



Annual Report
2019

OVERVIEW

How can
we work
together to
solve today's
complex
challenges?

It starts with passion and purpose. At Dow, our people use science and collaboration to create what matters most to our customers, society and the planet. Our ambition to be the world's most innovative, customer-centric, inclusive and sustainable materials science company drives best-in-class performance and a culture where new ideas thrive.



INNOVATIVE

Alongside our customers, we create materials and solutions for a better tomorrow.

CUSTOMER-CENTRIC

We collaborate closely with our customers to help invent solutions to their toughest challenges and strive to make it easier and more enjoyable to do business with us – in person or virtually.

INCLUSIVE

We champion a fully inclusive workforce that reflects the world in which we do business. Bringing the best minds to the table empowers our employees to exceed customer expectations every day.

SUSTAINABLE

We are committed to leading the transition to a more sustainable planet – through our operations, product innovations and partnerships – as we strive to make a positive impact on society and the world.

Our Values

Integrity

**Respect for
People**

**Protecting
the Planet**

Financial Highlights

In millions, except per share amounts

	2019	2018
Net Sales	\$42,951	\$49,604
Pro Forma ¹ Net Sales	\$42,998	\$49,852
Income (Loss) from Continuing Operations, Net of Tax	(\$1,717)	\$2,940
Pro Forma ¹ Operating EBIT	\$4,352	\$6,236
Pro Forma ¹ Operating EBIT Margin	10.1%	12.5%
Earnings (Loss) per Common Share from Continuing Operations – Diluted	(\$2.42)	\$3.80
Pro Forma ¹ Operating EPS – Diluted	\$3.53	\$5.37
Cash Provided by Operating Activities – Continuing Operations	\$5,713	\$3,096
Cash Provided by Operating Activities – Continuing Operations, Excluding the Impact of ASU 2016-15 ²	\$5,713	\$3,753
Capital Expenditures	\$1,961	\$2,091
Free Cash Flow (FCF)	\$3,752	\$1,662

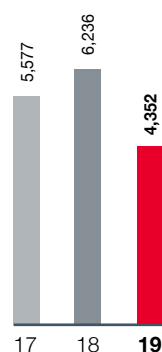
Pro Forma Net Sales¹

(dollars in millions)



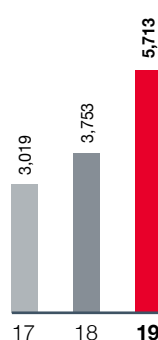
Pro Forma Operating EBIT¹

(dollars in millions)



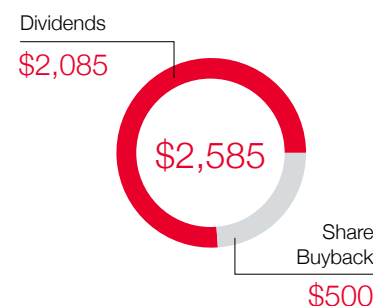
Cash Provided by Operating Activities – Continuing Operations, Excluding the Impact of ASU 2016-15²

(dollars in millions)



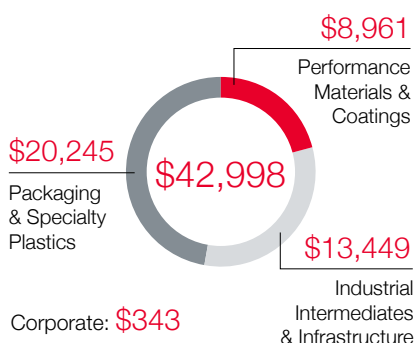
2019 Shareholder Remuneration³

(dollars in millions)



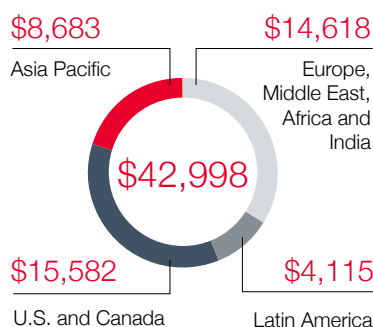
2019 Pro Forma Sales¹

by Operating Segment (dollars in millions)



2019 Pro Forma Sales¹

by Geography (dollars in millions)



For reconciliation to the most directly comparable U.S. GAAP measure, see supplemental information in the appendix and located at investors.dow.com under Financial Reporting.

See the appendix for a full list of financial definitions.

¹ Results for the first quarter of 2019 and periods prior are prepared on a pro forma basis. Results for the second quarter of 2019 and subsequent periods are prepared on an as-reported basis.

² Non-GAAP measure that excludes impact of ASU 2016-15.

³ Dow paid dividends of \$535 million to DowDuPont in the first quarter of 2019, as well as a cumulative \$1.55 billion to Dow Inc. shareholders in the remaining three quarters of the year.

Certain statements in this report, other than purely historical information, including estimates, projections, statements relating to business plans, objectives and expected operating results, and the assumptions upon which those statements are based, are "forward-looking statements" within the meaning of the federal securities laws, including Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. In this context, forward-looking statements often address expected future business and financial performance, financial conditions and other matters, and often contain words such as "anticipate," "believe," "estimate," "expect," "intend," "may," "opportunity," "outlook," "plan," "project," "seek," "should," "strategy," "target," "will," "will be," "will continue," "will likely result," "would" and similar expressions, and variations or negatives of these words. Forward-looking statements are based on current expectations and assumptions that are subject to risks and uncertainties which may cause actual results to differ materially from the forward-looking statements. Dow Inc. undertakes no obligation to update or revise any forward-looking statements whether because of new information, future events or otherwise, except as required by securities and other applicable laws. References to "Dow" or the "Company" mean Dow Inc. and its consolidated subsidiaries, unless otherwise expressly noted.

Dear Fellow Dow Shareholders,

In April 2019, we introduced a new Dow – a more focused, disciplined and customer-oriented company that is well-positioned to generate long-term value for our customers and shareholders. We are driving this through maintaining our leading business positions, more disciplined capital allocation, a leaner cost structure and a focus on strong shareholder returns across the cycle.

Our resilience in the face of global industrial economy and trade headwinds was clear in 2019. Despite these global challenges, we captured downstream demand growth in sectors closer to the consumer, such as packaging, infrastructure and consumer goods – where our unique products and material science expertise are highly valued.

Applying a culture of benchmarking for best-in-class results, we advanced our lean operating structure by achieving our cost synergy targets ahead of schedule and removing the stranded costs from the merge and separation from DowDuPont. We also intensified our focus on cash flow, driving our cash conversion significantly higher. And we used our free cash flow in a balanced way: rewarding our shareholders, investing in our business and paying down debt.

As a result, Dow achieved higher cash flows, improved our financial strength and delivered attractive shareholder returns. And we made good progress on the elements of our ambition – innovation, customer-centricity, inclusion and sustainability – continuing to drive these environmental, social and governance (ESG) measures as strategic priorities and positioning Dow as a thought and action leader.

2019 Financial Highlights:

- Pro forma¹ net sales of \$43 billion, with 1% volume growth excluding the Hydrocarbons & Energy business.
- Pro forma¹ operating earnings per share of \$3.53, pro forma¹ operating EBIT of \$4.4 billion, and a pro forma¹ operating EBIT margin of 10%.
- Cash flow from operations of \$5.7 billion, with a cash flow conversion² of 78%, up 37 percentage points year-over-year.
- More than \$600 million in cumulative savings from cost synergies and stranded cost removal, exceeding our target for the year by 13%.
- Paid down more than \$3 billion of debt, leading to a \$130 million year-over-year decrease in interest expense.
- \$2.6 billion returned to shareholders – \$2.1 billion from our industry-leading dividend³ and \$500 million in share repurchases.
- For the first time in our more than 120-year history, Dow was added to the Dow Jones Industrial Average in April 2019.

ADVANCED GROWTH PROJECTS IN 2019:

- Completed 16 debottlenecks in our global silicones franchise
- Advanced the construction of our incremental ethylene capacity addition in Texas, due to start up in 2020
- Announced plans to retrofit an ethylene facility in Louisiana with our new proprietary fluidized catalytic dehydrogenation (FCDh) technology to produce on-purpose propylene
- Reached final investment decision on our flexible alkoxylation capacity expansion and signed a 10-year supply agreement with a key customer



Executing on Our Priorities

Our results demonstrate a more streamlined Dow with a focus on executing the operational, financial and strategic playbook we laid out at the end of 2018.



Driving profitable growth:

Our playbook includes a **robust pipeline of lower-risk, higher-return projects**. We progressed many of these projects in the year.

In 2020, we will continue advancing our second wave of high value, downstream growth investments in plastics, silicones and ethylene oxide derivatives – unlocking additional earnings upside in the near and long term. These investments are slated to come online through 2023 and will bring new downstream capacity in North America, Europe and Asia to meet growing demand.

Our ability to design the next generation of higher-value, sustainable products will be a defining advantage for Dow. I am particularly proud of the innovations our team is creating that **advance our goal of enabling a circular economy for plastics**.

In 2019, we launched AGILITY™ CE, a new resin made with 70% post-consumer recycled plastics, which incorporates recycled plastic shrink film into low-density polyethylene. We also announced a partnership with The Netherlands-based Fuenix Ecogy Group for the supply of pyrolysis oil feedstock, which is made from recycled plastic waste. And, we announced a partnership with UPM Biofuels to create an alternative feedstock source for plastics production.

These efforts are firmly aligned with those of the **Alliance to End Plastic Waste** – the largest value chain alliance ever created in our industry. In 2019, **we became a founding member** of this non-profit global initiative that is focused on developing waste disposal infrastructure and driving a closed-loop economy for plastics.

We are also **enhancing the customer experience** through **new digital capabilities** to better understand our customers' needs and better deliver on their expectations.

We took an important step forward in 2019 with the launch of a new **Dow.com**. The site's expanded e-commerce platform and robust

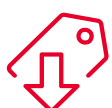
market application-oriented product catalog has made doing business with Dow quicker and easier. We generated nearly \$3 billion in sales on the platform in 2019, and there is significant opportunity for further expansion in e-commerce as a growth platform for Dow in the future.



Exercising disciplined capital allocation:

Our actions to deliver **higher returns on invested capital, increase free cash flow and generate attractive returns to our shareholders** were apparent in our 2019 results. As economic conditions became more unpredictable through the year, we proactively reduced our initial capital expenditures target by \$500 million and re-focused our spending.

We significantly enhanced our cash conversion by 37 percentage points, resulting in substantial free cash flow generation that we deployed in a balanced way: deleveraging to ensure a strong capital structure, returning capital to shareholders through an industry-leading dividend, and continuing to strategically invest in the business.



Executing a low-cost operating model:

We achieved **considerable cost synergy and stranded cost savings** in the year. We completed our \$1.365 billion cost synergy program nearly two quarters ahead of schedule and removed \$160 million in stranded costs, delivering more than \$600 million of savings in the year. We expect to remove more than \$140 million of additional stranded costs in 2020, while continuing to capture productivity gains in our manufacturing and corporate operations. All of this was driven by benchmarking Dow versus our peers for best-in-class results.



Applying a best owner mindset:

We consistently benchmarked our results versus our competitors, so we have a clear understanding of our competitive position in the industry. We also illustrated our disciplined approach to portfolio management by executing several incremental clean-up transactions in the year:

- Shut down a polyurethanes facility in Altona, Australia, as well as a coatings manufacturing facility in Charlotte, North Carolina.
- Divested our acetone derivatives business and the associated site in Institute, West Virginia.
- Transferred ownership of our La Porte, Texas, site and our coatings emulsion plant in Rheinmünster, Germany.

INNOVATING A SUSTAINABLE FUTURE:

- **AMPLIFY™ Si Silicone Enhanced Polymer Systems** is a silicone-polyethylene hybrid technology that improves plastic composites product performance and helps divert plastic waste from landfills
- **ECOFAST™ Pure Sustainable Textile Treatment** helps reduce the environmental impact of dyeing cotton fabric
- **PRIMAL™ Bio-based Acrylic Emulsions** are produced with carbon from plants and enable formulated paints to get USDA bio-based certification

FACILITATING CROSS-VALUE CHAIN COLLABORATION TO:

- Develop infrastructure to collect and manage waste and increase recycling
- Drive innovation to advance and scale new technologies
- Educate and engage governments, businesses and communities
- Clean up concentrated areas of plastic waste already in the environment



Commitment to Our Ambition

Ultimately, our success comes from the energy and passion of the 36,500 members of Team Dow, who are living and driving our ambition and values every day. We believe inclusion is a powerful catalyst to positively impact the bottom line and **accelerate innovation**.

By **enhancing the employee experience**, we foster a culture where everyone is respected, valued, and has an equal opportunity to contribute and advance. I'm proud of the efforts we've made to cultivate an **inclusive workplace** around the world – efforts that continue to result in external accolades, such as earning the 37th spot on DiversityInc.'s 2019 Top Companies for Diversity.

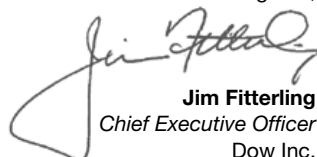
Sustainability is also a fundamental part of our business strategy that customers are demanding. We progressed several projects and actions aligned with our ambitious **2025 Sustainability Goals** in 2019, particularly with our efforts to advance a circular plastics economy. We recognize that plastics are too valuable to waste. They are an indispensable part of the global economy, a low-carbon future and a healthier quality of life. Yet plastics waste is undeniably harming our environment.

Can we close the loop on the circular economy for plastics? Yes, and collaboration will be key. And in fact, the Alliance to End Plastic Waste is already facilitating partnerships across the entire value chain to solve this challenge.

Looking to 2020 and beyond, I am confident about the future of our company. We remain focused on executing against our playbook to **drive value for our shareholders, customers, employees and communities** where we operate. At the same time, we continue to relentlessly pursue **our ambition to be the most innovative, customer-centric, inclusive and sustainable materials science company in the world**.

Thank you to our customers for placing your trust in us and to our shareholders for your continued support and investment in Dow. We look forward to shaping a successful and sustainable future together.

Best Regards,



Jim Fitterling
Chief Executive Officer
Dow Inc.

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² Cash flow conversion is defined as cash flow from operating activities – continuing operations, excluding the impact of ASU 2016-15, divided by pro forma operating EBITDA. Pro forma operating EBITDA is defined as earnings (i.e., "Pro forma net income (loss) before income taxes") less interest, depreciation and amortization, excluding the impact of significant items.

³ Dow paid dividends of \$535 million to DowDuPont in the first quarter of 2019 as well as a cumulative \$1.55 billion to Dow Inc. shareholders in the remaining three quarters of the year.



Seek

Together™



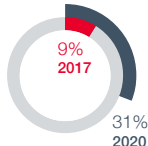
Dow Leadership Team, left to right: Melanie Kalmar, Karen S. Carter, Jack Broodo, Torsten Kraef, Diego Donoso, Howard Ungerleider, Jim Fitterling, Mauro Gregorio, Amy Wilson, Peter Holicki, A. N. Sreeram, Neil Carr, Jane Palmieri

Leading for Success

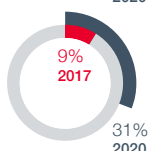
Strategic, transparent and responsible leadership is instrumental in driving both near- and long-term value. It not only forms the foundation for lasting success but is important for strengthening the trust of our stakeholders. Meet our Leadership Team.

Leadership Team Diversity

Female representation among our Leadership Team has increased from 9% to 31%.



The percentage of **U.S. minorities** on our Leadership Team has increased from 9% to 31%.



Dow Leadership Team

Jim Fitterling

Chief Executive Officer

Howard Ungerleider

President and Chief Financial Officer

Jack Broodo

President, Feedstocks & Energy

Neil Carr

President, Europe, Middle East, Africa and India

Karen S. Carter

Chief Human Resources Officer and Chief Inclusion Officer

Diego Donoso

President, Packaging & Specialty Plastics

Mauro Gregorio

President, Performance Materials & Coatings; Latin America oversight

Peter Holicki

Senior Vice President, Operations, Manufacturing & Engineering

Melanie Kalmar

Corporate Vice President, Chief Information Officer and Chief Digital Officer

Torsten Kraef

Senior Vice President, Corporate Development

Jane Palmieri

President, Industrial Intermediates & Infrastructure; Asia Pacific oversight

A. N. Sreeram

Senior Vice President, Research & Development and Chief Technology Officer

Amy Wilson

General Counsel and Corporate Secretary

(As of February 14, 2020)

At Dow, we believe a diverse, experienced, independent and active board leads to improved decision-making, financial performance and shareholder value. Our goal is to ensure our board is comprised of individuals with: expertise in fields that are relevant to Dow's business; experience from different professions and industries; a diversity of ethnicity, gender and global experience; and a range of tenures. In addition to the six continuing heritage Dow directors, four new independent directors have joined the board.

Board of Directors

Our Board of Directors includes 10 independent directors who participate on four committees: [1] Audit; [2] Compensation and Leadership Development; [3] Corporate Governance; and [4] Environment, Health, Safety & Technology.

Jeff M. Fettig [2] [3]

Non-Executive Chairman, Dow
Former Chairman and Chief Executive Officer,
Whirlpool Corporation

Samuel R. Allen [2] [3]

Chairman and Retired Chief Executive Officer,
Deere & Company

Ajay Banga [2] [3]

President and Chief Executive Officer,
MasterCard Incorporated

Jacqueline K. Barton [4]

John G. Kirkwood and Arthur A. Noyes Professor
of Chemistry and Norman Davidson Leadership
Chair of the Division of Chemistry and Chemical
Engineering, California Institute of Technology

James A. Bell [1] [3]

Former Executive Vice President, Corporate
President and Chief Financial Officer, The Boeing
Company

Wesley G. Bush [1] [4]

Former Chairman and Chief Executive Officer,
Northrop Grumman Corporation

Richard K. Davis [1] [3]

President and Chief Executive Officer, Make-A-
Wish America

Jim Fitterling

Chief Executive Officer, Dow

Jacqueline C. Hinman [1] [4]

Former Chairman, President and Chief Executive
Officer, CH2M HILL

Ruth G. Shaw [2] [4]

Former Group Executive for Public Policy and
President, Duke Nuclear

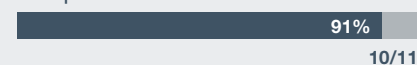
Daniel W. Yohannes [1] [4]

Former U.S. Ambassador to the Organization for
Economic Cooperation and Development

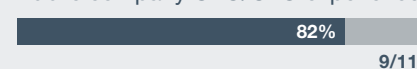
(As of February 14, 2020)

A Diverse and Independent Board

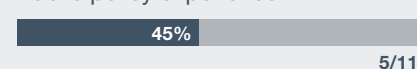
Independent directors:



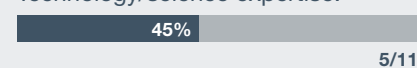
Public company CEO/CFO experience:



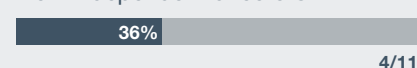
Public policy experience:



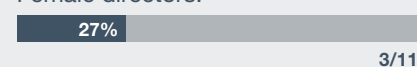
Technology/science expertise:



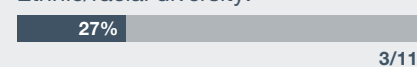
New independent directors:



Female directors:



Ethnic/racial diversity:



More information on Dow's corporate governance, including Dow's corporate governance guidelines, Board Committee charters and Code of Conduct, is available at investors.dow.com.

Dow Board of Directors, left to right: Wesley G. Bush, Jacqueline C. Hinman, James A. Bell, Ruth G. Shaw, Jeff M. Fettig, Jim Fitterling, Ajay Banga, Jacqueline K. Barton, Samuel R. Allen, Daniel W. Yohannes, Richard K. Davis



How Can Dow's Materials Science Enable a Better Future?

Our innovative, sustainable solutions make lives better. From the buildings where we live and work to the packaging on grocery shelves to the shoes we wear, Dow is there.



Personal Care

Bio-based and biodegradable **MaizeCare™ Style Polymer** is sourced from non-GMO corn and delivers curl retention and frizz control for haircare.



Architectural Coatings

Dow PRIMAL™ Bio-based Acrylic Emulsions are produced with carbon from plants, enable paints with ultra-low odor and low VOC, and help remove formaldehyde – to improve indoor air quality.



High-Performance Building

DOWSIL™ Silicone Adhesives are helping protect skyscrapers around the world and save energy by providing a durable and flexible bond for modern glass façades.



Furniture & Bedding

Our **RENUVA™ Mattress Program** brings together recycling companies and value chain participants to build a business ecosystem that turns end-of-life mattresses back into valuable raw materials.

5G

5G

DOWSIL™ TC-3015 Re-workable Thermal Gel enables reuse and recycling of smartphones while addressing their critical thermal management needs.



Illumination

SILASTIC™ Moldable Optics Silicones have the ability to precisely control light for applications including high-performance automotive and stadium lighting.



Packaging

SURLYN™ Ionomer Resin enables ornamental perfume caps with optimized transparency that can be recycled into other cosmetic packaging.



Shoes

Our **SILASTIC™ 3D 3335 Liquid Silicone Rubber** enables customized midsoles that are 3D printed to be a perfect fit for consumer comfort.



Bright Fabrics

ECOFAST™ Pure Sustainable Textile Treatment helps reduce the environmental impact of dyeing cotton fabric.



Dishwashing

With **ACUSOL™ Dispersant Polymers**, Dow and Ecolab developed a new, more efficient detergent for automatic dishwashers at large chain restaurants – enabling a 60-90 second wash-and-dry cycle that saves water and energy.



Appliance

PASCAL™ Technology helps appliance manufacturers meet required energy standards and sustain design quality and production costs.



Traffic and Road Marking Technology

Our **FASTRACK™ Quick-Dry Technology** is enabling reflective road markings that improve nighttime visibility and are fast drying.

Innovating for Growth with Our Customers

Customer-centric research and development is helping fuel our growth – and our customers' growth.



Hybrid Chemistry

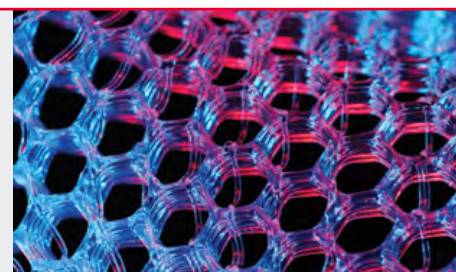
By combining silicones with other molecules, Dow is developing hybrid products that can provide performance, processing and cost advantages for customers.

NEW IN 2019: Designed for wood-plastic composite decking, **AMPLIFY™ Si** Silicone Enhanced Polymer Systems is a silicone-polyethylene hybrid technology that helps manufacturers use more recycled plastics while maintaining – or even improving – the finished product.

Collaborative Solutions

Fueled by creativity and collaboration with external partners, we're commercializing novel ideas – including products, processes and business models. Our collaborators include universities, governments and value chain partners.

NEW IN 2019: We collaborated with German RepRap GmbH and shoe manufacturer ECCO to develop a new **3D printing** material to make customized midsoles. Consumers scan their feet in stores, and in hours, receive shoes with midsoles built for their footprint.



Digitalization

Investments in digitalization are helping speed innovation and create new value for Dow and our customers.

NEW IN 2019: We launched a new **dow.com** – a customer-focused website with an expanded **e-commerce platform**, achieving

~\$3 billion in sales.

Sustainability

Our businesses are systematically evaluating opportunities to innovate more sustainable products.

NEW IN 2019: Working with UPM Biofuels, we are turning a waste residue from paper production into a **bio-based feedstock**. This renewable feedstock can be used to make food packaging with a significantly lower carbon footprint.



Working with Customers at Their Design Table

Customers visiting Dow's new Inspiration Studio in Seneffe, Belgium, will find an array of samples that they can see and feel – from polyurethane foams to silicone gels to films made from Dow resins. Nicknamed "Dow's storefront," the studio enables customers to explore Dow's technologies and products under one roof and is an example of how Dow scientists and technical experts are increasingly innovating as one team.

Engaging Our People and Communities

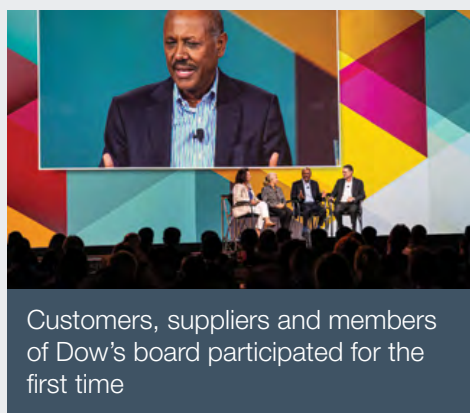
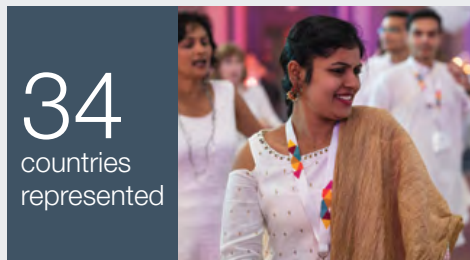
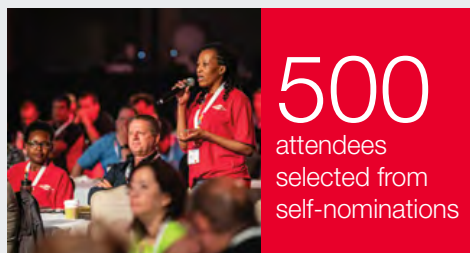
To compete, lead and contribute to the well-being of people and the planet, we need diverse voices, ideas and perspectives to help us arrive at the best solutions possible.

Attracting and Developing a Diverse Workforce

In 2019, we continued to make progress in key areas of our inclusion & diversity (I&D) strategy:



Our second all-ERG conference connected the work of Dow's employee resource groups (ERGs) to our ambition to become the most innovative, customer-centric, inclusive and sustainable materials science company in the world.

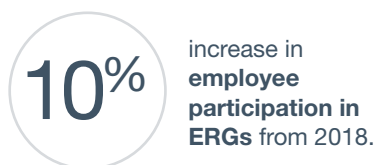


Addressing diversity gaps in employee perception as expressed in Dow's global employee opinion survey:



To help us gather better insights and drive meaningful change, we revamped our all-employee survey – named Voice.

Activating Employee Resource Groups:



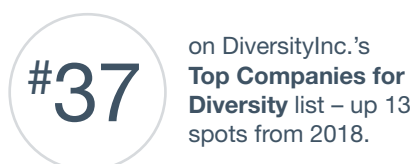
More than 40% of our employees participated in our Employee Resource Groups (ERGs) in 2019. Our 10 ERGs act as catalysts to drive culture change and business results, while also contributing to employee development.

Accelerating spend with diverse suppliers:



To foster the economic growth of diverse companies and communities, we are advancing a three-year plan to increase our spending among diverse suppliers and achieve top benchmark performance.

Achieving targeted premier recognition globally:



We were recognized as a top company for diversity and among the best places to work for disabled and LGBTQ employees in 2019.

Advancing representation globally and across multiple dimensions of diversity:



Our goal is to hire and promote the best talent everywhere in the world. Although we've significantly increased representation of women and minorities among our executive leadership and Board of Directors, we're working to achieve better representation at all levels of the company. In 2019, we launched Advocacy in Action, a new talent development program that pairs African American protégés with senior leader sponsors to drive career achievement.

Making a Positive Impact on Our Communities

Our global citizenship efforts apply our innovative technology, employee expertise and passion, and culture of inclusion to generate transformational and positive change.

Focus Areas:



Advancing Sustainable SOLUTIONS

We're using our science and expertise to contribute to collaborations that are helping solve global challenges.

Turning Trash into Cash

Through our Business Impact Fund, we teamed up with the non-profit WILDTRUST to empower local "wastepreneurs" in South Africa to generate income by collecting, sorting and recycling waste. Dow also is funding the expansion of WILDTRUST's recycling villages, which include collection points in schools, shopping centers and other public areas – making it easier to recycle. To date, more than 715 wastepreneurs have participated in the initiative, generating reliable income for them and ensuring waste materials get to the collection points so they can be repurposed.



Building Inclusive COMMUNITIES

To help advance inclusion and strengthen communities, we help equip community influencers to address diversity-related challenges and support organizations that respect unique differences and perspectives.

Going "All In" with Inclusion

Our employees are not only making our company a better and more inclusive place to work, but they are also making our communities kinder and more inclusive places to live. In 2019, we launched the ALL IN ERG Fund. This program offers up to \$200,000 of seed funding to activate Dow's ERG participants in developing innovative programs with external organizations that help solve I&D needs in communities.



Developing Tomorrow's INNOVATORS

To ensure a diverse and ready workforce for tomorrow, we are committed to increasing student preparedness in skilled trades, engineering and chemistry, while also cultivating behaviors focused on inclusion, innovation and sustainability.

Using Robots to Bring STEM to Life

Since 2014, more than 200 FIRST Robotics youth teams across six countries have been launched in Dow communities. Most of these teams are mentored by Dow STEM Ambassadors – employee volunteers who spark students' curiosity in STEM through robots, competition and teamwork. Dow also provides financial and technical support for teams.



350 MT

of plastic diverted from landfills and 8 recycling villages upgraded or expanded

~150

projects submitted to ALL IN ERG Fund in first year

>200

FIRST Robotics teams launched in Dow communities since 2014

Accelerating the Transition to a More Sustainable Planet

Together, with our customers and collaboration partners – and guided by our 2025 Sustainability Goals – we are seeking to make a more sustainable planet.

Dow's Areas of Focus: Collaborating for Change

Our focus is on three sustainability areas that are critical to our business and where we believe we can make a difference.



Circular Economy

In 2019, we:

- Became a **founding member of the Alliance to End Plastic Waste**, in which more than 40 companies have committed to invest \$1.5 billion in various projects and partnerships, mainly in Asia and Africa.
- Were **named to Fortune's 2019 "Change the World" list** of companies for our use of recycled plastics in roads. To help improve infrastructure and find new uses for plastic waste, we are working with partners across the world to make polymer-modified asphalt roads with recycled plastic. The results are roads that are less costly and more durable than conventional highways.



100 kilometers

of "plastic roads" built globally have diverted nearly 200 MT of plastic from landfills to date



Climate Protection

In 2019, we:

- Initiated a **Carbon Challenge Award with the U.S. Green Building Council** to recognize buildings that have reduced carbon emissions and improved energy efficiency.
- Are producing a **100% renewable-energy-made polyethylene** at our Freeport, Texas, site that results in 13.8 fewer greenhouse gas emissions per pound than the industry average. As part of our 2025 Sustainability Goal on World-Leading Operations Performance, we are targeting to obtain 750 MW of our power demand from renewable resources by 2025 – and today are an industry leader with 700 MW.



30%

of our electricity needs at our four Texas manufacturing sites is sourced from wind power



Safer Materials

In 2019, we:

- Hosted our **first customer Sustainability Academy** in China to generate ideas for innovative sustainability projects.
- Were awarded the **2019 Sustainability Champion Award from Green Chemistry & Commerce Council (GC3)** for our leadership in value chain outreach and development of sustainable materials.
- Expanded our **award-winning Product Stewardship Academy** in Africa and the Middle East. The program proactively engages customers to increase product safety knowledge and safe material handling practices in developing regions.



Product Stewardship Academies

promote hands-on training to enable responsible and sustainable business growth

Partnering to Tackle Plastic Waste

Across the world, we are collaborating with a variety of stakeholders to help find answers to the plastic waste challenge. Where others see plastic waste, we see value.



Hefty® EnergyBag® Program: Teaming up with Keep America Beautiful, Reynolds Consumer Products and municipalities to collect hard-to-recycle plastics at curbside and convert them into valuable resources such as fuels.

Operation Clean Sweep: Implementing this American Chemistry Council initiative at our manufacturing sites to prevent the loss of plastic pellets into the environment.

North America



Extended Plastics Partnership for Innovation in Circularity: Working with UK retailer M&S and Wastebuster to turn recycled plastic food packaging into rigid panels used for playground equipment and other items.

Alternative Feedstocks: Working with Fuenix Ecogy Group and UPM Biofuels to produce plastics using feedstocks made from hard-to-recycle plastics and wood pulp residue.

Europe



Project MASARO: Collaborating on a pilot project to introduce a closed loop waste management system at a boarding school in Indonesia.

Circulate Capital Ocean Fund: Founding investor in the world's first investment fund dedicated to addressing Asia's plastic crisis.

Asia



Global

#PullingOurWeight Campaign: In 2019, more than 18,000 employees, families and friends participated in 175 cleanups globally, removing more than 175,000 pounds of trash from beaches and waterways.

Latin America

Recycled Bricks for Schools: Collaborating with Conceptos Plásticos in Colombia to build classrooms using bricks made from recycled plastics.

Recycling for a Change: Working with Boomeria and Fundación Avina in Brazil to enable waste picker cooperatives to become more productive and profitable.

Africa

Project Butterfly: Helping to improve waste management and boost economic opportunities by educating communities and kick-starting recycling collections in South Africa, Kenya, Nigeria, Algeria and Ethiopia.

Alliance to End Plastic Waste Project: Contributing funding, materials, logistics capabilities and technical expertise to Renew Oceans in India, to help stem the 1.2 billion pounds of plastic waste from entering the Ganges River yearly.

A Locations of recycled plastic roads projects



2019 Highlights

FINANCIAL



Dow Inc. **begins trading** on the

NYSE

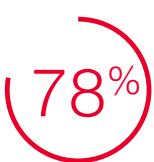
after the Materials Science Division separates from DowDuPont

70 CENTS PER SHARE

Declared **industry-leading quarterly dividend**

>\$3B

in debt paid down, strengthening Dow's debt maturity profile



Pro forma operating **EBITDA-to-cash flow conversion** – up from 41% in 2018

\$1.365B

cost synergy program completed – nearly two quarters ahead of schedule

CUSTOMER-CENTRIC

LAUNCHED NEW DOW.COM

Featuring an expanded e-commerce platform reaching **online sales of ~\$3 billion**



Opened regional

CUSTOMER CARE CENTERS

Offering **real-time data and analytics** to improve customer experience

INCLUSIVE

Earned **37th place** on 2019

TOP 50 COMPANIES FOR DIVERSITY

list from DiversityInc.

Named **Best Place to Work** for

LGBTQ EQUALITY

by the Human Rights Campaign Foundation for the **15th consecutive year in 2020**

2019

DISABILITY EQUALITY INDEX®

“Best Place to Work”

Achieved

GREAT PLACE TO WORK® CERTIFICATION

in **5 countries** – Brazil, Canada, Colombia, Mexico and the United States



INNOVATIVE



Record 5 breakthrough innovation **2019 Edison Awards**



Winner of

4 R&D 100 AWARDS

in 2019

Announced collaborations to increase recycled and renewable content in our

POLYMER SOLUTIONS

Reducing our **carbon footprint**



SUSTAINABLE

FOUNDING MEMBER of



Representing 40+ companies globally committing \$1.5B to develop and scale solutions to **eliminate plastic waste** in the environment

Received 4

SUSTAINABILITY AWARDS

from Business Intelligence Group, including

Sustainability Initiative of the Year Award for RENUVA™ Mattress Project



20TH YEAR

Named to **Dow Jones Sustainability World Index**

Named to Fortune's

CHANGE THE WORLD LIST

For use of **recycled plastics in roads** as part of commitment to **reduce plastic waste**

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 10-K

☒ **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the fiscal year ended **December 31, 2019**

or

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the transition period from _____ to _____



<u>Commission File Number</u>	<u>Exact Name of Registrant as Specified in its Charter, Principal Office Address and Telephone Number</u>	<u>State of Incorporation or Organization</u>	<u>I.R.S. Employer Identification No.</u>
001-38646	Dow Inc. 2211 H.H. Dow Way, Midland, MI 48674 (989) 636-1000	Delaware	30-1128146
001-03433	The Dow Chemical Company 2211 H.H. Dow Way, Midland, MI 48674 (989) 636-1000	Delaware	38-1285128

Securities registered pursuant to Section 12(b) of the Act:

Registrant	Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Dow Inc.	Common Stock, par value \$0.01 per share	DOW	New York Stock Exchange
The Dow Chemical Company	4.625% Notes due October 1, 2044	DOW/44	New York Stock Exchange

Securities registered pursuant to Section 12(g) of the Act: None

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act.

Dow Inc.	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
The Dow Chemical Company	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act.

Dow Inc.	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
The Dow Chemical Company	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days.

Dow Inc.	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
The Dow Chemical Company	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files).

Dow Inc.	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
The Dow Chemical Company	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Dow Inc.	Large accelerated filer <input checked="" type="checkbox"/>	Accelerated filer <input type="checkbox"/>	Non-accelerated filer <input type="checkbox"/>	Smaller reporting company <input type="checkbox"/>	Emerging growth company <input type="checkbox"/>
The Dow Chemical Company	Large accelerated filer <input type="checkbox"/>	Accelerated filer <input type="checkbox"/>	Non-accelerated filer <input checked="" type="checkbox"/>	Smaller reporting company <input type="checkbox"/>	Emerging growth company <input type="checkbox"/>

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act.

Dow Inc.	<input type="checkbox"/>
The Dow Chemical Company	<input type="checkbox"/>

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act).

Dow Inc.	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
The Dow Chemical Company	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

As of June 30, 2019, the aggregate market value of the common stock of Dow Inc. held by non-affiliates of Dow Inc. was approximately \$36.3 billion based on the last reported closing price of \$49.31 per share as reported on the New York Stock Exchange.

Dow Inc. had 741,678,966 shares of common stock, \$0.01 par value, outstanding at January 31, 2020. The Dow Chemical Company had 100 shares of common stock, \$0.01 par value, outstanding at January 31, 2020, all of which were held by the registrant's parent, Dow Inc.

The Dow Chemical Company meets the conditions set forth in General Instruction I(1)(a) and (b) for Form 10-K and therefore is filing this form in the reduced disclosure format.

DOCUMENTS INCORPORATED BY REFERENCE

Dow Inc.: Portions of Dow Inc.'s Proxy Statement for the 2020 Annual Meeting of Stockholders are incorporated herein by reference in Part III of this Annual Report on Form 10-K to the extent stated herein. Such proxy statement will be filed with the Securities and Exchange Commission within 120 days of Dow Inc.'s fiscal year ended December 31, 2019.

The Dow Chemical Company: None.

Dow Inc. and Subsidiaries
The Dow Chemical Company and Subsidiaries

ANNUAL REPORT ON FORM 10-K
For the fiscal year ended December 31, 2019

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Dow Inc. and Subsidiaries
The Dow Chemical Company and Subsidiaries

This Annual Report on Form 10-K is a combined report being filed by Dow Inc. and The Dow Chemical Company and its consolidated subsidiaries ("TDCC" and together with Dow Inc., "Dow" or the "Company"). This Annual Report on Form 10-K reflects the results of Dow and its consolidated subsidiaries, after giving effect to the distribution to DowDuPont Inc. ("DowDuPont" and effective June 3, 2019, n/k/a DuPont de Nemours, Inc. or "DuPont") of TDCC's agricultural sciences business ("AgCo") and specialty products business ("SpecCo") and the receipt of E. I. du Pont de Nemours and Company and its consolidated subsidiaries' ("Historical DuPont") ethylene and ethylene copolymers business (other than its ethylene acrylic elastomers business) ("ECP"). The U.S. GAAP consolidated financial results of Dow Inc. and TDCC reflect the distribution of AgCo and SpecCo as discontinued operations for the applicable periods presented as well as the receipt of ECP as a common control transaction from the closing of the merger with Historical DuPont on August 31, 2017. In addition, following the separation from DowDuPont, the Company changed the manner in which its business activities were managed. The Company's portfolio now includes six global businesses which are organized into the following operating segments: Packaging & Specialty Plastics, Industrial Intermediates & Infrastructure and Performance Materials & Coatings. Corporate contains the reconciliation between the totals for the operating segments and the Company's totals. As a result of the parent/subsidiary relationship between Dow Inc. and TDCC, and the expectation that the financial statements and disclosures of each company will be substantially similar, the companies are filing a combined report for this Annual Report on Form 10-K. The information reflected in this report is equally applicable to both Dow Inc. and TDCC, except where otherwise noted. Each of Dow Inc. and TDCC is filing information in this report on its own behalf and neither company makes any representation to the information relating to the other company.

Background

On April 1, 2019, DowDuPont completed the separation of its materials science business and Dow Inc. became the direct parent company of TDCC and its consolidated subsidiaries, owning all of the outstanding common shares of TDCC. For filings relating to the period commencing April 1, 2019 and thereafter, TDCC was deemed the predecessor to Dow Inc., and the historical results of TDCC are deemed the historical results of Dow Inc. for periods prior to and including March 31, 2019.

The separation was contemplated by the merger of equals transaction effective August 31, 2017, under the Agreement and Plan of Merger, dated as of December 11, 2015, as amended on March 31, 2017. TDCC and Historical DuPont each merged with subsidiaries of DowDuPont and, as a result, TDCC and Historical DuPont became subsidiaries of DowDuPont (the "Merger"). Subsequent to the Merger, TDCC and Historical DuPont engaged in a series of internal reorganization and realignment steps to realign their businesses into three subgroups: agriculture, materials science and specialty products. Dow Inc. was formed as a wholly owned subsidiary of DowDuPont to serve as the holding company for the materials science business.

FORWARD-LOOKING STATEMENTS

This report contains "forward-looking statements" within the meaning of the federal securities laws, including Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. In this context, forward-looking statements often address expected future business and financial performance, financial condition, and other matters, and often contain words such as "anticipate," "believe," "estimate," "expect," "intend," "may," "opportunity," "outlook," "plan," "project," "seek," "should," "strategy," "target," "will," "will be," "will continue," "will likely result," "would" and similar expressions, and variations or negatives of these words. Forward-looking statements are based on current expectations and assumptions that are subject to risks and uncertainties which may cause actual results to differ materially from the forward-looking statements.

Forward-looking statements include, but are not limited to, expectations as to future sales of Dow's products; the ability to protect Dow's intellectual property in the United States and abroad; estimates regarding Dow's capital requirements and need for and availability of financing; estimates of Dow's expenses, future revenues and profitability; estimates of the size of the markets for Dow's products and services and Dow's ability to compete in such markets; expectations related to the rate and degree of market acceptance of Dow's products; the outcome of certain Dow contingencies, such as litigation and environmental matters; estimates of the success of competing technologies that may become available and expectations regarding the benefits and costs associated with each of the foregoing.

Forward-looking statements by their nature address matters that are, to different degrees, uncertain. Forward-looking statements are based on certain assumptions and expectations of future events which may not be realized and speak only as of the date the statements were made. In addition, forward-looking statements also involve risks, uncertainties and other factors that are beyond Dow's control that could cause Dow's actual results to differ materially from those projected, anticipated or implied in the forward-looking statements. These factors include, but are not limited to: fluctuations in energy and raw material prices; failure to develop and market new products and optimally manage product life cycles; significant litigation and environmental matters; failure to appropriately manage process safety and product stewardship issues; changes in laws and regulations or political conditions; global economic and capital markets conditions, such as inflation, market uncertainty, interest and currency exchange rates, and equity and commodity prices; business or supply disruptions; security threats, such as acts of sabotage, terrorism or war; weather events and natural disasters; ability to protect, defend and enforce Dow's intellectual property rights; increased competition; changes in relationships with Dow's significant customers and suppliers; unanticipated expenses such as litigation or legal settlement expenses; unanticipated business disruptions; Dow's ability to predict, identify and interpret changes in consumer preferences and demand; Dow's ability to complete proposed divestitures or acquisitions; Dow's ability to realize the expected benefits of acquisitions if they are completed; the availability of financing to Dow in the future and the terms and conditions of such financing; and disruptions in Dow's information technology networks and systems. Additionally, there may be other risks and uncertainties that Dow is unable to identify at this time or that Dow does not currently expect to have a material impact on its business.

Risks related to achieving the anticipated benefits of Dow's separation from DowDuPont include, but are not limited to, a number of conditions outside the control of Dow, including risks related to (i) Dow's inability to achieve some or all of the benefits that it expects to receive from the separation from DowDuPont, (ii) certain tax risks associated with the separation, (iii) Dow's inability to make necessary changes to operate as a stand-alone company, (iv) the failure of Dow's pro forma financial information to be a reliable indicator of Dow's future results, (v) Dow's inability to enjoy the same benefits of diversity, leverage and market reputation that it enjoyed as a combined company, (vi) Dow's inability to receive third-party consents required under the separation agreement, (vii) Dow's customers, suppliers and others' perception of Dow's financial stability on a stand-alone basis, (viii) non-compete restrictions under the separation agreement, (ix) receipt of less favorable terms in the commercial agreements Dow entered into with DuPont and Corteva, Inc. ("Corteva"), including restrictions under intellectual property cross-license agreements, than Dow would have received from an unaffiliated third party; and (x) Dow's obligation to indemnify DuPont and/or Corteva for certain liabilities.

Where, in any forward-looking statement, an expectation or belief as to future results or events is expressed, such expectation or belief is based on the current plans and expectations of management and expressed in good faith and believed to have a reasonable basis, but there can be no assurance that the expectation or belief will result or be achieved or accomplished. A detailed discussion of principal risks and uncertainties which may cause actual results and events to differ materially from such forward-looking statements is included in the section of this Annual Report on Form 10-K titled "Risk Factors." Dow Inc. and TDCC assume no obligation to update or revise publicly any forward-looking statements whether because of new information, future events, or otherwise, except as required by securities and other applicable laws.

Dow Inc. and Subsidiaries
The Dow Chemical Company and Subsidiaries
PART I

ITEM 1. BUSINESS

THE COMPANY

Dow Inc. was incorporated on August 30, 2018, under Delaware law, to serve as a holding company for The Dow Chemical Company and its consolidated subsidiaries ("TDCC" and together with Dow Inc., "Dow" or the "Company"). Dow Inc. operates all of its businesses through TDCC, a wholly owned subsidiary, which was incorporated in 1947 under Delaware law and is the successor to a Michigan corporation, of the same name, organized in 1897. The Company's principal executive offices are located at 2211 H.H. Dow Way, Midland, Michigan 48674.

Available Information

The Company's Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q and Current Reports on Form 8-K, and amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934, are available free of charge at www.dow.com/investors, as soon as reasonably practicable after the reports are electronically filed or furnished with the U.S. Securities and Exchange Commission ("SEC"). The SEC maintains a website that contains these reports as well as proxy statements and other information regarding issuers that file electronically. The SEC's website is at www.sec.gov. Dow's website and its content are not deemed incorporated by reference into this report.

MERGER AND SEPARATION

On April 1, 2019, DowDuPont Inc. ("DowDuPont" and effective June 3, 2019, n/k/a DuPont de Nemours, Inc. or "DuPont") completed the separation of its materials science business and Dow Inc. became the direct parent company of TDCC and its consolidated subsidiaries, owning all of the outstanding common shares of TDCC.

The separation was contemplated by the merger of equals transaction effective August 31, 2017, under the Agreement and Plan of Merger, dated as of December 11, 2015, as amended on March 31, 2017. TDCC and E. I. du Pont de Nemours and Company and its consolidated subsidiaries ("Historical DuPont") each merged with subsidiaries of DowDuPont and, as a result, TDCC and Historical DuPont became subsidiaries of DowDuPont (the "Merger"). Subsequent to the Merger, TDCC and Historical DuPont engaged in a series of internal reorganization and realignment steps to realign their businesses into three subgroups: agriculture, materials science and specialty products. Dow Inc. was formed as a wholly owned subsidiary of DowDuPont to serve as the holding company for the materials science business.

As of the effective date and time of the distribution, DowDuPont does not beneficially own any equity interest in Dow and no longer consolidates Dow and its consolidated subsidiaries into its financial results. The consolidated financial results of Dow for periods prior to April 1, 2019, reflect the distribution of TDCC's agricultural sciences business ("AgCo") and specialty products business ("SpecCo") as discontinued operations for each period presented as well as reflect the receipt of Historical DuPont's ethylene and ethylene copolymers businesses (other than its ethylene acrylic elastomers business) ("ECP") as a common control transaction from the closing of the Merger on August 31, 2017. See Notes 3 and 4 to the Consolidated Financial Statements and Dow Inc.'s Amendment No. 4 to the Registration Statement on Form 10 filed with the SEC on March 8, 2019, for additional information.

Throughout this Annual Report on Form 10-K, unless otherwise indicated, amounts and activity are presented on a continuing operations basis.

About Dow

Dow combines global breadth, asset integration and scale, focused innovation and leading business positions to achieve profitable growth. The Company's ambition is to become the most innovative, customer centric, inclusive and sustainable materials science company. Dow's portfolio of plastics, industrial intermediates, coatings and silicones businesses delivers a broad range of differentiated science-based products and solutions for its customers in high-growth market segments, such as packaging, infrastructure and consumer care. Dow operates 109 manufacturing sites in 31 countries and employs approximately 36,500 people.

BUSINESS SEGMENTS AND PRODUCTS

Effective with the Merger, TDCC's business activities were components of DowDuPont's business operations and were reported as a single operating segment. Following the separation from DowDuPont, the Company changed the manner in which its business activities were managed. The Company's portfolio now includes six global businesses which are organized into the following operating segments: Packaging & Specialty Plastics, Industrial Intermediates & Infrastructure and Performance Materials & Coatings. Corporate contains the reconciliation between the totals for the operating segments and the Company's totals. The Company did not aggregate any operating segments when determining its reportable segments. See Part II, Item 7, Management's Discussion and Analysis of Financial Condition and Results of Operations and Note 27 to the Consolidated Financial Statements for additional information concerning the Company's operating segments.

PACKAGING & SPECIALTY PLASTICS

Packaging & Specialty Plastics consists of two highly integrated global businesses: Hydrocarbons & Energy and Packaging and Specialty Plastics. The segment employs the industry's broadest polyolefin product portfolio, supported by the Company's proprietary catalyst and manufacturing process technologies, to work at the customer's design table throughout the value chain to deliver more reliable and durable, higher performing, and more sustainable plastics to customers in food and specialty packaging; industrial and consumer packaging; health and hygiene; caps, closures and pipe applications; consumer durables; automotive; and infrastructure.

The Company's unique advantages compared with its competitors include: extensive low-cost feedstock positions around the world; unparalleled scale, global footprint and market reach, with world-class manufacturing sites in every geography; deep customer and brand owner understanding; portfolio of higher-value functional polymers, such as polyolefin elastomers, semiconductive and jacketing compound solutions and wire and cable insulation; and market-driven application development and technical support.

The segment remains agile and adaptive by participating in the entire ethylene-to-polyethylene chain integration, enabling the Company to manage market swings, and therefore optimize returns while reducing long-term earnings volatility. The Company's unrivaled value chain ownership is further strengthened by its Pack Studio locations in every geography, which help customers and brand owners deliver faster and more efficient packaging product commercialization through a global network of laboratories, technical experts and testing equipment.

Hydrocarbons & Energy

Hydrocarbons & Energy is the largest global producer of ethylene, a key chemical building block that the Company consumes primarily within the Packaging & Specialty Plastics segment. Ethylene is transferred to downstream derivative businesses at market-based prices, which are generally equivalent to prevailing market prices for large volume purchases. In addition to ethylene, the business is a leading producer of propylene and aromatics products that are used to manufacture materials that consumers use every day. The business also produces and procures the power and feedstocks used by the Company's manufacturing sites.

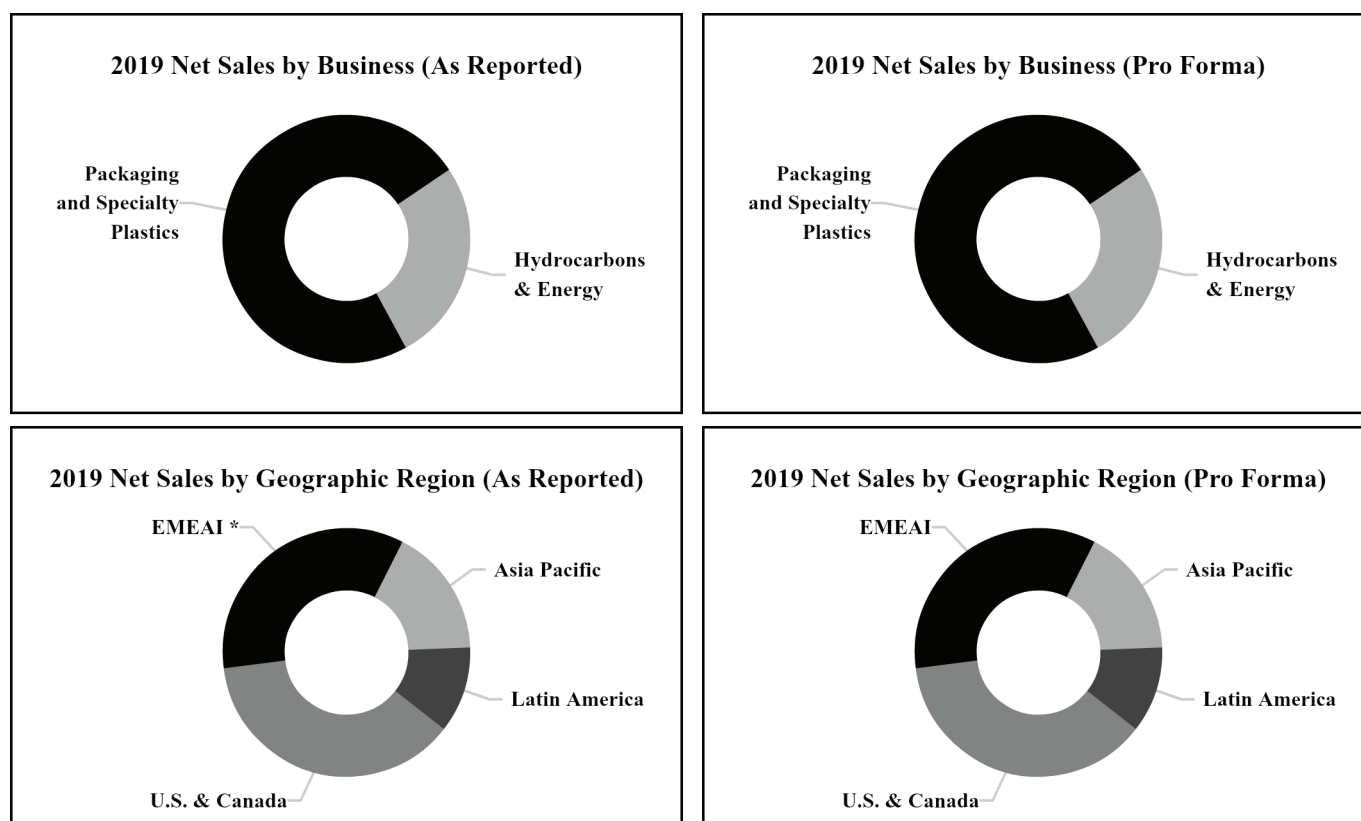
Packaging and Specialty Plastics

Packaging and Specialty Plastics serves growing, high-value sectors using world-class technology, broad existing product lines, and a rich product pipeline that creates competitive advantages for the entire packaging value chain. The business is a recognized leader in the production, marketing and innovation of polyethylene. The business is also a leader in other ethylene derivatives, such as polyolefin elastomers, ethylene vinyl acetate and ethylene propylene diene monomer ("EPDM") rubber serving automotive, consumer, wire and cable and construction markets. Market growth is expected to be driven by major shifts in population demographics; improving socioeconomic status in emerging geographies; consumer and brand owner demand for increased functionality; global efforts to reduce food waste; growth in telecommunications networks; global development of electrical transmission and distribution infrastructure; and renewable energy applications.

Divestiture

On September 1, 2017, the Company sold its global Ethylene Acrylic Acid copolymers and ionomers business to SK Global Chemical Co., Ltd. See Note 6 to the Consolidated Financial Statements for additional information.

Details on Packaging & Specialty Plastics' 2019 net sales, by business and geographic region, are as follows:



* Europe, Middle East, Africa and India ("EMEAI")

Products

Major applications/market segments and products are listed below by business:

<i>Business</i>	<i>Applications/Market Segments</i>	<i>Major Products</i>	<i>Key Raw Materials</i>	<i>Key Competitors</i>
Hydrocarbons & Energy	Purchaser of feedstocks; production of cost competitive hydrocarbon monomers utilized by Dow's derivative businesses; and energy, principally for use in Dow's global operations	Ethylene, propylene, benzene, butadiene, octene, aromatics co-products, power, steam, other utilities	Butane, condensate, ethane, naphtha, natural gas, propane	Chevron Phillips Chemical, ExxonMobil, INEOS, LyondellBasell, SABIC, Shell, Sinopec
Packaging and Specialty Plastics	Adhesives; automotive; caps, closures and pipe applications; construction; cosmetics; electrical transmission and distribution; food and supply chain packaging; footwear; health and hygiene; housewares; industrial specialty applications using polyolefin elastomers, ethylene copolymers, and ethylene propylene diene monomer ("EPDM") elastomers; irrigation pipe; photovoltaic encapsulants; sporting goods; telecommunications infrastructure; toys and infant products	Acrylics, bio-based plasticizers, copolymer, elastomers, ethylene copolymer resins, EPDM, ethylene vinyl acetate ("EVA"), methacrylic acid copolymer resins, polyethylene ("PE"), high-density polyethylene ("HDPE"), low-density polyethylene ("LDPE"), linear low-density polyethylene ("LLDPE"), polyolefin plastomers, resin additives and modifiers, semiconductive and jacketing compound solutions and wire and cable insulation	Aliphatic solvent, butene, ethylene, hexene, octene, propylene	Borealis, ExxonMobil, INEOS, Lanxess, LyondellBasell, Nova, SABIC

Joint Ventures

This segment includes a portion of the Company's share of the results of the following joint ventures:

- EQUATE Petrochemical Company K.S.C.C. ("EQUATE") - a Kuwait-based company that manufactures ethylene, polyethylene and ethylene glycol, and manufactures and markets monoethylene glycol, diethylene glycol and polyethylene terephthalate resins; owned 42.5 percent by the Company.
- The Kuwait Olefins Company K.S.C.C. ("TKOC") - a Kuwait-based company that manufactures ethylene and ethylene glycol; owned 42.5 percent by the Company.
- Map Ta Phut Olefins Company Limited ("Map Ta Phut") - a Thailand-based company that manufactures propylene and ethylene; the Company has an effective ownership of 32.77 percent (of which 20.27 percent is owned directly by the Company and aligned with the Industrial Intermediates & Infrastructure segment and 12.5 percent is owned indirectly through the Company's equity interest in Siam Polyethylene Company Limited, an entity that is part of The SCG-Dow Group and aligned with the Packaging & Specialty Plastics segment).
- Sadara Chemical Company ("Sadara") - a Saudi Arabian company that manufactures chlorine, ethylene, propylene and aromatics for internal consumption and manufactures and sells polyethylene, ethylene oxide and propylene oxide derivative products, and isocyanates; owned 35 percent by the Company. The Company is responsible for marketing a majority of Sadara products outside of the Middle East zone through the Company's established sales channels. As part of this arrangement, the Company purchases and sells Sadara products for a marketing fee.

This segment also includes the Company's share of the results of the following joint ventures:

- The Kuwait Styrene Company K.S.C.C. ("TKSC") - a Kuwait-based company that manufactures styrene monomer; owned 42.5 percent by the Company.
- The SCG-Dow Group - a group of Thailand-based companies (consisting of Siam Polyethylene Company Limited; Siam Polystyrene Company Limited; Siam Styrene Monomer Company Limited; and Siam Synthetic Latex Company Limited) that manufacture polyethylene, polystyrene, styrene, latex and specialty elastomers; owned 50 percent by the Company.

Current and Future Investments

In 2017, the Company announced the startup of its new integrated world-scale ethylene production facility and its new ELITE™ Enhanced Polyethylene production facility, both located in Freeport, Texas. In 2018, the Company started up its new LDPE production facility and its new NORDEL™ Metallocene EPDM production facility, both located in Plaquemine, Louisiana. These key milestones enable the Company to capture benefits from increasing supplies of U.S. shale gas to deliver differentiated downstream solutions in its core market verticals. The Company also completed debottlenecking of an existing bi-modal gas phase polyethylene production facility in St. Charles, Louisiana, and started up a new High Melt Index ("HMI") AFFINITY™ polymer production facility in Freeport, Texas, in the fourth quarter of 2018.

Additionally, the Company has announced investments over the next five years that are expected to enhance competitiveness. These include:

- Expansion of the capacity of the Company's new ethylene production facility in Freeport, TX, bringing the facility's total ethylene capacity to 2,000 kilotonnes per annum ("KTA") and making it the largest ethylene cracker in the world.
- Incremental debottleneck projects across its global asset network that will deliver approximately 350 KTA of additional polyethylene, the majority of which will be in U.S. & Canada.
- Construction of a world-scale polyethylene unit on the U.S. Gulf Coast based on Dow's proprietary process technologies, to meet consumer-driven demand in specialty packaging, health and hygiene, and industrial and consumer packaging applications.
- A new catalyst production facility for key catalysts licensed by Univation Technologies, LLC, a wholly owned subsidiary of the Company.
- On January 29, 2020, the Company announced plans to add another furnace to its ethylene production facility in Alberta, Canada, incrementally expanding capacity by approximately 130,000 metric tons. Dow will co-invest in the expansion with a regional customer, evenly sharing project costs and ethylene output, with the additional ethylene to be consumed by existing polyethylene manufacturing assets in the region. The expansion is expected to come online in the first half of 2021.

The Company's ambition includes becoming the most sustainable materials science company in the world with a strategy to advance the well-being of humanity by helping lead the transition to a sustainable planet and society. This includes lowering energy and greenhouse gas emissions ("GHG") and enabling a shift to a circular economy for plastics by focusing on resource efficiency and integrating recycled content and renewable feedstocks into its production processes. As part of that strategy, Dow announced the following in August 2019:

- An agreement with the Fuenix Ecology Group, based in Weert, The Netherlands, for the supply of pyrolysis oil feedstock, which is made from recycled plastic waste. The feedstock will be used to produce virgin polymers at Dow's production facilities in Terneuzen, The Netherlands. This is an important step forward to increase feedstock recycling - the process of breaking down mixed waste plastics into their original form to manufacture new virgin polymers. The polymers produced from this pyrolysis oil will be identical to products produced from traditional feedstocks, and as such, they can be used in the same applications, including food packaging.
- An agreement with UPM Biofuels, a producer of biofuels, for the supply and integration of wood-based UPM Bio Verno renewable naphtha - a key raw material used to develop plastics - into Dow's slate of raw materials, creating an alternative source for plastics production. The feedstock will be used to produce bio-based polyethylene at Dow's production facilities in Terneuzen, The Netherlands, for use in packaging applications such as food packaging, to reduce food waste.
- The retrofit of one of its Louisiana steam crackers with Dow's proprietary fluidized catalytic dehydrogenation ("FCDh") technology to produce on-purpose propylene. The FCDh technology retrofit further improves Dow's ability to continue to source the most advantaged feedstocks, while also producing reliable and cost-efficient on-purpose propylene to supply its integrated derivative units in Louisiana. The technology reduces capital outlay by up to 25 percent and lowers energy usage and GHG by up to 20 percent, thereby improving overall sustainability when compared with conventional propane dehydrogenation technologies. The project is expected to begin producing on-purpose propylene by the end of 2021.

INDUSTRIAL INTERMEDIATES & INFRASTRUCTURE

Industrial Intermediates & Infrastructure consists of two customer-centric global businesses - Industrial Solutions and Polyurethanes & Construction Chemicals - that develop important intermediate chemicals that are essential to manufacturing processes, as well as downstream, customized materials and formulations that use advanced development technologies. These businesses primarily produce and market ethylene oxide and propylene oxide derivatives that are aligned to market segments as diverse as appliances, coatings, infrastructure and oil and gas. The global scale and reach of these businesses, world-class technology and R&D capabilities and materials science expertise enable the Company to be a premier solutions provider offering customers value-add sustainable solutions to enhance comfort, energy efficiency, product effectiveness and durability across a wide range of home comfort and appliances, building and construction, adhesives and lubricant applications, among others.

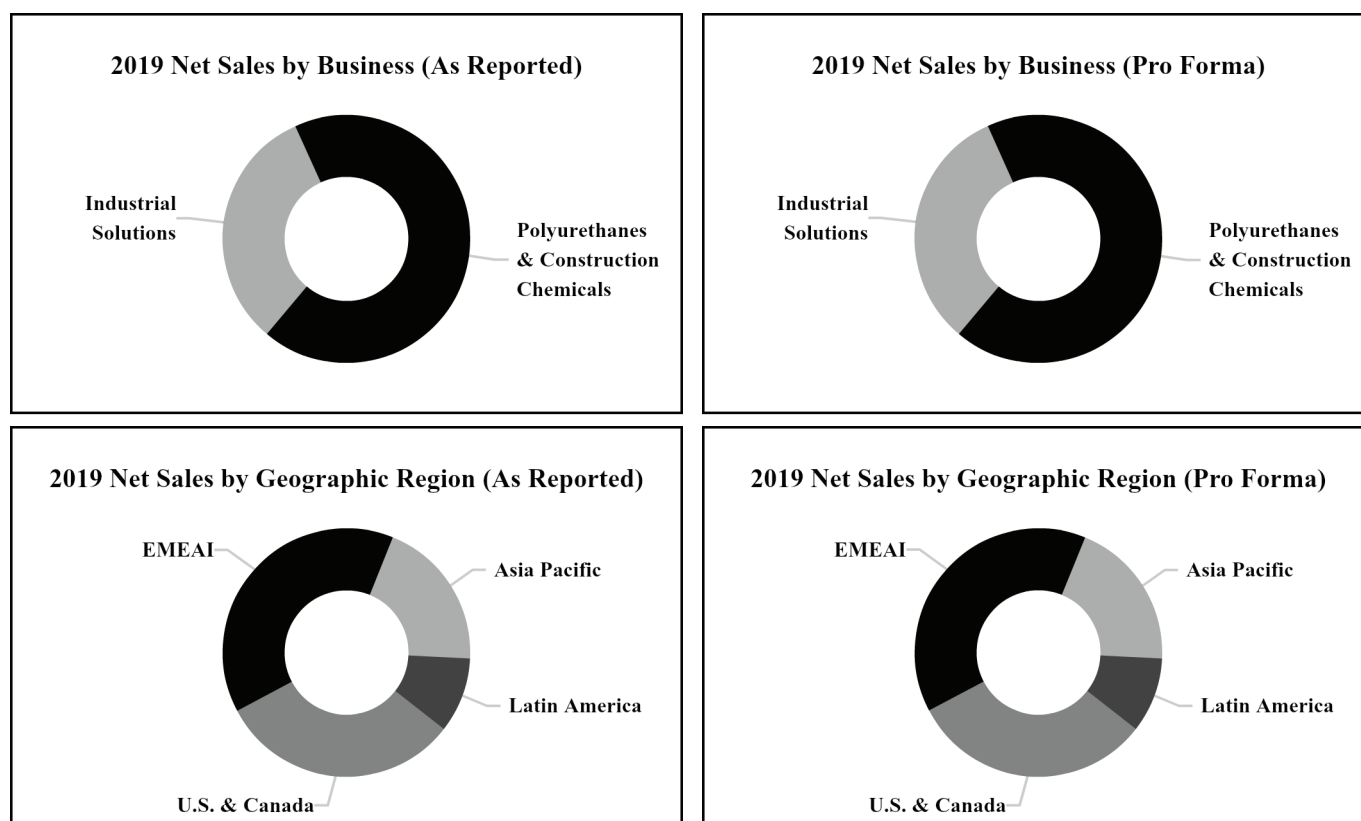
Industrial Solutions

Industrial Solutions provides a broad portfolio of solutions that address world needs by enabling and improving the manufacture of consumer and industrial goods and services. The business' solutions minimize friction and heat in mechanical processes; manage the oil and water interface; deliver ingredients for maximum effectiveness; facilitate dissolvability; enable product identification; and provide the foundational building blocks for the development of chemical technologies. The business supports manufacturers associated with a large variety of end-markets, notably coatings, detergents and cleaners, crop protection, solvents for electronics processing, inks and textiles. The business is the world's largest producer of purified ethylene oxide.

Polyurethanes & Construction Chemicals

Polyurethanes & Construction Chemicals consists of three businesses: Polyurethanes, Chlor-Alkali & Vinyl ("CAV") and Construction Chemicals ("DCC"). The Polyurethanes business is the world's largest producer of propylene oxide, propylene glycol and polyether polyols, and a leading producer of aromatic isocyanates and fully formulated polyurethane systems for rigid, semi-rigid and flexible foams, and coatings, adhesives, sealants, elastomers and composites that serve energy efficiency, consumer comfort, industrial and enhanced mobility market sectors. The CAV business provides cost-advantaged chlorine and caustic soda supply and markets caustic soda, a valuable co-product of the chlor-alkali manufacturing process, and ethylene dichloride and vinyl chloride monomer. The CAV business' assets are predominantly in Western Europe and largely produce materials for internal consumption. The DCC business provides cellulose ethers, redispersible latex powders, and acrylic emulsions used as key building blocks for differentiated building and construction materials across many market segments and applications ranging from roofing and flooring to gypsum-, cement-, concrete- or dispersion-based building materials.

Details on Industrial Intermediates & Infrastructures' 2019 net sales, by business and geographic region, are as follows:



Products

Major applications/market segments and products are listed below by business:

Business	Applications/Market Segments	Major Products	Key Raw Materials	Key Competitors
Industrial Solutions	Broad range of products for specialty applications, including agriculture crop protection offerings, aircraft deicing, solvents for coatings, heat transfer fluids for concentrated solar power, construction, solvents for electronics processing, food preservation, fuel markers, home and personal care, infrastructure applications, lubricant additives, paper, transportation and utilities; products for energy markets including exploration, production, transmission, refining, mining and gas processing to optimize supply, improve efficiencies and manage emissions	Acetone derivatives, butyl glycol ethers, VERSENE™ Chelants, UCAR™ Deicing Fluids, ethanolamines, ethylene oxide ("EO"), ethyleneamines, UCON™ Fluids, glycol ethers, UCARTHERM™ Heat Transfer Fluids, higher glycols, isopropanolamines, low-VOC solvents, methoxypolyethylene glycol, methyl isobutyl, polyalkylene glycol, CARBOWAX™ SENTRY™ Polyethylene Glycol, TERGITOL™ and TRITON™ Surfactants, demulsifiers, drilling and completion fluids, heat transfer fluids, rheology modifiers, scale inhibitors, shale inhibitors, specialty amine solvents, surfactants, water clarifiers, frothing separating agents	Ethylene, propylene	BASF, Eastman, Hexion, Huntsman, INEOS, LyondellBasell, SABIC, Sasol, Shell
Polyurethanes & Construction Chemicals	Aircraft deicing fluids; alumina; pulp and paper; appliances; automotive; bedding; building and construction; flooring; footwear; heat transfer fluids; hydraulic fluids; infrastructure; packaging; textiles and transportation; construction; caulks and sealants; cement-based tile adhesives; concrete solutions; elastomeric roof coatings; industrial non-wovens; plasters and renders; roof tiles and siding; sport grounds and tape joint compounds	Aniline, caustic soda, ethylene dichloride ("EDC"), methylene diphenyl diisocyanate ("MDI"), polyether polyols, propylene glycol ("PG"), propylene oxide ("PO"), polyurethane systems, toluene diisocyanate ("TDI"), vinyl chloride monomer ("VCM"), AQUASET™ Acrylic Thermosetting Resins, DOW™ Latex Powder, RHOPLEX™ and PRIMAL™ Acrylic Emulsion Polymers, WALOCCEL™ Cellulose Ethers	Aniline, aqueous hydrochloric acid, benzene, carbon monoxide, caustic soda, cell effluent, cellulose chlorine, electric power, ethylene, hydrogen peroxide, propylene, styrene	Arkema, Ashland, BASF, Covestro, Eastman, Huntsman, INEOS, Olin, Owens-Corning, Yantai Wanhua

Joint Ventures

This segment includes a portion of the Company's share of the results of EQUATE, TKOC, Map Ta Phut and Sadara.

Current and Future Investments

The Company expects to make investments over the next five years to enhance competitiveness in the Company's Polyurethanes & Construction Chemicals and Industrial Solutions businesses. The investments will include alkoxylation capacity expansions and finishing capabilities; investments to support growth in polyurethane systems; and efficiency improvements around the world.

PERFORMANCE MATERIALS & COATINGS

Performance Materials & Coatings includes industry-leading franchises that deliver a wide array of solutions into consumer and infrastructure end-markets. The segment consists of two global businesses: Coatings & Performance Monomers and Consumer Solutions. These businesses primarily utilize the Company's acrylics-, cellulose- and silicone-based technology platforms to serve the needs of the architectural and industrial coatings, home care and personal care end-markets. Both businesses employ materials science capabilities, global reach and unique products and technology to combine chemistry platforms to deliver differentiated offerings to customers.

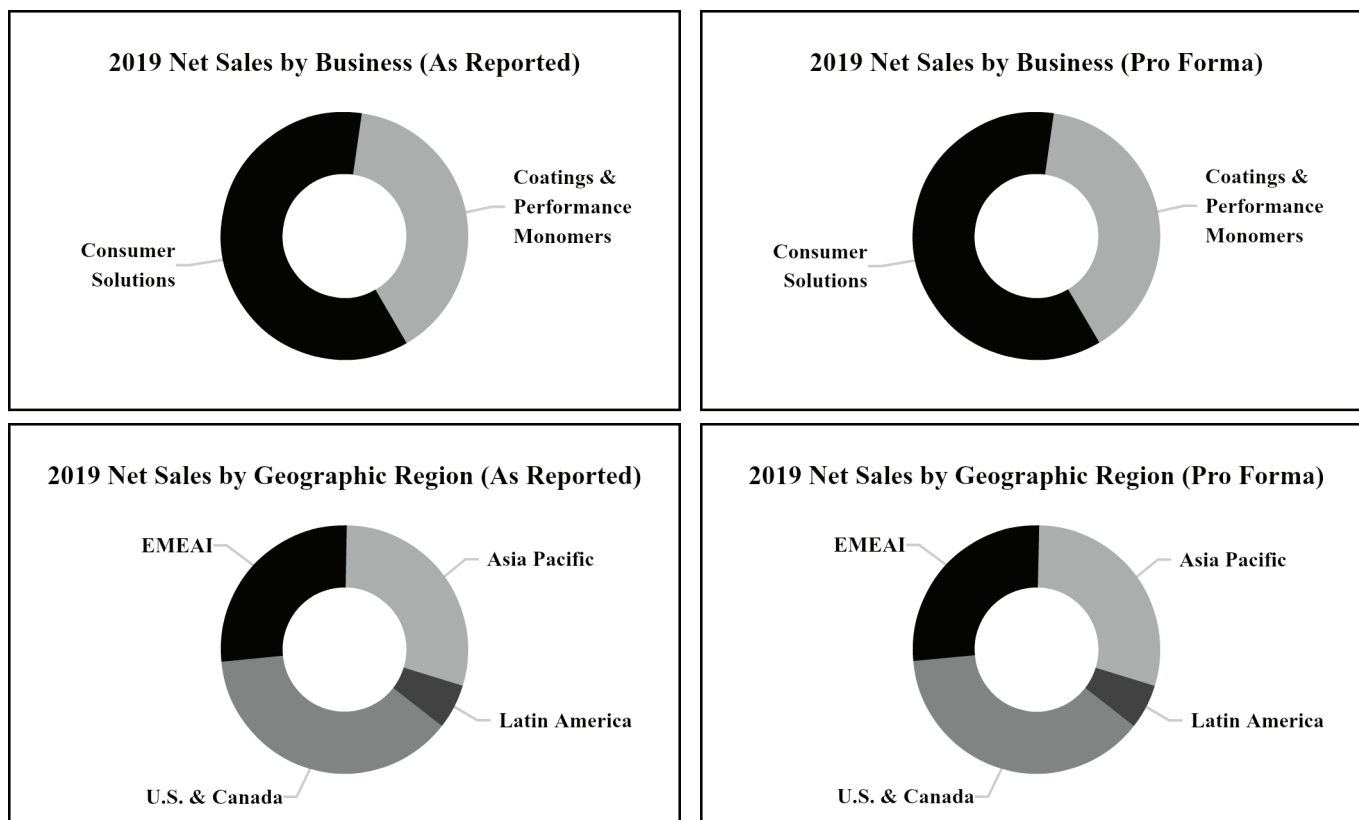
Coatings & Performance Monomers

Coatings & Performance Monomers consists of two businesses: Coating Materials and Performance Monomers. The Coating Materials business makes critical ingredients and additives that help advance the performance of paints and coatings. The business offers innovative and sustainable products to accelerate paint and coatings performance across diverse market segments, including architectural paints and coatings, as well as industrial coatings applications used in maintenance and protective industries, wood, metal packaging, traffic markings, thermal paper and leather. These products enhance coatings by improving hiding and coverage characteristics, enhancing durability against nature and the elements, lowering or eliminating volatile organic compounds ("VOC") content, reducing maintenance and improving ease of application. The Performance Monomers business manufactures acrylics-based building blocks needed for the production of coatings, textiles, and home and personal care products.

Consumer Solutions

Consumer Solutions consists of three businesses: Performance Silicones; Home & Personal Care; and Silicone Feedstocks & Intermediates. Performance Silicones uses innovative, versatile silicone-based technology to provide ingredients and solutions to customers in high performance building, consumer goods, elastomeric applications and the pressure sensitive adhesives industry that help them meet modern consumer preferences in attributes such as texture, feel, scent, durability and consistency. Dow's wide array of silicone-based products and solutions enables customers to: increase the appeal of their products; extend shelf life; improve performance of products under a wider range of conditions; and provide a more sustainable offering. The Home & Personal Care business collaborates closely with global and regional brand owners to deliver innovative solutions, leveraging acrylics and cellulose technology platforms for creating new and unrivaled consumer benefits and experiences in cleaning, laundry and skin and hair care applications, among others. Silicone Feedstocks & Intermediates provides standalone silicone materials that are used as intermediates in a wide range of applications including adhesion promoters, coupling agents, crosslinking agents, dispersing agents and surface modifiers.

Details on Performance Materials & Coatings' 2019 net sales, by business and geographic region, are as follows:



Products

Major applications/market segments and products are listed below by business:

<i>Business</i>	<i>Applications/Market Segments</i>	<i>Major Products</i>	<i>Key Raw Materials</i>	<i>Key Competitors</i>
Coatings & Performance Monomers	Acrylic binders for architectural paints and coatings, industrial coatings and paper; adhesives; dispersants; impact modifiers; inks and paints; opacifiers and surfactants for both architectural and industrial applications; plastics additives; processing aids; protective and functional coatings; rheology modifiers	ACOUSTICRYL™ Liquid-Applied Sound Damping Technology; acrylates; ACRY SOL™ Rheology Modifiers; AVANSE™ Acrylic Binders; EVOQUE™ Pre-Composite Polymer; foam cell promoters; FORMASHIELD™ Acrylic Binder; high-quality impact modifiers; MAINCOTE™ Acrylic Epoxy Hybrid; methacrylates; processing aids; RHOPLEX™ Acrylic Resin; TAMOL™ Dispersants; vinyl acetate monomers; weatherable acrylic capstock compounds for thermoplastic and thermosetting materials	Acetic acid, acetone, acrylic acid, butyl acrylate, methyl methacrylate, propylene, styrene	Arkema, BASF, Celanese, Evonik, LyondellBasell, Wacker Chemie
Consumer Solutions	Personal care, color cosmetics, baby care, home care and specialty applications with a key focus on hair care, skin care, sun care, cleansing, as well as fabric, dish, floor, hard surface and air care applications; commercial glazing; electrical and high-voltage insulation; lamp and luminaire modules assembly; oil and gas; paints and inks; release liners, specialty films and tapes; sporting goods; 3D printing	Adhesives and sealants; antifoams and surfactants; coatings and controlled release; coupling agents and crosslinkers; EVOLV3D™ Printing Technology; fluids, emulsions and dispersions; formulating and processing aids; granulation and binders; oils; polymers and emollients; opacifiers; reagents; resins, gels and powders; rheology modifiers; rubber; silicone elastomers; solubility enhancers; aerospace composites; surfactants and solvents; SILASTIC™ Silicone Elastomers; DOWSIL™ Silicone Products	Hydrochloric acid, methanol, platinum, silica, silicon metal	Elkem, Momentive, Shin-Etsu, Wacker Chemie

Current and Future Investments

The Company has announced investments over the next five years that are expected to enhance competitiveness, including low capital intensity, high return investments in the Company's silicones franchise. The investments include a series of incremental silicones debottleneck and efficiency improvement projects around the world, a new hydroxyl functional siloxane polymer plant in the U.S. and a new specialty resin plant in China.

CORPORATE

Corporate includes certain enterprise and governance activities (including insurance operations, environmental operations, etc.); non-business aligned joint ventures; non-business aligned litigation expenses; and discontinued or non-aligned businesses.

RAW MATERIALS

The Company operates in an integrated manufacturing environment. Basic raw materials are processed through many stages to produce a number of products that are sold as finished goods at various points in those processes. The major raw material stream that feeds the production of the Company's finished goods is hydrocarbon-based raw materials. The Company purchases hydrocarbon raw materials including ethane, propane, butane, naphtha and condensate as feedstocks. These raw materials are used in the production of both saleable products and energy. The Company also purchases certain monomers, primarily ethylene and propylene, to supplement internal production. The Company purchases natural gas, primarily to generate electricity, and purchases electric power to supplement internal generation. In addition, the Company produces a portion of its electricity needs in Louisiana and Texas; Alberta, Canada; The Netherlands; and Germany.

The Company's primary source of these raw materials are natural gas liquids ("NGLs"), which are derived from shale gas and crude oil production and naphtha, which is produced during the processing and refining of crude oil. Given recent advancements in shale gas, shale oil and conventional drilling techniques, the Company expects these raw materials to be in abundant supply. The Company's suppliers of these raw materials include regional, international and national oil and gas companies.

The Company purchases raw materials on both short- and long-term contracts. The Company had adequate supplies of raw materials in 2019 and expects to continue to have adequate supplies of raw materials in 2020.

INDUSTRY SEGMENTS AND GEOGRAPHIC REGION RESULTS

See Note 27 to the Consolidated Financial Statements for information regarding net sales, pro forma net sales, pro forma Operating EBIT and total assets by segment, as well as net sales and long-lived assets by geographic region.

SIGNIFICANT CUSTOMERS AND PRODUCTS

All products and services are marketed primarily through the Company's sales force, although in some instances more emphasis is placed on sales through distributors. In 2019, no significant portion of the Company's sales was dependent upon a single customer.

PATENTS, LICENSES AND TRADEMARKS

The Company continually applies for and obtains U.S. and foreign patents and has a substantial number of pending patent applications throughout the world. At December 31, 2019, the Company owned approximately 3,700 active U.S. patents and 19,100 active foreign patents as follows:

Remaining Life of Patents Owned at Dec 31, 2019	United States	Foreign
Within 5 years	900	3,800
6 to 10 years	1,000	6,400
11 to 15 years	1,600	8,300
16 to 20 years	200	600
Total	3,700	19,100

The Company's primary purpose in obtaining patents is to protect the results of its research for use in operations and licensing. The Company is party to a substantial number of patent licenses, including intellectual property cross-license agreements and other technology agreements, and also has a substantial number of trademarks and trademark registrations in the United States and in other countries, including the "Dow in Diamond" trademark. Although the Company considers that its patents, licenses and trademarks in the aggregate constitute a valuable asset, it does not regard its business as being materially dependent on any single or group of related patents, licenses or trademarks.

PRINCIPAL PARTLY OWNED COMPANIES

The Company's principal nonconsolidated affiliates at December 31, 2019, including direct or indirect ownership interest for each, are listed below:

<i>Principal Nonconsolidated Affiliate</i>	<i>Country</i>	<i>Ownership Interest</i>	<i>Business Description</i>
EQUATE Petrochemical Company K.S.C.C.	Kuwait	42.50%	Manufactures ethylene, polyethylene and ethylene glycol, and manufactures and markets monoethylene glycol, diethylene glycol and polyethylene terephthalate resins
The Kuwait Olefins Company K.S.C.C.	Kuwait	42.50%	Manufactures ethylene and ethylene glycol
The Kuwait Styrene Company K.S.C.C.	Kuwait	42.50%	Manufactures styrene monomer
Map Ta Phut Olefins Company Limited ¹	Thailand	32.77%	Manufactures propylene and ethylene
Sadara Chemical Company ²	Saudi Arabia	35.00%	Manufactures chlorine, ethylene, propylene and aromatics for internal consumption and manufactures and sells polyethylene, ethylene oxide and propylene oxide derivative products, and isocyanates
The SCG-Dow Group:			
Siam Polyethylene Company Limited	Thailand	50.00%	Manufactures polyethylene
Siam Polystyrene Company Limited	Thailand	50.00%	Manufactures polystyrene
Siam Styrene Monomer Company Limited	Thailand	50.00%	Manufactures styrene
Siam Synthetic Latex Company Limited	Thailand	50.00%	Manufactures latex and specialty elastomers

1. The Company's effective ownership of Map Ta Phut is 32.77 percent, of which the Company directly owns 20.27 percent and indirectly owns 12.5 percent through its equity interest in Siam Polyethylene Company Limited.

2. The Company is responsible for marketing the majority of Sadara products outside of the Middle East zone through the Company's established sales channels. Under this arrangement, the Company purchases and sells Sadara products for a marketing fee.

See Note 13 to the Consolidated Financial Statements for additional information regarding nonconsolidated affiliates.

PROTECTION OF THE ENVIRONMENT

Matters pertaining to the environment are discussed in Part I, Item 1A. Risk Factors; Part II, Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations; and Notes 1 and 17 to the Consolidated Financial Statements. In addition, detailed information on the Company's performance regarding environmental matters and goals can be found online on the Science & Sustainability webpage at www.dow.com/sustainability. Dow's website and its content are not deemed incorporated by reference into this report.

EMPLOYEES

At December 31, 2019, the Company permanently employed approximately 36,500 people on a full-time basis.

OTHER ACTIVITIES

The Company engages in the property and casualty insurance and reinsurance business primarily through its Liana Limited subsidiaries.

EXECUTIVE OFFICERS OF THE REGISTRANT

Set forth below is information related to the Company's executive officers as of February 7, 2020:

<i>Name - Age</i>	<i>Present Position with Registrant</i>	<i>Year Elected to be an Officer</i>	<i>Other Business Experience since January 1, 2015</i>
Karen S. Carter, 49	Chief Human Resources Officer	2019	<u>Dow Inc.</u> : Chief Human Resources Officer since April 1, 2019. <u>TDCC</u> : Chief Human Resources Officer since October 2018; Chief Inclusion Officer since July 2017; North America Commercial Vice President, Dow Packaging and Specialty Plastics from February 2016 to July 2017; Global Business Director, Low Density & Slurry Polyethylene, Packaging & Specialty Plastics from April 2015 to January 2016; and Global Marketing Director Value Chain, New Business Development & Sustainability, Performance Plastics from September 2011 to April 2015.
Ronald C. Edmonds, 62	Controller and Vice President of Controllars and Tax	2019	<u>Dow Inc.</u> : Controller and Vice President of Controllars and Tax since April 1, 2019. <u>TDCC</u> : Controller and Vice President since November 2009; Vice President of Tax since January 2016.
Jim Fitterling, 58	Chief Executive Officer	2018	<u>Dow Inc.</u> : Chief Executive Officer since August 2018. <u>TDCC</u> : Chief Executive Officer since July 2018; President and Chief Operating Officer from February 2016 to July 2018; Vice Chairman and Chief Operating Officer from October 2015 to February 2016; Vice Chairman, Business Operations from October 2014 to October 2015.
Peter Holicki, 59	Senior Vice President, Operations - Manufacturing & Engineering and Environment, Health and Safety Operations	2019	<u>Dow Inc.</u> : Senior Vice President, Operations - Manufacturing & Engineering and Environment, Health and Safety Operations since April 1, 2019. <u>TDCC</u> : Senior Vice President, Operations - Manufacturing & Engineering and Environment, Health and Safety Operations since October 2015; responsible for oversight of the Emergency Services and Security Expertise Center since September 2014; Corporate Vice President of Manufacturing & Engineering and Environment, Health & Safety Operations January 2014 to October 2015.
A. N. Sreeram, 52	Senior Vice President of Research & Development and Chief Technology Officer	2019	<u>Dow Inc.</u> : Senior Vice President of Research & Development and Chief Technology Officer since April 1, 2019. <u>TDCC</u> : Chief Technology Officer since October 2015; Senior Vice President of Research & Development since August 2013; Corporate Vice President, Research & Development from August 2013 to October 2015.
Howard Ungerleider, 51	President and Chief Financial Officer	2018	<u>Dow Inc.</u> : President and Chief Financial Officer since August 2018. <u>TDCC</u> : Chief Financial Officer since October 2014; President since July 2018; Vice Chairman from October 2015 to July 2018; Executive Vice President from October 2014 to October 2015.
Amy E. Wilson, 49	General Counsel and Corporate Secretary	2018	<u>Dow Inc.</u> : General Counsel and Corporate Secretary since April 1, 2019; Secretary from August 2018 to April 1, 2019. <u>TDCC</u> : General Counsel since October 2018; Corporate Secretary since February 2015; Associate General Counsel from April 2017 to September 2018; Assistant General Counsel from February 2015 to April 2017; Assistant Corporate Secretary from 2008 to February 2015; Director of the Office of the Corporate Secretary from August 2013 to October 2018.

ITEM 1A. RISK FACTORS

The factors described below represent the Company's principal risks.

Global Economic Considerations: The Company operates in a global, competitive environment which gives rise to operating and market risk exposure.

The Company sells its broad range of products and services in a competitive, global environment, and competes worldwide for sales on the basis of product quality, price, technology and customer service. Increased levels of competition could result in lower prices or lower sales volume, which could have a negative impact on the Company's results of operations. Sales of the Company's products are also subject to extensive federal, state, local and foreign laws and regulations, trade agreements, import and export controls and duties and tariffs. The imposition of additional regulations, controls and duties and tariffs or changes to bilateral and regional trade agreements could result in lower sales volume, which could negatively impact the Company's results of operations.

Economic conditions around the world, and in certain industries in which the Company does business, also impact sales price and volume. As a result, market uncertainty or an economic downturn driven by political tensions, war, terrorism, epidemics or political instability in the geographic regions or industries in which the Company sells its products could reduce demand for these products and result in decreased sales volume, which could have a negative impact on the Company's results of operations.

In addition, volatility and disruption of financial markets could limit customers' ability to obtain adequate financing to maintain operations, which could result in a decrease in sales volume and have a negative impact on the Company's results of operations. The Company's global business operations also give rise to market risk exposure related to changes in foreign exchange rates, interest rates, commodity prices and other market factors such as equity prices. To manage such risks, the Company enters into hedging transactions pursuant to established guidelines and policies. If the Company fails to effectively manage such risks, it could have a negative impact on its results of operations.

Financial Commitments and Credit Markets: Market conditions could reduce the Company's flexibility to respond to changing business conditions or fund capital needs.

Adverse economic conditions could reduce the Company's flexibility to respond to changing business and economic conditions or to fund capital expenditures or working capital needs. The economic environment could result in a contraction in the availability of credit in the marketplace and reduce sources of liquidity for the Company. This could result in higher borrowing costs.

Raw Materials: Availability of purchased feedstock and energy, and the volatility of these costs, impact Dow's operating costs and add variability to earnings.

Purchased feedstock and energy costs account for a substantial portion of the Company's total production costs and operating expenses. The Company purchases hydrocarbon raw materials including ethane, propane, butane, naphtha and condensate as feedstocks and also purchases certain monomers, primarily ethylene and propylene, to supplement internal production, as well as other raw materials. The Company also purchases natural gas, primarily to generate electricity, and purchases electric power to supplement internal generation.

Feedstock and energy costs generally follow price trends in crude oil and natural gas, which are sometimes volatile. While the Company uses its feedstock flexibility and financial and physical hedging programs to help mitigate feedstock cost increases, the Company is not always able to immediately raise selling prices. Ultimately, the ability to pass on underlying cost increases is dependent on market conditions. Conversely, when feedstock and energy costs decline, selling prices generally decline as well. As a result, volatility in these costs could impact the Company's results of operations.

The Company has a number of investments on the U.S. Gulf Coast to take advantage of increasing supplies of low-cost natural gas and NGLs derived from shale gas including: the St. Charles Operations ("SCO-2") ethylene production facility in December 2012; an on-purpose propylene production facility, which commenced operations in December 2015; an ethylene production facility in Plaquemine, Louisiana, which included expanding the facility's ethylene production capacity and modifications to enable full ethane cracking flexibility; completion of a new integrated world-scale ethylene production facility and a new ELITE™ Enhanced Polyethylene production facility, both located in Freeport, Texas, in 2017, and a capacity expansion project which will bring the facility's total ethylene capacity to 2,000 KTA in 2020; and, the Company commenced operations in 2018 on its new LDPE production facility and its new NORDEL™ Metallocene EPDM production facility, both located in Plaquemine, Louisiana. As a result of these investments, the Company's exposure to purchased ethylene and propylene is expected to decline, offset by increased exposure to ethane- and propane-based feedstocks.

While the Company expects abundant and cost-advantaged supplies of NGLs in the United States to persist for the foreseeable future, if NGLs become significantly less advantaged than crude oil-based feedstocks, it could have a negative impact on the Company's results of operations and future investments. Also, if the Company's key suppliers of feedstocks and energy are unable to provide the raw materials required for production, it could have a negative impact on the Company's results of operations.

Supply/Demand Balance: Earnings generated by the Company's products vary based in part on the balance of supply relative to demand within the industry.

The balance of supply relative to demand within the industry may be significantly impacted by the addition of new capacity, especially for basic commodities where capacity is generally added in large increments as world-scale facilities are built. This may disrupt industry balances and result in downward pressure on prices due to the increase in supply, which could negatively impact the Company's results of operations.

Litigation: The Company is party to a number of claims and lawsuits arising out of the normal course of business with respect to product liability, patent infringement, employment matters, governmental tax and regulation disputes, contract and commercial litigation, and other actions.

Certain of the claims and lawsuits facing the Company purport to be class actions and seek damages in very large amounts. All such claims are contested. With the exception of the possible effect of the asbestos-related liability of Union Carbide Corporation ("Union Carbide") and Chapter 11 related matters of Dow Silicones Corporation ("Dow Silicones," formerly known as Dow Corning Corporation, which changed its name effective as of February 1, 2018) as described below, it is the opinion of the Company's management that the possibility is remote that the aggregate of all such claims and lawsuits will have a material adverse impact on the Company's consolidated financial statements.

Union Carbide is and has been involved in a large number of asbestos-related suits filed primarily in state courts during the past four decades. At December 31, 2019, Union Carbide's total asbestos-related liability, including future defense and processing costs, was \$1,165 million (\$1,260 million at December 31, 2018).

In 1995, Dow Silicones, a former 50:50 joint venture, voluntarily filed for protection under Chapter 11 of the U.S. Bankruptcy Code in order to resolve breast implant liabilities and related matters (the "Chapter 11 Proceeding"). Dow Silicones emerged from the Chapter 11 Proceeding on June 1, 2004, and is implementing the Joint Plan of Reorganization (the "Plan"). The Plan provides funding for the resolution of breast implant and other product liability litigation covered by the Chapter 11 Proceeding. Dow Silicones' liability for breast implant and other product liability claims was \$165 million at December 31, 2019 (\$263 million at December 31, 2018).

See Note 17 to the Consolidated Financial Statements for additional information on these matters.

Environmental Compliance: The costs of complying with evolving regulatory requirements could negatively impact the Company's financial results. Actual or alleged violations of environmental laws or permit requirements could result in restrictions or prohibitions on plant operations, substantial civil or criminal sanctions, as well as the assessment of strict liability and/or joint and several liability.

The Company is subject to extensive federal, state, local and foreign laws, regulations, rules and ordinances relating to pollution, protection of the environment, greenhouse gas emissions, and the generation, storage, handling, transportation, treatment, disposal and remediation of hazardous substances and waste materials. In addition, the Company may have costs related to environmental remediation and restoration obligations associated with past and current sites as well as related to its past or current waste disposal practices or other hazardous materials handling. Although management will estimate and accrue liabilities for these obligations, it is reasonably possible that the Company's ultimate cost with respect to these matters could be significantly higher, which could negatively impact the Company's financial condition and results of operations. Costs and capital expenditures relating to environmental, health or safety matters are subject to evolving regulatory requirements and depend on the timing of the promulgation and enforcement of specific standards which impose the requirements. Moreover, changes in environmental regulations could inhibit or interrupt the Company's operations, or require modifications to its facilities. Accordingly, environmental, health or safety regulatory matters could result in significant unanticipated costs or liabilities.

Health and Safety: Increased concerns regarding the safe use of chemicals and plastics in commerce and their potential impact on the environment has resulted in more restrictive regulations and could lead to new regulations.

Concerns regarding the safe use of chemicals and plastics in commerce and their potential impact on health and the environment reflect a growing trend in societal demands for increasing levels of product safety and environmental protection. These concerns could manifest themselves in stockholder proposals, preferred purchasing, delays or failures in obtaining or retaining regulatory approvals, delayed product launches, lack of market acceptance and continued pressure for more stringent regulatory intervention and litigation. These concerns could also influence public perceptions, the viability or continued sales of certain of the Company's products, its reputation and the cost to comply with regulations. In addition, terrorist attacks and natural disasters have increased concerns about the security and safety of chemical production and distribution. These concerns could have a negative impact on the Company's results of operations.

Local, state, federal and foreign governments continue to propose new regulations related to the security of chemical plant locations and the transportation of hazardous chemicals, which could result in higher operating costs.

Plastic Waste: Increased concerns regarding plastic waste in the environment, consumers selectively reducing their consumption of plastic products due to recycling concerns, or new or more restrictive regulations and rules related to plastic waste could reduce demand for the Company's plastic products and could negatively impact the Company's financial results.

Local, state, federal and foreign governments have been increasingly proposing and in some cases approving bans on certain plastic-based products including single-use plastics, plastic straws and utensils. In addition, plastics have faced increased public scrutiny due to negative coverage of plastic waste in the environment, including the world's oceans. As Dow is one of the world's largest producers of plastics, increased regulation on the use of plastics could cause reduced demand for the Company's polyethylene products which could negatively impact the Company's financial condition, results of operations and cash flows.

Operational Event: A significant operational event could negatively impact the Company's results of operations.

As a diversified chemical manufacturing company, the Company's operations, the transportation of products, cyber-attacks, or severe weather conditions and other natural phenomena (such as freezing, drought, hurricanes, earthquakes, tsunamis, floods, etc.) could result in an unplanned event that could be significant in scale and could negatively impact operations, neighbors or the public at large, which could have a negative impact on the Company's results of operations.

Major hurricanes have caused significant disruption in the Company's operations on the U.S. Gulf Coast, logistics across the region, and the supply of certain raw materials, which had an adverse impact on volume and cost for some of its products. Due to the Company's substantial presence on the U.S. Gulf Coast, similar severe weather conditions or other natural phenomena in the future could negatively impact the Company's results of operations.

Cyber Threat: The risk of loss of the Company's intellectual property, trade secrets or other sensitive business information or disruption of operations could negatively impact the Company's financial results.

Cyber-attacks or security breaches could compromise confidential, business critical information, cause a disruption in the Company's operations or harm the Company's reputation. The Company has attractive information assets, including intellectual property, trade secrets and other sensitive, business critical information. While the Company has a comprehensive cyber-security program that is continuously reviewed, maintained and upgraded, a significant cyber-attack could result in the loss of critical business information and/or could negatively impact operations, which could have a negative impact on the Company's financial results.

Company Strategy: Implementing certain elements of the Company's strategy could negatively impact its financial results.

The Company currently has manufacturing operations, sales and marketing activities, and joint ventures in emerging geographies. Activities in these geographic regions are accompanied by uncertainty and risks including: navigating different government regulatory environments; relationships with new, local partners; project funding commitments and guarantees; expropriation, military actions, war, terrorism and political instability; sabotage; uninsurable risks; suppliers not performing as expected resulting in increased risk of extended project timelines; and determining raw material supply and other details regarding product movement. If the manufacturing operations, sales and marketing activities, and/or implementation of these projects is not successful, it could adversely affect the Company's financial condition, cash flows and results of operations.

Goodwill: An impairment of goodwill could negatively impact the Company's financial results.

At least annually, the Company assesses goodwill for impairment. If testing indicates that goodwill is impaired, the carrying value is written down based on fair value with a charge against earnings. Where the Company utilizes a discounted cash flow methodology in determining fair value, continued weak demand for a specific product line or business could result in an impairment. Accordingly, any determination requiring the write-off of a significant portion of goodwill could negatively impact the Company's results of operations. See Note 14 to the Consolidated Financial Statements for additional information regarding the Company's goodwill impairment testing.

Pension and Other Postretirement Benefits: Increased obligations and expenses related to the Company's defined benefit pension plans and other postretirement benefit plans could negatively impact its financial condition and results of operations.

The Company has defined benefit pension plans and other postretirement benefit plans (the "plans") in the United States and a number of other countries. The assets of the Company's funded plans are primarily invested in fixed income securities, equity securities of U.S. and foreign issuers and alternative investments, including investments in real estate, private market securities and absolute return strategies. Changes in the market value of plan assets, investment returns, discount rates, mortality rates, regulations and the rate of increase in compensation levels may affect the funded status of the Company's plans and could cause volatility in the net periodic benefit cost, future funding requirements of the plans and the funded status of the plans. A significant increase in the Company's obligations or future funding requirements could have a negative impact on the Company's results of operations and cash flows for a particular period and on the Company's financial condition.

Separation from DowDuPont: Risks related to achieving the anticipated benefits of Dow's separation from DowDuPont.

Risks related to achieving the anticipated benefits of Dow's separation from DowDuPont include, but are not limited to, a number of conditions outside the control of Dow, including risks related to (i) Dow's inability to achieve some or all of the benefits that it expects to receive from the separation from DowDuPont, (ii) certain tax risks associated with the separation, (iii) Dow's inability to make necessary changes to operate as a stand-alone company, (iv) the failure of Dow's pro forma financial information to be a reliable indicator of Dow's future results, (v) Dow's inability to enjoy the same benefits of diversity, leverage and market reputation that it enjoyed as a combined company, (vi) Dow's inability to receive third-party consents required under the separation agreement, (vii) Dow's customers, suppliers and others' perception of Dow's financial stability on a stand-alone basis, (viii) non-compete restrictions under the separation agreement, (ix) receipt of less favorable terms in the commercial agreements Dow entered into with DuPont and Corteva, Inc. ("Corteva"), including restrictions under intellectual property cross-license agreements, than Dow would have received from an unaffiliated third party; and (x) Dow's obligation to indemnify DuPont and/or Corteva for certain liabilities.

ITEM 1B. UNRESOLVED STAFF COMMENTS

None.

ITEM 2. PROPERTIES

The Company's corporate headquarters are located in Midland, Michigan. The Company's manufacturing, processing, marketing and research and development facilities, as well as regional purchasing offices and distribution centers are located throughout the world. The Company has investments in property, plant and equipment related to global manufacturing operations. Collectively, the Company operates 109 manufacturing sites in 31 countries. The following table includes the major manufacturing sites by segment, including consolidated variable interest entities:

Major Manufacturing Sites by Segment	<i>Packaging & Specialty Plastics</i>	<i>Industrial Intermediates & Infrastructure</i>	<i>Performance Materials & Coatings</i>
<i>Location</i>			
Bahia Blanca, Argentina	X		
Candeias, Brazil	X	X	
Canada:			
Fort Saskatchewan, Alberta	X		
Prentiss, Alberta	X		
Zhangjiagang, China	X	X	X
Germany:			
Boehlen	X	X	X
Leuna	X		
Schkopau	X	X	
Stade		X	
Terneuzen, The Netherlands	X	X	
Tarragona, Spain	X	X	
Map Ta Phut, Thailand	X	X	X
Barry, United Kingdom			X
United States:			
Carrollton, Kentucky			X
Hahnville, Louisiana	X	X	X
Plaquemine, Louisiana	X	X	
Midland, Michigan			X
Deer Park, Texas		X	X
Freeport, Texas	X	X	X
Orange, Texas	X		
Seadrift, Texas	X	X	

Including the major manufacturing sites, the Company has manufacturing sites and holdings in all geographic regions as follows:

Manufacturing Sites by Region	
Asia Pacific	19 manufacturing sites in 10 countries
EMEA	37 manufacturing sites in 15 countries
Latin America	18 manufacturing sites in 4 countries
U.S. & Canada	35 manufacturing sites in 2 countries

Properties of the Company include facilities which, in the opinion of management, are suitable and adequate for their use and will have sufficient capacity for the Company's current needs and expected near-term growth. All of the Company's plants are owned or leased, subject to certain easements of other persons which, in the opinion of management, do not substantially interfere with the continued use of such properties or materially affect their value. No title examination of the properties has been made for the purpose of this report. Additional information with respect to the Company's property, plant and equipment and leases is contained in Notes 12, 16 and 18 to the Consolidated Financial Statements.

ITEM 3. LEGAL PROCEEDINGS

Asbestos-Related Matters of Union Carbide Corporation

Union Carbide Corporation ("Union Carbide"), a wholly owned subsidiary of the Company, is and has been involved in a large number of asbestos-related suits filed primarily in state courts during the past four decades. These suits principally allege personal injury resulting from exposure to asbestos-containing products and frequently seek both actual and punitive damages. The alleged claims primarily relate to products that Union Carbide sold in the past, alleged exposure to asbestos-containing products located on Union Carbide's premises, and Union Carbide's responsibility for asbestos suits filed against a former Union Carbide subsidiary, Amchem Products, Inc.

For additional information, see Part II, Item 7. Other Matters, Asbestos-Related Matters of Union Carbide Corporation in Management's Discussion and Analysis of Financial Condition and Results of Operations, and Notes 1 and 17 to the Consolidated Financial Statements.

Environmental Matters

In April 2012 and May 2015, Dow Silicones Corporation ("Dow Silicones"), a wholly owned subsidiary of the Company, received the following notifications from the U.S. Environmental Protection Agency ("EPA"), Region 5 related to Dow Silicones' Midland, Michigan, manufacturing facility (the "Facility"): 1) a Notice of Violation and Finding of Violation which alleges a number of violations in connection with the detection, monitoring and control of certain organic hazardous air pollutants at the Facility and various recordkeeping and reporting violations under the Clean Air Act and 2) a Notice of Violation alleging a number of violations relating to the management of hazardous wastes at the Facility pursuant to the Resource Conservation and Recovery Act. On June 25, 2019, the U.S. Department of Justice ("DOJ") filed a proceeding on behalf of the EPA against Dow Silicones in the U.S. District Court for the Eastern District of Michigan ("District Court"), which proposes to resolve the previously reported allegations of noncompliance with requirements of federal air, water, waste and chemical release reporting laws at the Facility predating the ownership restructure of Dow Silicones. The consent decree, which was entered by the District Court on January 24, 2020, provides for a penalty of \$4.55 million, performance of supplemental environmental projects and enhancements at the site that will cost approximately \$2 million, as well as additional environmental studies and other actions.

On July 5, 2018, the Company received a draft consent decree from the EPA, the DOJ and the Louisiana Department of Environmental Quality ("DEQ"), relating to the operation of steam-assisted flares at the Company's olefins manufacturing facilities in Freeport, Texas; Plaquemine, Louisiana; and St. Charles, Louisiana. Discussions between the EPA, the DOJ and the DEQ are ongoing.

On October 30, 2018, DC Alabama, Inc. ("DCA"), a wholly owned subsidiary of the Company, finalized and executed a consent order ("Order") from the Alabama Department of Environmental Management ("ADEM") relating to alleged unpermitted discharges of industrial process water and certain water quality and equipment violations at DCA's silicon metal production facility located in Mt. Meigs, Alabama. The Order included, among other remedies, a civil penalty of \$250,000 that DCA paid in December 2018. Implementation of the Order has been ongoing and DCA remains compliant with the Order. Discussions between DCA and ADEM are ongoing.

On August 27, 2019, the EPA, DOJ, Texas Environmental Quality Board, and Texas Office of the Attorney General (the “Government Agencies”) added Performance Materials NA, Inc., a wholly owned subsidiary of the Company, as an additional signatory to an existing draft consent decree relating to alleged environmental violations at the Sabine manufacturing facility in Orange, Texas (the “Orange, TX Facility”). Performance Materials NA, Inc. acquired the Orange, TX Facility in February 2019 and became a subsidiary of the Company in April 2019. The alleged violations were first identified during multimedia environmental inspections that the EPA conducted at the Orange, TX Facility while under prior ownership in March 2009 and December 2015, and involve the management of materials in the Orange, TX Facility’s wastewater treatment system, hazardous waste management, flare and air emissions, including leak detection and repair. Discussions are ongoing between the Government Agencies, the Company, and the Orange, TX Facility’s prior owner, who is the other named signatory.

On October 23, 2019, Union Carbide received a proposed Agreed Order from the Texas Commission on Environmental Quality (“TCEQ”) relating to emissions of ethylene oxide from a process leak at Union Carbide’s manufacturing facility in Seadrift, Texas. The proposed Agreed Order included an administrative penalty of \$800,000. On December 30, 2019, TCEQ sent a revised Agreed Order reducing the penalty to \$600,000 based on Union Carbide’s corrective actions. Discussions between Union Carbide and TCEQ are ongoing.

On November 8, 2019, a proposed consent decree was filed in the U.S. District Court for the Eastern District of Michigan, Civil Action No. 1:19-cv-13292 between the Company and federal, state and tribal trustees to resolve allegations of natural resource damages arising from the historic operations of the Company’s Midland manufacturing facility. On November 14, 2019, a Notice of Lodging and Notice of Availability and Request for Comments on Draft Restoration Plan/Environmental Assessment was published in the Federal Register. Public comments on the proposed consent decree and the draft Restoration Plan/Environmental Assessment were required to be submitted within 45 days of that publication. The proposed consent decree would require the Company to pay a \$15 million cash settlement to be used for Trustee-selected remediation projects and \$6.75 million to specified local projects managed by third parties, and require the Company to complete 13 additional environmental restoration projects which are valued by the trustees at approximately \$77 million.

ITEM 4. MINE SAFETY DISCLOSURES

Not applicable.

Dow Inc. and Subsidiaries
The Dow Chemical Company and Subsidiaries
PART II

ITEM 5. MARKET FOR REGISTRANT'S COMMON EQUITY, RELATED STOCKHOLDER MATTERS AND ISSUER PURCHASES OF EQUITY SECURITIES

On April 1, 2019, DowDuPont Inc. ("DowDuPont" and effective June 3, 2019, n/k/a DuPont de Nemours, Inc.) completed the separation of its materials science business and Dow Inc. became the direct parent company of The Dow Chemical Company and its consolidated subsidiaries ("TDCC" and together with Dow Inc., "Dow" or the "Company"), owning all of the outstanding common shares of TDCC. Dow Inc. is now an independent, publicly traded company and Dow Inc. common stock is listed on the New York Stock Exchange under the symbol "DOW." Dow Inc. common stock began regular-way trading on April 2, 2019.

Dow Inc. has paid dividends on a quarterly basis since the separation from DowDuPont and expects to continue to do so, subject to approval by the Company's Board of Directors. Quarterly market price of common stock and dividend information can be found in Note 28 to the Consolidated Financial Statements.

At January 31, 2020, there were 81,546 stockholders of record.

See Part III, Item 11. Executive Compensation for information relating to shares authorized for issuance under Dow Inc.'s equity compensation plans.

The Company grants stock-based compensation to employees and non-employee directors in the form of stock incentive plans, which include stock options, restricted stock units ("RSUs") and restricted stock. The Company also provides stock-based compensation in the form of performance stock units ("PSUs"). See Note 22 to the Consolidated Financial Statements for additional information.

Issuer Purchases of Equity Securities

The following table provides information regarding purchases of Dow Inc. common stock by the Company during the three months ended December 31, 2019:

Issuer Purchases of Equity Securities			<i>Total number of shares purchased as part of the Company's publicly announced share repurchase program</i>	<i>Approximate dollar value of shares that may yet be purchased under the Company's publicly announced share repurchase program¹ (In millions)</i>
<i>Period</i>	<i>Total number of shares purchased</i>	<i>Average price paid per share</i>		
October 2019	—	\$ —	—	\$ 2,594
November 2019	735,600	\$ 53.84	735,600	\$ 2,555
December 2019	1,032,502	\$ 53.17	1,032,502	\$ 2,500
Fourth quarter 2019	1,768,102	\$ 53.45	1,768,102	\$ 2,500

1. On April 1, 2019, Dow Inc.'s Board of Directors ratified the share repurchase program originally approved on March 15, 2019, authorizing up to \$3.0 billion to be spent on the repurchase of the Company's common stock, with no expiration date.

ITEM 6. SELECTED FINANCIAL DATA

Selected Financial Data - Dow Inc.					
In millions, except as noted (Unaudited)					
	2019	2018	2017	2016	2015
Summary of Operations					
Net sales ¹	\$ 42,951	\$ 49,604	\$ 43,730	\$ 36,264	\$ 37,101
Income (loss) from continuing operations, net of tax ²	\$ (1,717)	\$ 2,940	\$ (1,287)	\$ 1,478	\$ 6,462
Per share of common stock (in dollars):					
Earnings (loss) per common share from continuing operations - basic ²	\$ (2.42)	\$ 3.80	\$ (1.88)	\$ 1.57	\$ 8.64
Earnings (loss) per common share from continuing operations - diluted ²	\$ (2.42)	\$ 3.80	\$ (1.88)	\$ 1.55	\$ 8.31
Cash dividends declared per share of common stock ³	\$ 2.10	\$ —	\$ 1.38	\$ 1.84	\$ 1.72
Year-end Financial Position					
Total assets	\$ 60,524	\$ 83,699	\$ 85,852	\$ 79,511	\$ 67,938
Long-term debt	\$ 15,975	\$ 19,253	\$ 19,757	\$ 20,444	\$ 16,202
Financial Ratios					
Research and development expenses as percent of net sales	1.8 %	1.6%	1.8%	2.1%	2.0%
Income (loss) from continuing operations before income taxes as percent of net sales ²	(2.9)%	7.6%	0.5%	3.5%	21.8%
Return on stockholders' equity ²	(10.0)%	14.3%	1.5%	15.3%	28.2%
Gross debt as a percent of total capitalization	54.7 %	37.2%	39.1%	43.9%	39.5%
Net debt as a percent of total capitalization	50.9 %	33.7%	31.1%	35.1%	24.6%

Selected Financial Data - TDCC					
In millions, except as noted (Unaudited)					
	2019	2018	2017	2016	2015
Summary of Operations					
Net sales ¹	\$ 42,951	\$ 49,604	\$ 43,730	\$ 36,264	\$ 37,101
Income (loss) from continuing operations, net of tax ²	\$ (1,595)	\$ 2,940	\$ (1,287)	\$ 1,478	\$ 6,462
Year-end Financial Position					
Total assets	\$ 60,390	\$ 83,699	\$ 85,852	\$ 79,511	\$ 67,938
Long-term debt	\$ 15,975	\$ 19,253	\$ 19,757	\$ 20,444	\$ 16,202
Financial Ratios					
Research and development expenses as percent of net sales	1.8 %	1.6%	1.8%	2.1%	2.0%
Income (loss) from continuing operations before income taxes as percent of net sales ²	(2.6)%	7.6%	0.5%	3.5%	21.8%
Return on stockholders' equity ²	(8.6)%	14.3%	1.5%	15.3%	28.2%
Gross debt as a percent of total capitalization	53.3 %	37.2%	39.1%	43.9%	39.5%
Net debt as a percent of total capitalization	49.6 %	33.7%	31.1%	35.1%	24.6%

1. The Company has certain product and service agreements with DuPont and Corteva that were considered intercompany transactions prior to the separation, but are trade transactions subsequent to the separation. Treatment of these transactions as trade transactions have been reflected in the tables above for 2019, 2018, 2017 and 2016. The amounts for 2015 were not updated as the impact to "Net sales" for this period was not significant.

2. See Notes 4, 7, 8, 9, 13, 14, 16, 17 and 21 to the Consolidated Financial Statements for information on items materially impacting the results for the years ended December 31, 2019, 2018 and 2017, including the effects of the U.S. Tax Cuts and Jobs Act, enacted on December 22, 2017; Swiss tax reform; loss on early redemption of debt; integration and separation costs; charges related to restructuring programs; goodwill impairment and other asset related charges (including charges related to Sadara Chemical Company); a charge related to environmental remediation; a charge related to payment of plan obligations to certain participants of a U.S. non-qualified pension plan; litigation related charges, awards and adjustments; and charges associated with agreements entered into with DuPont and Corteva as part of the separation from DowDuPont.

3. Amount shown for 2019 represents dividends declared by Dow Inc. Amounts shown for 2017, 2016 and 2015 represent cash dividends declared by TDCC prior to the Merger. Subsequent to the Merger, TDCC has no common shares outstanding.

ITEM 7. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

On April 1, 2019, DowDuPont Inc. ("DowDuPont" and effective June 3, 2019, n/k/a DuPont de Nemours, Inc. or "DuPont") completed the separation of its materials science business and Dow Inc. became the direct parent company of The Dow Chemical Company and its consolidated subsidiaries ("TDCC" and together with Dow Inc., "Dow" or the "Company"), owning all of the outstanding common shares of TDCC. For filings related to the period commencing April 1, 2019 and thereafter, TDCC was deemed the predecessor to Dow Inc., and the historical results of TDCC are deemed the historical results of Dow Inc. for periods prior to and including March 31, 2019. As a result of the parent/subsidiary relationship between Dow Inc. and TDCC, and the expectation that the financial statements and disclosures of each company will be substantially similar, the companies are filing a combined report for this Annual Report on Form 10-K. The information reflected in the report is equally applicable to both Dow Inc. and TDCC, except where otherwise noted.

The separation was contemplated by the merger of equals transaction effective August 31, 2017, under the Agreement and Plan of Merger, dated as of December 11, 2015, as amended on March 31, 2017. TDCC and E. I. du Pont de Nemours and Company and its consolidated subsidiaries ("Historical DuPont") each merged with subsidiaries of DowDuPont and, as a result, TDCC and Historical DuPont became subsidiaries of DowDuPont (the "Merger"). Subsequent to the Merger, TDCC and Historical DuPont engaged in a series of internal reorganization and realignment steps to realign their businesses into three subgroups: agriculture, materials science and specialty products. Dow Inc. was formed as a wholly owned subsidiary of DowDuPont to serve as the holding company for the materials science business.

As of the effective date and time of the distribution, DowDuPont does not beneficially own any equity interest in Dow and no longer consolidates Dow and its consolidated subsidiaries into its financial results. The consolidated financial results of Dow for all periods presented reflect the distribution of TDCC's agricultural sciences business ("AgCo") and specialty products business ("SpecCo") as discontinued operations, as well as reflect the receipt of Historical DuPont's ethylene and ethylene copolymers businesses (other than its ethylene acrylic elastomers business) ("ECP") as a common control transaction from the closing of the Merger on August 31, 2017. See Notes 3 and 4 to the Consolidated Financial Statements and Dow Inc.'s Amendment No. 4 to the Registration Statement on Form 10 filed with the U.S. Securities and Exchange Commission ("SEC") on March 8, 2019 for additional information.

Throughout this Annual Report on Form 10-K, unless otherwise indicated, amounts and activity are presented on a continuing operations basis.

Except as otherwise indicated by the context, the terms "Union Carbide" means Union Carbide Corporation, a wholly owned subsidiary of the Company, and "Dow Silicones" means Dow Silicones Corporation (formerly known as Dow Corning Corporation, which changed its name effective as of February 1, 2018), a wholly owned subsidiary of the Company.

Items Affecting Comparability of Financial Results

As a result of the separation from DowDuPont, pro forma net sales and pro forma Operating EBIT are provided in this section and based on the consolidated financial statements of TDCC, adjusted to give effect to the separation from DowDuPont as if it had been consummated on January 1, 2017. Pro forma adjustments include (1) the margin impact of various manufacturing, supply and service related agreements entered into with DuPont and Corteva, Inc. ("Corteva") in connection with the separation which provide for different pricing than the historical intercompany and intracompany pricing practices of TDCC and Historical DuPont (only included for 2018 and the first three months of 2019), (2) the inclusion of ECP for the period of January 1, 2017 through August 31, 2017, (3) the removal of the amortization of ECP's inventory step-up recognized in connection with the Merger, (4) the elimination of the impact of events directly attributable to the Merger, internal reorganization and business realignment, separation, distribution and other related transactions (e.g., one-time transaction costs), and (5) the elimination of the effect of a consummated divestiture agreed to with certain regulatory agencies as a condition of approval for the Merger. These adjustments impacted the consolidated results as well as the reportable segments. See Note 27 to the Consolidated Financial Statements for a summary of the pro forma adjustments impacting segment measures for the years ended December 31, 2019, 2018 and 2017.

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ABOUT DOW

Dow combines global breadth, asset integration and scale, focused innovation and leading business positions to achieve profitable growth. The Company's ambition is to become the most innovative, customer centric, inclusive and sustainable materials science company. Dow's portfolio of plastics, industrial intermediates, coatings and silicones businesses delivers a broad range of differentiated science-based products and solutions for its customers in high-growth market segments, such as packaging, infrastructure and consumer care. Dow operates 109 manufacturing sites in 31 countries and employs approximately 36,500 people.

In 2019, the Company had annual sales of \$43 billion, of which 36 percent of the Company's sales were to customers in U.S. & Canada; 34 percent were in Europe, Middle East, Africa and India ("EMEAI"); while the remaining 30 percent were to customers in Asia Pacific and Latin America.

In 2019, the Company and its consolidated subsidiaries did not operate in countries subject to U.S. economic sanctions and export controls as imposed by the U.S. State Department or in countries designated by the U.S. State Department as state sponsors of terrorism, including Iran, the Democratic People's Republic of Korea (North Korea), Sudan and Syria. The Company has policies and procedures in place designed to ensure that it and its consolidated subsidiaries remain in compliance with applicable U.S. laws and regulations.

OVERVIEW

The following is a summary of the results from continuing operations and other notable events for the Company for the year ended December 31, 2019:

The Company reported net sales in 2019 of \$43 billion, down 13 percent from \$49.6 billion in 2018, with declines across all geographic regions and operating segments. These declines were due to a decrease in local price of 11 percent, a volume decline of 2 percent and a 1 percent unfavorable currency impact, partially offset by a 1 percent increase in Portfolio & Other.

Local price decreased 11 percent compared with the same period last year, with decreases in all operating segments, including double-digit declines in Packaging & Specialty Plastics and Industrial Intermediates & Infrastructure (both down 12 percent). Local price decreased in all geographic regions, including double-digit declines in Latin America (down 14 percent), Asia Pacific (down 12 percent) and U.S. & Canada (down 11 percent).

Volume decreased 2 percent compared with 2018, driven primarily by lower hydrocarbon co-product sales. Packaging & Specialty Plastics and Performance Materials & Coatings reported volume declines (both down 3 percent) while Industrial Intermediates & Infrastructure was flat. Volume decreased in EMEAI (down 4 percent) and Latin America and U.S. & Canada (both down 3 percent), partially offset by an increase in Asia Pacific (up 5 percent).

Currency had an unfavorable impact of 1 percent on net sales, driven primarily by EMEAI (down 3 percent).

Research and development ("R&D") expenses were \$765 million in 2019, down from \$800 million in 2018. Selling, general and administrative ("SG&A") expenses for Dow Inc. and TDCC were \$1,590 million and \$1,585 million, respectively, in 2019, down from \$1,782 million in 2018. R&D and SG&A expenses decreased primarily due to cost reductions, cost synergies, stranded cost removal and lower performance-based compensation costs.

Restructuring, goodwill impairment and asset related charges - net were \$3,219 million in 2019, primarily reflecting post-merger restructuring actions under the DowDuPont Cost Synergy Program, a goodwill impairment charge of \$1,039 million related to the Coatings & Performance Monomers reporting unit and \$1,755 million of pretax charges related to Sadara Chemical Company ("Sadara").

Integration and separation costs for Dow Inc. and TDCC were \$1,063 million and \$1,039 million, respectively, in 2019, down from \$1,179 million in 2018, reflecting the wind-down of post-Merger integration and business separation activities.

Equity in earnings (losses) of nonconsolidated affiliates was a loss of \$94 million in 2019, down from earnings of \$555 million in 2018, primarily due to increased equity losses from Sadara and lower equity earnings from the Kuwait joint ventures and the Thai joint ventures.

Sundry income (expense) - net for Dow Inc. and TDCC was income of \$461 million and income of \$573 million, respectively, in 2019, compared with income of \$96 million in 2018. Sundry income (expense) - net increased primarily due to an increase in foreign currency exchange gains as well as a net gain related to litigation matters.

Net income (loss) available for Dow Inc. and TDCC common stockholder(s) was a loss of \$1,359 million and \$1,237 million, respectively, in 2019, compared with income of \$4,641 million in 2018. Earnings (loss) per share for Dow Inc. was a loss of \$1.84 per share in 2019, compared with income of \$6.21 per share in 2018.

In 2019, Dow Inc. declared and paid dividends of \$2.10 per share (\$1,550 million), to common stockholders, and TDCC paid a \$535 million dividend to DowDuPont.

In 2019, Dow Inc. repurchased \$500 million of the Company's common stock.

In 2019, the Company reduced gross debt by nearly \$3 billion.

In October 2019, the Company received a \$0.8 billion cash payment related to the Nova Chemicals Corporation ("Nova") ethylene asset matter.

Other notable events and highlights from the year ended December 31, 2019 include:

- On April 1, 2019, Dow successfully completed its separation from DowDuPont, becoming a more focused and streamlined materials science company.
- In April 2019, Dow Inc. was named to the Dow Jones Industrial Average.
- On April 25, 2019, the Company announced plans to expand its alkoxylation capacity at its existing facility in Tarragona, Spain, directly benefiting the EMEAI region.
- On August 13, 2019, Dow announced that it reached an agreement for the divestiture of its acetone derivatives business to ALTIVIA Ketones & Additives, LLC, an affiliate of ALTIVIA, a privately held producer of chemicals headquartered in Houston, Texas. The transaction closed on November 1, 2019, and included the Company's acetone derivatives related inventory and production assets located in Institute, West Virginia, in addition to the site infrastructure, land and utilities.
- On August 20, 2019, as part of the Company's current slate of low capital intensity, high-return incremental growth investments, Dow announced it will retrofit proprietary fluidized catalytic dehydrogenation technology into one of its mixed-feed crackers in Plaquemine, Louisiana, to produce on-purpose propylene.

- Dow announced two new agreements that contribute to its commitment to incorporate at least 100,000 tonnes of recycled plastics in its product offerings sold in the European Union by 2025. The first was announced on August 29, 2019 with the Fuenix Ecology Group for the supply of pyrolysis oil feedstock, which is made from plastic waste. The second agreement was announced on September 24, 2019 with UPM Biofuels for the supply of wood-based UPM BioVerno renewable naphtha. These feedstocks will be used to produce new polymers and bio-based polyethylene at Dow's production facilities in Terneuzen, The Netherlands.
- Dow was named to the Dow Jones Sustainability World Index - marking the 20th time the Company has been named to this global benchmark.
- Dow was named to *Fortune's* 2019 *Change the World* list, recognizing the Company's program to pilot the use of recycled plastics in roads as part of the Company's long-standing commitment to reduce plastic waste and drive sustainable solutions.
- Dow was named to the 2019 *Disability Equality Index*® "Best Places to Work," by receiving the top score for the third year in a row.
- Dow received four *R&D 100 Awards* from *R&D Magazine* for innovative technologies including: IMAGIN3D™ Polyethylene OBC, SYL-OFF™ SL-25 Release Modifier, SILASTIC™ MS-4007 Moldable Optical Silicone and GREAT STUFF™ SMART DISPENSER™.
- Dow received four 2019 Sustainability Awards from the Business Intelligence Group, including the Sustainability Initiative of the Year Award for the RENUVA™ Mattress Project and the Sustainability Products of the Year Award for Dow PRIMAL™ Bio-based Acrylic Emulsion, DOWSIL™ TC-3015 Re-workable Thermal Conductive Silicone Gel and RENUVA™ Polyols.
- Dow received five prestigious Edison Awards for breakthrough technologies, setting a record for the Company, with two gold, two silver and one bronze award including: gold to ENGAGE™ PV Polyolefin Elastomers, gold to Tenter Frame Biaxially Orientable Polyethylene Resin, silver to ECOFAST™ Pure Sustainable Textile Treatment, silver to VORARAD™ Downhole Radium Sequestration Technology and bronze to OPULUX™ HGT.
- On June 13, 2019, Samuel R. Allen was elected to Dow's Board of Directors, effective August 1, 2019.

In addition to the highlights above, the following events occurred subsequent to December 31, 2019:

- On January 29, 2020, the Company announced plans to add another furnace to its ethylene production facility in Alberta, Canada, incrementally expanding capacity by approximately 130,000 metric tons. Dow will co-invest in the expansion with a regional customer, evenly sharing project costs and ethylene output, with the additional ethylene to be consumed by existing polyethylene manufacturing assets in the region. The expansion is expected to come online in the first half of 2021.

RESULTS OF OPERATIONS

Net Sales

The following tables summarize net sales, pro forma net sales and sales variance by operating segment and geographic region from the prior year:

Summary of Sales Results			
In millions	2019	2018	2017
Net sales	\$ 42,951	\$ 49,604	\$ 43,730
Pro forma net sales	\$ 42,998	\$ 49,852	\$ 44,772

Sales Variances by Operating Segment and Geographic Region - As Reported										
Percentage change from prior year	2019					2018				
	<i>Local Price & Product Mix</i>	<i>Currency</i>	<i>Volume</i>	<i>Portfolio & Other¹</i>	<i>Total</i>	<i>Local Price & Product Mix</i>	<i>Currency</i>	<i>Volume</i>	<i>Portfolio & Other¹</i>	<i>Total</i>
Packaging & Specialty Plastics	(12)%	(1)%	(3)%	—%	(16)%	1%	2%	5%	5%	13%
Industrial Intermediates & Infrastructure	(12)	(1)	—	—	(13)	5	1	13	—	19
Performance Materials & Coatings	(6)	(2)	(3)	3	(8)	10	1	(2)	—	9
Total	(11)%	(1)%	(2)%	1%	(13)%	4%	1%	6%	2%	13%
U.S. & Canada	(11)%	—%	(3)%	1%	(13)%	4%	—%	2%	2%	8%
EMEAI	(9)	(3)	(4)	—	(16)	5	3	4	2	14
Asia Pacific	(12)	(1)	5	—	(8)	2	1	19	3	25
Latin America	(14)	—	(3)	—	(17)	5	—	4	2	11
Total	(11)%	(1)%	(2)%	1%	(13)%	4%	1%	6%	2%	13%

1. Portfolio & Other includes the sales impact of various manufacturing, supply and service related agreements entered into with DuPont and Corteva in connection with the separation, which provide for different pricing than the historical intercompany and intracompany pricing practices of TDC and Historical DuPont.

Sales Variances by Operating Segment and Geographic Region - As Reported					
Percentage change from prior year	2017				
	<i>Local Price & Product Mix</i>	<i>Currency</i>	<i>Volume</i>	<i>Portfolio & Other¹</i>	<i>Total</i>
Packaging & Specialty Plastics	8%	—%	6%	3%	17%
Industrial Intermediates & Infrastructure	10	1	6	—	17
Performance Materials & Coatings	8	1	2	26	37
Total	9%	—%	6%	6%	21%
U.S. & Canada	8%	—%	5%	6%	19%
EMEAI	12	1	6	5	24
Asia Pacific	6	—	8	13	27
Latin America	4	—	—	3	7
Total	9%	—%	6%	6%	21%

1. Portfolio & Other primarily reflects sales related to the receipt of ECP as a common control transaction from the closing of the Merger on August 31, 2017, and the divestiture of the global Ethylene Acrylic Acid copolymers and ionomers business ("EAA Business"), divested on September 1, 2017 (both impacting Packaging & Specialty Plastics). In addition, Portfolio & Other includes the ownership restructure of Dow Silicones announced on June 1, 2016 (impacting Performance Materials & Coatings).

2019 Versus 2018

The Company reported net sales of \$43 billion in 2019, down 13 percent from \$49.6 billion in 2018, primarily driven by a decrease in local price, decreased volume and the unfavorable impact of currency. Sales declines were broad-based and occurred in all segments and geographic regions. Local price decreased 11 percent, primarily in response to lower feedstock and raw material costs and pricing pressures. Local price decreased in Packaging & Specialty Plastics and Industrial Intermediates & Infrastructure (both down 12 percent) and in Performance Materials & Coatings (down 6 percent). Local price decreased in all geographic regions. Volume decreased 2 percent with declines in all geographic regions except Asia Pacific (up 5 percent). Volume declines were primarily driven by lower hydrocarbon co-product sales. Volume decreased in Packaging & Specialty Plastics and Performance Materials & Coatings (both down 3 percent), while Industrial Intermediates & Infrastructure volume was flat. Currency unfavorably impacted net sales by 1 percent compared with the prior year, driven primarily by EMEAI (down 3 percent). Portfolio & Other improved sales by 1 percent.

2018 Versus 2017

The Company reported net sales of \$49.6 billion in 2018, up 13 percent from \$43.7 billion in 2017, driven by higher sales volume, reflecting additional capacity from U.S. Gulf Coast growth projects and increased supply from Sadara, increased local price, the receipt of ECP and the favorable impact of currency. Sales growth was broad-based, with increases in all segments and geographic regions. Volume increased 6 percent compared with the prior year, as increases in Packaging & Specialty Plastics (up 5 percent) and Industrial Intermediates & Infrastructure (up 13 percent) more than offset a decline in Performance Materials & Coatings (down 2 percent). Volume increased in all geographic regions, including a double-digit increase in Asia Pacific (up 19 percent).

Local price was up 4 percent compared with the prior year, with increases in all geographic regions, driven by pricing initiatives and higher feedstock and raw material prices. Local price increased in all segments, with the most notable increases in Industrial Intermediates & Infrastructure (up 5 percent) and Performance Materials & Coatings (up 10 percent). Portfolio & Other contributed 2 percent of the sales increase, primarily reflecting the receipt of ECP. Currency was up 1 percent compared with the prior year, driven by a favorable impact in EMEAI and Asia Pacific.

Sales Variances by Operating Segment and Geographic Region - Pro Forma Basis										
Percentage change from prior year	2019					2018				
	Local Price & Product Mix	Currency	Volume	Portfolio & Other ¹	Total	Local Price & Product Mix	Currency	Volume	Portfolio & Other ¹	Total
Packaging & Specialty Plastics	(12)%	(1)%	(3)%	—%	(16)%	1%	1%	5%	—%	7%
Industrial Intermediates & Infrastructure	(12)	(2)	1	—	(13)	5	1	13	—	19
Performance Materials & Coatings	(6)	(2)	(1)	—	(9)	10	1	(2)	2	11
Total	(11)%	(1)%	(2)%	—%	(14)%	4%	1%	6%	—%	11%
Total, excluding the Hydrocarbons & Energy business	(10)%	(2)%	1 %	—%	(11)%	4%	1%	7%	—%	12%
U.S. & Canada	(11)%	— %	(2)%	—%	(13)%	3%	—%	2%	1%	6%
EMEAI	(9)	(3)	(4)	—	(16)	5	3	4	—	12
Asia Pacific	(12)	(1)	5	—	(8)	3	1	18	—	22
Latin America	(15)	—	(3)	—	(18)	5	—	4	—	9
Total	(11)%	(1)%	(2)%	—%	(14)%	4%	1%	6%	—%	11%

1. Portfolio & Other includes the sales impact of various manufacturing, supply and service related agreements entered into with DuPont and Corteva in connection with the separation, which provide for different pricing than the historical intercompany and intracompany pricing practices of TDCC and Historical DuPont.

2019 Versus 2018 - Pro Forma

The Company reported pro forma net sales for 2019 of \$43 billion, down 14 percent from \$49.9 billion for 2018, primarily driven by a decrease in local price, decreased volume and the unfavorable impact of currency. Sales declines were broad-based and occurred in all segments and geographic regions. Local price decreased 11 percent, primarily in response to lower feedstock and raw material costs and pricing pressures. Local price decreased in Packaging & Specialty Plastics and Industrial Intermediates & Infrastructure (both down 12 percent) and in Performance Materials & Coatings (down 6 percent). Local price decreased in all geographic regions. Volume decreased 2 percent with declines in all geographic regions except Asia Pacific (up 5 percent). Volume decreased in Packaging & Specialty Plastics (down 3 percent) and Performance Materials & Coatings (down 1 percent), and increased in Industrial Intermediates & Infrastructure (up 1 percent). Currency unfavorably impacted net sales by 1 percent compared with the prior year, driven primarily by EMEAI (down 3 percent). Portfolio & Other was flat compared with the prior year.

2018 Versus 2017 - Pro Forma

The Company reported pro forma net sales of \$49.9 billion in 2018, up 11 percent from pro forma net sales of \$44.8 billion in 2017, with increases across all segments and geographic regions. Double-digit net sales increases were reported in Industrial Intermediates & Infrastructure (up 19 percent) and Performance Materials & Coatings (up 11 percent). Net sales increased in Asia Pacific (up 22 percent), EMEAI (up 12 percent), Latin America (up 9 percent) and U.S. & Canada (up 6 percent). Volume increased 6 percent compared with pro forma results in the prior year, reflecting additional capacity from U.S. Gulf Coast growth projects and increased supply from Sadara. Volume increases in Packaging & Specialty Plastics (up 5 percent) and Industrial Intermediates & Infrastructure (up 13 percent) more than offset a decline in Performance Materials & Coatings (down 2 percent). Volume increased in all geographic regions, including a double-digit increase in Asia Pacific (up 18 percent). Local price was up 4 percent compared with pro forma results in the prior year with increases in all geographic regions, driven by pricing initiatives and higher feedstock and raw material prices. Local price increased across all segments, including a double-digit increase in Performance Materials & Coatings (up 10 percent). Currency was up 1 percent compared with the prior year, driven primarily by EMEAI (up 3 percent).

Cost of Sales

Cost of sales ("COS") was \$36.7 billion in 2019, down \$4.4 billion from \$41.1 billion in 2018. COS decreased in 2019 primarily due to lower feedstock and other raw material costs, decreased sales volume, cost synergies, stranded cost removal and a favorable adjustment to the warranty accrual of an exited business, which were partially offset by \$75 million of transaction-related costs resulting from the separation from DowDuPont (related to the Corporate segment) and \$399 million of environmental charges related to Packaging & Specialty Plastics (\$5 million), Industrial Intermediates & Infrastructure (\$8 million), Performance Materials & Coatings (\$50 million) and Corporate (\$336 million). COS as a percentage of sales was 85.3 percent in 2019 compared with 82.8 percent in 2018.

COS was \$41.1 billion in 2018, up \$4.7 billion from \$36.4 billion in 2017, primarily due to increased sales volume, which reflected additional capacity from U.S. Gulf Coast growth projects and increased supply from Sadara, higher feedstock and other raw material costs and increased planned maintenance turnaround costs which more than offset lower commissioning expenses related to U.S. Gulf Coast growth projects and cost synergies. COS as a percentage of sales was 82.8 percent in 2018 compared with 83.1 percent in 2017.

Personnel Count

The Company permanently employed approximately 36,500 people at December 31, 2019, down from approximately 37,600 people at December 31, 2018 and 39,200 people at December 31, 2017 primarily due to the Company's restructuring programs.

Research and Development Expenses

R&D expenses were \$765 million in 2019, compared with \$800 million in 2018 and \$803 million in 2017. R&D expenses in 2019 decreased compared with 2018 primarily due to cost reductions and lower performance-based compensation costs. R&D expenses in 2018 were essentially flat compared with 2017.

Selling, General and Administrative Expenses

SG&A expenses for Dow Inc. and TDCC were \$1,590 million and \$1,585 million, respectively, in 2019, compared with \$1,782 million in 2018 and \$1,795 million in 2017. In 2019, SG&A expenses decreased primarily due to cost reductions, cost synergies, stranded cost removal and lower performance-based compensation costs. SG&A expenses were favorably impacted by a recovery of a portion of legal costs related to the Nova litigation award in the third quarter of 2019. In 2018, SG&A expenses decreased primarily due to additional cost reductions and lower performance-based compensation costs which more than offset a full year of expense from the ECP business and the absence of the recovery of costs related to the Nova patent infringement award in 2017. See Note 17 to the Consolidated Financial Statements for additional information on the Nova litigation awards.

Amortization of Intangibles

Amortization of intangibles was \$419 million in 2019, down from \$469 million in 2018, primarily due to certain intangible assets becoming fully amortized. Amortization of intangibles in 2018 increased from \$400 million in 2017, primarily due to the receipt of ECP. See Note 14 to the Consolidated Financial Statements for additional information on intangible assets.

Restructuring, Goodwill Impairment and Asset Related Charges - Net

Restructuring, goodwill impairment and asset related charges - net were \$3,219 million in 2019, \$221 million in 2018 and \$2,739 million in 2017.

DowDuPont Cost Synergy Program

In September and November 2017, DowDuPont approved post-merger restructuring actions under the DowDuPont Cost Synergy Program (the "Synergy Program") which was designed to integrate and optimize the organization following the Merger and in preparation for the business separations. The Company expected (prior to the impact of any discontinued operations) to record total pretax restructuring charges of approximately \$1.3 billion, which included initial estimates of approximately \$525 million to \$575 million of severance and related benefit costs; \$400 million to \$440 million of asset write-downs and write-offs, and \$290 million to \$310 million of costs associated with exit and disposal activities. The restructuring charges below reflect charges from continuing operations.

As a result of the Synergy Program, the Company recorded pretax restructuring charges of \$399 million in 2017, consisting of severance and related benefit costs of \$307 million, asset write-downs and write-offs of \$87 million and costs associated with exit and disposal activities of \$5 million. The restructuring charges by segment were as follows: \$36 million in Packaging & Specialty Plastics, \$12 million in Industrial Intermediates & Infrastructure, \$11 million in Performance Materials & Coatings and \$340 million in Corporate.

For the year ended December 31, 2018, the Company recorded pretax restructuring charges of \$184 million, consisting of severance and related benefit costs of \$137 million, asset write-downs and write-offs of \$33 million and costs associated with exit and disposal activities of \$14 million. The restructuring charges by segment were as follows: \$13 million in Packaging & Specialty Plastics, \$11 million in Industrial Intermediates & Infrastructure, \$7 million in Performance Materials & Coatings and \$153 million in Corporate.

For the year ended December 31, 2019, the Company recorded pretax restructuring charges of \$292 million, consisting of severance and related benefit costs of \$123 million, asset write-downs and write-offs of \$143 million and costs associated with exit and disposal activities of \$26 million. The restructuring charges by segment were as follows: \$1 million in Packaging & Specialty Plastics, \$7 million in Industrial Intermediates & Infrastructure, \$28 million in Performance Materials & Coatings and \$256 million in Corporate. The Company expects the Synergy Program to be substantially complete by the end of the second quarter of 2020.

Goodwill Impairment

Upon completion of the goodwill impairment testing in the fourth quarter of 2019, the Company determined the fair value of the Coatings & Performance Monomers reporting unit was lower than its carrying amount. As a result, the Company recorded an impairment charge of \$1,039 million in the fourth quarter of 2019 related to Performance Materials & Coatings.

Upon completion of the goodwill impairment testing in the fourth quarter of 2017, the Company determined the fair value of the Coatings & Performance Monomers reporting unit was lower than its carrying amount. As a result, the Company recorded an impairment charge of \$1,491 million in the fourth quarter of 2017, related to Performance Materials & Coatings.

Asset Related Charges

2019 Charges

In 2019, the Company recognized additional pretax impairment charges of \$58 million related primarily to capital additions made to a biopolymers manufacturing facility in Santa Vitoria, Minas Gerais, Brazil ("Santa Vitoria"), which was impaired in 2017. The impairment charges by segment were as follows: \$44 million in Packaging & Specialty Plastics, \$9 million in Performance Materials & Coatings and \$5 million in Corporate.

On August 13, 2019, the Company entered into a definitive agreement to sell its acetone derivatives business to ALTIVIA Ketones & Additives, LLC. The transaction closed on November 1, 2019 and included the Company's acetone derivatives related inventory and production assets, located in Institute, West Virginia, in addition to the site infrastructure, land, utilities and certain railcars. The Company remains at the Institute site as a tenant. As a result of the divestiture, the Company recognized a pretax impairment charge of \$75 million in the third quarter of 2019. The impairment charge by segment was as follows: \$24 million in Packaging & Specialty Plastics and \$51 million in Corporate.

In the fourth quarter of 2019, the Company concluded that its equity method investment in Sadara was other-than-temporarily impaired. The Company also reserved certain accounts and notes receivable and accrued interest balances due to uncertainty on the timing of collection. As a result, the Company recorded a \$1,755 million pretax charge related to Sadara. The charge by segment was as follows: \$370 million in Packaging & Specialty Plastics, \$1,168 million in Industrial Intermediates & Infrastructure and \$217 million in Corporate.

2018 Charges

In 2018, the Company recognized an additional pretax impairment charge of \$34 million related primarily to capital additions at its Santa Vitoria manufacturing facility. The impairment charge was related to Packaging & Specialty Plastics.

2017 Charges

In 2017, the Company recognized a \$622 million pretax impairment charge related to its Santa Vitoria manufacturing facility. The Company determined it would not pursue an expansion of the facility's ethanol mill into downstream derivative products, primarily as a result of cheaper ethane-based production as well as the Company's new assets coming online on the U.S. Gulf Coast which can be used to meet growing market demands in Brazil. As a result of this decision, cash flow analysis indicated the carrying amount of the impacted assets was not recoverable. The impairment charge was related to Packaging & Specialty Plastics.

The Company also recognized other pretax impairment charges of \$246 million in the fourth quarter of 2017, including charges related to manufacturing assets of \$159 million, an equity method investment of \$81 million and other assets of \$6 million. The impairment charges by segment were as follows: \$58 million in Packaging & Specialty Plastics, \$5 million in Industrial Intermediates & Infrastructure, \$83 million in Performance Materials & Coatings and \$100 million in Corporate.

Refer to Note 7 to the Consolidated Financial Statements for additional information on restructuring, goodwill impairment and asset related charges.

Integration and Separation Costs

Integration and separation costs, which reflect costs related to the Merger and the ownership restructure of Dow Silicones (through May 31, 2018), as well as post-Merger integration and business separation activities, were \$1,063 million and \$1,039 million for Dow Inc. and TDCC, respectively, in 2019, \$1,179 million in 2018 and \$798 million in 2017, and were related to Corporate. In 2018 and 2019, integration and separation costs were higher as a result of post-merger integration and business separation activities.

Equity in Earnings of Nonconsolidated Affiliates

The Company's share of the earnings (losses) of nonconsolidated affiliates in 2019 was a loss of \$94 million, compared with earnings of \$555 million in 2018 and \$394 million in 2017. In 2019, equity earnings decreased primarily due to lower equity earnings from the Kuwait joint ventures (due to lower monethylene glycol and polyethylene prices) and the Thai joint ventures and increased equity losses from Sadara. See Note 13 to the Consolidated Financial Statements for additional information on the Company's evaluation of its equity method investment in Sadara for other-than-temporary impairment.

In 2018, equity earnings increased from 2017 as higher earnings from the Kuwait joint ventures and lower equity losses from Sadara were partially offset by lower equity earnings from the Thai joint ventures.

Sundry Income (Expense) - Net

Sundry income (expense) – net includes a variety of income and expense items such as foreign currency exchange gains and losses, dividends from investments, gains and losses on sales of investments and assets, non-operating pension and other postretirement benefit plan credits or costs, and certain litigation matters.

TDCC

Sundry income (expense) - net for 2019 was income of \$573 million, compared with income of \$96 million in 2018 and expense of \$154 million in 2017.

In 2019, sundry income (expense) - net included an increase in foreign currency exchange gains, non-operating pension and postretirement benefit plan credits and gains on sales of assets and investments, as well as a net gain of \$205 million related to litigation matters, which included a \$170 million gain related to a legal settlement with Nova (related to Packaging & Specialty Plastics), and an \$85 million gain related to an adjustment of the Dow Silicones breast implant liability (related to Corporate), which were partially offset by a \$50 million charge (net of indemnifications of \$37 million), related to the settlement of the Dow Silicones commercial creditor matters (related to Corporate). In 2019, sundry income (expense) - net also included a \$102 million loss on the early extinguishment of debt and a gain of \$2 million on post-closing adjustments related to previous divestitures (both related to Corporate). See Notes 8, 16, 17, 21 and 27 to the Consolidated Financial Statements for additional information.

In 2018, sundry income (expense) - net included non-operating pension and other postretirement benefit plan credits, a \$20 million gain related to the Company's sale of its equity interest in MEGlobal (related to Corporate) and gains on sales of assets and investments, which more than offset foreign currency exchange losses, a loss of \$54 million on the early extinguishment of debt (related to Corporate) and a loss of \$20 million for post-closing adjustments related to the Dow Silicones ownership restructure (related to Performance Materials & Coatings). See Notes 8, 16 and 21 to the Consolidated Financial Statements for additional information.

In 2017, sundry income (expense) - net included a \$227 million gain on the divestiture of the EAA Business (related to Packaging & Specialty Plastics), a \$137 million gain related to the Nova patent infringement matter (related to Packaging & Specialty Plastics), a \$7 million gain on post-closing adjustments related to the split-off of the chlorine value chain (related to Corporate) and gains on sales of assets and investments. These gains were more than offset by \$676 million of non-operating pension and other postretirement benefit costs, primarily driven by a \$687 million settlement charge for a U.S. non-qualified pension plan (related to Corporate), and foreign currency exchange losses. See Notes 6, 8, 17 and 21 to the Consolidated Financial Statements for additional information.

Dow Inc.

Sundry income (expense) - net for 2019 was income of \$461 million, compared with income of \$96 million in 2018 and an expense of \$154 million in 2017. In addition to the amounts previously discussed above for TDCC, sundry income (expense) - net in 2019 included a \$51 million loss on post-closing adjustments related to a previous divestiture and \$69 million in charges associated with agreements entered into with DuPont and Corteva as part of the separation and distribution, which provides for cross-indemnities and allocations of obligations and liabilities for periods prior to, at and after completion of the separation (both related to Corporate). See Notes 4, 8, 17, 21 and 27 to the Consolidated Financial Statements for additional information.

Interest Expense and Amortization of Debt Discount

Dow Inc.

Interest expense and amortization of debt discount was \$933 million in 2019, down from \$1,063 million in 2018, primarily due to debt reductions and lower interest bearing notes issued in the fourth quarter of 2018, which replaced higher interest bearing notes redeemed in the fourth quarter of 2018. Interest expense and amortization of debt discount in 2018 was up from \$914 million in 2017, primarily reflecting the effect of lower capitalized interest as a result of decreased capital spending. See Liquidity and Capital Resources in Management's Discussion and Analysis of Financial Condition and Results of Operations and Notes 12 and 16 to the Consolidated Financial Statements for additional information related to debt financing activity.

TDCC

Interest expense and amortization of debt discount was \$952 million in 2019, down from \$1,063 million in 2018. Interest expense and amortization of debt discount in 2018 was up from \$914 million in 2017. In addition to the amounts previously discussed above for Dow Inc., TDCC had interest expense related to an intercompany loan with Dow Inc. See Note 26 to the Consolidated Financial Statements for additional information.

Provision for Income Taxes on Continuing Operations

The Company's effective tax rate fluctuates based on, among other factors, where income is earned, the level of income relative to tax attributes and the level of equity earnings, since most earnings from the Company's equity method investments are taxed at the joint venture level. The underlying factors affecting the Company's overall tax rate are summarized in Note 9 to the Consolidated Financial Statements.

On December 22, 2017, the Tax Cuts and Jobs Act ("The Act") was enacted. The Act reduced the U.S. federal corporate income tax rate from 35 percent to 21 percent, required companies to pay a one-time transition tax on earnings of certain foreign subsidiaries that were previously deferred, created new provisions related to foreign sourced earnings, eliminated the domestic manufacturing deduction and moved to a hybrid territorial system. At December 31, 2017, the Company had not completed its accounting for the tax effects of The Act; however, the Company made a reasonable estimate of the effects on its existing deferred tax balances and the one-time transition tax. In accordance with Staff Accounting Bulletin 118, income tax effects of The Act were refined upon obtaining, preparing, and analyzing additional information during the measurement period. At December 31, 2018, the Company had completed its accounting for the tax effects of The Act.

In the fourth quarter of 2019, the Company recorded the impacts of tax law changes enacted in Switzerland. As a result, deferred tax assets increased by \$92 million.

The provision for income taxes on continuing operations was \$470 million in 2019, compared with \$809 million in 2018 and \$1,524 million in 2017. The tax rate for 2019 was unfavorably impacted by non-deductible goodwill and investment impairments, geographic mix of earnings and reduced equity earnings. These factors resulted in a negative effective tax rate of 37.7 percent for Dow Inc. in 2019.

The tax rate for 2018 was favorably impacted by the reduced U.S. federal corporate income tax rate as a result of The Act and benefits related to the issuance of stock-based compensation and unfavorably impacted by non-deductible restructuring costs and increases in statutory income in Latin America and Canada due to local currency devaluations. These factors resulted in an effective tax rate of 21.6 percent in 2018.

The tax rate for 2017 was unfavorably impacted by the enactment of The Act, the impairment of goodwill for which there was no corresponding tax deduction, charges related to tax attributes in the United States and Germany as a result of the Merger and certain non-deductible costs associated with the Merger. The tax rate was favorably impacted by the geographic mix of earnings, equity earnings and the adoption of Accounting Standards Update ("ASU") 2016-09, "Compensation - Stock Compensation (Topic 718): Improvements to Employee Share-Based Payment Accounting," which resulted in the recognition of excess tax benefits related to the issuance of stock-based compensation in the provision for income taxes on continuing operations. These factors resulted in an effective tax rate of 643.0 percent for 2017.

Income from Discontinued Operations, Net of Tax

Income from discontinued operations, net of tax was \$445 million in 2019, \$1,835 million in 2018 and \$1,882 million in 2017, and was related to the distribution of AgCo and SpecCo to DowDuPont as a result of the separation. See Note 4 to the Consolidated Financial Statements for additional information.

Net Income Attributable to Noncontrolling Interests

Net income attributable to noncontrolling interests was \$87 million in 2019, \$134 million in 2018 and \$130 million in 2017. Net income attributable to noncontrolling interests decreased in 2019 compared with 2018, primarily due to the Company's acquisition of full ownership in a propylene oxide manufacturing joint venture on October 1, 2019. Net income attributable to noncontrolling interests increased in 2018 compared with 2017, primarily due to the sale of the Company's ownership interests in the SKC Haas Display Films group of companies on June 30, 2017. Net income attributable to noncontrolling interests from discontinued operations of \$13 million in 2019, \$32 million in 2018 and \$28 million in 2017 are included in the amounts above. See Notes 20 and 25 to the Consolidated Financial Statements for additional information.

Net Income (Loss) Available for the Common Stockholder(s)

Net income (loss) available for Dow Inc. and TDCC common stockholder(s) was a loss of \$1,359 million and \$1,237 million, respectively, in 2019, compared with income of \$4,641 million in 2018 and income of \$465 million in 2017. Earnings (loss) per share of Dow Inc. was a loss of \$1.84 per share in 2019, compared with income of \$6.21 per share in 2018 and income of \$0.60 per share in 2017. Following the separation from DowDuPont, TDCC's common shares are owned solely by Dow Inc.

SEGMENT RESULTS

Effective with the Merger, TDCC's business activities were components of DowDuPont's business operations and were reported as a single operating segment. Following the separation from DowDuPont, the Company changed the manner in which its business activities were managed. The Company's portfolio now includes six global businesses which are organized into the following operating segments: Packaging & Specialty Plastics, Industrial Intermediates & Infrastructure and Performance Materials & Coatings. Corporate contains the reconciliation between the totals for the operating segments and the Company's totals. The Company did not aggregate any operating segments when determining its reportable segments.

Following the separation from DowDuPont, the Company changed its practice of transferring ethylene to its downstream derivative businesses at cost to transferring ethylene at market prices. The Company also changed certain of its Corporate segment allocation practices, including costs previously assigned to AgCo and SpecCo ("stranded costs") which are now allocated to the operating segments. These changes to the Company's segment results have been consistently applied to all periods presented.

Dow reported geographic information for the following regions: U.S. & Canada, Asia Pacific, Latin America, and EMEAI. As a result of the separation from DowDuPont, the Company changed the geographic alignment for the country of India to be reflected in EMEAI (previously reported in Asia Pacific).

The Company's measure of profit/loss for segment reporting purposes is pro forma Operating EBIT as this is the manner in which the Company's chief operating decision maker ("CODM") assesses performance and allocates resources. The Company defines pro forma Operating EBIT as earnings (i.e., "Income (loss) from continuing operations before income taxes") before interest, plus pro forma adjustments, excluding the impact of significant items. Pro forma Operating EBIT by segment includes all operating items relating to the businesses; items that principally apply to Dow as a whole are assigned to Corporate. The Company also presents pro forma net sales as it is included in management's measure of segment performance and is regularly reviewed by the CODM. Pro forma net sales includes the impact of ECP from January 1, 2017 through August 31, 2017, as well as the impact of various manufacturing, supply and service related agreements entered into with DuPont and Corteva in connection with the separation which provide for different pricing than the historical intercompany and intracompany pricing practices of TDCC and Historical DuPont. See Note 27 to the Consolidated Financial Statements for reconciliations of these measures and a summary of the pro forma adjustments impacting segment measures, which are consistent with the pro forma adjustments included in the Current Report on Form 8-K filed on June 3, 2019, with the SEC.

PACKAGING & SPECIALTY PLASTICS

Packaging & Specialty Plastics consists of two highly integrated global businesses: Hydrocarbons & Energy and Packaging and Specialty Plastics. The segment employs the industry's broadest polyolefin product portfolio, supported by the Company's proprietary catalyst and manufacturing process technologies, to work at the customer's design table throughout the value chain to deliver more reliable and durable, higher performing, and more sustainable plastics to customers in food and specialty packaging; industrial and consumer packaging; health and hygiene; caps, closures and pipe applications; consumer durables; automotive; and infrastructure. Ethylene is transferred to downstream derivative businesses at market-based prices, which are generally equivalent to prevailing market prices for large volume purchases. This segment also includes the results of The Kuwait Styrene Company K.S.C.C. and The SCG-Dow Group, as well as a portion of the results of EQUATE Petrochemical Company K.S.C.C. ("EQUATE"), The Kuwait Olefins Company K.S.C.C. ("TKOC"), Map Ta Phut Olefins Company Limited and Sadara, all joint ventures of the Company.

The Company is responsible for marketing a majority of Sadara products outside of the Middle East zone through the Company's established sales channels. As part of this arrangement, the Company purchases and sells Sadara products for a marketing fee.

Packaging & Specialty Plastics			
In millions	2019	2018	2017
Net sales	\$ 20,245	\$ 24,195	\$ 21,504
Pro forma net sales	\$ 20,245	\$ 24,237	\$ 22,546
Pro forma Operating EBIT	\$ 2,904	\$ 3,593	\$ 3,712
Equity earnings	\$ 162	\$ 287	\$ 190

Packaging & Specialty Plastics			
Percentage change from prior year	2019	2018	2017
<i>Change in Net Sales from Prior Period due to:</i>			
Local price & product mix	(12)%	1%	8%
Currency	(1)	2	—
Volume	(3)	5	6
Portfolio & other	—	5	3
Total	(16)%	13%	17%
<i>Change in Pro Forma Net Sales from Prior Period due to:</i>			
Local price & product mix	(12)%	1%	
Currency	(1)	1	
Volume	(3)	5	
Portfolio & other	—	—	
Total	(16)%	7%	

2019 Versus 2018

Packaging & Specialty Plastics net sales were \$20,245 million in 2019, down 16 percent from net sales of \$24,195 million in 2018. Pro forma net sales were \$20,245 million in 2019, a decrease of 16 percent compared with pro forma net sales of \$24,237 million in 2018, with local price down 12 percent, volume down 3 percent, and an unfavorable currency impact of 1 percent, primarily in EMEAI. Local price decreased in both businesses and across all geographic regions driven by reduced polyethylene prices and lower prices for Hydrocarbons & Energy co-products. Volume declined for the segment in all geographic regions, except Asia Pacific. Hydrocarbons & Energy volume declines more than offset volume gains in Packaging and Specialty Plastics. Volume decreased in Hydrocarbons & Energy primarily due to planned maintenance turnaround activity in Europe, increased internal consumption of ethylene on the U.S. Gulf Coast and lighter feedstock usage in Europe, leading to lower co-product production. Volume increased in Packaging and Specialty Plastics in Asia Pacific and EMEAI. Packaging and Specialty Plastics volume growth was driven by strong end-market growth in flexible food and specialty packaging, industrial and consumer packaging, and health and hygiene applications.

Pro forma Operating EBIT was \$2,904 million in 2019, down 19 percent from pro forma Operating EBIT of \$3,593 million in 2018. Pro forma Operating EBIT decreased primarily due to lower selling prices, reduced equity earnings at the Kuwait joint ventures due to lower polyethylene margins, lower sales volume in the Hydrocarbons & Energy business and the impact of an outage in Argentina, which more than offset lower feedstock and other raw material costs, volume gains in the Packaging and Specialty Plastics business and cost synergies.

2018 Versus 2017

Packaging & Specialty Plastics net sales were \$24,195 million in 2018, up 13 percent from \$21,504 million in 2017. Pro forma net sales were \$24,237 million in 2018, up from pro forma net sales of \$22,546 million in 2017. Pro forma net sales increased 7 percent compared with 2017, with volume up 5 percent, a currency benefit of 1 percent, primarily in EMEAI, and local price up 1 percent. Volume increased in both businesses and across all geographic regions primarily due to new capacity additions on the U.S. Gulf Coast and increased supply from Sadara. Packaging and Specialty Plastics' volume growth was driven by increased demand in industrial and consumer packaging, food and specialty packaging, health and hygiene solutions and elastomer applications. Hydrocarbons & Energy volume increased primarily due to higher sales of ethylene and ethylene co-products. Local price increased in all geographic regions, except U.S. & Canada. Hydrocarbons & Energy local price increased as a result of higher Brent crude oil prices, which increased approximately 30 percent compared with 2017. Packaging and Specialty Plastics local price was flat when compared with 2017 as local price increases in Latin America were offset by declines in EMEAI.

Pro forma Operating EBIT was \$3,593 million in 2018, down 3 percent from pro forma Operating EBIT of \$3,712 million in 2017. Pro forma Operating EBIT decreased as the impact of higher feedstock and other raw materials costs, increased costs from planned maintenance turnarounds and the unfavorable impact of stranded costs more than offset higher sales volume, reflecting additional capacity from growth projects, higher selling prices, the benefit from currency on sales, cost synergies, higher equity earnings and lower startup and commissioning costs.

INDUSTRIAL INTERMEDIATES & INFRASTRUCTURE

Industrial Intermediates & Infrastructure consists of two customer-centric global businesses - Industrial Solutions and Polyurethanes & Construction Chemicals - that develop important intermediate chemicals that are essential to manufacturing processes, as well as downstream, customized materials and formulations that use advanced development technologies. These businesses primarily produce and market ethylene oxide and propylene oxide derivatives that are aligned to market segments as diverse as appliances, coatings, infrastructure and oil and gas. The global scale and reach of these businesses, world-class technology and R&D capabilities and materials science expertise enable the Company to be a premier solutions provider offering customers value-add sustainable solutions to enhance comfort, energy efficiency, product effectiveness and durability across a wide range of home comfort and appliances, building and construction, adhesives and lubricant applications, among others. This segment also includes a portion of the results of EQUATE, TKOC, Map Ta Phut Olefins Company Limited and Sadara, all joint ventures of the Company.

The Company is responsible for marketing a majority of Sadara products outside of the Middle East zone through the Company's established sales channels. As part of this arrangement, the Company purchases and sells Sadara products for a marketing fee.

Industrial Intermediates & Infrastructure			
In millions	2019	2018	2017
Net sales	\$ 13,440	\$ 15,447	\$ 12,951
Pro forma net sales	\$ 13,449	\$ 15,465	\$ 12,951
Pro forma Operating EBIT	\$ 845	\$ 1,767	\$ 1,470
Equity earnings (losses)	\$ (241)	\$ 284	\$ 172

Industrial Intermediates & Infrastructure			
Percentage change from prior year	2019	2018	2017
<i>Change in Net Sales from Prior Period due to:</i>			
Local price & product mix	(12)%	5%	10%
Currency	(1)	1	1
Volume	—	13	6
Portfolio & other	—	—	—
Total	(13)%	19%	17%
<i>Change in Pro Forma Net Sales from Prior Period due to:</i>			
Local price & product mix	(12)%	5%	
Currency	(2)	1	
Volume	1	13	
Portfolio & other	—	—	
Total	(13)%	19%	

2019 Versus 2018

Industrial Intermediates & Infrastructure net sales were \$13,440 million in 2019, down 13 percent from \$15,447 million in 2018. Pro forma net sales were \$13,449 million in 2019, down from pro forma net sales of \$15,465 million in 2018. Pro forma net sales decreased 13 percent in 2019, with local price down 12 percent and an unfavorable currency impact of 2 percent, primarily in EMEAI, which were partially offset by a 1 percent increase in volume. Price decreased in both businesses and all geographic regions, driven by lower feedstock and other raw material costs and unfavorable supply/demand fundamentals. Polyurethanes & Construction Chemicals reported volume increases in all geographic regions, primarily reflecting increased supply from Sadara and growth in polyurethanes systems applications, which were partially offset by a decline of caustic soda volume due to planned maintenance turnaround activities. Industrial Solutions volume decreased in EMEAI and U.S & Canada and was flat in Latin America and Asia Pacific, primarily driven by reduced availability of glycol ethers, performance solvents and monoethylene glycol due to planned and unplanned events that more than offset higher demand for industrial specialties.

Pro forma Operating EBIT was \$845 million in 2019, down 52 percent from pro forma Operating EBIT of \$1,767 million in 2018. Pro forma Operating EBIT decreased as a result of margin compression across both businesses as well as lower equity earnings from the Kuwait joint ventures and increased equity losses from Sadara, which more than offset cost reductions.

2018 Versus 2017

Industrial Intermediates & Infrastructure net sales were \$15,447 million in 2018, up 19 percent from \$12,951 million in 2017. Pro forma net sales were \$15,465 million in 2018, up from pro forma net sales of \$12,951 million in 2017. Pro forma net sales increased 19 percent in 2018, with volume up 13 percent, local price up 5 percent and a currency benefit of 1 percent, primarily in EMEA. Volume increased in both businesses and across all geographic regions. Polyurethanes & Construction Chemicals reported volume increases in all geographic regions, except Latin America, primarily reflecting increased supply from Sadara. Industrial Solutions volume increased in all geographic regions reflecting greater production from Sadara and increased demand in industrial specialties. Local price increased in both businesses and all geographic regions, except Asia Pacific. Local price increases were driven by higher feedstock and other raw material costs, pricing initiatives and strong demand for caustic soda, propylene glycols and propylene oxide which more than offset price declines in isocyanates.

Pro forma Operating EBIT was \$1,767 million in 2018, up 20 percent from pro forma Operating EBIT of \$1,470 million in 2017. Pro forma Operating EBIT increased as the impact of higher selling prices, cost synergies, higher equity earnings from the Kuwait joint ventures and lower equity losses from Sadara more than offset contraction in isocyanates margins, the unfavorable impact of stranded costs and higher feedstock and other raw material costs.

PERFORMANCE MATERIALS & COATINGS

Performance Materials & Coatings includes industry-leading franchises that deliver a wide array of solutions into consumer and infrastructure end-markets. The segment consists of two global businesses: Coatings & Performance Monomers and Consumer Solutions. These businesses primarily utilize the Company's acrylics-, cellulose- and silicone-based technology platforms to serve the needs of the architectural and industrial coatings, home care and personal care end-markets. Both businesses employ materials science capabilities, global reach and unique products and technology to combine chemistry platforms to deliver differentiated offerings to customers.

Performance Materials & Coatings			
In millions	2019	2018	2017
Net sales	\$ 8,923	\$ 9,677	\$ 8,892
Pro forma net sales	\$ 8,961	\$ 9,865	\$ 8,892
Pro forma Operating EBIT	\$ 918	\$ 1,246	\$ 817
Equity earnings	\$ 5	\$ 4	\$ 40

Performance Materials & Coatings			
Percentage change from prior year	2019	2018	2017
<i>Change in Net Sales from Prior Period due to:</i>			
Local price & product mix	(6)%	10%	8%
Currency	(2)	1	1
Volume	(3)	(2)	2
Portfolio & other	3	—	26
Total	(8)%	9%	37%
<i>Change in Pro Forma Net Sales from Prior Period due to:</i>			
Local price & product mix	(6)%	10%	
Currency	(2)	1	
Volume	(1)	(2)	
Portfolio & other	—	2	
Total	(9)%	11%	

2019 Versus 2018

Performance Materials & Coatings net sales were \$8,923 million in 2019, down 8 percent from net sales of \$9,677 million in 2018. Pro forma net sales were \$8,961 million in 2019, down 9 percent from pro forma net sales of \$9,865 million in 2018 with local price down 6 percent, an unfavorable currency impact of 2 percent and volume down 1 percent. Local price decreased in both businesses and all geographic regions. Local price decreased in Consumer Solutions due to lower siloxanes prices, primarily

in Asia Pacific and EMEAI. Coatings & Performance Monomers local price declined in all geographic regions in response to lower feedstock and other raw material costs. Volume for the segment declined in all geographic regions except Asia Pacific. Consumer Solutions volume was flat, with volume growth in Asia Pacific, offset by volume declines in Latin America and EMEAI. Consumer Solutions volume was flat in U.S. & Canada. Coatings & Performance Monomers volume declined in all geographic regions. The decline in volume was driven by increased captive use of coatings products which drove soft demand in coating applications, primarily architectural binders, and lower demand for acrylates and methacrylates due to supply/demand balances.

Pro forma Operating EBIT was \$918 million in 2019, down 26 percent from pro forma Operating EBIT of \$1,246 million in 2018. Pro forma Operating EBIT decreased primarily due to margin compression in both businesses, which more than offset lower planned maintenance turnaround spending and cost synergies.

2018 Versus 2017

Performance Materials & Coatings net sales were \$9,677 million in 2018, up from \$8,892 million in 2017. Pro forma net sales were \$9,865 million in 2018, up from pro forma net sales of \$8,892 million in 2017. Pro forma net sales increased 11 percent in 2018, with an increase in local price of 10 percent, a benefit of 2 percent from portfolio actions, a benefit from currency of 1 percent, primarily in EMEAI, and a decrease in volume of 2 percent. Local price increased in both businesses and all geographic regions. Consumer Solutions local price increased primarily due to disciplined price/volume management in upstream silicone intermediates, which more than offset a decrease in volume. Local price increased in Coatings & Performance Monomers in response to higher feedstock and other raw material costs and favorable supply/demand fundamentals. Volume decreased in both businesses and all geographic regions, except Asia Pacific. Volume decreased in Consumer Solutions primarily as a result of targeted reductions of low-margin business, primarily in the home care market sector. Volume decreased slightly for Coatings & Performance Monomers, with a decline in all geographic regions, except Asia Pacific.

Pro forma Operating EBIT was \$1,246 million in 2018, up 53 percent from pro forma Operating EBIT of \$817 million in 2017. Pro forma Operating EBIT improved compared with 2017 as higher selling prices and the favorable impact of cost synergies more than offset the unfavorable impact of stranded costs and higher feedstock and other raw material costs.

CORPORATE

Corporate includes certain enterprise and governance activities (including insurance operations, environmental operations, etc.); non-business aligned joint ventures; non-business aligned litigation expenses; and discontinued or non-aligned businesses.

Corporate			
In millions	2019	2018	2017
Net sales	\$ 343	\$ 285	\$ 383
Pro forma net sales	\$ 343	\$ 285	\$ 383
Pro forma Operating EBIT	\$ (315)	\$ (370)	\$ (422)
Equity losses	\$ (20)	\$ (20)	\$ (8)

2019 Versus 2018

Net sales and pro forma net sales for Corporate, which primarily relate to the Company's insurance operations, were \$343 million in 2019, up from net sales and pro forma net sales of \$285 million in 2018.

Pro forma Operating EBIT was a loss of \$315 million in 2019, compared with a pro forma Operating EBIT loss of \$370 million in 2018. Compared with 2018, pro forma Operating EBIT improved primarily due to cost reductions and stranded cost removal.

2018 Versus 2017

Net sales and pro forma net sales for Corporate were \$285 million in 2018, compared with net sales and pro forma net sales of \$383 million in 2017.

Pro forma Operating EBIT was a loss of \$370 million in 2018, compared with a loss of \$422 million in 2017. Compared with 2017, pro forma Operating EBIT improved primarily due to lower discontinued business costs and cost reductions.

OUTLOOK

Operating Segments & End-Market Expectations

In 2020, the Company expects crude oil, natural gas and feedstock costs to remain volatile and sensitive to external macroeconomic and geopolitical factors. The Company currently expects crude oil prices to be, on average, flat to slightly higher than 2019. Crude oil fundamentals suggest ample global supply to meet current demand; however, geopolitical tensions could add a risk premium that potentially supports higher prices.

The Company expects natural gas prices to be, on average, lower than 2019. In U.S. & Canada, robust supplies of natural gas are expected to keep domestic prices globally competitive. U.S. exports of liquefied natural gas ("LNG") are expected to increase further in 2020. In Europe, the supply of natural gas is expected to continue to be plentiful, both from pipeline supply and from growing LNG imports.

In Packaging & Specialty Plastics, integrated margins are expected to remain stable in U.S. & Canada, supported by delays in new capacity additions, solid underlying demand and regional feedstock cost advantages. Margins in Europe are expected to remain challenged as a result of weaker regional demand and flat to higher feedstock costs. Margins in Asia Pacific commenced 2020 slightly below break-even levels, while full year margins are expected to be comparable to the second half of 2019. Profitability could vary materially depending on global GDP growth, industry operating rates, timing of capacity startups and fluctuations in global crude oil, natural gas and feedstock prices. The Hydrocarbons & Energy business expects to bring online approximately 500,000 metric tons of additional ethylene capacity in Texas as part of its suite of incremental growth investments. The new capacity is expected to come online in the second quarter of 2020.

In Industrial Intermediates & Infrastructure, monoethylene glycol ("MEG") margins are expected to remain constrained in 2020 due to new industry capacity additions. End-market conditions for polyurethane intermediates are expected to remain highly competitive, with demand softness expected in key applications related to infrastructure, household appliances, automotive and furniture and bedding. Methyl diphenyl diisocyanate ("MDI") prices are expected to remain at low levels due to additional industry capacity and weak end-market fundamentals.

In Performance Materials & Coatings, prices for commodity siloxane products are expected to be similar to those observed in the second half of 2019. Downstream silicones volume is expected to grow in excess of GDP, particularly for applications related to home and personal care, high performance building and construction and pressure-sensitive adhesives. The Company will continue to pursue incremental downstream silicones capacity debottleneck projects to meet demand in consumer driven end-markets. Global architectural coatings demand is expected to remain soft in the do-it-yourself and retail market segments. Industrial coatings are also projected to soften in 2020; however, the Company's focus will be on capturing opportunities from customers' shift to waterborne chemistries where Dow has unique technologies and solutions.

Other factors impacting operating segment profitability include:

- Planned maintenance turnaround spending is expected to be approximately flat compared with 2019.
- Equity losses in nonconsolidated affiliates are expected to be slightly unfavorable compared with 2019. With respect to Sadara, which impacts the Packaging & Specialty Plastics and Industrial Intermediates & Infrastructure operating segments, the Company expects to continue to record equity losses due to anticipated funding commitments with the joint venture.

Other Income Statement Expectations

Additional items that may impact the consolidated statements of income in 2020 include:

- The service cost component of pension expense is expected to be flat compared with 2019. The non-operating pension benefit is expected to be a headwind of approximately \$125 million compared with 2019.
- Interest expense and amortization of debt discount is expected to be approximately \$850 million in 2020, reflecting lower gross debt compared with 2019.

Projected Uses of Cash

Items that may impact the consolidated statements of cash flows in 2020 include:

- Integration and separation spending is expected to be approximately \$200 million to \$250 million. Year over year reductions in integration and separation spending as well as cash payments related to the DowDuPont Cost Synergy Program will result in reduced cash spending of approximately \$1 billion compared with 2019.
- Cash contributions to global pension plans are expected to be limited to mandatory minimum contributions. The total cash outflow is projected to be approximately \$250 million.
- Capital expenditures are expected to be \$1.5 billion to \$1.75 billion. The Company will adjust its spending within this range through the year as economic conditions develop.
- The Company expects to loan approximately \$500 million to Sadara and all or a portion of the loan could potentially be converted into equity.
- The Company expects to preferentially deploy its free cash flow¹ in a balanced way between shareholder returns and debt reduction.

1. Dow defines free cash flow as cash flows from operating activities - continuing operations, excluding the impact of ASU 2016-15, less capital expenditures.

LIQUIDITY AND CAPITAL RESOURCES

The Company had cash and cash equivalents of \$2,367 million at December 31, 2019 and \$2,724 million at December 31, 2018, of which \$986 million at December 31, 2019 and \$2,013 million at December 31, 2018, was held by subsidiaries in foreign countries, including United States territories. The decrease in cash and cash equivalents held by subsidiaries in foreign countries is due to repatriation activities. For each of its foreign subsidiaries, the Company makes an assertion regarding the amount of earnings intended for permanent reinvestment, with the balance available to be repatriated to the United States.

The cash held by foreign subsidiaries for permanent reinvestment is generally used to finance the subsidiaries' operational activities and future foreign investments. Dow has the ability to repatriate additional funds to the U.S., which could result in an adjustment to the tax liability for foreign withholding taxes, foreign and/or U.S. state income taxes and the impact of foreign currency movements. At December 31, 2019, management believed that sufficient liquidity was available in the United States. The Company has and expects to continue repatriating certain funds from its non-U.S. subsidiaries that are not needed to finance local operations; however, these particular repatriation activities have not and are not expected to result in a significant incremental tax liability to the Company.

The Company's cash flows from operating, investing and financing activities, as reflected in the consolidated statements of cash flows, are summarized in the following table:

Cash Flow Summary In millions	<i>Dow Inc.</i>			<i>TDCC</i>		
	<i>2019</i>	<i>2018</i>	<i>2017¹</i>	<i>2019</i>	<i>2018</i>	<i>2017¹</i>
Cash provided by (used for):						
Operating activities - continuing operations	\$ 5,713	\$ 3,096	\$ (6,443)	\$ 5,706	\$ 3,096	\$ (6,443)
Operating activities - discontinued operations	217	1,158	1,514	371	1,158	1,514
Operating activities	5,930	4,254	(4,929)	6,077	4,254	(4,929)
Investing activities - continuing operations	(2,158)	(1,826)	6,793	(2,158)	(1,826)	6,793
Investing activities - discontinued operations	(34)	(369)	725	(34)	(369)	725
Investing activities	(2,192)	(2,195)	7,518	(2,192)	(2,195)	7,518
Financing activities - continuing operations	(4,077)	(5,351)	(3,275)	(4,224)	(5,351)	(3,275)
Financing activities - discontinued operations	(18)	(53)	(50)	(18)	(53)	(50)
Financing activities	(4,095)	(5,404)	(3,325)	(4,242)	(5,404)	(3,325)
Effect of exchange rate changes on cash, cash equivalents and restricted cash	(27)	(99)	320	(27)	(99)	320
Summary						
Decrease in cash, cash equivalents and restricted cash	(384)	(3,444)	(416)	(384)	(3,444)	(416)
Cash, cash equivalents and restricted cash at beginning of year	2,764	6,208	6,624	2,764	6,208	6,624
Cash, cash equivalents and restricted cash at end of year	\$ 2,380	\$ 2,764	\$ 6,208	\$ 2,380	\$ 2,764	\$ 6,208
Less: Restricted cash and cash equivalents, included in "Other current assets"	13	40	19	13	40	19
Cash and cash equivalents at end of year	\$ 2,367	\$ 2,724	\$ 6,189	\$ 2,367	\$ 2,724	\$ 6,189

1. Updated for ASU 2016-15, "Statement of Cash Flows (Topic 230): Classification of Certain Cash Receipts and Cash Payments" ("ASU 2016-15") (including related SEC interpretive guidance) and ASU 2016-18, "Statement of Cash Flows (Topic 230): Restricted Cash," which the Company adopted in 2018.

Cash Flows from Operating Activities

Cash provided by operating activities from continuing operations increased in 2019 compared with 2018. The increase was primarily due to improvements in working capital, a cash receipt related to the Nova ethylene asset matter, advance payments from customers for product supply agreements, lower pension contributions and higher dividends received from nonconsolidated affiliates, which were partially offset by a decrease in cash earnings. Cash provided by operating activities from continuing operations in 2018 improved from cash used for operating activities from continuing operations in 2017, primarily due to the change in the Company's accounts receivable securitization facilities discussed in the section titled "Non-GAAP Cash Flow Measures" and a decrease in cash used for working capital requirements, which were partially offset by the absence of certain cash receipts in 2017.

Net Working Capital at Dec 31 In millions	Dow Inc.		TDCC	
	2019	2018	2019	2018
Current assets ¹	\$ 16,815	\$ 19,470	\$ 16,733	\$ 19,470
Current liabilities ¹	10,679	11,059	10,150	11,059
Net working capital	\$ 6,136	\$ 8,411	\$ 6,583	\$ 8,411
Current ratio	1.57:1	1.76:1	1.65:1	1.76:1

1. Amounts exclude assets and liabilities of discontinued operations.

Working Capital Metrics	Twelve Months Ended	
	Dec 31, 2019	Dec 31, 2018
Days sales outstanding in trade receivables ¹	45	41
Days sales in inventory ²	65	58
Days payables outstanding ³	65	58

1. The increase in days sales outstanding in receivables was primarily due to an increase in accounts receivable as a result of the Company's accounts receivable securitization facilities moving from off-balance sheet arrangements to secured borrowing arrangements in the second half of 2018.

2. The increase in days sales in inventory is primarily due to a decrease in COS, driven by lower sales and raw material costs, in addition to an increase in average ending inventory.

3. The increase in days payables outstanding is primarily due to a decrease in average accounts payable and a decrease in COS, which were partially offset by an increase in average ending inventory.

Cash provided by operating activities from discontinued operations decreased in 2019 compared with 2018. The reduction was primarily due to the separation of AgCo and SpecCo on April 1, 2019. The Company had cash payments and receipts with DuPont and Corteva that related to certain agreements and matters related to the separation from DowDuPont. See Note 4 to the Consolidated Financial Statements for additional information. Cash provided by operating activities from discontinued operations decreased in 2018 compared with 2017, primarily due to changes in working capital requirements.

Cash Flows from Investing Activities

Cash used for investing activities from continuing operations in 2019 was primarily for capital expenditures, purchases of investments and investments in and loans to nonconsolidated affiliates, which were partially offset by proceeds from sales and maturities of investments. Cash used for investing activities from continuing operations in 2018 was primarily for capital expenditures and purchases of investments, which were partially offset by proceeds from sales and maturities of investments and proceeds from interests in trade accounts receivable conduits. Cash provided by investing activities from continuing operations in 2017 was primarily from proceeds from interests in trade accounts receivable conduits, proceeds from sales and maturities of investments and proceeds from divestitures, including the divestiture of the EAA Business, which were partially offset by capital expenditures, purchases of investments and investments in and loans to nonconsolidated affiliates, primarily with Sadara.

The Company loaned Sadara \$473 million in 2019 (zero in 2018 and \$735 million in 2017) and a portion of these loans has been converted to equity. In the fourth quarter of 2019, the Company reserved certain notes receivable and accrued interest balances with Sadara due to uncertainty around timing of collection. The Company expects to loan Sadara approximately \$500 million in 2020 and all or a portion of the loan could potentially be converted into equity. Additionally, the Company anticipates providing future financial support to Sadara through loans or capital contributions which will be subject to collectability assessments. See Note 13 to the Consolidated Financial Statements for additional information.

The Company's capital expenditures related to continuing operations, including capital expenditures of consolidated variable interest entities, were \$1,961 million in 2019, \$2,091 million in 2018 and \$2,807 million in 2017. The Company expects capital spending in 2020 to be in the range of \$1.5 billion to \$1.75 billion. The Company will adjust its spending within this range through the year as economic conditions develop.

Capital spending in 2019, 2018 and 2017 included spending related to certain U.S. Gulf Coast investment projects including: a world-scale ethylene production facility and an ELITE™ Enhanced Polyethylene production facility, both of which commenced operations in 2017; a NORDEL™ Metallocene EPDM production facility, a Low Density Polyethylene ("LDPE") production facility, a High Melt Index ("HMI") AFFINITY™ polymer production facility and debottlenecking of an existing bi-modal gas phase polyethylene production facility, all of which commenced operations in 2018; and an expansion of the Company's new ethylene production facility expected to commence operations in 2020, bringing the facility's total ethylene capacity to 2,000 kilotonnes per annum and making it the largest ethylene cracker in the world.

Cash used for investing activities from discontinued operations in 2019 was primarily for capital expenditures, partially offset by proceeds from the sales of property, businesses and ownership interests in nonconsolidated affiliates. Cash used for investing activities from discontinued operations in 2018 was primarily for capital expenditures, partially offset by proceeds from the sales of property and businesses. Cash provided by investing activities from discontinued operations in 2017 was primarily due to proceeds from the sale of property and businesses, which was partially offset by capital expenditures.

Cash Flows from Financing Activities

Cash used for financing activities from continuing operations in 2019 included payments on long-term debt and dividends paid to DowDuPont, which were partially offset by proceeds from issuance of long-term debt. In addition, Dow Inc. received cash as part of the separation from DowDuPont, which was more than offset by dividends paid to stockholders and purchases of treasury stock. Cash used for financing activities from continuing operations in 2018 included dividends paid to DowDuPont and payments of long-term debt, which were partially offset by proceeds from issuance of long-term debt. Cash used for financing activities in continuing operations in 2017 included dividends paid to stockholders through the close of the Merger, a dividend paid to DowDuPont in the fourth quarter of 2017, and payments of long-term debt. See Notes 16 and 19 to the Consolidated Financial Statements for additional information related to the issuance and retirement of debt and the Company's share repurchases and dividends.

Cash used for financing activities from discontinued operations in 2019, 2018 and 2017 primarily related to distributions to noncontrolling interests and employee taxes paid for share-based payment arrangements.

Non-GAAP Cash Flow Measures

Cash Flows from Operating Activities - Continuing Operations - Excluding Impact of ASU 2016-15

Cash flows from operating activities - continuing operations, excluding the impact of ASU 2016-15, is defined as cash provided by (used for) operating activities - continuing operations, excluding the impact of ASU 2016-15 and related interpretive guidance. Management believes this non-GAAP financial measure is relevant and meaningful as it presents cash flows from operating activities inclusive of all trade accounts receivable collection activity, which Dow utilizes in support of its operating activities.

Free Cash Flow

Dow defines free cash flow as cash flows from operating activities - continuing operations, excluding the impact of ASU 2016-15, less capital expenditures. Under this definition, free cash flow represents the cash generated by Dow from operations after investing in its asset base. Free cash flow, combined with cash balances and other sources of liquidity, represent the cash available to fund obligations and provide returns to shareholders. Free cash flow is an integral financial measure used in Dow's financial planning process.

Pro Forma Operating EBITDA

Dow defines pro forma operating EBITDA as pro forma earnings (i.e. "Pro forma income from continuing operations before income taxes") before interest, depreciation and amortization, excluding the impact of significant items.

Cash Flow Conversion (Pro Forma Operating EBITDA to Cash Flow From Operations)

Dow defines cash flow conversion (or pro forma Operating EBITDA to cash flow from operations) as cash flows from operating activities - continuing operations, excluding the impact of ASU 2016-15, divided by pro forma Operating EBITDA. Management believes cash flow conversion is an important financial metric as it helps the Company determine how efficiently it is converting its earnings into cash flow.

These financial measures are not recognized in accordance with U.S. GAAP and should not be viewed as alternatives to U.S. GAAP financial measures of performance. All companies do not calculate non-GAAP financial measures in the same manner and, accordingly, Dow's definitions may not be consistent with the methodologies used by other companies.

Reconciliation of Non-GAAP Cash Flow Measures In millions	<i>Dow Inc.</i>		
	<i>2019</i>	<i>2018</i>	<i>2017</i>
Cash provided by (used for) operating activities - continuing operations (GAAP)	\$ 5,713	\$ 3,096	\$ (6,443)
Impact of ASU 2016-15 and related interpretive guidance	—	657	9,462
Cash flows from operating activities - continuing operations - excluding impact of ASU 2016-15 (Non-GAAP)	\$ 5,713	\$ 3,753	\$ 3,019
Capital expenditures	(1,961)	(2,091)	(2,807)
Free cash flow (Non-GAAP)	\$ 3,752	\$ 1,662	\$ 212

Reconciliation of Cash Flow Conversion (Pro Forma Operating EBITDA to Cash Flow From Operations)	Dow Inc.		
	2019	2018	2017
In millions			
Income (loss) from continuing operations, net of tax (GAAP)	\$ (1,717)	\$ 2,940	\$ (1,287)
+ Provision for income taxes on continuing operations	470	809	1,524
Income (loss) from continuing operations before income taxes	\$ (1,247)	\$ 3,749	\$ 237
- Interest income	81	82	66
+ Interest expense and amortization of debt discount	933	1,063	914
+ Pro forma adjustments ¹	65	180	1,120
- Significant items	(4,682)	(1,326)	(3,372)
Pro forma Operating EBIT	\$ 4,352	\$ 6,236	\$ 5,577
+ Pro forma depreciation and amortization	2,938	2,909	2,684
Pro forma Operating EBITDA	\$ 7,290	\$ 9,145	\$ 8,261
Cash flows from operating activities - continuing operations - excluding impact of ASU 2016-15 (Non-GAAP)	\$ 5,713	\$ 3,753	\$ 3,019
Cash flow conversion (Pro Forma Operating EBITDA to cash flow from operations) (Non-GAAP)	78.4%	41.0%	36.5%

1. Pro forma adjustments include: (1) the margin impact of various manufacturing, supply and service related agreements entered into with DuPont and Corteva in connection with the separation which provide for different pricing than the historical intercompany and intracompany pricing practices of TDCC and Historical DuPont (included for 2019 and 2018 only), (2) the inclusion of ECP for the period of January 1, 2017 through August 31, 2017, (3) the removal of the amortization of ECP's inventory step-up recognized in connection with the Merger (4) the elimination of the impact of events directly attributable to the Merger, internal reorganization and business realignment, separation, distribution and other related transactions (e.g., one-time transaction costs) and (5) the elimination of the effect of a consummated divestiture agreed to with certain regulatory agencies as a condition of approval for the Merger. See Note 27 to the Consolidated Financial Statements for additional information.

Liquidity & Financial Flexibility

The Company's primary source of incremental liquidity is cash flows from operating activities. The generation of cash from operations and the Company's ability to access capital markets is expected to meet the Company's cash requirements for working capital, capital expenditures, debt maturities, contributions to pension plans, dividend distributions to stockholders, share repurchases and other needs. In addition to cash from operating activities, the Company's current liquidity sources also include TDCC's U.S. and Euromarket commercial paper programs, committed credit facilities, a committed accounts receivable facility, a U.S. retail note program ("InterNotes®") and other debt markets. Additional details on sources of liquidity are as follows:

Commercial Paper

TDCC issues promissory notes under its U.S. and Euromarket commercial paper programs. TDCC had \$151 million of commercial paper outstanding at December 31, 2019 (\$10 million at December 31, 2018). TDCC maintains access to the commercial paper market at competitive rates. Amounts outstanding under TDCC's commercial paper programs during the period may be greater or less than the amount reported at the end of the period. Subsequent to December 31, 2019, TDCC issued approximately \$1.5 billion of commercial paper.

Committed Credit Facilities

The Company also has the ability to access liquidity through TDCC's committed and available credit facilities. At December 31, 2019, TDCC had total committed credit facilities of \$9.4 billion and available credit facilities of \$7.4 billion. See Note 16 to the Consolidated Financial Statements for additional information on committed and available credit facilities.

In connection with the ownership restructure of Dow Silicones on May 31, 2016, Dow Silicones incurred \$4.5 billion of indebtedness under a certain third party credit agreement ("Term Loan Facility"). In the second quarter of 2019, Dow Silicones voluntarily repaid \$2.5 billion of principal on the Term Loan Facility. In September 2019, Dow Silicones amended the Term Loan Facility to extend the maturity date on the remaining principal balance of \$2 billion, making amounts borrowed under the Term Loan Facility repayable in September 2021. In addition, this amendment includes options to extend the maturity date through September 2023, at Dow Silicones' election, which the Company intends to exercise. See Note 16 to the Consolidated Financial Statements for additional information on the Term Loan Facility.

Letters of Credit

TDCC utilizes letters of credit to support commitments made in the ordinary course of business. While the terms and amounts of letters of credit change, TDCC generally has approximately \$400 million of outstanding letters of credit at any given time.

Shelf Registration - U.S.

On July 26, 2019, Dow Inc. and TDCC filed a shelf registration statement with the SEC. The shelf indicates that Dow Inc. may offer common stock; preferred stock; depositary shares; debt securities; guarantees; warrants to purchase common stock, preferred stock and debt securities; and stock purchase contracts and stock purchase units, with pricing and availability of any such offerings depending on market conditions. The shelf also indicates that TDCC may offer debt securities, guarantees and warrants to purchase debt securities, with pricing and availability of any such offerings depending on market conditions. Also on July 26, 2019, TDCC filed a new prospectus supplement under this shelf registration to register an unlimited amount of securities for issuance under InterNotes®.

Debt

As the Company continues to maintain its strong balance sheet and financial flexibility, management is focused on net debt (a non-GAAP financial measure), as the Company believes this is the best representation of its financial leverage at this point in time. As shown in the following table, net debt is equal to total gross debt minus "Cash and cash equivalents" and "Marketable securities." At December 31, 2019, net debt as a percent of total capitalization for Dow Inc. and TDCC increased to 50.9 percent and 49.6 percent, respectively, compared with 33.7 percent for both companies at December 31, 2018. The increase is primarily due to a reduction in stockholders' equity for both companies as a result of the separation from DowDuPont and a net loss in 2019, which was partially offset by a decrease in debt.

Total Debt at Dec 31 In millions	<i>Dow Inc.</i>		<i>TDCC</i>	
	<i>2019</i>	<i>2018</i>	<i>2019</i>	<i>2018</i>
Notes payable	\$ 586	\$ 298	\$ 586	\$ 298
Long-term debt due within one year	435	338	435	338
Long-term debt	15,975	19,253	15,975	19,253
Gross debt	\$ 16,996	\$ 19,889	\$ 16,996	\$ 19,889
- Cash and cash equivalents	2,367	2,724	2,367	2,724
- Marketable securities	21	100	21	100
Net debt	\$ 14,608	\$ 17,065	\$ 14,608	\$ 17,065
Gross debt as a percent of total capitalization	54.7%	37.2%	53.3%	37.2%
Net debt as a percent of total capitalization	50.9%	33.7%	49.6%	33.7%

In 2019, the Company issued \$2 billion of senior unsecured notes in an offering under Rule 144A of the Securities Act of 1933. The offering included \$750 million aggregate principal amount of 4.80 percent notes due 2049; \$750 million aggregate principal amount of 3.625 percent notes due 2026; and \$500 million aggregate principal amount of 3.15 percent notes due 2024. In addition, the Company redeemed \$1.5 billion of 4.25 percent notes issued by the Company with maturity in 2020 and \$1.25 billion of 4.125 percent notes issued by the Company with maturity in 2021.

In October 2019, TDCC launched exchange offers for \$4 billion of all the outstanding, unregistered senior notes that were issued in private offerings on November 30, 2018 and May 20, 2019, for identical, registered notes under the Securities Act of 1933 (the "Exchange Offers"). The Exchange Offers are with respect to the Company's 3.15 percent notes due 2024, 4.55 percent notes due 2025, 3.625 percent notes due 2026, 4.80 percent notes due 2028, 5.55 percent notes due 2048 and 4.80 percent notes due 2049, and fulfilled the Company's obligations contained in the registration rights agreements entered into in connection with the issuance of the aforementioned notes.

The Company may at any time repurchase certain debt securities in the open market or in privately negotiated transactions subject to: the applicable terms under which any such debt securities were issued, certain internal approvals of the Company, and applicable laws and regulations of the relevant jurisdiction in which any such potential transactions might take place. This in no way obligates the Company to make any such repurchases nor should it be considered an offer to do so.

TDCC's public debt instruments and primary, private credit agreements contain, among other provisions, certain customary restrictive covenant and default provisions. TDCC's most significant debt covenant with regard to its financial position is the obligation to maintain the ratio of its consolidated indebtedness to consolidated capitalization at no greater than 0.65 to 1.00 at any time the aggregate outstanding amount of loans under the Five Year Competitive Advance and Revolving Credit Facility Agreement ("Revolving Credit Agreement") equals or exceeds \$500 million. The ratio of TDCC's consolidated indebtedness as defined in the Revolving Credit Agreement was 0.51 to 1.00 at December 31, 2019. Management believes TDCC was in compliance with all of its covenants and default provisions at December 31, 2019.

On April 1, 2019, DowDuPont completed the separation of its materials science business and Dow Inc. became the direct parent company of TDCC. In conjunction with the separation, Dow Inc. is obligated, substantially concurrently with the issuance of any guarantee in respect of outstanding or committed indebtedness under the Revolving Credit Agreement, to enter into a supplemental indenture with TDCC and the trustee under TDCC's existing 2008 base indenture governing certain notes issued by TDCC. Under such supplemental indenture, Dow Inc. will guarantee all outstanding debt securities and all amounts due under such existing base indenture and will become subject to certain covenants and events of default under the existing base indenture.

In addition, the Revolving Credit Agreement includes an event of default which would be triggered in the event Dow Inc. incurs or guarantees third party indebtedness for borrowed money in excess of \$250 million or engages in any material activity or directly owns any material assets, in each case, subject to certain conditions and exceptions. Dow Inc. may, at its option, cure the event of default by delivering an unconditional and irrevocable guarantee to the administrative agent within thirty days of the event or events giving rise to such event of default.

No such events have occurred or have been triggered at the time of the filing of this Annual Report on Form 10-K. See Note 16 to the Consolidated Financial Statements for information related to TDCC's notes payable and long-term debt activity and information on TDCC's covenants and default provisions.

Management expects that the Company will continue to have sufficient liquidity and financial flexibility to meet all of its business obligations.

Credit Ratings

TDCC's credit ratings at January 31, 2020 were as follows:

Credit Ratings	Long-Term Rating	Short-Term Rating	Outlook
Standard & Poor's	BBB	A-2	Stable
Moody's Investors Service	Baa2	P-2	Stable
Fitch Ratings	BBB+	F2	Stable

Downgrades in TDCC's credit ratings will increase borrowing costs on certain indentures and could impact its ability to access debt capital markets.

Dividends

Dow Inc.

The following table provides dividends paid to common stockholders for the years ended December 31, 2019, 2018 and 2017:

Dividends Paid for the Years Ended Dec 31	2019 ¹	2018 ²	2017 ³
In millions, except per share amounts			
Dividends paid, per common share	\$ 2.10	N/A	\$ 1.84
Dividends paid to common stockholders	\$ 1,550	N/A	\$ 2,179

1. Reflects Dow Inc. activity subsequent to the separation from DowDuPont.

2. In 2018, the common stock of Dow Inc. and TDCC was owned solely by DowDuPont and therefore the Company did not have publicly traded stock.

3. Reflects TDCC activity prior to the Merger.

TDCC

Effective with the Merger, TDCC no longer has publicly traded common stock. From the Merger date through March 31, 2019, TDCC's common shares were owned solely by DowDuPont. Pursuant to the Merger Agreement, TDCC committed to fund a portion of DowDuPont's dividends paid to common stockholders and certain governance expenses. In addition, share repurchases by DowDuPont were partially funded by TDCC through 2018. Funding was accomplished through intercompany loans. On a quarterly basis, TDCC's Board of Directors reviewed and determined a dividend distribution to DowDuPont to settle the intercompany loans. The dividend distribution considered the level of TDCC's earnings and cash flows and the outstanding intercompany loan balances. For the year ended December 31, 2019, TDCC declared and paid dividends to DowDuPont of \$535 million (\$3,711 million for the year ended December 31, 2018 and \$1,056 for the year ended December 31, 2017). See Note 26 to the Consolidated Financial Statements for additional information.

Effective with the separation from DowDuPont on April 1, 2019, TDCC became a wholly owned subsidiary of Dow Inc. TDCC has committed to fund Dow Inc.'s dividends paid to common stockholders, share repurchases and certain governance expenses. Funding is accomplished through intercompany loans. TDCC's Board of Directors reviews and determines a dividend distribution to Dow Inc. to settle the intercompany loans. For the year ended December 31, 2019, TDCC declared and paid dividends to Dow Inc. of \$201 million. At December 31, 2019, TDCC's intercompany loan balance with Dow Inc. was zero. See Note 26 to the Consolidated Financial Statements for additional information.

Share Repurchase Program

Dow Inc.

On April 1, 2019, Dow Inc.'s Board of Directors ratified the share repurchase program originally approved on March 15, 2019, authorizing up to \$3 billion to be spent on the repurchase of the Company's common stock, with no expiration date. In 2019, Dow Inc. repurchased \$500 million of the Company's common stock. At December 31, 2019, approximately \$2.5 billion of the share repurchase program authorization remained available for repurchases. Dow Inc. expects to repurchase \$250 million of the Company's common stock in 2020.

TDCC

In 2013, TDCC's Board of Directors approved a share repurchase program. As a result of subsequent authorizations approved by TDCC's Board of Directors, the total authorized amount of the share repurchase program was \$9.5 billion. Effective with the Merger, the share repurchase program was canceled. Over the duration of the program, a total of \$8.1 billion was spent on the repurchase of TDCC Common Stock.

Pension Plans

The Company has both funded and unfunded defined benefit pension plans that cover employees in the United States and a number of other countries. As a result of the Company's separation from DowDuPont, the number of significant defined benefit pension plans administered by the Company decreased from 45 plans to 35 plans, with approximately \$270 million of net unfunded pension liabilities transferred to DowDuPont. Plans administered by other subsidiaries of DowDuPont that were transferred to the Company were not significant. There were no changes in the number of significant other postretirement benefit plans administered by the Company as a result of the separation. Existing Company plans that were significantly impacted by the transfer of active plan participants to DowDuPont were remeasured, resulting in curtailment gains and losses and recognition of special termination benefits.

In 2019, 2018 and 2017, the Company contributed \$261 million, \$1,651 million and \$1,672 million to its continuing operations pension plans respectively, including contributions to fund benefit payments for its non-qualified pension plans (\$266 million, \$1,656 million and \$1,676 million, including contributions to plans of discontinued operations). In the third quarter of 2018, the Company made a \$1,100 million discretionary contribution to its principal U.S. pension plan, which is included in the 2018 contribution amount above. The discretionary contribution was primarily based on the Company's funding policy, which permits contributions to defined benefit pension plans when economics encourage funding, and reflected considerations relating to tax deductibility and capital structure.

The provisions of a U.S. non-qualified pension plan require the payment of plan obligations to certain participants upon a change in control of the Company, which occurred at the time of the Merger. Certain participants could elect to receive a lump-sum payment or direct the Company to purchase an annuity on their behalf using the after-tax proceeds of the lump sum. In the fourth quarter of 2017, the Company paid \$940 million to plan participants and \$230 million to an insurance company for the purchase of annuities, which were included in "Pension contributions" in the consolidated statements of cash flows. The Company also paid \$205 million for income and payroll taxes for participants electing the annuity option. The Company recorded a settlement charge of \$687 million associated with the payout in the fourth quarter of 2017.

The Company expects to contribute approximately \$250 million to its pension plans in 2020. See Note 21 to the Consolidated Financial Statements for additional information concerning the Company's pension plans.

Restructuring, Goodwill Impairment and Asset Related Charges - Net

The activities related to the Synergy Program are expected to result in additional cash payments of approximately \$70 million, primarily through the second quarter of 2020, consisting of severance and related benefit costs and costs associated with exit and disposal activities, including environmental remediation (see Note 7 to the Consolidated Financial Statements). The Company expects to incur additional costs in the future related to its restructuring activities. Future costs are expected to include demolition costs related to closed facilities; these costs will be recognized as incurred. The Company also expects to incur additional employee-related costs, including involuntary termination benefits, related to its other optimization activities. These costs cannot be reasonably estimated at this time.

Integration and Separation Costs

Integration and separation costs, which reflect costs related to the Merger, post-Merger integration and business separation activities and costs related to the ownership restructure of Dow Silicones, were \$1,063 million and \$1,039 million in 2019 for Dow Inc. and TDCC, respectively, \$1,179 million in 2018 and \$798 million in 2017. Integration and separation costs related to post-Merger integration and business separation activities are expected to continue in 2020 for activities primarily involving the separation of information technology infrastructure and physical plant operations. Integration and separation costs are expected to result in additional cash expenditures of approximately \$200 million to \$250 million through the end of 2020.

Contractual Obligations

The following table summarizes the Company's contractual obligations, commercial commitments and expected cash requirements for interest at December 31, 2019. Additional information related to these obligations can be found in Notes 16, 17, 18 and 21 to the Consolidated Financial Statements.

Contractual Obligations at Dec 31, 2019	Payments Due In				Total
	2020	2021-2022	2023-2024	2025 and beyond	
In millions					
Dow Inc.					
Long-term debt obligations ¹	\$ 435	\$ 2,024	\$ 4,036	\$ 10,246	\$ 16,741
Expected cash requirements for interest ²	799	1,529	1,289	7,479	11,096
Pension and other postretirement benefits	379	909	1,944	7,214	10,446
Operating leases ³	492	777	504	803	2,576
Purchase obligations ⁴	2,548	4,162	3,664	4,737	15,111
Other noncurrent obligations ⁵	—	1,390	795	1,062	3,247
Total	\$ 4,653	\$ 10,791	\$ 12,232	\$ 31,541	\$ 59,217
TDCC					
Long-term debt obligations ¹	\$ 435	\$ 2,024	\$ 4,036	\$ 10,246	\$ 16,741
Expected cash requirements for interest ²	799	1,529	1,289	7,479	11,096
Pension and other postretirement benefits	379	909	1,944	7,214	10,446
Operating leases ³	492	777	504	803	2,576
Purchase obligations ⁴	2,548	4,162	3,664	4,737	15,111
Other noncurrent obligations ⁵	—	1,180	633	1,061	2,874
Total	\$ 4,653	\$ 10,581	\$ 12,070	\$ 31,540	\$ 58,844

1. Excludes unamortized debt discount and issuance costs of \$331 million. Includes finance lease obligations of \$395 million. Assumes the option to extend will be exercised for the \$2 billion Dow Silicones Term Loan Facility.

2. Cash requirements for interest on long-term debt was calculated using current interest rates at December 31, 2019, and includes \$2,344 million of various floating rate notes.

3. Includes imputed interest of \$416 million.

4. Includes outstanding purchase orders and other commitments greater than \$1 million obtained through a survey conducted within the Company.

5. Includes liabilities related to asbestos litigation, environmental remediation, legal settlements and other noncurrent liabilities. In addition to these items, Dow Inc. includes liabilities related to noncurrent obligations with DuPont and Corteva. The table excludes uncertain tax positions due to uncertainties in the timing of the effective settlement of tax positions with the respective taxing authorities and deferred tax liabilities as it is impractical to determine whether there will be a cash impact related to these liabilities. The table also excludes deferred revenue as it does not represent future cash requirements arising from contractual payment obligations.

The Company expects to meet its contractual obligations through its normal sources of liquidity and believes it has the financial resources to satisfy these contractual obligations.

Off-Balance Sheet Arrangements

Off-balance sheet arrangements are obligations the Company has with nonconsolidated entities related to transactions, agreements or other contractual arrangements. The Company holds variable interests in joint ventures accounted for under the equity method of accounting. The Company is not the primary beneficiary of these joint ventures and therefore is not required to consolidate these entities (see Note 25 to the Consolidated Financial Statements). In addition, see Note 15 to the Consolidated Financial Statements for information regarding the transfer of financial assets.

Guarantees arise during the ordinary course of business from relationships with customers, committed accounts receivable facilities and nonconsolidated affiliates when the Company undertakes an obligation to guarantee the performance of others if specific triggering events occur. The Company had outstanding guarantees at December 31, 2019 of \$3,952 million, compared with \$4,273 million at December 31, 2018. Additional information related to guarantees can be found in the "Guarantees" section of Note 17 to the Consolidated Financial Statements.

Fair Value Measurements

See Note 21 to the Consolidated Financial Statements for information related to fair value measurements of pension and other postretirement benefit plan assets; see Note 23 for information related to other-than-temporary impairments; and, see Note 24 for additional information concerning fair value measurements.

OTHER MATTERS**Recent Accounting Guidance**

See Note 2 to the Consolidated Financial Statements for a summary of recent accounting guidance.

Critical Accounting Estimates

The preparation of financial statements and related disclosures in accordance with accounting principles generally accepted in the United States of America ("U.S. GAAP") requires management to make judgments, assumptions and estimates that affect the amounts reported in the consolidated financial statements and accompanying notes. Note 1 to the Consolidated Financial Statements describes the significant accounting policies and methods used in the preparation of the consolidated financial statements. Following are the Company's accounting policies impacted by judgments, assumptions and estimates:

Litigation

The Company is subject to legal proceedings and claims arising out of the normal course of business including product liability, patent infringement, employment matters, governmental tax and regulation disputes, contract and commercial litigation and other actions. The Company routinely assesses the legal and factual circumstances of each matter, the likelihood of any adverse outcomes to these matters, as well as ranges of probable losses. A determination of the amount of the reserves required, if any, for these contingencies is made after thoughtful analysis of each known claim. The Company has an active risk management program consisting of numerous insurance policies secured from many carriers covering various timeframes. These policies may provide coverage that could be utilized to minimize the financial impact, if any, of certain contingencies. The required reserves may change in the future due to new developments in each matter. For further discussion, see Note 17 to the Consolidated Financial Statements.

Asbestos-Related Matters of Union Carbide Corporation

Union Carbide is and has been involved in a large number of asbestos-related suits filed primarily in state courts during the past four decades. These suits principally allege personal injury resulting from exposure to asbestos-containing products and frequently seek both actual and punitive damages. The alleged claims primarily relate to products that Union Carbide sold in the past, alleged exposure to asbestos-containing products located on Union Carbide's premises, and Union Carbide's responsibility for asbestos suits filed against a former Union Carbide subsidiary, Amchem Products, Inc. ("Amchem"). Each year, Ankura Consulting Group, LLC ("Ankura") performs a review for Union Carbide based upon historical asbestos claims, resolution and asbestos-related defense and processing costs, through the terminal year of 2049. Union Carbide compares current asbestos claim and resolution activity, including asbestos-related defense and processing costs, to the results of the most recent Ankura study at each balance sheet date to determine whether the asbestos-related liability continues to be appropriate.

For additional information, see Part I, Item 3. Legal Proceedings; Asbestos-Related Matters of Union Carbide Corporation in Management's Discussion and Analysis of Financial Condition and Results of Operations; and Notes 1 and 17 to the Consolidated Financial Statements.

Environmental Matters

The Company determines the costs of environmental remediation of its facilities and formerly owned facilities based on evaluations of current law and existing technologies. Inherent uncertainties exist in such evaluations primarily due to unknown environmental conditions, changing governmental regulations and legal standards regarding liability, and emerging remediation technologies. The recorded liabilities are adjusted periodically as remediation efforts progress, or as additional technical or legal information becomes available. At December 31, 2019, the Company had accrued obligations of \$1,155 million for probable environmental remediation and restoration costs, including \$207 million for the remediation of Superfund sites. This is management's best estimate of the costs for remediation and restoration with respect to environmental matters for which the Company has accrued liabilities, although it is reasonably possible that the ultimate cost with respect to these particular matters could range up to approximately one and a half times that amount. For further discussion, see Environmental Matters in Management's Discussion and Analysis of Financial Condition and Results of Operations and Notes 1 and 17 to the Consolidated Financial Statements.

Goodwill

The Company performs goodwill impairment testing at the reporting unit level. Reporting units are the level at which discrete financial information is available and reviewed by business management on a regular basis. The Company tests goodwill for impairment annually (in the fourth quarter), or more frequently when events or changes in circumstances indicate it is more likely than not that the fair value of a reporting unit has declined below its carrying value. Goodwill is evaluated for impairment using

qualitative and/or quantitative testing procedures. The separation from DowDuPont on April 1, 2019, did not impact the composition of the Company's six reporting units: Coatings & Performance Monomers, Consumer Solutions, Hydrocarbons & Energy, Industrial Solutions, Packaging and Specialty Plastics and Polyurethanes & Construction Chemicals. The ECP businesses received as part of the separation from DowDuPont are included in the Hydrocarbons & Energy and Packaging and Specialty Plastics reporting units. At December 31, 2019, goodwill was carried by five out of six of the Company's reporting units.

The Company has the option to first perform qualitative testing to determine whether it is more likely than not that the fair value of a reporting unit is less than its carrying value. Qualitative factors assessed at the Company level include, but are not limited to, GDP growth rates, long-term hydrocarbon and energy prices, equity and credit market activity, discount rates, foreign exchange rates and overall financial performance. Qualitative factors assessed at the reporting unit level include, but are not limited to, changes in industry and market structure, competitive environments, planned capacity and new product launches, cost factors such as raw material prices, and financial performance of the reporting unit. If the Company chooses not to complete a qualitative assessment for a given reporting unit or if the initial assessment indicates that it is more likely than not that the estimated fair value of a reporting unit is less than its carrying value, additional quantitative testing is required.

Quantitative testing requires the fair value of the reporting unit to be compared with its carrying value. If the reporting unit's carrying value exceeds its fair value, an impairment charge is recognized for the difference. The Company utilizes a discounted cash flow methodology to calculate the fair value of its reporting units. This valuation technique has been selected by management as the most meaningful valuation method due to the limited number of market comparables for the Company's reporting units. However, where market comparables are available, the Company includes EBIT/EBITDA multiples as part of the reporting unit valuation analysis. The discounted cash flow valuations are completed using the following key assumptions: projected revenue growth rates or compounded annual growth rates, discount rates, tax rates, terminal values, currency exchange rates, and forecasted long-term hydrocarbon and energy prices, by geographic region and by year, which include the Company's key feedstocks as well as natural gas and crude oil (due to its correlation to naphtha). Currency exchange rates and long-term hydrocarbon and energy prices are established for the Company as a whole and applied consistently to all reporting units, while revenue growth rates, discount rates and tax rates are established by reporting unit to account for differences in business fundamentals and industry risk. These key assumptions drive projected EBIT/EBITDA and EBIT/EBITDA margins, which are key elements of management's internal control over the reporting unit valuation analysis.

2019 Goodwill Impairment Testing

In the fourth quarter of 2019, quantitative testing was performed on two reporting units and a qualitative assessment was performed for the remaining reporting units. For the qualitative assessments, management considered the factors at both the Company level and the reporting unit level. Based on the qualitative assessment, management concluded it is not more likely than not that the fair value of the reporting unit is less than the carrying value of the reporting unit.

Upon completion of the quantitative testing in the fourth quarter of 2019, the Company determined the Coatings & Performance Monomers ("C&PM") reporting unit was impaired. During 2019, the C&PM reporting unit did not consistently meet expected financial performance targets, primarily due to the industry's increased captive use of coatings products, which led to volume reductions, reduced margins for products across the portfolio due to changes in customer buying patterns and supply and demand balances, as well as a continued trend of customer consolidation in end markets, which reduced growth opportunities. As a result, the C&PM reporting unit lowered its future revenue and profitability projections, which were used in determining the fair value of the C&PM reporting unit using a discounted cash flow methodology. These discounted cash flows did not support the carrying value of the C&PM reporting unit. As a result, the Company recorded a goodwill impairment charge of \$1,039 million in the fourth quarter of 2019. The C&PM reporting unit did not carry a goodwill balance at December 31, 2019. The fair value of the other reporting unit exceeded its carrying value and no other goodwill impairments were identified as a result of the 2019 testing.

Pension and Other Postretirement Benefits

As a result of the Company's separation from DowDuPont, the number of defined benefit pension plans administered by the Company decreased from 45 plans to 35 plans, with approximately \$270 million of net unfunded pension liabilities transferring to DowDuPont. Plans administered by other subsidiaries of DowDuPont that were transferred to the Company were not significant. There were no changes in the number of other postretirement benefit plans administered by the Company as a result of the separation.

The amounts recognized in the consolidated financial statements related to pension and other postretirement benefits are determined from actuarial valuations. Inherent in these valuations are assumptions including expected return on plan assets, discount rates at which the liabilities could have been settled at December 31, 2019, rate of increase in future compensation levels, mortality rates and health care cost trend rates. These assumptions are updated annually and are disclosed in Note 21 to the Consolidated Financial Statements. In accordance with U.S. GAAP, actual results that differ from the assumptions are accumulated and amortized over future periods and, therefore, affect expense recognized and obligations recorded in future periods. The U.S. pension plans represent 71 percent of the Company's pension plan assets and 70 percent of the pension obligations.

The Company uses the spot rate approach to determine the discount rate utilized to measure the service cost and interest cost components of net periodic pension and other postretirement benefit costs for the U.S. and other selected countries. Under the spot rate approach, the Company calculates service costs and interest costs by applying individual spot rates from the Willis Towers Watson RATE:Link yield curve (based on high-quality corporate bond yields) for each selected country to the separate expected cash flow components of service cost and interest cost; service cost and interest cost for all other plans (including all plans prior to adoption) are determined on the basis of the single equivalent discount rates derived in determining those plan obligations.

The following information relates to the U.S. plans only; a similar approach is used for the Company's non-U.S. plans.

The Company determines the expected long-term rate of return on assets by performing a detailed analysis of historical and expected returns based on the strategic asset allocation approved by the Company's Investment Committee and the underlying return fundamentals of each asset class. The Company's historical experience with the pension fund asset performance is also considered. The expected return of each asset class is derived from a forecasted future return confirmed by historical experience. The expected long-term rate of return is an assumption and not what is expected to be earned in any one particular year. The weighted-average long-term rate of return assumption used for determining net periodic pension expense for 2019 was 7.92 percent. The weighted-average assumption to be used for determining 2020 net periodic pension expense is 7.95 percent. Future actual pension expense will depend on future investment performance, changes in future discount rates and various other factors related to the population of participants in the Company's pension plans.

The discount rates utilized to measure the pension and other postretirement obligations of the U.S. qualified plans are based on the yield on high-quality corporate fixed income investments at the measurement date. Future expected actuarially determined cash flows for the Company's U.S. plans are individually discounted at the spot rates under the Willis Towers Watson U.S. RATE:Link 60-90 corporate yield curve (based on 60th to 90th percentile high-quality corporate bond yields) to arrive at the plan's obligations as of the measurement date. The weighted average discount rate utilized to measure pension obligations decreased to 3.41 percent at December 31, 2019, from 4.39 percent at December 31, 2018.

At December 31, 2019, the U.S. qualified plans were underfunded on a projected benefit obligation basis by \$4,768 million. The underfunded amount increased \$702 million compared with December 31, 2018. The increase in the underfunded amount in 2019 was primarily due to the impact of lower discount rates, which was partially offset by the reduction in the number of active U.S. pension plan participants after the Company's separation from DowDuPont. The Company did not make contributions to the U.S. qualified plans in 2019.

The assumption for the long-term rate for the compensation levels for the U.S. qualified plans was unchanged. The Company uses a generational mortality table to determine the duration of its pension and other postretirement obligations.

The following discussion relates to the Company's significant pension plans.

The Company bases the determination of pension expense on a market-related valuation of plan assets that reduces year-to-year volatility. This market-related valuation recognizes investment gains or losses over a five-year period from the year in which they occur. Investment gains or losses for this purpose represent the difference between the expected return calculated using the market-related value of plan assets and the actual return based on the market value of plan assets. Since the market-related value of plan assets recognizes gains or losses over a five-year period, the future value will be impacted when previously deferred gains or losses are recorded. Over the life of the plans, both gains and losses have been recognized and amortized. At December 31, 2019, net gains of \$566 million remain to be recognized in the calculation of the market-related value of plan assets. These net gains will result in decreases in future pension expense as they are recognized in the market-related value of assets.

The net increase in the market-related value of assets due to the recognition of prior gains (losses) is presented in the following table:

Net Increase in Market-Related Asset Value Due to Recognition of Prior Gains (Losses)	
In millions	
2020	\$ 93
2021	129
2022	(48)
2023	392
Total	\$ 566

At December 31, 2019, the Company expects pension expense from continuing operations to increase in 2020 by approximately \$125 million. The increase in pension expense is primarily due to the decrease in discount rates and curtailment gains of \$27 million recognized in 2019 that are not expected to recur in 2020.

A 25 basis point increase or decrease in the long-term return on assets assumption would change the Company's total pension expense for 2020 by \$59 million. A 25 basis point increase in the discount rate assumption would lower the Company's total pension expense for 2020 by \$54 million. A 25 basis point decrease in the discount rate assumption would increase the Company's total pension expense for 2020 by \$56 million. A 25 basis point change in the long-term return and discount rate assumptions would have an immaterial impact on the other postretirement benefit expense for 2020.

Income Taxes

Deferred tax assets and liabilities are determined based on temporary differences between the financial reporting and tax bases of assets and liabilities, applying enacted tax rates expected to be in effect for the year in which the differences are expected to reverse. Based on the evaluation of available evidence, both positive and negative, the Company recognizes future tax benefits, such as net operating loss carryforwards and tax credit carryforwards, to the extent that realizing these benefits is considered to be more likely than not.

At December 31, 2019, the Company had a net deferred tax asset balance of \$1,866 million, after valuation allowances of \$1,262 million.

In evaluating the ability to realize the deferred tax assets, the Company relies on, in order of increasing subjectivity, taxable income in prior carryback years, the future reversals of existing taxable temporary differences, tax planning strategies and forecasted taxable income using historical and projected future operating results.

At December 31, 2019, the Company had deferred tax assets for tax loss and tax credit carryforwards of \$1,920 million, \$295 million of which is subject to expiration in the years 2020 through 2024. In order to realize these deferred tax assets for tax loss and tax credit carryforwards, the Company needs taxable income of approximately \$27,010 million across multiple jurisdictions. The taxable income needed to realize the deferred tax assets for tax loss and tax credit carryforwards that are subject to expiration between 2020 through 2024 is approximately \$3,388 million.

The Company recognizes the financial statement effects of an uncertain income tax position when it is more likely than not, based on technical merits, that the position will be sustained upon examination. At December 31, 2019, the Company had uncertain tax positions for both domestic and foreign issues of \$319 million.

The Company accrues for non-income tax contingencies when it is probable that a liability to a taxing authority has been incurred and the amount of the contingency can be reasonably estimated. At December 31, 2019, the Company had a non-income tax contingency reserve for both domestic and foreign issues of \$44 million.

Indemnification Assets and Liabilities

In connection with the 2019 separation from DowDupont and the 2016 ownership restructure of Dow Silicones, Dow entered into agreements that established each party's indemnification obligations for certain tax, environmental, litigation and other matters, subject to certain conditions and limits. The Company records indemnification assets when collection is deemed probable and engages with indemnifying parties and assesses publicly available information to evaluate collectability. The underlying tax, environmental, litigation and other liabilities for which the Company claims indemnification are subject to significant judgment and potential disputes could adversely impact collectability. The Company assesses the collectability of indemnification assets when events or changes in circumstances indicate the carrying values may not be recoverable. At December 31, 2019, indemnification assets were \$210 million and \$100 million for Dow Inc. and TDCC respectively (zero for both at December 31, 2018).

The Company records indemnification liabilities when it is probable that a liability has been incurred and the amount can be reasonably estimated. At December 31, 2019, indemnification liabilities related to the agreements were \$848 million for Dow Inc. and zero for TDCC (zero for both at December 31, 2018). This represents management's best estimate of the Company's obligations under the agreements, although it is reasonably possible that future events could cause the actual values to be higher or lower than those projected or those recorded. For further discussion, see Notes 4 and 17 to the Consolidated Financial Statements.

Environmental Matters

Environmental Policies

Dow is committed to world-class environmental, health and safety (“EH&S”) performance, as demonstrated by industry-leading performance, a long-standing commitment to Responsible Care®, and a strong commitment to achieve the Company's 2025 Sustainability Goals – goals that set the standard for sustainability in the chemical industry by focusing on improvements in the Company’s local corporate citizenship and product stewardship, and by actively pursuing methods to reduce its environmental impact.

To meet the Company’s public commitments, as well as the stringent laws and government regulations related to environmental protection and remediation to which its global operations are subject, the Company has well-defined policies, requirements and management systems. The Company's EH&S Management System (“EMS”) defines the “who, what, when and how” needed for the businesses to achieve the Company’s policies, requirements, performance objectives, leadership expectations and public commitments. To ensure effective utilization, the EMS is integrated into a company-wide management system for EH&S, Operations, Quality and Human Resources.

It is the Company's policy to adhere to a waste management hierarchy that minimizes the impact of wastes and emissions on the environment. First, work to eliminate or minimize the generation of waste and emissions at the source through research, process design, plant operations and maintenance. Second, find ways to reuse and recycle materials. Finally, unusable or non-recyclable hazardous waste is treated before disposal to eliminate or reduce the hazardous nature and volume of the waste. Treatment may include destruction by chemical, physical, biological or thermal means. Disposal of waste materials in landfills is considered only after all other options have been thoroughly evaluated. The Company has specific requirements for waste that is transferred to non-Dow facilities, including the periodic auditing of these facilities.

The Company believes third-party verification and transparent public reporting are cornerstones of world-class EH&S performance and building public trust. Numerous Dow sites in Europe, Latin America, Asia Pacific and U.S. & Canada have received third-party verification of the Company’s compliance with Responsible Care® and with outside specifications such as ISO-14001. The Company continues to be a global champion of Responsible Care® and has worked to broaden the application and impact of Responsible Care® around the world through engagement with suppliers, customers and joint venture partners.

The Company’s EH&S policies helped to achieve improvements in many aspects of EH&S performance in 2019. The Company’s process safety performance was excellent in 2019 and improvements were made in injury/illness rates, and safety remains a priority. Further improvement in these areas, as well as environmental compliance, remains a top management priority, with initiatives underway to further improve performance and compliance in 2020 as the Company continues to implement the 2025 Sustainability Goals.

Detailed information on Dow’s performance regarding environmental matters and goals can be found online on the Company's Science & Sustainability webpage at www.dow.com/sustainability. The website and its content are not deemed incorporated by reference into this report.

Chemical Security

Public and political attention continues to be placed on the protection of critical infrastructure, including the chemical industry, from security threats. Terrorist attacks, natural disasters and cyber incidents have increased concern about the security and safety of chemical production and distribution. Many, including the Company and the American Chemistry Council, have called for uniform risk-based and performance-based national standards for securing the U.S. chemical industry. The Maritime Transportation Security Act of 2002 and its regulations further set forth risk-based and performance-based standards that must be met at U.S. Coast Guard-regulated facilities. U.S. Chemical Plant Security legislation was passed in 2006 and the Department of Homeland Security is now implementing the regulations known as the Chemical Facility Anti-Terrorism Standards. The Company is complying with the requirements of the Rail Transportation Security Rule issued by the U.S. Transportation Security Administration. The Company continues to support uniform risk-based national standards for securing the chemical industry.

The focus on security, emergency planning, preparedness and response is not new to the Company. A comprehensive, multi-level security plan has been maintained since 1988. This plan, which has been activated in response to significant world and national events since then, is reviewed on an annual basis. The Company continues to improve its security plans, placing emphasis on the safety of Dow communities and people by being prepared to meet risks at any level and to address both internal and external identifiable risks. The security plan includes regular vulnerability assessments, security audits, mitigation efforts and physical security upgrades designed to reduce vulnerability. The Company’s security plans also are developed to avert interruptions of normal business operations that could materially and adversely affect the Company’s results of operations, liquidity and financial condition.

The Company played a key role in the development and implementation of the American Chemistry Council's Responsible Care® Security Code ("Security Code"), which requires that all aspects of security – including facility, transportation and cyberspace – be assessed and gaps addressed. Through the global implementation of the Security Code, the Company has permanently heightened the level of security – not just in the U.S., but worldwide. The Company employs several hundred employees and contractors in its Emergency Services and Security department worldwide. In 2019, the Company established its Global Security Operations Center ("GSOC") to provide 24-hour/day, 365-day/year real-time monitoring of global risks to Dow assets and people. The GSOC employs state-of-the-art social media monitoring, threat reporting and geo-fencing capabilities to analyze global risks and report those risks facilitating decision-making and actions to prevent Dow crises.

Through the implementation of the Security Code, including voluntary security enhancements and upgrades made since 2002, the Company is well-positioned to comply with U.S. chemical facility regulations and other regulatory security frameworks. The Company is currently participating with the American Chemistry Council to review and update the Security Code.

The Company continues to work collaboratively across the supply chain on Responsible Care®, Supply Chain Design, Emergency Preparedness, Shipment Visibility and transportation of hazardous materials. The Company is cooperating with public and private entities to lead the implementation of advanced tank car design, and track and trace technologies. Further, the Company's Distribution Risk Review process that has been in place for decades was expanded to address potential threats in all modes of transportation across the Company's supply chain. To reduce vulnerabilities, the Company maintains security measures that meet or exceed regulatory and industry security standards in all areas in which they operate.

The Company's initiatives relative to chemical security, emergency preparedness and response, Community Awareness and Emergency Responses and crisis management are implemented consistently at all Dow sites on a global basis. The Company participates with chemical associations globally and participates as an active member of the U.S. delegation to the G7 Global Partnership Sub-Working Group on Chemical Security.

Climate Change

Climate change matters for the Company are likely to be driven by changes in regulations, public policy and physical climate parameters.

Regulatory Matters

Regulatory matters include cap and trade schemes; increased greenhouse gas ("GHG") limits; and taxes on GHG emissions, fuel and energy. The potential implications of each of these matters are all very similar, including increased cost of purchased energy, additional capital costs for installation or modification of GHG emitting equipment, and additional costs associated directly with GHG emissions (such as cap and trade systems or carbon taxes), which are primarily related to energy use. It is difficult to estimate the potential impact of these regulatory matters on energy prices.

Reducing the Company's overall energy usage and GHG emissions through new and unfolding projects will decrease the potential impact of these regulatory matters. The Company also has a dedicated commercial group to handle energy contracts and purchases, including managing emissions trading. The Company has not experienced any material impact related to regulated GHG emissions, and continues to evaluate and monitor this area for future developments.

Physical Climate Parameters

Many scientific academies throughout the world have concluded that it is very likely that human activities are contributing to global warming. At this point, it is difficult to predict and assess the probability and opportunity of a global warming trend on the Company specifically. Preparedness plans are developed that detail actions needed in the event of severe weather. These measures have historically been in place and these activities and associated costs are driven by normal operational preparedness. Dow continues to study the long-term implications of changing climate parameters on water availability, plant siting issues, and impacts and opportunities for products.

Dow's Energy business and Public Affairs and Sustainability functions are tasked with developing and implementing a comprehensive strategy that addresses the potential challenges of energy security and GHG emissions on the Company. Dow continues to elevate its internal focus and external positions - to focus on the root causes of GHG emissions - including the unsustainable use of energy. The Company's energy plan provides the roadmap:

- Conserve - aggressively pursue energy efficiency and conservation
- Optimize - increase and diversify energy resources
- Accelerate - develop cost-effective, clean, renewable and alternative energy sources
- Transition - to a sustainable energy future

Through corporate energy efficiency programs and focused GHG management efforts, the Company has and is continuing to reduce its GHG emissions footprint. Dow's manufacturing intensity, measured in Btu per pound of product, has improved by more than 40 percent since 1990. As part of the 2025 Sustainability Goals, the Company will maintain GHG emissions below 2006 levels on an absolute basis for all GHGs.

The Company intends to implement the recommendations of the Financial Stability Board's Task Force on Climate-related Financial Disclosures ("Task Force") over the next three years, which is aligned with the recommendations of the Task Force.

Environmental Remediation

The Company accrues the costs of remediation of its facilities and formerly owned facilities based on current law and regulatory requirements. The nature of such remediation can include management of soil and groundwater contamination. The accounting policies adopted to properly reflect the monetary impacts of environmental matters are discussed in Note 1 to the Consolidated Financial Statements. To assess the impact on the financial statements, environmental experts review currently available facts to evaluate the probability and scope of potential liabilities. Inherent uncertainties exist in such evaluations primarily due to unknown environmental conditions, changing governmental regulations and legal standards regarding liability, and the ability to apply remediation technologies. These liabilities are adjusted periodically as remediation efforts progress or as additional technical or legal information becomes available. The Company had an accrued liability of \$948 million at December 31, 2019, related to the remediation of current or former Dow-owned sites. At December 31, 2018, the liability related to remediation was \$654 million.

In addition to current and former Dow-owned sites, under the federal Comprehensive Environmental Response, Compensation and Liability Act ("CERCLA") and equivalent state laws (hereafter referred to collectively as "Superfund Law"), the Company is liable for remediation of other hazardous waste sites where the Company allegedly disposed of, or arranged for the treatment or disposal of, hazardous substances. Because Superfund Law imposes joint and several liability upon each party at a site, the Company has evaluated its potential liability in light of the number of other companies that also have been named potentially responsible parties ("PRPs") at each site, the estimated apportionment of costs among all PRPs, and the financial ability and commitment of each to pay its expected share. The Company's remaining liability for the remediation of Superfund sites was \$207 million at December 31, 2019 (\$156 million at December 31, 2018). The Company has not recorded any third-party recovery related to these sites as a receivable.

Information regarding environmental sites is provided below:

Environmental Sites	<i>Dow-owned Sites</i> ¹		<i>Superfund Sites</i> ²	
	2019	2018	2019	2018
Number of sites at Jan 1	178	181	131	131
Sites added during year	7	3	6	2
Sites closed during year	(7)	(6)	(4)	(2)
Number of sites at Dec 31	178	178	133	131

1. Dow-owned sites are sites currently or formerly owned by the Company. In the United States, remediation obligations are imposed by the Resource Conservation and Recovery Act or analogous state law. At December 31, 2019, 28 of these sites (32 sites at December 31, 2018) were formerly owned by Dowell Schlumberger, Inc., a group of companies in which the Company previously owned a 50 percent interest. The Company sold its interest in Dowell Schlumberger in 1992.

2. Superfund sites are sites, including sites not owned by the Company, where remediation obligations are imposed by Superfund Law.

Additional information is provided below for the Company's Midland, Michigan, manufacturing site and Midland off-site locations (collectively, the "Midland sites"), as well as a Superfund site in Wood-Ridge, New Jersey, the locations for which the Company has the largest potential environmental liabilities.

In the early days of operations at the Midland manufacturing site, wastes were usually disposed of on-site, resulting in soil and groundwater contamination, which has been contained and managed on-site under a series of Resource Conservation and Recovery Act permits and regulatory agreements. The Hazardous Waste Operating License for the Midland manufacturing site, issued in 2003, and renewed and replaced in September 2015, also included provisions for the Company to conduct an investigation to determine the nature and extent of off-site contamination from historic Midland manufacturing site operations. In January 2010, the Company, the U.S. Environmental Protection Agency ("EPA") and the State of Michigan ("State") entered into an Administrative Order on Consent that requires the Company to conduct a remedial investigation, a feasibility study and a remedial design for the Tittabawassee River, the Saginaw River and the Saginaw Bay, and pay the oversight costs of the EPA and the State under the authority of CERCLA. See Note 17 to the Consolidated Financial Statements for further information relating to Midland off-site environmental matters.

Rohm and Haas, a wholly owned subsidiary of the Company, is a PRP at the Wood-Ridge, New Jersey Ventron/Velsicol Superfund Site, and the adjacent Berry's Creek Study Area ("BCSA") (collectively, the "Wood-Ridge sites"). Rohm and Haas is a successor

in interest to a company that owned and operated a mercury processing facility, where wastewater and waste handling resulted in contamination of soils and adjacent creek sediments. In 2018, the Berry's Creek Study Area Potentially Responsible Party Group ("PRP Group"), consisting of over 100 PRPs, completed a Remedial Investigation/Feasibility Study for the BCSA. During that time, the EPA concluded that an "iterative or adaptive approach" was appropriate for cleaning up the BCSA. Thus, each phase of remediation will be followed by a period of monitoring to assess its effectiveness and determine if there is a need for more work. In September 2018, the EPA signed a Record of Decision ("ROD 1") which describes the initial phase of the EPA's plan to clean-up the BCSA. ROD 1 will remediate waterways and major tributaries in the most contaminated part of the BCSA. The PRP Group has signed agreements with the EPA to design the selected remedy. Although there is currently much uncertainty as to what will ultimately be required to remediate the BCSA and Rohm and Haas's share of these costs has yet to be determined, the range of activities that are required in the interim Record of Decision is known in general terms.

At December 31, 2019, the Company had accrued liabilities totaling \$368 million (\$240 million at December 31, 2018) for environmental remediation at the Midland and Wood-Ridge sites. In 2019, the Company spent \$32 million (\$32 million in 2018) for environmental remediation at the Midland and Wood-Ridge sites.

During the third quarter of 2019, the Company accrued additional liabilities totaling \$447 million related to environmental remediation matters at a number of current and historical locations. The additional accrual primarily resulted from: the culmination of long-standing negotiations and discussions with regulators and agencies, including technical studies supporting higher cost estimates for final or staged remediation plans; the Company's evaluation of the cost required to manage remediation activities at sites affected by Dow's separation from DowDuPont and related agreements with Corteva and DuPont; and, the Company's review of its closure strategies and obligations to monitor ongoing operations and maintenance activities. In addition, the Company recorded indemnification assets of \$48 million related to Dow Silicones' environmental matters. Net of indemnifications, the Company recognized a pretax charge of \$399 million related to these environmental matters, included in "Cost of sales" in the consolidated statements of income.

In total, the Company's accrued liability for probable environmental remediation and restoration costs was \$1,155 million at December 31, 2019, compared with \$810 million at December 31, 2018. This is management's best estimate of the costs for remediation and restoration with respect to environmental matters for which the Company has accrued liabilities, although it is reasonably possible that the ultimate cost with respect to these particular matters could range up to approximately one and a half times that amount. Consequently, it is reasonably possible that environmental remediation and restoration costs in excess of amounts accrued could have a material impact on the Company's results of operations, financial condition and cash flows. It is the opinion of the Company's management, however, that the possibility is remote that costs in excess of the range disclosed will have a material impact on the Company's results of operations, financial condition and cash flows.

The amounts charged to income on a pretax basis related to environmental remediation totaled \$588 million in 2019, \$176 million in 2018 and \$163 million in 2017. The amounts charged to income on a pretax basis related to operating the Company's current pollution abatement facilities, excluding internal recharges, totaled \$677 million in 2019, \$695 million in 2018 and \$566 million in 2017. Capital expenditures for environmental protection were \$83 million in 2019, \$55 million in 2018 and \$57 million in 2017.

Asbestos-Related Matters of Union Carbide Corporation

Union Carbide is and has been involved in a large number of asbestos-related suits filed primarily in state courts during the past four decades. These suits principally allege personal injury resulting from exposure to asbestos-containing products and frequently seek both actual and punitive damages. The alleged claims primarily relate to products that Union Carbide sold in the past, alleged exposure to asbestos-containing products located on Union Carbide's premises, and Union Carbide's responsibility for asbestos suits filed against a former Union Carbide subsidiary, Amchem. In many cases, plaintiffs are unable to demonstrate that they have suffered any compensable loss as a result of such exposure, or that injuries incurred in fact resulted from exposure to Union Carbide's products.

The table below provides information regarding asbestos-related claims pending against Union Carbide and Amchem based on criteria developed by Union Carbide and its external consultants:

Asbestos-Related Claim Activity	2019	2018	2017
Claims unresolved at Jan 1	12,780	15,427	16,141
Claims filed	5,743	6,599	7,010
Claims settled, dismissed or otherwise resolved	(7,406)	(9,246)	(7,724)
Claims unresolved at Dec 31	11,117	12,780	15,427
Claimants with claims against both Union Carbide and Amchem	(3,837)	(4,675)	(5,530)
Individual claimants at Dec 31	7,280	8,105	9,897

Plaintiffs' lawyers often sue numerous defendants in individual lawsuits or on behalf of numerous claimants. As a result, the damages alleged are not expressly identified as to Union Carbide, Amchem or any other particular defendant, even when specific damages are alleged with respect to a specific disease or injury. In fact, there are no asbestos personal injury cases in which only Union Carbide and/or Amchem are the sole named defendants. For these reasons and based upon Union Carbide's litigation and settlement experience, Union Carbide does not consider the damages alleged against Union Carbide and Amchem to be a meaningful factor in its determination of any potential asbestos-related liability.

For additional information see Part I, Item 3. Legal Proceedings and Asbestos-Related Matters of Union Carbide Corporation in Note 17 to the Consolidated Financial Statements.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

The Company's business operations give rise to market risk exposure due to changes in foreign exchange rates, interest rates, commodity prices and other market factors such as equity prices. To manage such risks effectively, the Company enters into hedging transactions, pursuant to established guidelines and policies that enable it to mitigate the adverse effects of financial market risk. Derivatives used for this purpose are designated as hedges per the accounting guidance related to derivatives and hedging activities, where appropriate. A secondary objective is to add value by creating additional non-specific exposure within established limits and policies; derivatives used for this purpose are not designated as hedges. The potential impact of creating such additional exposures is not material to the Company's results.

The global nature of the Company's business requires active participation in the foreign exchange markets. The Company has assets, liabilities and cash flows in currencies other than the U.S. dollar. The primary objective of the Company's foreign currency risk management is to optimize the U.S. dollar value of net assets and cash flows. To achieve this objective, the Company hedges on a net exposure basis using foreign currency forward contracts, over-the-counter option contracts, cross-currency swaps and nonderivative instruments in foreign currencies. Exposures primarily relate to assets, liabilities and bonds denominated in foreign currencies, as well as economic exposure, which is derived from the risk that currency fluctuations could affect the dollar value of future cash flows related to operating activities. The largest exposures are denominated in European currencies, the Japanese yen and the Chinese yuan, although exposures also exist in the Canadian dollar, the Indian rupee and other currencies in Asia Pacific, Latin America, the Middle East and Africa.

The main objective of interest rate risk management is to reduce the total funding cost to the Company and to alter the interest rate exposure to the desired risk profile. To achieve this objective, the Company hedges using interest rate swaps, "swaptions," and exchange-traded instruments. The Company's primary exposure is to the U.S. dollar yield curve.

The Company has a portfolio of equity securities derived primarily from the investment activities of its insurance subsidiaries. This exposure is managed in a manner consistent with the Company's market risk policies and procedures.

Inherent in the Company's business is exposure to price changes for several commodities. Some exposures can be hedged effectively through liquid tradable financial instruments. Natural gas and crude oil, along with feedstocks for ethylene and propylene production, constitute the main commodity exposures. Over-the-counter and exchange traded instruments are used to hedge these risks, when feasible.

The Company uses value-at-risk ("VAR"), stress testing and scenario analysis for risk measurement and control purposes. VAR estimates the maximum potential loss in fair market values, given a certain move in prices over a certain period of time, using specified confidence levels. The VAR methodology used by the Company is a variance/covariance model. This model uses a 97.5 percent confidence level and includes at least one year of historical data. The 2019 and 2018 year-end and average daily VAR for the aggregate of all positions are shown below. These amounts are immaterial relative to the total equity of the Company.

Total Daily VAR by Exposure Type at Dec 31 In millions	2019		2018	
	<i>Year-end</i>	<i>Average</i>	<i>Year-end</i>	<i>Average</i>
Commodities	\$ 7	\$ 12	\$ 26	\$ 30
Equity securities	10	11	12	7
Foreign exchange	43	36	26	28
Interest rate	77	69	81	80
Composite	\$ 137	\$ 128	\$ 145	\$ 145

The Company's composite VAR for the aggregate of all positions decreased from \$145 million at December 31, 2018 to \$137 million at December 31, 2019. The interest rate and commodities VAR declined due to a decrease in exposure. The equity securities VAR declined due to a decrease in managed exposures and lower equity volatility. The foreign exchange VAR increased due to increased hedging. See Note 23 to the Consolidated Financial Statements for further disclosure regarding market risk.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Stockholders and the Board of Directors of Dow Inc.

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of Dow Inc. and subsidiaries (the "Company") as of December 31, 2019 and 2018, the related consolidated statements of income, comprehensive income, equity, and cash flows, for each of the three years in the period ended December 31, 2019, and the related notes and the schedule listed in the Index at Item 15(a)2 (collectively referred to as the "financial statements"). In our opinion, the financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2019 and 2018, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2019, in conformity with accounting principles generally accepted in the United States of America.

We have also audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company's internal control over financial reporting as of December 31, 2019, based on criteria established in *Internal Control - Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission and our report dated February 7, 2020, expressed an unqualified opinion on the Company's internal control over financial reporting.

Changes in Accounting Principles

As discussed in Note 1 to the financial statements, in the first quarter of 2018, the Company changed its method of accounting for revenue due to the adoption of Accounting Standards Codification (ASC) Topic 606, *Revenue From Contracts with Customers* and, in the first quarter of 2019, the Company changed the method of accounting for leases due to the adoption of ASC Topic 842, *Leases*.

Basis for Opinion

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

Critical Audit Matters

The critical audit matters communicated below are matters arising from the current-period audit of the financial statements that were communicated or required to be communicated to the audit committee and that (1) relate to accounts or disclosures that are material to the financial statements and (2) involved our especially challenging, subjective, or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the financial statements, taken as a whole, and we are not, by communicating the critical audit matters below, providing separate opinions on the critical audit matters or on the accounts or disclosures to which they relate.

Goodwill - Coatings & Performance Monomers Reporting Unit - Refer to Note 1 and Note 14 to the financial statements

Critical Audit Matter Description

The Company tests goodwill for impairment annually (in the fourth quarter), or more frequently when events or changes in circumstances indicate it is more likely than not that the fair value of a reporting unit has declined below its carrying value. The Company utilizes a discounted cash flow methodology to calculate the fair value of its reporting units, which requires management to make significant estimates and assumptions related to projected revenue growth rates, discount rates, and earnings before interest, taxes, depreciation and amortization ("EBITDA"). Changes in these assumptions could have a significant impact on the fair value

of the reporting unit and the amount of any goodwill impairment charge. As of December 31, 2019, the Company has six reporting units, all but one of which have goodwill.

Throughout 2019, the Coatings & Performance Monomers reporting unit (“C&PM”) did not consistently meet expected financial targets and experienced volume reductions and reduced margins for products across the portfolio due to changes in customer buying patterns and supply and demand balances, as well as the continued trend of customer consolidation in end markets, which reduced its future revenue and profitability projections. Therefore, in 2019, the Company used a discounted cash flow methodology to determine the fair value of the C&PM reporting unit. These discounted cash flows did not support the carrying value of C&PM. As a result, the Company recorded a goodwill impairment charge of \$1,039 million in the fourth quarter of 2019.

Given the significant judgments made by management to estimate the fair value of the C&PM reporting unit, performing audit procedures to evaluate the reasonableness of management’s estimates and assumptions related to projected revenue growth rates, discount rates, EBITDA and EBITDA margin required a high degree of auditor judgment and an increased extent of effort, including the assistance of our fair value specialists.

How the Critical Audit Matter Was Addressed in the Audit

Our audit procedures related to management’s estimates and assumptions related to projected revenue growth rates, discount rates, EBITDA and EBITDA margin for the C&PM reporting unit included the following, among other procedures:

- We tested the effectiveness of internal controls over the goodwill impairment evaluation, including controls over the selection of the discount rates and over forecasts of future revenue growth rates, EBITDA, and EBITDA margin.
- We performed a retrospective review comparing actual revenue and EBITDA results of the reporting unit for 2019 to the forecasted results from 2018.
- We performed a retrospective review comparing management’s estimates and assumptions relating to revenue, EBITDA, and EBITDA margin projections for the reporting unit used for the purpose of current year’s annual impairment test to the projections previously used in connection with the prior year annual impairment test.
- We evaluated the consistency of estimates and assumptions relating to revenue and EBITDA growth inherent in the discounted cash flow model for the reporting unit to those used by management in other annual forecasting activities.
- With the assistance of our fair value specialists, we performed a benchmarking exercise comparing management’s estimates and assumptions related to revenue growth, EBITDA and EBITDA margin for the reporting unit as of the measurement date to the revenue growth, EBITDA and EBITDA margins of a peer group of public companies for the most recent three years and the projection period.
- With the assistance of our fair value specialists, we evaluated (1) the valuation methodology used and (2) the projections of long-term revenue growth and the discount rates by testing the underlying source information, and by developing a range of independent estimates and comparing those to the rates selected by management.

Other-Than-Temporary-Impairment (“OTTI”) of the Sadara Chemical Company (“Sadara”) equity method investment – Refer to Note 13 to the financial statements

Critical Audit Matter Description

In 2011, the Company and Saudi Arabian Oil Company formed Sadara Chemical Company (“Sadara”), a joint venture between the two companies that subsequently constructed and now operates a world-scale, fully integrated chemicals complex in Jubail Industrial City, Kingdom of Saudi Arabia. The Company has a 35 percent equity interest in this joint venture and has been, and continues to be, responsible for marketing the majority of Sadara’s products through the Company’s established sales channels.

In 2017, Sadara achieved full commercial operations of all its facilities. In December 2018, the joint venture successfully completed its Creditors Reliability Test, an extensive operational testing program designed to demonstrate the reliability of the joint venture’s full chemical complex by operating at high rates for an extended period of time. While Sadara has reached these operational milestones and has been generating positive EBITDA, the joint venture has yet to report positive net income.

During the fourth quarter of 2019, Sadara tested its long-lived assets for impairment using long-term cash flow projections. Due to Sadara’s financial condition and its long-lived asset impairment test, Dow evaluated its equity method investment in Sadara for other-than-temporary impairment. The Company utilized a discounted cash flow methodology to measure the estimated fair value of its investment in Sadara, which was estimated to be zero. The Company determined the decline in value of its investment in Sadara was other-than-temporary due to Sadara’s financial performance since becoming commercially operational in 2017 and uncertainty around the prospects for recovery in Sadara’s financial condition. In the fourth quarter of 2019, the Company recorded

an impairment of its investment in Sadara and reserved certain accounts and notes receivable and accrued interest balances due to uncertainty around timing of collection for a total charge of \$1,755 million.

We have identified the evaluation of the Sadara investment for other-than-temporary impairment as a critical audit matter because of the significant estimates and assumptions management makes to estimate the fair value of its investment, including the discount rate, terminal value, and long-term growth rates. This required a high degree of auditor judgment and increased extent of effort, including the need to involve our fair value specialists, when performing audit procedures to evaluate the reasonableness of management's estimates and assumptions.

How the Critical Audit Matter Was Addressed in the Audit

Our audit procedures related to management's judgements, estimates and assumptions, related to the discount rate, terminal value, and long-term growth rate used in the discounted cash flow analysis used in the evaluation of other-than-temporary impairment of the Sadara investment included the following, among others:

- We tested the effectiveness of internal controls over management's evaluation of the Sadara investment for other-than-temporary impairment, including management's evaluation of the assumptions used such as discount rate, terminal value, and long-term growth rate.
- We evaluated the consistency of the assumptions and judgments relating to the discount rate, terminal value, and long-term growth rates by comparing to:
 - Agreements in place between Sadara and Dow
 - Independent third-party pricing study
- We read external information included in press releases, earnings releases, regulatory filings, and other Sadara communications to search for contradictory information.
- With the assistance of our fair value specialists, we evaluated (1) the valuation methodology used and model being used (2) the assumptions used such as the discount rate, terminal value, and the long-term growth rate by testing the underlying source information, and by developing a range of independent estimates and comparing those to the rates selected by management.

/s/ DELOITTE & TOUCHE LLP

Deloitte & Touche LLP
Midland, Michigan
February 7, 2020

We have served as the Company's auditor since 1905.

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Stockholder and the Board of Directors of The Dow Chemical Company

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of The Dow Chemical Company and subsidiaries (the "Company") as of December 31, 2019 and 2018, the related consolidated statements of income, comprehensive income, equity, and cash flows, for each of the three years in the period ended December 31, 2019, and the related notes and the schedule listed in the Index at Item 15(a)2 (collectively referred to as the "financial statements"). In our opinion, the financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2019 and 2018, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2019, in conformity with accounting principles generally accepted in the United States of America.

We have also audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company's internal control over financial reporting as of December 31, 2019, based on criteria established in *Internal Control - Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission and our report dated February 7, 2020, expressed an unqualified opinion on the Company's internal control over financial reporting.

Changes in Accounting Principles

As discussed in Note 1 to the financial statements, in the first quarter of 2018, the Company changed its method of accounting for revenue due to the adoption of Accounting Standards Codification (ASC) Topic 606, *Revenue From Contracts with Customers* and, in the first quarter of 2019, the Company changed the method of accounting for leases due to the adoption of ASC Topic 842, *Leases*.

Basis for Opinion

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audits. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

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Goodwill - Coatings & Performance Monomers Reporting Unit - Refer to Note 1 and Note 14 to the financial statements

Critical Audit Matter Description

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/s/ DELOITTE & TOUCHE LLP

Deloitte & Touche LLP
Midland, Michigan
February 7, 2020

We have served as the Company's auditor since 1905.

Dow Inc. and Subsidiaries
Consolidated Statements of Income

(In millions, except per share amounts) For the years ended Dec 31,	2019	2018	2017
Net sales	\$ 42,951	\$ 49,604	\$ 43,730
Cost of sales	36,657	41,074	36,350
Research and development expenses	765	800	803
Selling, general and administrative expenses	1,590	1,782	1,795
Amortization of intangibles	419	469	400
Restructuring, goodwill impairment and asset related charges - net	3,219	221	2,739
Integration and separation costs	1,063	1,179	798
Equity in earnings (losses) of nonconsolidated affiliates	(94)	555	394
Sundry income (expense) - net	461	96	(154)
Interest income	81	82	66
Interest expense and amortization of debt discount	933	1,063	914
Income (loss) from continuing operations before income taxes	(1,247)	3,749	237
Provision for income taxes on continuing operations	470	809	1,524
Income (loss) from continuing operations, net of tax	(1,717)	2,940	(1,287)
Income from discontinued operations, net of tax	445	1,835	1,882
Net income (loss)	(1,272)	4,775	595
Net income attributable to noncontrolling interests	87	134	130
Net income (loss) available for Dow Inc. common stockholders	\$ (1,359)	\$ 4,641	\$ 465

Per common share data:			
Earnings (loss) per common share from continuing operations - basic	\$ (2.42)	\$ 3.80	\$ (1.88)
Earnings per common share from discontinued operations - basic	0.58	2.41	2.48
Earnings (loss) per common share - basic	\$ (1.84)	\$ 6.21	\$ 0.60
Earnings (loss) per common share from continuing operations - diluted	\$ (2.42)	\$ 3.80	\$ (1.88)
Earnings per common share from discontinued operations - diluted	0.58	2.41	2.48
Earnings (loss) per common share - diluted	\$ (1.84)	\$ 6.21	\$ 0.60

Weighted-average common shares outstanding - basic	742.5	747.2	744.8
Weighted-average common shares outstanding - diluted	742.5	747.2	744.8

See Notes to the Consolidated Financial Statements.

Dow Inc. and Subsidiaries
Consolidated Statements of Comprehensive Income

(In millions) For the years ended Dec 31,	2019	2018	2017
Net income (loss)	\$ (1,272)	\$ 4,775	\$ 595
Other comprehensive income (loss), net of tax			
Unrealized gains (losses) on investments	115	(67)	(46)
Cumulative translation adjustments	(32)	(225)	900
Pension and other postretirement benefit plans	(899)	(40)	391
Derivative instruments	(338)	75	(14)
Total other comprehensive income (loss)	(1,154)	(257)	1,231
Comprehensive income (loss)	(2,426)	4,518	1,826
Comprehensive income attributable to noncontrolling interests, net of tax	99	97	172
Comprehensive income (loss) attributable to Dow Inc.	\$ (2,525)	\$ 4,421	\$ 1,654

See Notes to the Consolidated Financial Statements.

Dow Inc. and Subsidiaries
Consolidated Balance Sheets

(In millions, except share amounts) At Dec 31,	2019	2018
Assets		
Current Assets		
Cash and cash equivalents (variable interest entities restricted - 2019: \$37; 2018: \$71)	\$ 2,367	\$ 2,724
Marketable securities	21	100
Accounts and notes receivable:		
Trade (net of allowance for doubtful receivables - 2019: \$45; 2018: \$42)	4,844	5,646
Other	2,711	3,389
Inventories	6,214	6,899
Other current assets	658	712
Assets of discontinued operations - current	—	19,900
Total current assets	16,815	39,370
Investments		
Investment in nonconsolidated affiliates	1,404	3,320
Other investments (investments carried at fair value - 2019: \$1,584; 2018: \$1,699)	2,588	2,646
Noncurrent receivables	1,063	360
Total investments	5,055	6,326
Property		
Property	54,910	53,984
Less accumulated depreciation	33,914	32,566
Net property (variable interest entities restricted - 2019: \$330; 2018: \$683)	20,996	21,418
Other Assets		
Goodwill	8,796	9,846
Other intangible assets (net of accumulated amortization - 2019: \$3,886; 2018: \$3,379)	3,759	4,225
Operating lease right-of-use assets	2,072	—
Deferred income tax assets	2,213	1,779
Deferred charges and other assets	818	735
Total other assets	17,658	16,585
Total Assets	\$ 60,524	\$ 83,699
Liabilities and Equity		
Current Liabilities		
Notes payable	\$ 586	\$ 298
Long-term debt due within one year	435	338
Accounts payable:		
Trade	3,889	4,456
Other	2,064	2,479
Operating lease liabilities - current	421	—
Income taxes payable	522	557
Accrued and other current liabilities	2,762	2,931
Liabilities of discontinued operations - current	—	4,488
Total current liabilities	10,679	15,547
Long-Term Debt (variable interest entities nonrecourse - 2019: \$34; 2018: \$75)	15,975	19,253
Other Noncurrent Liabilities		
Deferred income tax liabilities	347	501
Pension and other postretirement benefits - noncurrent	10,083	8,926
Asbestos-related liabilities - noncurrent	1,060	1,142
Operating lease liabilities - noncurrent	1,739	—
Other noncurrent obligations	6,547	4,709
Total other noncurrent liabilities	19,776	15,278
Stockholders' Equity		
Common stock (2019: authorized 5,000,000,000 shares and issued 751,228,644 shares of \$0.01 par value each; 2018: authorized and issued 100 shares of \$0.01 par value each)	8	—
Additional paid-in capital	7,325	7,042
Retained earnings	17,045	35,460
Accumulated other comprehensive loss	(10,246)	(9,885)
Unearned ESOP shares	(91)	(134)
Treasury stock at cost (2019: 9,729,834 shares; 2018: zero shares)	(500)	—
Dow Inc.'s stockholders' equity	13,541	32,483
Noncontrolling interests	553	1,138
Total equity	14,094	33,621
Total Liabilities and Equity	\$ 60,524	\$ 83,699

See Notes to the Consolidated Financial Statements.

Dow Inc. and Subsidiaries
Consolidated Statements of Cash Flows

(In millions) For the years ended Dec 31,	2019	2018	2017
Operating Activities			
Net income (loss)	\$ (1,272)	\$ 4,775	\$ 595
Less: Income from discontinued operations, net of tax	445	1,835	1,882
Income (loss) from continuing operations, net of tax	(1,717)	2,940	(1,287)
Adjustments to reconcile net income (loss) to net cash provided by (used for) operating activities:			
Depreciation and amortization	2,938	2,909	2,546
Provision (credit) for deferred income tax	(228)	(429)	1,413
Earnings of nonconsolidated affiliates less than dividends received	1,114	108	253
Net periodic pension benefit cost	144	279	1,032
Pension contributions	(261)	(1,651)	(1,672)
Net gain on sales of assets, businesses and investments	(81)	(38)	(419)
Restructuring, goodwill impairment and asset related charges - net	3,219	221	2,739
Other net loss	198	415	451
Changes in assets and liabilities, net of effects of acquired and divested companies:			
Accounts and notes receivable	1,253	(855)	(11,431)
Inventories	668	(859)	(891)
Accounts payable	(948)	787	1,081
Other assets and liabilities, net	(586)	(731)	(258)
Cash provided by (used for) operating activities - continuing operations	5,713	3,096	(6,443)
Cash provided by operating activities - discontinued operations	217	1,158	1,514
Cash provided by (used for) operating activities	5,930	4,254	(4,929)
Investing Activities			
Capital expenditures	(1,961)	(2,091)	(2,807)
Investment in gas field developments	(76)	(114)	(121)
Purchases of previously leased assets	(9)	(26)	(187)
Proceeds from sales of property and businesses, net of cash divested	84	47	522
Acquisitions of property and businesses, net of cash acquired	—	(20)	47
Investments in and loans to nonconsolidated affiliates	(638)	(18)	(749)
Distributions and loan repayments from nonconsolidated affiliates	89	55	69
Purchases of investments	(899)	(1,530)	(642)
Proceeds from sales and maturities of investments	1,252	1,214	1,165
Proceeds from interests in trade accounts receivable conduits	—	657	9,462
Other investing activities, net	—	—	34
Cash provided by (used for) investing activities - continuing operations	(2,158)	(1,826)	6,793
Cash provided by (used for) investing activities - discontinued operations	(34)	(369)	725
Cash provided by (used for) investing activities	(2,192)	(2,195)	7,518
Financing Activities			
Changes in short-term notes payable	307	(178)	268
Proceeds from issuance of long-term debt	2,287	1,999	—
Payments on long-term debt	(5,561)	(3,054)	(617)
Purchases of treasury stock	(500)	—	—
Proceeds from issuance of parent company stock	93	112	66
Proceeds from sales of common stock	—	—	423
Transaction financing, debt issuance and other costs	(119)	(70)	—
Employee taxes paid for share-based payment arrangements	(60)	(77)	(81)
Distributions to noncontrolling interests	(77)	(135)	(101)
Purchases of noncontrolling interests	(297)	—	—
Dividends paid to stockholders	(1,550)	—	(2,179)
Dividends paid to DowDuPont Inc.	(535)	(3,711)	(1,056)
Settlements and transfers related to separation from DowDuPont Inc.	1,935	(240)	6
Other financing activities, net	—	3	(4)
Cash used for financing activities - continuing operations	(4,077)	(5,351)	(3,275)
Cash used for financing activities - discontinued operations	(18)	(53)	(50)
Cash used for financing activities	(4,095)	(5,404)	(3,325)
Effect of exchange rate changes on cash, cash equivalents and restricted cash	(27)	(99)	320
Summary			
Decrease in cash, cash equivalents and restricted cash	(384)	(3,444)	(416)
Cash, cash equivalents and restricted cash at beginning of year	2,764	6,208	6,624
Cash, cash equivalents and restricted cash at end of year	\$ 2,380	\$ 2,764	\$ 6,208
Less: Restricted cash and cash equivalents, included in "Other current assets"	13	40	19
Cash and cash equivalents at end of year	\$ 2,367	\$ 2,724	\$ 6,189

See Notes to the Consolidated Financial Statements.

Dow Inc. and Subsidiaries
Consolidated Statements of Equity

(In millions, except per share amounts) For the years ended Dec 31,	2019	2018	2017
Common Stock			
Balance at beginning of year	\$ —	\$ —	\$ 3,107
Merger impact	—	—	(3,107)
Common stock issued	8	—	—
Balance at end of year	8	—	—
Additional Paid-in Capital			
Balance at beginning of year	7,042	6,553	4,262
Common stock issued / sold	57	—	423
Issuance of parent company stock - DowDuPont Inc.	28	112	66
Stock-based compensation and allocation of ESOP shares	235	377	(368)
Merger impact	—	—	2,172
Other	(37)	—	(2)
Balance at end of year	7,325	7,042	6,553
Retained Earnings			
Balance at beginning of year	35,460	33,742	30,338
Adoption of accounting standards (Note 1)	(151)	989	—
Net income (loss) available for Dow Inc.'s common stockholders	(1,359)	4,641	465
Dividends to stockholders	(1,550)	—	(1,673)
Dividends to DowDuPont Inc.	(535)	(3,711)	(1,056)
Common control transaction	(14,806)	(182)	5,693
Other	(14)	(19)	(25)
Balance at end of year	17,045	35,460	33,742
Accumulated Other Comprehensive Loss			
Balance at beginning of year	(9,885)	(8,591)	(9,822)
Adoption of accounting standards (Note 1)	—	(1,037)	—
Other comprehensive income (loss)	(1,154)	(257)	1,231
Common control transaction	793	—	—
Balance at end of year	(10,246)	(9,885)	(8,591)
Unearned ESOP Shares			
Balance at beginning of year	(134)	(189)	(239)
Stock-based compensation and allocation of ESOP shares	45	55	50
ESOP shares acquired	(2)	—	—
Balance at end of year	(91)	(134)	(189)
Treasury Stock			
Balance at beginning of year	—	—	(1,659)
Common stock issued/sold	—	—	724
Treasury stock purchases	(500)	—	—
Merger impact	—	—	935
Balance at end of year	(500)	—	—
Dow Inc.'s stockholders' equity	13,541	32,483	31,515
Noncontrolling Interests	553	1,138	1,186
Total Equity	\$ 14,094	\$ 33,621	\$ 32,701
Dividends declared per share of common stock	\$ 2.10	\$ —	\$ 1.38

See Notes to the Consolidated Financial Statements.

The Dow Chemical Company and Subsidiaries
Consolidated Statements of Income

(In millions) For the years ended Dec 31,	2019	2018	2017
Net sales	\$ 42,951	\$ 49,604	\$ 43,730
Cost of sales	36,657	41,074	36,350
Research and development expenses	765	800	803
Selling, general and administrative expenses	1,585	1,782	1,795
Amortization of intangibles	419	469	400
Restructuring, goodwill impairment and asset related charges - net	3,219	221	2,739
Integration and separation costs	1,039	1,179	798
Equity in earnings (losses) of nonconsolidated affiliates	(94)	555	394
Sundry income (expense) - net	573	96	(154)
Interest income	81	82	66
Interest expense and amortization of debt discount	952	1,063	914
Income (loss) from continuing operations before income taxes	(1,125)	3,749	237
Provision for income taxes on continuing operations	470	809	1,524
Income (loss) from continuing operations, net of tax	(1,595)	2,940	(1,287)
Income from discontinued operations, net of tax	445	1,835	1,882
Net income (loss)	(1,150)	4,775	595
Net income attributable to noncontrolling interests	87	134	130
Net income (loss) available for The Dow Chemical Company common stockholder	\$ (1,237)	\$ 4,641	\$ 465

See Notes to the Consolidated Financial Statements.

The Dow Chemical Company and Subsidiaries
Consolidated Statements of Comprehensive Income

(In millions) For the years ended Dec 31,	2019	2018	2017
Net income (loss)	\$ (1,150)	\$ 4,775	\$ 595
Other comprehensive income (loss), net of tax			
Unrealized gains (losses) on investments	115	(67)	(46)
Cumulative translation adjustments	(32)	(225)	900
Pension and other postretirement benefit plans	(899)	(40)	391
Derivative instruments	(338)	75	(14)
Total other comprehensive income (loss)	(1,154)	(257)	1,231
Comprehensive income (loss)	(2,304)	4,518	1,826
Comprehensive income attributable to noncontrolling interests, net of tax	99	97	172
Comprehensive income (loss) attributable to The Dow Chemical Company	\$ (2,403)	\$ 4,421	\$ 1,654

See Notes to the Consolidated Financial Statements.

The Dow Chemical Company and Subsidiaries
Consolidated Balance Sheets

(In millions, except share amounts) At Dec 31,	2019	2018
Assets		
Current Assets		
Cash and cash equivalents (variable interest entities restricted - 2019: \$37; 2018: \$71)	\$ 2,367	\$ 2,724
Marketable securities	21	100
Accounts and notes receivable:		
Trade (net of allowance for doubtful receivables - 2019: \$45; 2018: \$42)	4,844	5,646
Other	2,716	3,389
Inventories	6,214	6,899
Other current assets	571	712
Assets of discontinued operations - current	—	19,900
Total current assets	16,733	39,370
Investments		
Investment in nonconsolidated affiliates	1,404	3,320
Other investments (investments carried at fair value - 2019: \$1,584; 2018: \$1,699)	2,588	2,646
Noncurrent receivables	1,011	360
Total investments	5,003	6,326
Property		
Property	54,910	53,984
Less accumulated depreciation	33,914	32,566
Net property (variable interest entities restricted - 2019: \$330; 2018: \$683)	20,996	21,418
Other Assets		
Goodwill	8,796	9,846
Other intangible assets (net of accumulated amortization - 2019: \$3,886; 2018: \$3,379)	3,759	4,225
Operating lease right-of-use assets	2,072	—
Deferred income tax assets	2,213	1,779
Deferred charges and other assets	818	735
Total other assets	17,658	16,585
Total Assets	\$ 60,390	\$ 83,699
Liabilities and Equity		
Current Liabilities		
Notes payable	\$ 586	\$ 298
Long-term debt due within one year	435	338
Accounts payable:		
Trade	3,889	4,456
Other	2,064	2,479
Operating lease liabilities - current	421	—
Income taxes payable	522	557
Accrued and other current liabilities	2,233	2,931
Liabilities of discontinued operations - current	—	4,488
Total current liabilities	10,150	15,547
Long-Term Debt (variable interest entities nonrecourse - 2019: \$34; 2018: \$75)	15,975	19,253
Other Noncurrent Liabilities		
Deferred income tax liabilities	347	501
Pension and other postretirement benefits - noncurrent	10,083	8,926
Asbestos-related liabilities - noncurrent	1,060	1,142
Operating lease liabilities - noncurrent	1,739	—
Other noncurrent obligations	6,174	4,709
Total other noncurrent liabilities	19,403	15,278
Stockholder's Equity		
Common stock (authorized and issued 100 shares of \$0.01 par value each)	—	—
Additional paid-in capital	7,333	7,042
Retained earnings	17,313	35,460
Accumulated other comprehensive loss	(10,246)	(9,885)
Unearned ESOP shares	(91)	(134)
The Dow Chemical Company's stockholder's equity	14,309	32,483
Noncontrolling interests	553	1,138
Total equity	14,862	33,621
Total Liabilities and Equity	\$ 60,390	\$ 83,699

See Notes to the Consolidated Financial Statements.

The Dow Chemical Company and Subsidiaries
Consolidated Statements of Cash Flows

(In millions) For the years ended Dec 31,	2019	2018	2017
Operating Activities			
Net income (loss)	\$ (1,150)	\$ 4,775	\$ 595
Less: Income from discontinued operations, net of tax	445	1,835	1,882
Income (loss) from continuing operations, net of tax	(1,595)	2,940	(1,287)
Adjustments to reconcile net income (loss) to net cash provided by (used for) operating activities:			
Depreciation and amortization	2,938	2,909	2,546
Provision (credit) for deferred income tax	(228)	(429)	1,413
Earnings of nonconsolidated affiliates less than dividends received	1,114	108	253
Net periodic pension benefit cost	144	279	1,032
Pension contributions	(261)	(1,651)	(1,672)
Net gain on sales of assets, businesses and investments	(81)	(38)	(419)
Restructuring, goodwill impairment and asset related charges - net	3,219	221	2,739
Other net loss	213	415	451
Changes in assets and liabilities, net of effects of acquired and divested companies:			
Accounts and notes receivable	1,253	(855)	(11,431)
Inventories	668	(859)	(891)
Accounts payable	(948)	787	1,081
Other assets and liabilities, net	(730)	(731)	(258)
Cash provided by (used for) operating activities - continuing operations	5,706	3,096	(6,443)
Cash provided by operating activities - discontinued operations	371	1,158	1,514
Cash provided by (used for) operating activities	6,077	4,254	(4,929)
Investing Activities			
Capital expenditures	(1,961)	(2,091)	(2,807)
Investment in gas field developments	(76)	(114)	(121)
Purchases of previously leased assets	(9)	(26)	(187)
Proceeds from sales of property and businesses, net of cash divested	84	47	522
Acquisitions of property and businesses, net of cash acquired	—	(20)	47
Investments in and loans to nonconsolidated affiliates	(638)	(18)	(749)
Distributions and loan repayments from nonconsolidated affiliates	89	55	69
Purchases of investments	(899)	(1,530)	(642)
Proceeds from sales and maturities of investments	1,252	1,214	1,165
Proceeds from interests in trade accounts receivable conduits	—	657	9,462
Other investing activities, net	—	—	34
Cash provided by (used for) investing activities - continuing operations	(2,158)	(1,826)	6,793
Cash provided by (used for) investing activities - discontinued operations	(34)	(369)	725
Cash provided by (used for) investing activities	(2,192)	(2,195)	7,518
Financing Activities			
Changes in short-term notes payable	307	(178)	268
Proceeds from issuance of long-term debt	2,287	1,999	—
Payments on long-term debt	(5,561)	(3,054)	(617)
Proceeds from issuance of parent company stock	93	112	66
Proceeds from sales of common stock	—	—	423
Transaction financing, debt issuance and other costs	(119)	(70)	—
Employee taxes paid for share-based payment arrangements	(60)	(77)	(81)
Distributions to noncontrolling interests	(77)	(135)	(101)
Purchases of noncontrolling interests	(297)	—	—
Dividends paid to stockholders	—	—	(2,179)
Dividends paid to DowDuPont Inc.	(535)	(3,711)	(1,056)
Dividends paid to Dow Inc.	(201)	—	—
Settlements and transfers related to separation from DowDuPont Inc.	(61)	(240)	6
Other financing activities, net	—	3	(4)
Cash used for financing activities - continuing operations	(4,224)	(5,351)	(3,275)
Cash used for financing activities - discontinued operations	(18)	(53)	(50)
Cash used for financing activities	(4,242)	(5,404)	(3,325)
Effect of exchange rate changes on cash, cash equivalents and restricted cash	(27)	(99)	320
Summary			
Decrease in cash, cash equivalents and restricted cash	(384)	(3,444)	(416)
Cash, cash equivalents and restricted cash at beginning of year	2,764	6,208	6,624
Cash, cash equivalents and restricted cash at end of year	\$ 2,380	\$ 2,764	\$ 6,208
Less: Restricted cash and cash equivalents, included in "Other current assets"	13	40	19
Cash and cash equivalents at end of year	\$ 2,367	\$ 2,724	\$ 6,189

See Notes to the Consolidated Financial Statements.

The Dow Chemical Company and Subsidiaries
Consolidated Statements of Equity

(In millions, except per share amounts) For the years ended Dec 31,	2019	2018	2017
Common Stock			
Balance at beginning of year	\$ —	\$ —	\$ 3,107
Merger impact	—	—	(3,107)
Balance at end of year	—	—	—
Additional Paid-in Capital			
Balance at beginning of year	7,042	6,553	4,262
Common stock issued / sold	—	—	423
Issuance of parent company stock - Dow Inc.	65	—	—
Issuance of parent company stock - DowDuPont Inc.	28	112	66
Stock-based compensation and allocation of ESOP shares	235	377	(368)
Merger impact	—	—	2,172
Other	(37)	—	(2)
Balance at end of year	7,333	7,042	6,553
Retained Earnings			
Balance at beginning of year	35,460	33,742	30,338
Adoption of accounting standards (Note 1)	(151)	989	—
Net income (loss) available for The Dow Chemical Company's common stockholder	(1,237)	4,641	465
Dividends to stockholders	—	—	(1,673)
Dividends to DowDuPont Inc.	(535)	(3,711)	(1,056)
Dividends to Dow Inc.	(201)	—	—
Common control transaction	(16,009)	(182)	5,693
Other	(14)	(19)	(25)
Balance at end of year	17,313	35,460	33,742
Accumulated Other Comprehensive Loss			
Balance at beginning of year	(9,885)	(8,591)	(9,822)
Adoption of accounting standards (Note 1)	—	(1,037)	—
Other comprehensive income (loss)	(1,154)	(257)	1,231
Common control transaction	793	—	—
Balance at end of year	(10,246)	(9,885)	(8,591)
Unearned ESOP Shares			
Balance at beginning of year	(134)	(189)	(239)
Stock-based compensation and allocation of ESOP shares	45	55	50
ESOP shares acquired	(2)	—	—
Balance at end of year	(91)	(134)	(189)
Treasury Stock			
Balance at beginning of year	—	—	(1,659)
Common stock issued/sold	—	—	724
Merger impact	—	—	935
Balance at end of year	—	—	—
The Dow Chemical Company's stockholder's equity	14,309	32,483	31,515
Noncontrolling Interests	553	1,138	1,186
Total Equity	\$ 14,862	\$ 33,621	\$ 32,701

See Notes to the Consolidated Financial Statements.

Dow Inc. and Subsidiaries
The Dow Chemical Company and Subsidiaries
Notes to the Consolidated Financial Statements

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NOTE 1 – SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Merger and Separation

On April 1, 2019, DowDuPont Inc. ("DowDuPont" and effective June 3, 2019, n/k/a DuPont de Nemours, Inc. or "DuPont") completed the separation of its materials science business and Dow Inc. became the direct parent company of The Dow Chemical Company and its consolidated subsidiaries ("TDCC" and together with Dow Inc., "Dow" or the "Company"). The separation was contemplated by the merger of equals transaction effective August 31, 2017, under the Agreement and Plan of Merger, dated as of December 11, 2015, as amended on March 31, 2017. TDCC and E. I. du Pont de Nemours and Company and its consolidated subsidiaries ("Historical DuPont") each merged with subsidiaries of DowDuPont and, as a result, TDCC and Historical DuPont became subsidiaries of DowDuPont (the "Merger"). Subsequent to the Merger, TDCC and Historical DuPont engaged in a series of internal reorganization and realignment steps to realign their businesses into three subgroups: agriculture, materials science and specialty products. Dow Inc. was formed as a wholly owned subsidiary of DowDuPont to serve as the holding company for the materials science business. See Notes 3 and 4 for additional information.

Principles of Consolidation and Basis of Presentation

The accompanying consolidated financial statements of Dow Inc. and TDCC were prepared in accordance with accounting principles generally accepted in the United States of America ("U.S. GAAP") and include the assets, liabilities, revenues and expenses of all majority-owned subsidiaries over which Dow exercises control and, when applicable, entities for which Dow has a controlling financial interest or is the primary beneficiary. Intercompany transactions and balances are eliminated in consolidation. Investments in nonconsolidated affiliates (20-50 percent owned companies or less than 20 percent owned companies over which significant influence is exercised) are accounted for using the equity method.

Effective April 1, 2019, Dow Inc. owns all of the outstanding common shares of TDCC. TDCC is deemed the predecessor to Dow Inc. and the historical results of TDCC are deemed the historical results of Dow Inc. for periods prior to and including March 31, 2019. As a result of the parent/subsidiary relationship between Dow Inc. and TDCC, and the expectation that the financial statements and disclosures of each company will be substantially similar, the companies are filing a combined report for this Annual Report on Form 10-K. The information reflected in the report is equally applicable to both Dow Inc. and TDCC, except where otherwise noted.

As of the effective date and time of the distribution, DowDuPont does not beneficially own any equity interest in Dow and no longer consolidates Dow and its consolidated subsidiaries into its financial results. The consolidated financial results of Dow for all periods presented reflect the distribution of TDCC's agricultural sciences business ("AgCo") and specialty products business ("SpecCo") as discontinued operations, as well as the receipt of Historical DuPont's ethylene and ethylene copolymers businesses (other than its ethylene acrylic elastomers business) ("ECP") as a common control transaction from the closing of the Merger on August 31, 2017 ("Merger Date"). See Notes 3 and 4 for additional information.

Effective with the Merger, the Company's business activities were components of DowDuPont's business operations and therefore, were reported as a single operating segment. Following the separation from DowDuPont, the Company changed the manner in which its business activities were managed. The Company's portfolio now includes six global businesses which are organized into the following operating segments: Packaging & Specialty Plastics, Industrial Intermediates & Infrastructure and Performance Materials & Coatings. Corporate contains the reconciliation between the totals for the operating segments and the Company's totals. See Note 27 for additional information.

From the Merger Date through the separation, transactions between DowDuPont, TDCC and Historical DuPont and their affiliates were treated as related party transactions. Transactions between TDCC and Historical DuPont primarily consisted of the sale and procurement of certain raw materials that were consumed in each company's manufacturing process. Transactions between TDCC and Dow Inc. are treated as related party transactions for TDCC. See Note 26 for additional information.

Throughout this Annual Report on Form 10-K, unless otherwise indicated, amounts and activity are presented on a continuing operations basis.

Except as otherwise indicated by the context, the terms "Union Carbide" means Union Carbide Corporation, a wholly owned subsidiary of the Company, and "Dow Silicones" means Dow Silicones Corporation (formerly known as Dow Corning Corporation, which changed its name effective as of February 1, 2018), a wholly owned subsidiary of the Company.

Use of Estimates in Financial Statement Preparation

The preparation of financial statements in accordance with U.S. GAAP requires the use of estimates and assumptions that affect the reported amounts of assets and liabilities, the disclosure of contingent assets and liabilities at the date of the financial statements, and the reported amounts of revenues and expenses during the reporting period. The Company's consolidated financial statements include amounts that are based on management's best estimates and judgments. Actual results could differ from those estimates.

Significant Accounting Policies

Asbestos-Related Matters

Accruals for asbestos-related matters, including defense and processing costs, are recorded based on an analysis of claim and resolution activity, defense spending, and pending and future claims. These accruals are assessed at each balance sheet date to determine if the asbestos-related liability remains appropriate. Accruals for asbestos-related matters are included in the consolidated balance sheets in "Accrued and other current liabilities" and "Asbestos-related liabilities - noncurrent." See Note 17 for additional information.

Legal Costs

The Company expenses legal costs as incurred, with the exception of defense and processing costs associated with asbestos-related matters.

Foreign Currency Translation

The local currency has been primarily used as the functional currency throughout the world. Translation gains and losses of those operations that use local currency as the functional currency are included in the consolidated balance sheets in "Accumulated other comprehensive loss" ("AOCL"). For certain subsidiaries, the U.S. dollar is used as the functional currency. This occurs when the subsidiary operates in an economic environment where the products produced and sold are tied to U.S. dollar-denominated markets, or when the foreign subsidiary operates in a hyper-inflationary environment. Where the U.S. dollar is used as the functional currency, foreign currency translation gains and losses are reflected in income.

Environmental Matters

Accruals for environmental matters are recorded when it is probable that a liability has been incurred and the amount of the liability can be reasonably estimated based on current law and existing technologies. These accruals are adjusted periodically as assessment and remediation efforts progress or as additional technical or legal information becomes available. Accruals for environmental liabilities are included in the consolidated balance sheets in "Accrued and other current liabilities" and "Other noncurrent obligations" at undiscounted amounts. Accruals for related insurance or other third-party recoveries for environmental liabilities are recorded when it is probable that a recovery will be realized and are included in the consolidated balance sheets in "Accounts and notes receivable - Other" or "Noncurrent receivables."

Environmental costs are capitalized if the costs extend the life of the property, increase its capacity and/or mitigate or prevent contamination from future operations. Environmental costs are also capitalized in recognition of legal asset retirement obligations resulting from the acquisition, construction and/or normal operation of a long-lived asset. Costs related to environmental contamination treatment and cleanup are charged to expense. Estimated future incremental operations, maintenance and management costs directly related to remediation are accrued when such costs are probable and reasonably estimable.

Cash and Cash Equivalents

Cash and cash equivalents include time deposits and investments with maturities of three months or less at the time of purchase.

Financial Instruments

The Company calculates the fair value of financial instruments using quoted market prices when available. When quoted market prices are not available for financial instruments, the Company uses standard pricing models with market-based inputs that take into account the present value of estimated future cash flows.

The Company utilizes derivatives to manage exposures to foreign currency exchange rates, commodity prices and interest rate risk. The fair values of all derivatives are recognized as assets or liabilities at the balance sheet date. Changes in the fair values of these instruments are reported in income or AOCL, depending on the use of the derivative and whether the Company has elected hedge accounting treatment.

Gains and losses on derivatives that are designated and qualify as cash flow hedging instruments are recorded in AOCL until the underlying transactions are recognized in income. Gains and losses on derivative and non-derivative instruments used as hedges of the Company's net investment in foreign operations are recorded in AOCL as part of the cumulative translation adjustment. Prior to the adoption of Accounting Standards Update ("ASU") 2017-12, "Derivatives and Hedging (Topic 815): Targeted Improvements to Accounting for Hedging Activities" in 2018, the ineffective portions of hedges, if any, were recognized in income immediately.

Gains and losses on derivatives designated and qualifying as fair value hedging instruments, as well as the offsetting losses and gains on the hedged items, are reported in income in the same accounting period. Derivatives not designated as hedging instruments are marked-to-market at the end of each accounting period with the results included in income.

Inventories

Inventories are stated at the lower of cost or net realizable value. The method of determining cost for each subsidiary varies among last-in, first-out ("LIFO"); first-in, first-out ("FIFO"); and average cost, and is used consistently from year to year. At December 31, 2019, approximately 32 percent, 58 percent and 10 percent of the Company's inventories were accounted for under the LIFO, FIFO and average cost methods, respectively. At December 31, 2018, approximately 34 percent, 57 percent and 9 percent of the Company's inventories were accounted for under the LIFO, FIFO and average cost methods, respectively.

The Company routinely exchanges and swaps raw materials and finished goods with other companies to reduce delivery time, freight and other transportation costs. These transactions are treated as non-monetary exchanges and are valued at cost.

Property

Land, buildings and equipment are carried at cost less accumulated depreciation or amortization. Property under finance lease agreements is carried at the present value of lease payments over the lease term less accumulated amortization. Depreciation is based on the estimated service lives of depreciable assets and is calculated using the straight-line method, unless the asset was capitalized before 1997 when the declining balance method was used. Fully depreciated assets are retained in property and accumulated depreciation accounts until they are removed from service. In the case of disposals, assets and related accumulated depreciation are removed from the accounts, and the net amounts, less proceeds from disposal, are included in income.

Impairment and Disposal of Long-Lived Assets

The Company evaluates long-lived assets and certain identifiable intangible assets for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. When undiscounted future cash flows are not expected to be sufficient to recover an asset's carrying amount, the asset is written down to its fair value based on bids received from third parties or a discounted cash flow analysis based on market participant assumptions.

Long-lived assets to be disposed of by sale, if material, are classified as held for sale and reported at the lower of carrying amount or fair value less cost to sell, and depreciation is ceased. Long-lived assets to be disposed of other than by sale are classified as held and used until they are disposed of and reported at the lower of carrying amount or fair value, and depreciation is recognized over the remaining useful life of the assets.

Goodwill and Other Intangible Assets

The Company records goodwill when the purchase price of a business combination exceeds the estimated fair value of net identified tangible and intangible assets acquired. Goodwill is tested for impairment at the reporting unit level annually in the fourth quarter, or more frequently when events or changes in circumstances indicate that the fair value of a reporting unit has more likely than not declined below its carrying value. When testing goodwill for impairment, the Company may first assess qualitative factors. If an initial qualitative assessment identifies that it is more likely than not that the fair value of a reporting unit is less than its carrying value, additional quantitative testing is performed. The Company may also elect to skip the qualitative testing and proceed directly to the quantitative testing. If the quantitative testing indicates that goodwill is impaired, an impairment charge is recognized based on the difference between the reporting unit's carrying value and its fair value. The Company primarily utilizes a discounted cash flow methodology to calculate the fair value of its reporting units.

Finite-lived intangible assets such as purchased customer lists, developed technology, patents, trademarks and software, are amortized over their estimated useful lives, generally on a straight-line basis for periods ranging primarily from 3 to 20 years. Indefinite-lived intangible assets are reviewed for impairment or obsolescence annually, or more frequently when events or changes in circumstances indicate that the carrying amount of an intangible asset may not be recoverable. If impaired, intangible assets are written down to fair value based on discounted cash flows.

Asset Retirement Obligations

The Company records asset retirement obligations as incurred and reasonably estimable, including obligations for which the timing and/or method of settlement are conditional on a future event that may or may not be within the control of the Company. The fair values of obligations are recorded as liabilities on a discounted basis and are accreted over time for the change in present value. Costs associated with the liabilities are capitalized and amortized over the estimated remaining useful life of the asset, generally for periods of 10 years or less.

Investments

Investments in debt securities, primarily held by the Company's insurance operations, are classified as trading, available-for-sale or held-to-maturity. Investments classified as trading are reported at fair value with unrealized gains and losses related to mark-to-market adjustments included in income. Those classified as available-for-sale are reported at fair value with unrealized gains and losses recorded in AOCL. Those classified as held-to-maturity are recorded at amortized cost. The cost of investments sold is determined by FIFO or specific identification.

Investments in equity securities with a readily determinable fair value are reported at fair value with unrealized gains and losses related to mark-to-market adjustments included in income. Equity securities without a readily determinable fair value are accounted for at cost, adjusted for impairments and observable price changes in orderly transactions.

The Company routinely reviews its investments for declines in fair value below the cost basis. When events or changes in circumstances indicate the carrying value of an asset may not be recoverable, the security is written down to fair value, establishing a new cost basis.

Leases

Effective January 1, 2019, the Company adopted ASU 2016-02, "Leases (Topic 842)," and the associated ASUs (collectively, "Topic 842"). The Company added the following significant accounting policy for leases as a result of the adoption of Topic 842.

The Company determines whether a contract contains a lease at contract inception. A contract contains a lease if there is an identified asset and the Company has the right to control the asset.

Operating lease right-of-use ("ROU") assets represent the Company's right to use an underlying asset for the lease term, and lease liabilities represent the Company's obligation to make lease payments arising from the lease. Operating lease ROU assets and lease liabilities are recognized at commencement date based on the present value of lease payments over the lease term. The Company uses the incremental borrowing rate in determining the present value of lease payments, unless the implicit rate is readily determinable. If lease terms include options to extend or terminate the lease, the ROU asset and lease liability are measured based on the reasonably certain decision. Leases with a term of 12 months or less at the commencement date are not recognized on the balance sheet and are expensed as incurred.

The Company has lease agreements with lease and non-lease components, which are accounted for as a single lease component for all classes of leased assets for which the Company is the lessee. Additionally, for certain equipment leases, the portfolio approach is applied to account for the operating lease ROU assets and lease liabilities. In the consolidated statements of income, lease expense for operating lease payments is recognized on a straight-line basis over the lease term. For finance leases, interest expense is recognized on the lease liability and the ROU asset is amortized over the lease term.

Some leasing arrangements require variable payments that are dependent upon usage or output, or may vary for other reasons, such as insurance or tax payments. Variable lease payments are recognized as incurred and are not presented as part of the ROU asset or lease liability. See Notes 2 and 18 for additional information.

Revenue

Effective with the January 1, 2018 adoption of ASU 2014-09, "Revenue from Contracts with Customers (Topic 606)," and the associated ASUs (collectively, "Topic 606"), the Company recognizes revenue when its customer obtains control of promised goods or services in an amount that reflects the consideration which the Company expects to receive in exchange for those goods or services. To determine revenue recognition for the arrangements that the Company determines are within the scope of Topic 606, the Company performs the following five steps: (1) identify the contract(s) with a customer, (2) identify the performance obligations in the contract, (3) determine the transaction price, (4) allocate the transaction price to the performance obligations in the contract and (5) recognize revenue when (or as) the entity satisfies a performance obligation. See Note 5 for additional information.

Revenue related to the Company's insurance operations includes third-party insurance premiums, which are earned over the terms of the related insurance policies and reinsurance contracts.

In periods prior to the adoption of Topic 606, the Company's accounting policy was to recognize revenue when it was realized or realizable, and the earnings process was complete. Revenue for product sales was recognized as risk and title to the product transferred to the customer, which usually occurred at the time shipment was made. As such, title to the product passed when the product was delivered to the freight carrier. The Company's standard terms of delivery were included in its contracts of sale, order confirmation documents and invoices. Revenue related to the initial licensing of patent and technology was recognized when earned; revenue related to running royalties was recognized according to licensee production levels.

Severance Costs

The Company routinely reviews its operations around the world in an effort to ensure competitiveness across its businesses and geographic regions. When the reviews result in a workforce reduction related to the shutdown of facilities or other optimization activities, severance benefits are provided to employees primarily under the Company's ongoing benefit arrangements. These severance costs are accrued once management commits to a plan of termination and it becomes probable that employees will be entitled to benefits at amounts that can be reasonably estimated.

Integration and Separation Costs

The Company classifies expenses related to the Merger and separation and the ownership restructure of Dow Silicones as "Integration and separation costs" in the consolidated statements of income. Merger and separation related costs include: costs incurred to prepare for and close the Merger, post-Merger integration expenses, costs incurred for the separation of AgCo and SpecCo and costs related to the integration of ECP. The Dow Silicones-related costs include integration expenses incurred after the close of the ownership restructure. Integration and separation costs primarily consist of financial adviser, information technology, legal, accounting, consulting and other professional advisory fees associated with preparation and execution of these activities.

Income Taxes

The Company accounts for income taxes using the asset and liability method. Under this method, deferred tax assets and liabilities are recognized for the future tax consequences of temporary differences between the carrying amounts and tax bases of assets and liabilities using enacted tax rates. The effect of a change in tax rates on deferred tax assets or liabilities is recognized in income in the period that includes the enactment date. The Company uses the portfolio approach for releasing income tax effects from AOCL.

Effective with the Merger, TDCC and Historical DuPont were subsidiaries of DowDuPont. Prior to the separation, TDCC was included in DowDuPont's consolidated tax groups and related income tax returns within certain jurisdictions. The Company records a separate tax liability for its share of the taxable income and tax attributes and obligations on DowDuPont's consolidated income tax returns following a formula consistent with the economic sharing of tax attributes and obligations. The Company and Historical DuPont compute the amount due to DowDuPont for their share of taxable income and tax attributes and obligations on DowDuPont's consolidated tax return. The amounts reported as income tax payable or receivable represent the Company's payment obligation (or refundable amount) to DowDuPont based on a theoretical tax liability calculated based on the methodologies agreed, elected or required in each combined or consolidated filing jurisdiction.

The Company recognizes the financial statement effects of an uncertain income tax position when it is more likely than not, based on the technical merits, that the position will be sustained upon examination. The Company accrues for other tax contingencies when it is probable that a liability to a taxing authority has been incurred and the amount of the contingency can be reasonably estimated. The current portion of uncertain income tax positions is included in "Income taxes payable" and the long-term portion is included in "Other noncurrent obligations" in the consolidated balance sheets.

Provision is made for taxes on undistributed earnings of foreign subsidiaries and related companies to the extent that such earnings are not deemed to be permanently invested.

See Note 9 for further information relating to the enactment of the Tax Cuts and Jobs Act ("The Act") in 2017.

Earnings per Common Share

The calculation of earnings per common share is based on the weighted-average number of the Company's common shares outstanding for the applicable period. The calculation of diluted earnings per common share reflects the effect of all potential common shares that were outstanding during the respective periods, unless the effect of doing so is antidilutive.

Adoption of Accounting Standards

Effective January 1, 2019, the Company adopted Topic 842 and added the accounting policy discussed in the section above. Adoption of the new standard resulted in the recording of operating lease ROU assets and lease liabilities of \$2.3 billion at January 1, 2019. The net impact to "Retained earnings" was an increase of \$32 million and was primarily a result of the recognition of a deferred gain associated with a prior sale-leaseback transaction. The adoption of the new guidance did not have a material impact on Dow's consolidated statements of income and had no impact on cash flows. See Notes 2 and 18 for additional information.

Additionally, the Company's consolidated balance sheets reflect the impact of the adoption of Topic 606 at January 1, 2019, by certain nonconsolidated affiliates of the Company, which were subsequently distributed as part of the separation from DowDuPont. The net impact is reflected in assets and liabilities of discontinued operations with a corresponding reduction to "Retained earnings" of \$183 million in the consolidated balance sheets at January 1, 2019.

2018

In the first quarter of 2018, the Company adopted Topic 606, ASU 2016-01, "Financial Instruments - Overall (Subtopic 825-10): Recognition and Measurement of Financial Assets and Financial Liabilities" and ASU 2016-16, "Income Taxes (Topic 740): Intra-Entity Transfers of Assets Other Than Inventory." The adoption of these ASUs resulted in a net decrease of \$68 million to "Retained earnings" and a decrease of \$20 million to "Accumulated other comprehensive loss" ("AOCL") in the consolidated statements of equity at January 1, 2018. In the second quarter of 2018, the Company early adopted ASU 2018-02, "Income Statement - Reporting Comprehensive Income (Topic 220): Reclassification of Certain Tax Effects from Accumulated Other Comprehensive Income ("ASU 2018-02")." The adoption of this standard resulted in a \$1,057 million increase to "Retained earnings" due to the reclassification from AOCL in the consolidated statements of equity at April 1, 2018.

Dividends

Prior to the Merger, TDCC declared dividends of \$1.38 per share in 2017, based on the historical number of shares of common stock of TDCC held by shareholders of record for each dividend. Effective with the Merger, TDCC no longer had publicly traded common stock. TDCC's common shares were owned solely by its parent company, DowDuPont, prior to separation, and TDCC's Board of Directors determined whether or not there would be a dividend distribution to DowDuPont. Effective with the separation from DowDuPont, TDCC became a wholly owned subsidiary of Dow Inc. and TDCC's Board of Directors determines whether or not there will be a dividend distribution to Dow Inc. Subsequent to the separation from DowDuPont, Dow Inc. declared dividends of \$2.10 per share in 2019. See Notes 19 and 26 for additional information.

NOTE 2 – RECENT ACCOUNTING GUIDANCE

Recently Adopted Accounting Guidance

In 2019, the Company adopted Topic 842, which requires organizations that lease assets to recognize on the balance sheet the assets and liabilities for the rights and obligations created by those leases. The new guidance requires that a lessee recognize assets and liabilities for leases, and recognition, presentation and measurement in the financial statements will depend on its classification as a finance or operating lease. In addition, the new guidance requires disclosures to help investors and other financial statement users better understand the amount, timing and uncertainty of cash flows arising from leases. Lessor accounting remains largely unchanged from legacy U.S. GAAP but does contain some targeted improvements to align with the new revenue recognition guidance in Topic 606. The new standard was effective for fiscal years, and interim periods within those fiscal years, beginning after December 15, 2018, and early adoption was permitted.

The Company adopted Topic 842 using the modified retrospective transition approach, applying the new standard to leases existing at the date of initial adoption. The Company elected to apply the transition requirements at the effective date rather than at the beginning of the earliest comparative period presented with a cumulative effect adjustment to the opening balance of retained earnings in the period of adoption, and prior periods were not restated. In addition, the Company elected to apply the package of practical expedients permitted under the transition guidance which does not require reassessment of prior conclusions, lease classification and initial direct lease costs. The Company did not elect to use the hindsight practical expedient in determining the lease term or assessing impairment of ROU assets. Adoption of the new standard resulted in the recording of operating lease ROU assets and lease liabilities of \$2.3 billion at January 1, 2019. The net impact to retained earnings was an increase of \$32 million and was primarily a result of the recognition of a deferred gain associated with a prior sale-leaseback transaction. The adoption of the new guidance did not have a material impact on Dow's consolidated statements of income and had no impact on cash flows. See Notes 1 and 18 for additional information.

Accounting Guidance Issued But Not Adopted at December 31, 2019

In August 2018, the Financial Accounting Standards Board ("FASB") issued ASU 2018-13, "Fair Value Measurement (Topic 820): Disclosure Framework - Changes to the Disclosure Requirements for Fair Value Measurement," which is part of the FASB disclosure framework project to improve the effectiveness of disclosures in the notes to the financial statements. The amendments in the new guidance remove, modify and add certain disclosure requirements related to fair value measurements covered in Topic 820, "Fair Value Measurement." The new standard is effective for fiscal years, and interim periods within those fiscal years, beginning after December 15, 2019. Early adoption is permitted for either the entire standard or only the requirements that modify or eliminate the disclosure requirements, with certain requirements applied prospectively, and all other requirements applied retrospectively to all periods presented. The Company expects to adopt the new guidance in the first quarter of 2020 and the adoption of this guidance is not expected to have a material impact on the consolidated financial statements.

In August 2018, the FASB issued ASU 2018-15, "Intangibles - Goodwill and Other - Internal-Use Software (Subtopic 350-40): Customer's Accounting for Implementation Costs Incurred in a Cloud Computing Arrangement That is a Service Contract," which requires a customer in a cloud computing arrangement that is a service contract to follow the internal-use software guidance in Topic 350, "Intangibles - Goodwill and Other" to determine which implementation costs to capitalize as assets or expense as incurred. The new standard is effective for fiscal years, and interim periods within those fiscal years, beginning after December 15, 2019. Early adoption is permitted and an entity can elect to apply the new guidance on a prospective or retrospective basis. The Company expects to adopt the new guidance in the first quarter of 2020 and the adoption of this guidance is not expected to have a material impact on the consolidated financial statements.

In December 2019, the FASB issued ASU 2019-12, "Income Taxes (Topic 740): Simplifying the Accounting for Income Taxes." The amendments simplify the accounting for income taxes by removing certain exceptions to the general principles of Topic 740, "Income Taxes" and also improve consistent application by clarifying and amending existing guidance. The new standard is effective for fiscal years, and interim periods within those fiscal years, beginning after December 15, 2020. Early adoption is permitted, with the amendments to be applied on a retrospective, modified retrospective or prospective basis, depending on the specific amendment. The Company is currently evaluating the impact of adopting this guidance.

NOTE 3 - MERGER WITH HISTORICAL DUPONT

Effective August 31, 2017, TDCC and Historical DuPont completed the merger of equals transaction contemplated by the Merger Agreement, by and among TDCC, Historical DuPont, DowDuPont, Diamond Merger Sub, Inc. and Orion Merger Sub, Inc. Pursuant to the Merger Agreement, (i) Diamond Merger Sub, Inc. was merged with and into TDCC, with TDCC surviving the merger as a subsidiary of DowDuPont (the "Diamond Merger") and (ii) Orion Merger Sub, Inc. was merged with and into Historical DuPont, with Historical DuPont surviving the merger as a subsidiary of DowDuPont (the "Orion Merger" and, together with the Diamond Merger, the "Mergers"). Following the consummation of the Mergers, each of TDCC and Historical DuPont became subsidiaries of DowDuPont. Subsequent to the Merger, TDCC and Historical DuPont engaged in a series of internal reorganization and realignment steps to realign their businesses into three subgroups: agriculture, materials science and specialty products. Dow Inc. was formed as a wholly owned subsidiary of DowDuPont to serve as the holding company for the materials science business.

Upon completion of the Diamond Merger, each share of common stock, par value \$2.50 per share, of TDCC ("TDCC Common Stock") (excluding any shares of TDCC Common Stock that were held in treasury immediately prior to the effective time of the Diamond Merger, which were automatically canceled and retired for no consideration) was converted into the right to receive one fully paid and non-assessable share of common stock, par value \$0.01 per share, of DowDuPont ("DowDuPont Common Stock"). As provided in the Merger Agreement, at the effective time of the Mergers, (i) all options, deferred stock, performance deferred stock and other equity awards relating to shares of TDCC Common Stock outstanding immediately prior to the effective time of the Mergers were generally automatically converted into options and deferred stock and other equity awards relating to shares of DowDuPont Common Stock after giving effect to appropriate adjustments to reflect the Mergers and otherwise generally on the same terms and conditions as applied under the applicable plans and award agreements immediately prior to the effective time of the Mergers. See Note 22 for additional information on the conversion of the equity awards.

In the third quarter of 2017, as a result of the Diamond Merger and the Merger, TDCC recorded a reduction in "Treasury stock" of \$935 million, a reduction in "Common stock" of \$3,107 million and an increase in "Additional paid in capital" of \$2,172 million. At September 1, 2017, TDCC had 100 shares of common stock issued and outstanding, par value \$0.01 per share, owned solely by its parent, DowDuPont. Following the separation from DowDuPont, these shares are now solely owned by Dow Inc.

On August 31, 2017, following the Diamond Merger, TDCC requested that the New York Stock Exchange ("NYSE") withdraw the shares of TDCC Common Stock from listing on the NYSE and filed a Form 25 with the SEC to report that the shares of TDCC Common Stock are no longer listed on the NYSE. The shares of TDCC Common Stock were suspended from trading on the NYSE prior to the open of trading on September 1, 2017.

As a condition of the regulatory approval of the Merger, TDCC and Historical DuPont agreed to certain closing conditions, which are as follows:

- TDCC divested its global Ethylene Acrylic Acid copolymers and ionomers business ("EAA Business") to SK Global Chemical Co., Ltd., on September 1, 2017, as part of a divestiture commitment given to the European Commission ("EC") in connection with the EC's conditional approval of the Merger granted on March 27, 2017. See Note 6 for additional information on this transaction.
- Historical DuPont divested its Cereal Broadleaf Herbicides and Chewing Insecticides portfolios as well as its Crop Protection research and development ("R&D") pipeline and organization (excluding seed treatment, nematicides, late-stage R&D programs and certain personnel needed to support marketed products and R&D programs that remained with Historical DuPont) (collectively, the "DuPont Divested Assets") to FMC Corporation ("FMC") on November 1, 2017, as part of the EC's conditional approval granted on March 27, 2017. Also on November 1, 2017, Historical DuPont completed its acquisition of FMC's Health and Nutrition business, excluding its Omega-3 products.
- On May 2, 2017, TDCC and Historical DuPont announced that China's Ministry of Commerce ("MOFCOM") granted conditional regulatory approval for the companies' proposed merger of equals which included commitments already made to the EC including Historical DuPont's divestiture of the DuPont Divested Assets and TDCC's divestiture of the EAA Business. In addition, TDCC and Historical DuPont made commitments related to the supply and distribution in China of certain herbicide and insecticide ingredients and formulations for rice crops for five years after the closing of the Merger.

- TDCC divested a select portion of Dow AgroSciences' corn seed business in Brazil to CITIC Agri Fund on November 30, 2017. The divestiture was part of the commitment given to Brazil's Administrative Council for Economic Defense ("CADE") in connection with the CADE's conditional approval of the Merger granted on May 17, 2017, which was incremental to commitments already made to the EC, China and regulatory agencies in other jurisdictions. This divestiture was included in discontinued operations of the Company.
- On June 15, 2017, TDCC and Historical DuPont announced that a proposed agreement had been reached with the Antitrust Division of the United States Department of Justice that permitted the companies to proceed with the proposed merger of equals transaction. The proposed agreement was consistent with commitments already made to the EC.

NOTE 4 – SEPARATION FROM DOWDUPONT

On April 1, 2019, DowDuPont completed the previously announced separation of its materials science business. The separation was effected by way of a pro rata distribution of all of the then-issued and outstanding shares of Dow Inc. common stock to DowDuPont stockholders of record as of the close of business, Eastern Time, on March 21, 2019 (the "Record Date"). The shareholders of record of DowDuPont received one share of Dow Inc. common stock, par value \$0.01 per share, for every three shares of DowDuPont common stock, par value \$0.01 per share, held as of the Record Date ("Distribution Ratio"). No fractional shares of Dow Inc. common stock were issued. Instead, cash in lieu of any fractional shares was paid to DowDuPont registered shareholders. The number of shares of Dow Inc. common stock issued on April 1, 2019 was 748.8 million shares. Dow Inc. is now an independent, publicly traded company and Dow Inc. common stock is listed on the NYSE under the symbol "DOW." Dow Inc. common stock began regular-way trading on April 2, 2019, the first day following the distribution.

Effective April 1, 2019, TDCC became a wholly owned subsidiary of Dow Inc. As of the effective date and time of the distribution, DowDuPont does not beneficially own any equity interest in Dow and will no longer consolidate Dow and its consolidated subsidiaries into its financial results. Beginning in the second quarter of 2019, Dow's consolidated financial results reflect the results of Dow Inc. and its consolidated subsidiaries - that is, TDCC after giving effect to the distribution of AgCo and SpecCo and the receipt of ECP. The consolidated financial results of Dow for periods prior to April 1, 2019, reflect the distribution of AgCo and SpecCo as discontinued operations for each period presented as well as reflect the receipt of ECP as a common control transaction from the closing of the Merger on August 31, 2017.

On April 1, 2019, Dow Inc. received a cash contribution of \$2,024 million from DowDuPont as part of the internal reorganization and business realignment steps between Dow Inc., TDCC and DowDuPont. Dow Inc. recognized a reduction to "Retained earnings" of \$14,806 million in 2019 as a result of the cash contribution, the distribution of AgCo and SpecCo, and other separation related adjustments. TDCC recognized a reduction to "Retained earnings" of \$16,009 million in 2019 as a result of the distribution of AgCo and SpecCo.

Receipt of ECP

As the receipt of ECP was accounted for as a transfer between entities under common control, the consolidated financial statements have been retrospectively adjusted to reflect the receipt of ECP from the closing of the Merger on August 31, 2017. All intercompany transactions have been eliminated in consolidation.

Distribution of AgCo and SpecCo

Upon distribution, the Company retrospectively adjusted the previously issued consolidated financial statements and presented AgCo and SpecCo as discontinued operations based on the guidance in Accounting Standards Codification (“ASC”) 205-20 “Discontinued Operations” (“ASC 205-20”). The results of operations of AgCo and SpecCo are presented as discontinued operations in the consolidated statements of income and are summarized in the following table:

Results of Operations of AgCo and SpecCo In millions	2019 ¹	2018	2017
Net sales	\$ 2,953	\$ 12,187	\$ 12,337
Cost of sales	1,804	7,668	7,769
Research and development expenses	175	761	854
Selling, general and administrative expenses	262	1,108	1,143
Amortization of intangibles	61	249	255
Restructuring and asset related charges - net	78	411	376
Integration and separation costs	—	—	18
Equity in earnings of nonconsolidated affiliates	28	400	372
Sundry income (expense) - net	(18)	(13)	245
Interest income	3	26	40
Interest expense and amortization of debt discount	7	56	61
Income from discontinued operations before income taxes	\$ 579	\$ 2,347	\$ 2,518
Provision for income taxes	134	512	636
Income from discontinued operations, net of tax	\$ 445	\$ 1,835	\$ 1,882

1. Results through March 31, 2019.

The carrying amount of major classes of assets and liabilities related to the distribution of AgCo and SpecCo consisted of the following:

Carrying Values of AgCo and SpecCo ¹ In millions	Dec 31, 2018
Accounts and notes receivable - Trade	\$ 2,768
Accounts and notes receivable - Other	773
Inventories	2,826
Other current assets	151
Investment in nonconsolidated affiliates	612
Other investments	2
Noncurrent receivables	35
Net property	3,014
Goodwill	7,590
Other intangible assets	1,830
Deferred income tax assets	239
Deferred charges and other assets	60
Total assets of discontinued operations	\$ 19,900
Notes payable	\$ 7
Long-term debt due within one year	4
Accounts payable - Trade	1,118
Accounts payable - Other	868
Income taxes payable	234
Accrued and other current liabilities	716
Long-Term Debt	5
Deferred income tax liabilities	568
Pension and other postretirement benefits - noncurrent	306
Other noncurrent obligations	662
Total liabilities of discontinued operations	\$ 4,488

1. Includes assets and liabilities of consolidated variable interest entities related to discontinued operations.

Agreements Related to the Separation and Distribution

In connection with the separation, Dow Inc. entered into certain agreements with DuPont and/or Corteva, Inc. ("Corteva"), including the following: Separation and Distribution Agreement, Tax Matters Agreement and Employee Matters Agreement (collectively, the "Agreements"). In addition to establishing the terms of the separation, the Agreements provide a framework for Dow's interaction with DuPont and Corteva after the separation and also provide for the allocation among Dow, DuPont and Corteva of assets, liabilities and obligations attributable to periods prior to, at and after the completion of the separation. The Agreements also contain certain indemnity and/or cross-indemnity provisions that are intended to set forth each party's respective rights, responsibilities and obligations for matters subject to indemnification. Except in certain instances, the parties' indemnification obligations are uncapped. Certain indemnification obligations will be subject to reduction by insurance proceeds or other third-party proceeds of the indemnified party that reduces the amount of the loss. In addition, indemnifiable losses will be subject to, in certain cases, "de minimis" threshold amounts and, in certain cases, deductible amounts.

The impacts of indemnifications and other post-separation matters relating to the Agreements are primarily reflected in the consolidated financial statements of Dow Inc. In 2019, the Company recorded pretax charges related to the Agreements of \$24 million in "Integration and separation costs" and \$69 million in "Sundry income (expense) - net" in the consolidated statements of income of Dow Inc., and related to Corporate. At December 31, 2019, the Company had assets of \$58 million included in "Other current assets" and \$52 million included in "Noncurrent receivables," and liabilities of \$352 million included in "Accrued and other current liabilities" and \$96 million included in "Other noncurrent obligations" in the consolidated balance sheets of Dow Inc. related to the Agreements. Any adjustments to these assets and liabilities in subsequent periods will be recorded in Dow Inc.'s results of operations. In addition, the Company deferred approximately \$400 million of the cash distribution received from DowDuPont at separation and recorded an associated liability with an offset to "Retained earnings" in the consolidated balance sheets of Dow Inc. At December 31, 2019, \$130 million of this liability was recorded in "Accrued and other current liabilities" and \$270 million was recorded in "Other noncurrent obligations" in the consolidated balance sheets of Dow Inc. The final resolution of this liability is uncertain and any subsequent adjustments to the carrying value of this liability will be reflected in equity of Dow Inc. Following the separation, Dow Inc. made cash payments of \$215 million related to the Agreements, recorded in "Cash flows from operating activities - discontinued operations" in the Dow Inc. consolidated statements of cash flows. The Company also received \$98 million related to the Agreements, recorded in "Other assets and liabilities, net" within "Cash flows from operating activities - continuing operations" in the Dow Inc. consolidated statements of cash flows.

Continuing Involvement

The Company has certain product and service agreements with DuPont and Corteva that were considered intercompany transactions prior to the separation, but are trade transactions subsequent to the separation. These transactions have been retrospectively reclassified as trade transactions in the consolidated financial statements. Based on the Company's assessment of the specific factors identified in ASC Topic 205, "Presentation of Financial Statements," the Company concluded that these agreements do not constitute significant continuing involvement in AgCo or SpecCo.

Integration and Separation Costs

Integration and separation costs, which reflect costs related to post-Merger integration and business separation activities, as well as the ownership restructure of Dow Silicones (through May 31, 2018), were \$1,063 million and \$1,039 million for Dow Inc. and TDCC, respectively, in 2019, compared with \$1,179 million in 2018 and \$798 million in 2017. Integration and separation costs related to post-Merger integration and business separation activities are expected to be substantially complete by the end of 2020.

NOTE 5 – REVENUE

The majority of the Company's revenue is derived from product sales. In 2019, 98 percent of the Company's revenue related to product sales (99 percent in 2018 and 98 percent in 2017). The remaining sales were primarily related to the Company's insurance operations and licensing of patents and technologies.

Product Sales

Product sales consist of sales of the Company's products to manufacturers and distributors. The Company considers order confirmations or purchase orders, which in some cases are governed by master supply agreements, to be contracts with a customer. Product sale contracts are generally short-term contracts where the time between order confirmation and satisfaction of all performance obligations is less than one year. However, the Company has some long-term contracts which can span multiple years.

Revenues from product sales are recognized when the customer obtains control of the product, which occurs at a point in time, usually upon shipment, with payment terms typically in the range of 30 to 60 days after invoicing, depending on business and geographic region. When the Company performs shipping and handling activities after the transfer of control to the customer (e.g., when control transfers prior to shipment), these are considered fulfillment activities, and accordingly, the costs are accrued when

the related revenue is recognized. Taxes collected from customers relating to product sales and remitted to governmental authorities are excluded from revenues. The Company elected to use the practical expedient to expense cash and non-cash sales incentives, as the amortization period for the costs to obtain the contract would have been one year or less.

Certain long-term contracts include a series of distinct goods that are delivered continuously to the customer through a pipeline (e.g., feedstocks). For these types of product sales, the Company invoices the customer in an amount that directly corresponds with the value to the customer of the Company's performance to date. As a result, the Company recognizes revenue based on the amount billable to the customer in accordance with the right to invoice practical expedient.

The transaction price includes estimates for reductions in revenue from customer rebates and right of returns on product sales. These amounts are estimated based upon the most likely amount of consideration to which the customer will be entitled. All estimates are based on historical experience, anticipated performance and the Company's best judgment at the time to the extent it is probable that a significant reversal of revenue recognized will not occur. All estimates for variable consideration are reassessed periodically. The Company elected the practical expedient to not adjust the amount of consideration for the effects of a significant financing component for all instances in which the period between payment and transfer of the goods will be one year or less.

For contracts with multiple performance obligations, the Company allocates the transaction price to each performance obligation based on the relative standalone selling price. The standalone selling price is the observable price which depicts the price as if sold to a similar customer in similar circumstances.

Patents, Trademarks and Licenses

The Company enters into licensing arrangements in which it licenses certain rights of its patents and technology to customers. Revenue from the majority of the Company's licenses for patents and technology is derived from sales-based royalties. The Company estimates the amount of sales-based royalties it expects to be entitled to based on historical sales to the customer. For the remaining revenue from licensing arrangements, payments are typically received from the Company's licensees based on billing schedules established in each contract. Revenue is recognized when the performance obligation is satisfied.

Remaining Performance Obligations

Remaining performance obligations represent the transaction price allocated to unsatisfied or partially unsatisfied performance obligations. At December 31, 2019, the Company had unfulfilled performance obligations for the licensing of technology of \$826 million, and expects revenue to be recognized for the remaining performance obligations over the next one to seven years.

The remaining performance obligations are for product sales that have expected durations of one year or less, product sales of materials delivered through a pipeline for which the Company has elected the right to invoice practical expedient, or variable consideration attributable to royalties for licenses of patents and technology. The Company has received advance payments from customers related to long-term supply agreements that are deferred and recognized over the life of the contract, with remaining contract terms that range up to 21 years. The Company will have rights to future consideration for revenue recognized when product is delivered to the customer. These payments are included in "Accrued and other current liabilities" and "Other noncurrent obligations" in the consolidated balance sheets.

Disaggregation of Revenue

The Company disaggregates its revenue from contracts with customers by segment and business, as the Company believes it best depicts the nature, amount, timing and uncertainty of its revenue and cash flows. See details in the tables below:

Net Trade Sales by Segment and Business		
In millions	2019	2018
Hydrocarbons & Energy	\$ 5,357	\$ 7,587
Packaging and Specialty Plastics	14,888	16,608
Packaging & Specialty Plastics	\$ 20,245	\$ 24,195
Industrial Solutions	\$ 4,310	\$ 4,812
Polyurethanes & Construction Chemicals	9,117	10,615
Others	13	20
Industrial Intermediates & Infrastructure	\$ 13,440	\$ 15,447
Coatings & Performance Monomers	\$ 3,517	\$ 3,979
Consumer Solutions	5,406	5,698
Performance Materials & Coatings	\$ 8,923	\$ 9,677
Corporate	\$ 343	\$ 285
Total	\$ 42,951	\$ 49,604

Net Trade Sales by Geographic Region		
In millions	2019	2018
U.S. & Canada	\$ 15,549	\$ 17,809
EMEAI ¹	14,612	17,406
Asia Pacific	8,676	9,404
Latin America	4,114	4,985
Total	\$ 42,951	\$ 49,604

1. Europe, Middle East, Africa and India.

Contract Assets and Liabilities

The Company receives payments from customers based upon contractual billing schedules. Accounts receivable are recorded when the right to consideration becomes unconditional. Contract assets include amounts related to the Company's contractual right to consideration for completed performance obligations not yet invoiced. Contract liabilities include payments received in advance of performance under the contract, and are realized when the associated revenue is recognized under the contract. "Contract liabilities - current" primarily reflects deferred revenue from prepayments from customers for product to be delivered in 12 months or less. "Contract liabilities - noncurrent" includes advance payments that the Company has received from customers related to long-term supply agreements and royalty payments that are deferred and recognized over the life of the contract.

The Company's contract liabilities increased from December 31, 2018 to December 31, 2019 due to advanced payments from customers related to long-term product supply agreements. Revenue recognized in 2019 from amounts included in contract liabilities at the beginning of the period was approximately \$145 million (\$205 million in 2018). In 2019, the amount of contract assets reclassified to receivables as a result of the right to the transaction consideration becoming unconditional was approximately \$15 million (\$12 million in 2018). The Company did not recognize any asset impairment charges related to contract assets in 2019 or 2018.

The following table summarizes the contract assets and liabilities at December 31, 2019 and 2018:

Contract Assets and Liabilities at Dec 31		
In millions	2019	2018
Accounts and notes receivable - Trade	\$ 4,844	\$ 5,646
Contract assets - current ¹	\$ 41	\$ 19
Contract assets - noncurrent ²	\$ 4	\$ 1
Contract liabilities - current ³	\$ 193	\$ 134
Contract liabilities - noncurrent ⁴	\$ 1,607	\$ 1,318

1. Included in "Other current assets" in the consolidated balance sheets.

2. Included in "Deferred charges and other assets" in the consolidated balance sheets.

3. Included in "Accrued and other current liabilities" in the consolidated balance sheets.

4. Included in "Other noncurrent obligations" in the consolidated balance sheets.

NOTE 6 – DIVESTITURES

Merger Remedy - Divestiture of the Global Ethylene Acrylic Acid Copolymers and Ionomers Business

On February 2, 2017, as a condition of regulatory approval of the Merger, the Company announced it would divest its global EAA Business to SK Global Chemical Co., Ltd. The divestiture included production assets located in Freeport, Texas, and Tarragona, Spain, along with associated intellectual property and product trademarks. Under terms of the purchase agreement, SK Global Chemical Co., Ltd will honor certain customer and supplier contracts and other agreements. On September 1, 2017, the sale was completed for \$296 million, net of working capital adjustments, costs to sell and other adjustments, with proceeds subject to customary post-closing adjustments. As a result, in 2017, the Company recognized a pretax gain of \$227 million on the sale, included in "Sundry income (expense) - net" in the consolidated statements of income and related to the Packaging & Specialty Plastics segment.

The Company evaluated the divestiture of the EAA Business and determined it did not represent a strategic shift that had a major effect on the Company's operations and financial results and did not qualify as an individually significant component of the Company. As a result, this divestiture was not reported in discontinued operations.

NOTE 7 – RESTRUCTURING, GOODWILL IMPAIRMENT AND ASSET RELATED CHARGES - NET

The "Restructuring, goodwill impairment and asset related charges - net" line in the consolidated statements of income is used to record charges for restructuring programs, goodwill impairments, and other asset related charges, which includes other asset impairments.

DowDuPont Cost Synergy Program

In September and November 2017, DowDuPont approved post-merger restructuring actions under the DowDuPont Cost Synergy Program (the "Synergy Program") which was designed to integrate and optimize the organization following the Merger and in preparation for the business separations. The Company expected (prior to the impact of any discontinued operations) to record total pretax restructuring charges of approximately \$1.3 billion, which included initial estimates of approximately \$525 million to \$575 million of severance and related benefit costs, \$400 million to \$440 million of asset write-downs and write-offs, and \$290 million to \$310 million of costs associated with exit and disposal activities. The restructuring charges below reflect charges from continuing operations.

The Company recorded pretax restructuring charges of \$399 million in 2017, consisting of severance and related benefit costs of \$307 million, asset write-downs and write-offs of \$87 million and costs associated with exit and disposal activities of \$5 million. The Company recorded pretax restructuring charges of \$184 million in 2018, consisting of severance and related benefit costs of \$137 million, assets write-downs and write-offs of \$33 million and costs associated with exit and disposal activities of \$14 million. For the year ended December 31, 2019, the Company recorded pretax restructuring charges of \$292 million, consisting of severance and related benefit costs of \$123 million, asset write-downs and write-offs of \$143 million and costs associated with exit and disposal activities of \$26 million. The impact of these charges is shown as "Restructuring, goodwill impairment and asset related charges - net" in the consolidated statements of income. The Company expects the Synergy Program to be substantially complete by the end of the second quarter of 2020.

The following table summarizes the activities related to the Synergy Program. At December 31, 2019, \$52 million was included in "Accrued and other current liabilities" (\$205 million at December 31, 2018) and \$19 million was included in "Other noncurrent obligations" (\$12 million at December 31, 2018) in the consolidated balance sheets.

DowDuPont Synergy Program			<i>Costs Associated with Exit and Disposal Activities</i>	
In millions	<i>Severance and Related Benefit Costs</i>	<i>Asset Write- downs and Write-offs</i>		<i>Total</i>
2017 restructuring charges				
Packaging & Specialty Plastics	\$ —	\$ 33	\$ 3	\$ 36
Industrial Intermediates & Infrastructure	—	12	—	12
Performance Materials & Coatings	—	9	2	11
Corporate	307	33	—	340
Total 2017 restructuring charges	\$ 307	\$ 87	\$ 5	\$ 399
Charges against the reserve	—	(87)	—	(87)
Cash payments	(37)	—	—	(37)
Reserve balance at Dec 31, 2017	\$ 270	\$ —	\$ 5	\$ 275
2018 restructuring charges				
Packaging & Specialty Plastics	\$ —	\$ 10	\$ 3	\$ 13
Industrial Intermediates & Infrastructure	—	—	11	11
Performance Materials & Coatings	—	7	—	7
Corporate	137	16	—	153
Total 2018 restructuring charges	\$ 137	\$ 33	\$ 14	\$ 184
Charges against the reserve	—	(33)	—	(33)
Cash payments	(197)	—	(12)	(209)
Reserve balance at Dec 31, 2018	\$ 210	\$ —	\$ 7	\$ 217
2019 restructuring charges				
Packaging & Specialty Plastics	\$ —	\$ —	\$ 1	\$ 1
Industrial Intermediates & Infrastructure	—	2	5	7
Performance Materials & Coatings	—	28	—	28
Corporate	123	113	20	256
Total 2019 restructuring charges	\$ 123	\$ 143	\$ 26	\$ 292
Charges against the reserve	—	(143)	—	(143)
Cash payments	(279)	—	(16)	(295)
Reserve balance at Dec 31, 2019	\$ 54	\$ —	\$ 17	\$ 71

Asset Write-downs and Write-offs

The restructuring charges related to the write-down and write-off of assets in 2017 are as follows:

- The Company recorded a charge of \$22 million for asset write-downs and write-offs aligned with an energy project, including the write-off of capital projects and other non-manufacturing assets in Packaging & Specialty Plastics.
- The Company recorded a charge of \$65 million for other miscellaneous asset write-downs and write-offs, including the shutdown of several small manufacturing facilities and the write-off of non-manufacturing assets, certain corporate facilities and data centers. The charge related to Packaging & Specialty Plastics (\$11 million), Industrial Intermediates & Infrastructure (\$12 million), Performance Materials & Coatings (\$9 million) and Corporate (\$33 million). These manufacturing facilities were shut down primarily by the end of 2019.

The restructuring charges related to the write-down and write-off of assets in 2018 are as follows:

- The Company recorded a charge of \$33 million for other miscellaneous asset write-downs and write-offs, including the shutdown of several small manufacturing facilities and the write-off of leased, non-manufacturing assets and certain corporate facilities. The charge related to Packaging & Specialty Plastics (\$10 million), Performance Materials & Coatings (\$7 million) and Corporate (\$16 million). These manufacturing facilities were shut down by the end of 2019.

The restructuring charges related to the write-down and write-off of assets in 2019 are as follows:

- The Company recorded a charge of \$143 million for other miscellaneous asset write-downs and write-offs, including the shutdown of several small manufacturing facilities and the write-off of non-manufacturing assets and certain corporate facilities. The charge related to Industrial Intermediates & Infrastructure (\$2 million), Performance Materials & Coatings (\$28 million) and Corporate (\$113 million). These manufacturing facilities will be shut down by the end of the second quarter of 2020.

Costs Associated with Exit and Disposal Activities

The restructuring charges for costs associated with exit and disposal activities, including contract cancellation penalties and environmental remediation liabilities, totaled \$5 million in 2017, \$14 million in 2018 and \$26 million in 2019.

The Company expects to incur additional costs in the future related to its restructuring activities. Future costs are expected to include demolition costs related to closed facilities. These costs will be recognized as incurred. The Company also expects to incur additional employee-related costs, including involuntary termination benefits, related to its other optimization activities. These costs cannot be reasonably estimated at this time.

Goodwill Impairment

Upon completion of the goodwill impairment testing in the fourth quarter of 2019, the Company determined the fair value of the Coatings & Performance Monomers reporting unit was lower than its carrying amount. As a result, the Company recorded an impairment charge of \$1,039 million in the fourth quarter of 2019, included in "Restructuring, goodwill impairment and asset related charges - net" in the consolidated statements of income and related to Performance Materials & Coatings.

In 2017, upon completion of the annual goodwill impairment testing, the Company determined the fair value of the Coatings & Performance Monomers reporting unit was lower than its carrying amount and as a result, recorded an impairment charge of \$1,491 million in the fourth quarter of 2017, included in "Restructuring, goodwill impairment and asset related charges - net" in the consolidated statements of income and related to Performance Materials & Coatings. See Note 14 for additional information on these impairment charges.

Asset Related Charges

2019 Charges

In 2019, the Company recognized additional pretax impairment charges of \$58 million related primarily to capital additions made to a biopolymers manufacturing facility in Santa Vitoria, Minas Gerais, Brazil ("Santa Vitoria"), which was impaired in 2017. The impairment charges were included in "Restructuring, goodwill impairment and asset related charges - net" in the consolidated statements of income and related to Packaging & Specialty Plastics (\$44 million), Performance Materials & Coatings (\$9 million) and Corporate (\$5 million). See Note 24 for additional information.

On August 13, 2019, the Company entered into a definitive agreement to sell its acetone derivatives business to ALTIVIA Ketones & Additives, LLC. The transaction closed on November 1, 2019 and included the Company's acetone derivatives related inventory and production assets, located in Institute, West Virginia, in addition to the site infrastructure, land, utilities and certain railcars. The Company remains at the Institute site as a tenant. As a result of the planned transaction, the Company recognized a pretax impairment charge of \$75 million in the third quarter of 2019, included in "Restructuring, goodwill impairment and asset related charges - net" in the consolidated statements of income and related to Packaging & Specialty Plastics (\$24 million) and Corporate (\$51 million). See Note 24 for additional information.

In the fourth quarter of 2019, upon completion of an evaluation of its equity method investment in Sadara Chemical Company ("Sadara") for other-than-temporary impairment, the Company determined that its investment in Sadara was other-than-temporarily impaired and it was written down to zero. Additionally, as part of Dow's evaluation of Sadara, the Company reserved certain of its notes and accounts receivable with Sadara due to uncertainty on the timing of collection. As a result, the Company recorded a \$1,755 million charge related to Sadara, included in "Restructuring, goodwill impairment and asset related charges - net" in the consolidated statements of income and related to Packaging & Specialty Plastics (\$370 million), Industrial Intermediates & Infrastructure (\$1,168 million) and Corporate (\$217 million). See Notes 13 and 24 for additional information.

2018 Charges

In 2018, the Company recognized an additional pretax impairment charge of \$34 million related primarily to capital additions at Santa Vitoria. The impairment charge was included in "Restructuring, goodwill impairment and asset related charges - net" in the consolidated statements of income and related to the Packaging & Specialty Plastics segment. See Note 24 for additional information.

2017 Charges

In 2017, the Company recognized a \$622 million pretax impairment charge related to Santa Vitoria. The Company determined it would not pursue an expansion of the facility's ethanol mill into downstream derivative products, primarily as a result of cheaper ethane-based production as well as the Company's new assets coming online on the U.S. Gulf Coast which can be used to meet growing market demands in Brazil. As a result of this decision, cash flow analysis indicated the carrying amount of the impacted assets was not recoverable. The impairment charge was included in "Restructuring, goodwill impairment and asset related charges - net" in the consolidated statements of income and related to the Packaging & Specialty Plastics segment. See Note 24 for additional information.

The Company also recognized other pretax impairment charges of \$246 million in the fourth quarter of 2017, including charges related to manufacturing assets of \$159 million, an equity method investment of \$81 million and other assets of \$6 million. The impairment charges were included in "Restructuring, goodwill impairment and asset related charges - net" in the consolidated statements of income and related to Packaging & Specialty Plastics (\$58 million), Industrial Intermediates & Infrastructure (\$5 million), Performance Materials & Coatings (\$83 million) and Corporate (\$100 million). See Note 24 for additional information.

NOTE 8 – SUPPLEMENTARY INFORMATION

Sundry Income (Expense) – Net In millions	Dow Inc.			TDCC		
	2019	2018	2017	2019	2018	2017
Non-operating pension and other postretirement benefit plan net credits (costs) ¹	\$ 205	\$ 123	\$ (676)	\$ 205	\$ 123	\$ (676)
Foreign exchange gains (losses)	91	(119)	(72)	77	(119)	(72)
Gain related to Nova ethylene asset matter ²	170	—	—	170	—	—
Dow Silicones breast implant liability adjustment ²	85	—	—	85	—	—
Gain (loss) on Dow Silicones commercial creditor matters ²	(50)	—	33	(50)	—	33
Indemnification and other transaction related costs ³	(69)	—	—	6	—	—
Loss on early extinguishment of debt ⁴	(102)	(54)	—	(102)	(54)	—
Gain (loss) on divestitures ⁵	(49)	—	7	2	—	7
Gain on sales of other assets and investments	67	18	117	67	18	117
Reclassification of cumulative translation adjustments	10	4	8	10	4	8
Post-closing adjustments related to Dow Silicones ownership restructure	—	(20)	—	—	(20)	—
Post-closing adjustments on divestiture of MEGlobal	—	20	—	—	20	—
Gain on divestiture of the EAA business ⁶	—	—	227	—	—	227
Gain related to Nova patent infringement award ²	—	—	137	—	—	137
Other - net	103	124	65	103	124	65
Total sundry income (expense) – net	\$ 461	\$ 96	\$ (154)	\$ 573	\$ 96	\$ (154)

1. See Note 21 for additional information.

2. See Note 17 for additional information.

3. See Note 4 for additional information.

4. See Note 16 for additional information.

5. Primarily related to post-closing adjustments on previous divestitures.

6. See Note 6 for additional information.

Accrued and Other Current Liabilities

"Accrued and other current liabilities" were \$2,762 million and \$2,233 million at December 31, 2019 for Dow Inc. and TDCC, respectively, and \$2,931 million at December 31, 2018. Accrued payroll, which is a component of "Accrued and other current liabilities" and includes liabilities related to payroll, incentive compensation and severance, was \$284 million at December 31, 2019 and \$759 million at December 31, 2018. No other components of "Accrued and other current liabilities" were more than 5 percent of total current liabilities.

Supplemental Cash Flow Information

The following table shows cash paid for interest and income taxes for the years ended December 31, 2019, 2018 and 2017:

Supplemental Cash Flow Information			
In millions	2019	2018	2017
Cash paid during year for:			
Interest, net of amounts capitalized	\$ 993	\$ 1,143	\$ 1,115
Income taxes	\$ 881	\$ 1,193	\$ 1,259

NOTE 9 – INCOME TAXES

The financial statements for Dow Inc. and TDCC are substantially similar, including the reporting of current and deferred tax expense (benefit), provision for income taxes on continuing operations, and deferred tax asset and liability balances. As a result, the following income tax discussion pertains to Dow Inc. only.

Geographic Allocation of Income and Provision for Income Taxes on Continuing Operations			
In millions	2019	2018	2017
Income (loss) from continuing operations before income taxes			
Domestic ¹	\$ (1,196)	\$ 745	\$ (2,226)
Foreign ²	(51)	3,004	2,463
Income (loss) from continuing operations before income taxes	\$ (1,247)	\$ 3,749	\$ 237
Current tax expense (benefit)			
Federal	\$ (287)	\$ 324	\$ (864)
State and local	25	13	4
Foreign	960	901	971
Total current tax expense	\$ 698	\$ 1,238	\$ 111
Deferred tax expense (benefit)			
Federal ³	\$ 52	\$ (318)	\$ 1,499
State and local	19	(32)	85
Foreign	(299)	(79)	(171)
Total deferred tax expense (benefit)	\$ (228)	\$ (429)	\$ 1,413
Provision for income taxes on continuing operations	\$ 470	\$ 809	\$ 1,524
Income (loss) from continuing operations, net of tax	\$ (1,717)	\$ 2,940	\$ (1,287)

1. The 2019 amount includes approximately \$1.4 billion of expense related to goodwill impairment and environmental matters. The 2017 amount includes approximately \$1.4 billion of expense related to goodwill impairment and litigation settlements. See Notes 14 and 17 for additional information.

2. The 2019 amount includes approximately \$1.8 billion of expense related to Sadara related charges. See Note 13 for additional information.

3. The 2018 and 2017 amounts reflect the tax impact of The Act which accelerated the utilization of tax credits and required remeasurement of all U.S. deferred tax assets and liabilities.

In 2017, as a result of the Merger and subsequent change in the Company's ownership, certain net operating loss carryforwards available for the Company's consolidated German tax group were derecognized. In addition, the sale of stock between two consolidated subsidiaries in 2014 created a gain that was initially deferred for tax purposes. This deferred gain became taxable as a result of activities executed in anticipation of the business separations. As a result, in 2017, the Company recorded a charge of \$267 million to "Provision for income taxes on continuing operations" in the consolidated statements of income.

Reconciliation to U.S. Statutory Rate	2019	2018	2017
Statutory U.S. federal income tax rate	21.0 %	21.0%	35.0%
Equity earnings effect	(3.2)	(3.3)	(52.7)
Foreign income taxed at rates other than the statutory U.S. federal income tax rate ¹	(14.8)	6.7	(61.2)
U.S. tax effect of foreign earnings and dividends	1.9	(0.7)	(8.4)
Unrecognized tax benefits	1.0	0.2	13.5
Divestitures ²	—	0.8	142.0
Impact of tax reform ³	11.1	(3.4)	367.8
Federal tax accrual adjustment ⁴	10.4	—	—
State and local income taxes	(4.4)	0.4	11.4
Sadara related charges ⁵	(29.5)	—	—
Goodwill impairment ⁶	(17.5)	—	220.8
Excess tax benefits from stock-based compensation	1.2	(1.0)	(39.7)
Other - net	(14.9)	0.9	14.5
Effective Tax Rate	(37.7)%	21.6%	643.0%

1. Includes the impact of valuation allowances in foreign jurisdictions.

2. See Note 6 for additional information.

3. Includes the impact of tax reform in Switzerland and the U.S.

4. Primarily related to the favorable impact of the restoration of tax basis in assets, driven by a recent court judgment that did not involve the Company.

5. See Note 13 for additional information.

6. See Note 14 for additional information.

On December 22, 2017, The Act was enacted. The Act reduced the U.S. federal corporate income tax rate from 35 percent to 21 percent, required companies to pay a one-time transition tax on earnings of certain foreign subsidiaries that were previously deferred, created new provisions related to foreign sourced earnings, eliminated the domestic manufacturing deduction and moved to a hybrid territorial system. At December 31, 2017, the Company had not completed its accounting for the tax effects of The Act; however, the Company made a reasonable estimate of the effects on its existing deferred tax balances and the one-time transition tax. In accordance with Staff Accounting Bulletin 118, income tax effects of The Act were refined upon obtaining, preparing, and analyzing additional information during the measurement period. At December 31, 2018, the Company had completed its accounting for the tax effects of The Act.

- As a result of The Act, the Company remeasured its U.S. federal deferred tax assets and liabilities based on the rates at which they are expected to reverse in the future, which is generally 21 percent. The Company recorded a cumulative benefit of \$81 million (\$79 million benefit in 2018 and \$2 million benefit in 2017) to "Provision for income taxes on continuing operations" in the consolidated statements of income with respect to the remeasurement of the Company's deferred tax balances.
- The Act required a mandatory deemed repatriation of post-1986 undistributed foreign earnings and profits, which resulted in a one-time transition tax. The Company recorded a cumulative charge of \$789 million (\$85 million benefit in 2018 and \$874 million charge in 2017) to "Provision for income taxes on continuing operations" in the consolidated statements of income with respect to the one-time transition tax.
- In 2018, the Company recorded an indirect impact of The Act related to prepaid tax on the intercompany sale of inventory. The amount recorded related to inventory was a charge of \$38 million to "Provision for income taxes on continuing operations" in the consolidated statements of income.
- For tax years beginning after December 31, 2017, The Act introduced new provisions for U.S. taxation of certain global intangible low-taxed income ("GILTI"). The Company has made the policy election to record any liability associated with GILTI in the period in which it is incurred.

Deferred Tax Balances at Dec 31 In millions	2019		2018	
	Assets	Liabilities	Assets	Liabilities
Property	\$ 494	\$ 3,177	\$ 406	\$ 2,519
Tax loss and credit carryforwards	1,920	—	2,079	—
Postretirement benefit obligations	2,432	210	2,115	143
Other accruals and reserves	1,678	43	1,220	151
Intangibles	120	688	157	954
Inventory	28	234	53	239
Investments	125	48	190	84
Other – net	851	120	620	247
Subtotal	\$ 7,648	\$ 4,520	\$ 6,840	\$ 4,337
Valuation allowances	(1,262)	—	(1,225)	—
Total	\$ 6,386	\$ 4,520	\$ 5,615	\$ 4,337

Operating Loss and Tax Credit Carryforwards at Dec 31 In millions	2019	2018
	Assets	Assets
Operating loss carryforwards		
Expire within 5 years	\$ 263	\$ 245
Expire after 5 years or indefinite expiration	1,133	1,196
Total operating loss carryforwards	\$ 1,396	\$ 1,441
Tax credit carryforwards		
Expire within 5 years	\$ 32	\$ 32
Expire after 5 years or indefinite expiration	492	606
Total tax credit carryforwards	\$ 524	\$ 638
Total operating loss and tax credit carryforwards	\$ 1,920	\$ 2,079

Undistributed earnings of foreign subsidiaries and related companies that are deemed to be permanently invested amounted to \$6,851 million at December 31, 2019 and \$6,014 million at December 31, 2018. The Act imposed U.S. tax on all post-1986 foreign unrepatriated earnings accumulated through December 31, 2017. Unrepatriated earnings generated after December 31, 2017, are now subject to tax in the current year. All undistributed earnings are still subject to certain taxes upon repatriation, primarily where foreign withholding taxes apply. It is not practicable to calculate the unrecognized deferred tax liability on undistributed earnings.

The following table provides a reconciliation of the Company's unrecognized tax benefits:

Total Gross Unrecognized Tax Benefits In millions	2019	2018	2017
Total unrecognized tax benefits at Jan 1	\$ 314	\$ 255	\$ 231
Decreases related to positions taken on items from prior years	(1)	(8)	(4)
Increases related to positions taken on items from prior years	16	68	37
Increases related to positions taken in the current year	10	2	12
Settlement of uncertain tax positions with tax authorities	(19)	—	(12)
Decreases due to expiration of statutes of limitations	—	(1)	(9)
Foreign exchange gain	(1)	(2)	—
Total unrecognized tax benefits at Dec 31	\$ 319	\$ 314	\$ 255
Total unrecognized tax benefits that, if recognized, would impact the effective tax rate	\$ 234	\$ 235	\$ 245
Total amount of interest and penalties (benefit) recognized in "Provision for income taxes on continuing operations"	\$ (11)	\$ (12)	\$ 2
Total accrual for interest and penalties recognized in the consolidated balance sheets	\$ 100	\$ 109	\$ 110

On January 9, 2017, the U.S. Supreme Court denied *certiorari* in the Company's tax treatment of partnerships and transactions associated with Chemtech, a wholly owned subsidiary. The Company has fully accrued the position and does not expect a future impact to "Provision for income taxes on continuing operations" in the consolidated statements of income as a result of the ruling.

Prior to the separation, TDCC and its consolidated subsidiaries were included in DowDuPont's consolidated federal income tax group and consolidated tax return. Generally, the consolidated tax liability of the DowDuPont U.S. tax group for each year will be apportioned among the members of the consolidated group based on each member's separate taxable income. TDCC and DuPont intend that, to the extent federal and/or state corporate income tax liabilities are reduced through the utilization of tax attributes of the other, settlement of any receivable and payable generated from the use of the other party's sub-group attributes will be in accordance with a tax sharing agreement and/or tax matters agreement. At December 31, 2019, the Company had a receivable of \$312 million as part of the tax sharing agreement, which is included in "Noncurrent receivables" in the consolidated balance sheets. At December 31, 2018, the Company had a receivable related to the tax sharing agreement of \$89 million, included in "Accounts and notes receivable - Other" in the consolidated balance sheets.

Each year, the Company files tax returns in the various national, state and local income taxing jurisdictions in which it operates. These tax returns are subject to examination and possible challenge by the tax authorities. Positions challenged by the tax authorities may be settled or appealed by the Company. As a result, there is an uncertainty in income taxes recognized in the Company's financial statements in accordance with accounting for income taxes and accounting for uncertainty in income taxes. The ultimate resolution of such uncertainties is not expected to have a material impact on the Company's results of operations.

Tax years that remain subject to examination for the Company's major tax jurisdictions are shown below:

Tax Years Subject to Examination by Major Tax Jurisdiction at Dec 31, 2019	
<i>Jurisdiction</i>	<i>Earliest Open Year</i>
Argentina	2013
Brazil	2006
Canada	2012
China	2009
Germany	2010
Italy	2015
The Netherlands	2016
Switzerland	2016
United States:	
Federal income tax	2004
State and local income tax	2004

The reserve for non-income tax contingencies related to issues in the United States and foreign locations was \$44 million at December 31, 2019 (\$91 million at December 31, 2018). This is management's best estimate of the potential liability for non-income tax contingencies. Inherent uncertainties exist in estimates of tax contingencies due to changes in tax law, both legislated and concluded through the various jurisdictions' tax court systems. It is the opinion of the Company's management that the possibility is remote that costs in excess of those accrued will have a material impact on the Company's consolidated financial statements.

NOTE 10 - EARNINGS PER SHARE CALCULATIONS

The following tables provide earnings per share calculations of Dow Inc. for the years ended December 31, 2019, 2018, and 2017. In accordance with the accounting guidance for earnings per share, earnings per share of TDCC is not presented as this information is not required in financial statements of wholly owned subsidiaries.

Net Income (Loss) for Earnings Per Share Calculations			
In millions	2019	2018	2017
Income (loss) from continuing operations, net of tax	\$ (1,717)	\$ 2,940	\$ (1,287)
Net income attributable to noncontrolling interests - continuing operations	(74)	(102)	(102)
Net income attributable to participating securities - continuing operations ¹	(6)	—	(8)
Income (loss) from continuing operations attributable to common stockholders	\$ (1,797)	\$ 2,838	\$ (1,397)
Income from discontinued operations, net of tax	\$ 445	\$ 1,835	\$ 1,882
Net income attributable to noncontrolling interests - discontinued operations	(13)	(32)	(28)
Net income attributable to participating securities - discontinued operations ¹	—	—	(6)
Income from discontinued operations attributable to common stockholders	\$ 432	\$ 1,803	\$ 1,848
Net income (loss) attributable to common stockholders	\$ (1,365)	\$ 4,641	\$ 451

Earnings Per Share Calculations - Basic			
Dollars per share	2019	2018	2017
Income (loss) from continuing operations attributable to common stockholders	\$ (2.42)	\$ 3.80	\$ (1.88)
Income from discontinued operations, net of tax	0.58	2.41	2.48
Net income (loss) attributable to common stockholders	\$ (1.84)	\$ 6.21	\$ 0.60

Earnings Per Share Calculations - Diluted			
Dollars per share	2019	2018	2017
Income (loss) from continuing operations attributable to common stockholders	\$ (2.42)	\$ 3.80	\$ (1.88)
Income from discontinued operations, net of tax	0.58	2.41	2.48
Net income (loss) attributable to common stockholders	\$ (1.84)	\$ 6.21	\$ 0.60

Share Count Information			
Shares in millions	2019	2018	2017
Weighted-average common shares - basic ^{2,3}	742.5	747.2	744.8
Plus dilutive effect of equity compensation plans	—	—	—
Weighted-average common shares - diluted ^{2,3,4}	742.5	747.2	744.8
Stock options and restricted stock units excluded from EPS calculations ⁵	20.8	—	1.1

1. Restricted stock units (formerly termed deferred stock) are considered participating securities due to the Company's practice of paying dividend equivalents on unvested shares.
2. Share amounts for the year ended December 31, 2018 were based on 2,246.3 million DowDuPont common shares outstanding as of the Record Date for the April 1, 2019 distribution, less 4.6 million Employee Stock Ownership Plan ("ESOP") shares that had not been released and were not considered outstanding, adjusted for the Distribution Ratio. There was no dilutive effect for the year ended December 31, 2018 as the Company did not engage in activities giving rise to dilution.
3. Share amounts for the year ended December 31, 2017 were based on 2,246.3 million DowDuPont common shares outstanding as of the Record Date for the April 1, 2019 distribution, less 4.6 million ESOP shares that had not been released and were not considered outstanding, adjusted for the Distribution Ratio and further adjusted by 2.4 million shares for the effect of TDCC basic common shares outstanding during the pre-Merger period. The year ended December 31, 2017 reflected a loss from continuing operations, and as such, the basic share count was used for purposes of calculating earnings per share on a diluted basis.
4. The year ended December 31, 2019 reflected a loss from continuing operations, and as such, the basic share count was used for purposes of calculating earnings per share on a diluted basis.
5. These outstanding options to purchase shares of common stock and restricted stock units were excluded from the calculation of diluted earnings per share because the effect of including them would have been antidilutive. For the year ended December 31, 2018, the Company did not engage in activities giving rise to dilution.

NOTE 11 – INVENTORIES

The following table provides a breakdown of inventories:

Inventories at Dec 31		
In millions	2019	2018
Finished goods	\$ 3,505	\$ 4,313
Work in process	1,122	1,335
Raw materials	628	674
Supplies	845	826
Total	\$ 6,100	\$ 7,148
Adjustment of inventories to a LIFO basis	114	(249)
Total inventories	\$ 6,214	\$ 6,899

Inventories valued on a LIFO basis represented 32 percent of the total inventories at December 31, 2019 and 34 percent of the total inventories at December 31, 2018.

NOTE 12 – PROPERTY

The following table provides a breakdown of property:

Property at Dec 31	<i>Estimated Useful Lives (Years)</i>		
In millions		2019	2018
Land and land improvements	0-25	\$ 2,177	\$ 2,059
Buildings	5-50	4,742	4,745
Machinery and equipment	3-25	40,651	40,250
Other property	3-50	5,354	5,084
Construction in progress	—	1,986	1,846
Total property		\$ 54,910	\$ 53,984

In millions	2019	2018	2017
Depreciation expense	\$ 2,156	\$ 2,174	\$ 1,955
Capitalized interest	\$ 80	\$ 88	\$ 240

NOTE 13 – NONCONSOLIDATED AFFILIATES

The Company's investments in companies accounted for using the equity method ("nonconsolidated affiliates") and dividends received from nonconsolidated affiliates are shown in the following tables:

Investments in Nonconsolidated Affiliates at Dec 31		
In millions	2019 ¹	2018 ¹
Investment in nonconsolidated affiliates	\$ 1,404	\$ 3,320
Other noncurrent obligations	(80)	—
Net investment in nonconsolidated affiliates	\$ 1,324	\$ 3,320

1. The carrying amount of the Company's investments in nonconsolidated affiliates at December 31, 2019, was \$51 million less than its share of the investees' net assets, (\$39 million less at December 31, 2018), exclusive of additional differences relating to EQUATE Petrochemical Company K.S.C.C. ("EQUATE"), Sadara and AgroFresh Solutions Inc. ("AFSI"), which are discussed separately in the disclosures that follow.

Dividends Received from Nonconsolidated Affiliates			
In millions	2019	2018	2017 ¹
Dividends from nonconsolidated affiliates	\$ 1,020	\$ 663	\$ 654

1. Includes a non-cash dividend of \$7 million.

Except for AFSI, the nonconsolidated affiliates in which the Company has investments are privately held companies; therefore, quoted market prices are not available.

Sadara

In 2011, the Company and Saudi Arabian Oil Company formed Sadara - a joint venture between the two companies that subsequently constructed and now operates a world-scale, fully integrated chemicals complex in Jubail Industrial City, Kingdom of Saudi Arabia. The Company has a 35 percent equity interest in this joint venture and has been, and continues to be, responsible for marketing the majority of Sadara's products through the Company's established sales channels.

In 2017, Sadara achieved full commercial operations of all its facilities. In December 2018, the joint venture successfully completed its Creditors Reliability Test, an extensive operational testing program designed to demonstrate the reliability of the joint venture's full chemical complex by operating at high rates for an extended period of time. While Sadara has reached these operational milestones and has been generating positive EBITDA (a non-GAAP measure defined as earnings before interest, taxes, depreciation and amortization), the joint venture has yet to report positive net income. During the fourth quarter of 2019, Sadara tested its long-lived assets for impairment using long-term cash flow projections. Sadara's U.S. GAAP impairment test utilized an undiscounted cash flow methodology, under which Sadara concluded its long-lived assets were recoverable. Due to Sadara's financial condition and its long-lived asset impairment test, Dow evaluated its equity method investment in Sadara for other-than-temporary impairment. The Company utilized a discounted cash flow methodology to measure the estimated fair value of its investment in Sadara, which was estimated to be zero (see Note 24 for additional information on the fair value measurement). The Company determined the decline in value of its investment in Sadara was other-than-temporary due to Sadara's financial performance since becoming commercially operational in 2017 and uncertainty around prospects for recovery in Sadara's financial condition. In addition, the Company reserved certain accounts and notes receivable and accrued interest balances associated with Sadara due to uncertainty around the timing of collection. In total, the Company recorded a \$1,755 million pretax charge in the fourth quarter of 2019 related to Sadara, included in "Restructuring, goodwill impairment and asset related charges - net" in the consolidated statements of income and related to Packaging & Specialty Plastics (\$370 million), Industrial Intermediates & Infrastructure (\$1,168 million) and Corporate (\$217 million).

At December 31, 2019, the Company's investment in Sadara was \$1,705 million less than Dow's proportionate share of the carrying value of the underlying net assets held by Sadara. This basis difference is attributed to the long-lived assets of Sadara and will be amortized over a period of 22 years as Sadara recognizes the associated depreciation expense, which represents the estimated remaining useful lives of Sadara's long-lived assets. Due to the potential for Dow to continue providing financial support to Sadara, the Company expects to continue to recognize its share of potential future losses reported by Sadara.

Prior to the impairment of the Company's investment in Sadara and reserve of certain notes receivable at December 31, 2019, the Company loaned \$473 million to Sadara and converted \$380 million of the notes and accounts receivable into equity during 2019. In 2018, the Company converted \$382 million of outstanding notes and accounts receivable with Sadara into equity, primarily due to a shareholder loan reduction agreement with Sadara. In 2017, the Company loaned \$735 million to Sadara and converted \$718 million to equity. At December 31, 2019 and 2018, the Company's note receivable with Sadara was zero. Potential future loans and investments will continue to be subject to evaluation for reserve and impairments.

EQUATE

The Company had a negative investment balance in EQUATE of \$80 million at December 31, 2019, classified as "Other noncurrent obligations" in the consolidated balance sheets. At December 31, 2018, the Company had an investment balance in EQUATE of \$131 million, classified as "Investment in nonconsolidated affiliates" in the consolidated balance sheets. The Company's investment in EQUATE was \$489 million less than the Company's proportionate share of EQUATE's underlying net assets at December 31, 2019 (\$502 million less at December 31, 2018), which represents the difference between the fair values of certain MEGlobal assets acquired by EQUATE and the Company's related valuation on a U.S. GAAP basis. A basis difference of \$169 million at December 31, 2019 (\$184 million at December 31, 2018) is being amortized over the remaining useful lives of the assets and the remainder is considered a permanent difference.

AFSI

At December 31, 2019, the Company had an investment in AFSI of \$35 million (\$48 million at December 31, 2018), classified as "Investment in nonconsolidated affiliates" in the consolidated balance sheets. At December 31, 2019, the Company's investment in AFSI was \$102 million less than the Company's proportionate share of AFSI's underlying net assets (\$101 million less at December 31, 2018). This amount primarily relates to an other-than-temporary decline in the Company's investment in AFSI. At December 31, 2019, the Company held a 41 percent ownership interest in AFSI (42 percent at December 31, 2018). See Note 25 for additional information on this investment.

Transactions with Nonconsolidated Affiliates

The Company has service agreements with certain nonconsolidated affiliates, including contracts to manage the operations of manufacturing sites and the construction of new facilities; licensing and technology agreements; and marketing, sales, purchase, lease and sublease agreements.

The Company sells excess ethylene glycol produced at manufacturing facilities in the United States and Europe to MEGlobal, a subsidiary of EQUATE. The Company also sells ethylene to MEGlobal as a raw material for its ethylene glycol plants in Canada. Sales of these products to MEGlobal represented 1 percent of total net sales in 2019, 2018 and 2017. Sales of ethylene to MEGlobal are reflected in the Packaging & Specialty Plastics segment and represented 1 percent of the segment's sales in 2019, 2018 and 2017. Sales of ethylene glycol to MEGlobal are reflected in the Industrial Intermediates & Infrastructure segment and represented 1 percent of the segment's sales in 2019, and 2 percent of the segment's sales in 2018 and 2017.

The Company is responsible for marketing the majority of Sadara products outside of the Middle East zone through the Company's established sales channels. Under this arrangement, the Company purchases and sells Sadara products for a marketing fee. Purchases of Sadara products represented 8 percent of "Cost of sales" in 2019 (9 percent in 2018 and 4 percent in 2017).

The Company purchases products from The SCG-Dow Group, primarily for marketing and distribution in Asia Pacific. Purchases of products from The SCG-Dow Group represented 2 percent of "Cost of sales" in 2019 (2 percent in 2018 and 3 percent in 2017).

Sales to and purchases from other nonconsolidated affiliates were not material to the consolidated financial statements.

Balances due to or due from nonconsolidated affiliates at December 31, 2019 and 2018 were as follows:

Balances Due To or Due From Nonconsolidated Affiliates at Dec 31			
In millions		2019	2018
Accounts and notes receivable - Other		\$ 211	\$ 556
Noncurrent receivables		—	8
Total assets		\$ 211	\$ 564
Accounts payable - Other		\$ 1,092	\$ 1,347

Principal Nonconsolidated Affiliates

The Company had an ownership interest in 37 nonconsolidated affiliates at December 31, 2019 (38 at December 31, 2018). The Company's principal nonconsolidated affiliates and its ownership interest (direct and indirect) for each at December 31, 2019, 2018 and 2017 are as follows:

Principal Nonconsolidated Affiliates at Dec 31	<i>Country</i>	<i>Ownership Interest</i>		
		2019	2018	2017
EQUATE Petrochemical Company K.S.C.C.	Kuwait	42.5%	42.5%	42.5%
The Kuwait Olefins Company K.S.C.C.	Kuwait	42.5%	42.5%	42.5%
The Kuwait Styrene Company K.S.C.C.	Kuwait	42.5%	42.5%	42.5%
Map Ta Phut Olefins Company Limited ¹	Thailand	32.77%	32.77%	32.77%
Sadara Chemical Company	Saudi Arabia	35%	35%	35%
The SCG-Dow Group:				
Siam Polyethylene Company Limited	Thailand	50%	50%	50%
Siam Polystyrene Company Limited	Thailand	50%	50%	50%
Siam Styrene Monomer Company Limited	Thailand	50%	50%	50%
Siam Synthetic Latex Company Limited	Thailand	50%	50%	50%

1. The Company's effective ownership of Map Ta Phut Olefins Company Limited ("Map Ta Phut") is 32.77 percent, of which the Company directly owns 20.27 percent and indirectly owns 12.5 percent through its equity interest in Siam Polyethylene Company Limited.

The Company's investment in and equity earnings from its principal nonconsolidated affiliates are shown in the tables below:

Investment in Principal Nonconsolidated Affiliates at Dec 31		
In millions	2019	2018
Investment in nonconsolidated affiliates	\$ 963	\$ 2,876
Other noncurrent obligations	(80)	—
Net investment in principal nonconsolidated affiliates	\$ 883	\$ 2,876

Equity Earnings from Principal Nonconsolidated Affiliates			
In millions	2019	2018	2017
Equity in earnings of principal nonconsolidated affiliates	\$ 21	\$ 561	\$ 347

The summarized financial information that follows represents the combined accounts (at 100 percent) of the principal nonconsolidated affiliates.

Summarized Balance Sheet Information at Dec 31		
In millions	2019	2018
Current assets	\$ 5,302	\$ 7,553
Noncurrent assets	26,477	25,971
Total assets	\$ 31,779	\$ 33,524
Current liabilities	\$ 3,743	\$ 5,163
Noncurrent liabilities	20,271	19,089
Total liabilities	\$ 24,014	\$ 24,252
Noncontrolling interests	\$ 110	\$ 72

Summarized Income Statement Information¹			
In millions	2019	2018	2017
Sales	\$ 10,905	\$ 14,461	\$ 11,629
Gross profit	\$ 644	\$ 2,320	\$ 1,992
Income (loss) from continuing operations, net of tax	\$ (277)	\$ 1,173	\$ 689

1. The results in this table reflect purchase and sale activity between certain principal nonconsolidated affiliates and the Company, as previously discussed in the "Transactions with Nonconsolidated Affiliates" section.

NOTE 14 – GOODWILL AND OTHER INTANGIBLE ASSETS

The following table shows changes in the carrying amounts of goodwill by reportable segment for the years ended December 31, 2019 and 2018:

Goodwill	<i>Packaging & Specialty Plastics</i>	<i>Industrial Intermediates & Infrastructure</i>	<i>Performance Materials & Coatings</i>	<i>Total</i>
In millions				
Balance at Jan 1, 2018	\$ 5,043	\$ 1,101	\$ 3,689	\$ 9,833
Foreign currency impact	(24)	(6)	(39)	(69)
Measurement period adjustment - ECP ¹	82	—	—	82
Balance at Dec 31, 2018	\$ 5,101	\$ 1,095	\$ 3,650	\$ 9,846
Foreign currency impact	8	6	(24)	(10)
Goodwill impairment	—	—	(1,039)	(1,039)
Other	—	(1)	—	(1)
Balance at Dec 31, 2019	\$ 5,109	\$ 1,100	\$ 2,587	\$ 8,796

1. Goodwill recognized from the receipt of the ECP businesses as part of the separation from DowDuPont. See Note 4 for additional information.

The separation from DowDuPont did not impact the composition of the Company's six reporting units: Coatings & Performance Monomers, Consumer Solutions, Hydrocarbons & Energy, Industrial Solutions, Packaging and Specialty Plastics and Polyurethanes & Construction Chemicals. The ECP businesses received as part of the separation from DowDuPont are included in the Hydrocarbons & Energy and Packaging and Specialty Plastics reporting units. At December 31, 2019, goodwill was carried by all reporting units except Coatings & Performance Monomers ("C&PM").

Goodwill Impairments

The carrying amounts of goodwill at December 31, 2019 were net of accumulated impairments of \$309 million in Industrial Intermediates & Infrastructure (\$309 million at December 31, 2018) and \$2,530 million in Performance Materials & Coatings (\$1,491 million at December 31, 2018).

Goodwill Impairment Testing

The Company performs an impairment test of goodwill annually in the fourth quarter. In 2019, the Company performed quantitative testing for two reporting units (one in 2018 and four in 2017) and a qualitative assessment was performed for the remaining reporting units. The qualitative assessments indicated that it was not more likely than not that fair value was less than the carrying value for those reporting units included in the qualitative test.

Upon completion of the quantitative testing in the fourth quarter of 2017, the Company determined the C&PM reporting unit was impaired. Throughout 2017, the C&PM reporting unit did not consistently meet expected financial performance targets, primarily due to increasing commoditization in coatings markets and competition, as well as customer consolidation in end markets which reduced growth opportunities. As a result, the C&PM reporting unit lowered future revenue and profitability expectations. The fair value of the C&PM reporting unit was determined using a discounted cash flow methodology that reflected reductions in projected revenue growth rates, primarily driven by modified sales volume and pricing assumptions, as well as revised expectations for future growth rates. These discounted cash flows did not support the carrying value of the C&PM reporting unit. As a result, the Company recorded a goodwill impairment charge for the C&PM reporting unit of \$1,491 million in the fourth quarter of 2017, included in "Restructuring, goodwill impairment and asset related charges - net" in the consolidated statements of income and related to the Performance Materials & Coatings segment. The C&PM reporting unit carried \$1,071 million of goodwill at December 31, 2017. No other goodwill impairments were identified as a result of the 2017 testing.

Quantitative testing was performed on the C&PM reporting unit in the fourth quarter of 2018. The fair value of the reporting unit was determined using a discounted cash flow methodology that included plans to undertake modest, higher-return investments in several existing assets, improvements in cost performance and leveraging of technologies. While assessments supported a case for sustaining market growth consistent with GDP projections, the valuation also included adverse impacts related to increased customer purchasing leverage from ongoing customer consolidation. The resulting valuation was compared with the carrying value of the C&PM reporting and the Company concluded that no goodwill impairment existed.

Upon completion of the quantitative testing in the fourth quarter of 2019, the Company determined the C&PM reporting unit was impaired. During 2019, the C&PM reporting unit did not consistently meet expected financial performance targets, primarily due to the industry's increased captive use of coatings products, which led to volume reductions; reduced margins for products across the portfolio due to changes in customer buying patterns and supply and demand balances; as well as a continuous trend of customer consolidation in end markets, which reduced growth opportunities. As a result, the C&PM reporting unit lowered its future revenue and profitability projections. The fair value of the C&PM reporting unit was determined using a discounted cash flow methodology that reflected reductions in projected revenue growth rates due to lower sales volume and price assumptions, as well as reductions to future growth rates. These discounted cash flows did not support the carrying value of the C&PM reporting unit. As a result, the Company recorded a goodwill impairment charge of \$1,039 million in the fourth quarter of 2019, included in "Restructuring, goodwill impairment and asset related charges - net" in the consolidated statements of income and related to the Performance Materials & Coatings segment. The carrying value of the C&PM reporting unit's goodwill was zero at December 31, 2019. No other goodwill impairments were identified as a result of the 2019 testing.

Other Intangible Assets

The following table provides information regarding the Company's other intangible assets:

Other Intangible Assets at Dec 31	2019			2018		
	Gross Carrying Amount	Accum Amort	Net	Gross Carrying Amount	Accum Amort	Net
In millions						
Intangible assets with finite lives:						
Developed technology	\$ 2,634	\$ (1,467)	\$ 1,167	\$ 2,634	\$ (1,252)	\$ 1,382
Software	1,449	(893)	556	1,404	(805)	599
Trademarks/tradenames	352	(342)	10	352	(329)	23
Customer-related	3,207	(1,184)	2,023	3,211	(993)	2,218
Total other intangible assets, finite lives	\$ 7,642	\$ (3,886)	\$ 3,756	\$ 7,601	\$ (3,379)	\$ 4,222
In-process research and development	3	—	3	3	—	3
Total other intangible assets	\$ 7,645	\$ (3,886)	\$ 3,759	\$ 7,604	\$ (3,379)	\$ 4,225

The following table provides information regarding amortization expense from continuing operations related to intangible assets:

Amortization Expense from Continuing Operations	2019	2018	2017
In millions			
Other intangible assets, excluding software	\$ 419	\$ 469	\$ 400
Software ¹	\$ 96	\$ 93	\$ 82

1. Included in "Cost of sales" in the consolidated statements of income.

Total estimated amortization expense from continuing operations for the next five fiscal years, including amounts expected to be capitalized, is as follows:

Estimated Amortization Expense for Next Five Years	
In millions	
2020	\$ 492
2021	\$ 472
2022	\$ 411
2023	\$ 380
2024	\$ 364

NOTE 15 – TRANSFERS OF FINANCIAL ASSETS

Accounts Receivable Securitization Facilities

The Company historically sold trade accounts receivable of select North American entities and qualifying trade accounts receivable of select European entities on a revolving basis to certain multi-seller commercial paper conduit entities ("conduits"). The proceeds received were comprised of cash and interests in specified assets of the conduits (the receivables sold by the Company) that entitled the Company to the residual cash flows of such specified assets in the conduits after the commercial paper had been repaid. Neither the conduits nor the investors in those entities had recourse to other assets of the Company in the event of nonpayment by the debtors.

In the fourth quarter of 2017, the Company suspended further sales of trade accounts receivable through these facilities and began reducing outstanding balances through collections of trade accounts receivable previously sold to such conduits. In September and October 2018, the North American and European facilities, respectively, were amended and the terms of the agreements changed from off-balance sheet arrangements to secured borrowing arrangements. See Note 16 for additional information on the secured borrowing arrangements.

In 2018, the Company recognized a loss of \$7 million on the sale of these receivables (loss of \$25 million in 2017), which is included in "Interest expense and amortization of debt discount" in the consolidated statements of income. There were no sales of receivables through these facilities in 2019.

Following is an analysis of certain cash flows between the Company and the conduits:

Cash Proceeds		
In millions	2018	2017
Sale of receivables	\$ —	\$ 1
Collections reinvested in revolving receivables	\$ —	\$ 21,293
Interests in conduits ¹	\$ 657	\$ 9,462

1. Presented in "Investing Activities" in the consolidated statements of cash flows.

North America Accounts Receivable Program

The Company maintains a committed accounts receivable facility in North America ("North America A/R Program") with various financial institutions, which expires in November 2022. Under the terms of the North America A/R Program, the Company may sell certain eligible trade accounts receivable, up to \$900 million, at any point in time. The Company continues to service the receivables from the customer, but retains no interest in the receivables, and remits payment to the financial institutions. The Company also provides a guarantee to the financial institutions for the creditworthiness and collection of the receivables in satisfaction of the facility. See Note 17 for additional information related to guarantees. There were no receivables sold during the year ended December 31, 2019.

NOTE 16 – NOTES PAYABLE, LONG-TERM DEBT AND AVAILABLE CREDIT FACILITIES

Notes Payable at Dec 31		
In millions	2019	2018
Commercial paper	\$ 151	\$ 10
Notes payable to banks and other lenders	435	288
Total notes payable	\$ 586	\$ 298
Year-end average interest rates	6.30%	8.28%

Long-Term Debt at Dec 31	2019 Average Rate	2019	2018 Average Rate	2018
In millions				
Promissory notes and debentures:				
Final maturity 2019	—%	\$ —	9.80%	\$ 7
Final maturity 2020	8.44%	76	4.46%	1,547
Final maturity 2021	8.95%	174	4.71%	1,424
Final maturity 2022	3.50%	1,372	3.50%	1,373
Final maturity 2023	7.64%	325	7.64%	325
Final maturity 2024	3.37%	1,397	3.50%	896
Final maturity 2025 and thereafter	5.70%	9,482	5.98%	7,963
Other facilities:				
U.S. dollar loans, various rates and maturities	2.55%	2,000	3.59%	4,533
Foreign currency loans, various rates and maturities	3.26%	592	3.20%	708
InterNotes®, varying maturities through 2049	3.44%	928	3.26%	778
Finance lease obligations ¹		395		371
Unamortized debt discount and issuance costs		(331)		(334)
Long-term debt due within one year ²		(435)		(338)
Long-term debt		\$ 15,975		\$ 19,253

1. See Note 18 for additional information.

2. Presented net of current portion of unamortized debt issuance costs.

Maturities of Long-Term Debt for Next Five Years at Dec 31, 2019	
In millions	
2020	\$ 435
2021	\$ 511
2022	\$ 1,513
2023 ¹	\$ 2,508
2024	\$ 1,528

1. Assumes the option to extend maturity to 2023 will be exercised for the \$2 billion Dow Silicones Term Loan Facility.

2019 Activity

In 2019, the Company issued \$2 billion of senior unsecured notes in an offering under Rule 144A of the Securities Act of 1933. The offering included \$750 million aggregate principal amount of 4.80 percent notes due 2049; \$750 million aggregate principal amount of 3.625 percent notes due 2026; and \$500 million aggregate principal amount of 3.15 percent notes due 2024. In addition, the Company redeemed \$1.5 billion of 4.25 percent notes with maturity in 2020 and \$1.25 billion of 4.125 percent notes with maturity in 2021. As a result, the Company recognized a pretax loss of \$100 million on the early extinguishment of debt, included in "Sundry income (expense) - net" in the consolidated statements of income and related to the Corporate segment. The Company also issued an aggregate principal amount of \$277 million of InterNotes®, and redeemed an aggregate principal amount of \$122 million at maturity. Approximately \$149 million of long-term debt (net of \$16 million of issuances) was repaid by consolidated variable interest entities.

In 2019, Dow Silicones voluntarily repaid \$2.5 billion of principal under a certain third party credit agreement ("Term Loan Facility"). As a result, Dow Silicones recognized a pretax loss of \$2 million on the early extinguishment of debt, included in "Sundry income (expense) - net" in the consolidated statements of income and related to the Corporate segment. Dow Silicones also amended the Term Loan Facility to extend the maturity date on the remaining principal balance of \$2 billion, making amounts borrowed under the Term Loan Facility payable in September 2021. In addition, this amendment includes options to extend the maturity date through September 2023, at Dow Silicones' election, which the Company intends to exercise.

In October 2019, TDCC launched exchange offers for \$4 billion of all the outstanding, unregistered senior notes that were issued in private offerings on November 30, 2018 and May 20, 2019, for identical, registered notes under the Securities Act of 1933 (the "Exchange Offers"). The Exchange Offers are with respect to the Company's 3.15 percent notes due 2024, 4.55 percent notes due 2025, 3.625 percent notes due 2026, 4.80 percent notes due 2028, 5.55 percent notes due 2048 and 4.80 percent notes due 2049, and fulfilled the Company's obligations contained in the registration rights agreements entered into in connection with the issuance of the aforementioned notes.

2018 Activity

In 2018, the Company redeemed \$333 million of 5.70 percent notes at maturity and an aggregate principal amount of \$91 million of InterNotes® at maturity. In addition, approximately \$138 million of long-term debt was repaid by consolidated variable interest entities. The Company also called an aggregate principal amount of \$343 million tax-exempt bonds of various interest rates and maturities in 2029, 2033 and 2038. As a result of these redemptions, the Company recognized a pretax loss of \$6 million on the early extinguishment of debt, included in "Sundry income (expense) - net" in the consolidated statements of income and related to Corporate.

In November 2018, the Company issued \$2 billion of senior unsecured notes in an offering under Rule 144A of the Securities Act of 1933. The offering included \$900 million aggregate principal amount of 5.55 percent notes due 2048; \$600 million aggregate principal amount of 4.80 percent notes due 2028; and \$500 million aggregate principal amount of 4.55 percent notes due 2025.

In December 2018, the Company tendered and redeemed \$2.1 billion of 8.55 percent notes issued by the Company with maturity in 2019. As a result, the Company recognized a pretax loss of \$48 million on the early extinguishment of debt, included in "Sundry income (expense) - net" in the consolidated statements of income and related to Corporate.

2017 Activity

In 2017, the Company redeemed \$436 million of 6.00 percent notes that matured on September 15, 2017, and an aggregate principal amount of \$32 million of InterNotes® at maturity. In addition, approximately \$119 million of long-term debt was repaid by consolidated variable interest entities.

Available Credit Facilities

The following table summarizes the Company's credit facilities:

Committed and Available Credit Facilities at Dec 31, 2019				
In millions	<i>Committed Credit</i>	<i>Credit Available</i>	<i>Maturity Date</i>	<i>Interest</i>
Five Year Competitive Advance and Revolving Credit Facility	\$ 5,000	\$ 5,000	October 2024	Floating rate
Term Loan Facility ¹	2,000	—	September 2023	Floating rate
European Securitization Facility ²	448	448	October 2020	Floating rate
Bilateral Revolving Credit Facility	100	100	March 2020	Floating rate
Bilateral Revolving Credit Facility	100	100	March 2020	Floating rate
Bilateral Revolving Credit Facility	280	280	March 2020	Floating rate
Bilateral Revolving Credit Facility	200	200	May 2020	Floating rate
Bilateral Revolving Credit Facility	200	200	July 2020	Floating rate
Bilateral Revolving Credit Facility	100	100	August 2020	Floating rate
Bilateral Revolving Credit Facility	300	300	December 2020	Floating rate
Bilateral Revolving Credit Facility	300	300	December 2021	Floating rate
Bilateral Revolving Credit Facility	100	100	October 2024	Floating rate
Bilateral Revolving Credit Facility	100	100	October 2024	Floating rate
Bilateral Revolving Credit Facility	200	200	November 2024	Floating rate
Total Committed and Available Credit Facilities	\$ 9,428	\$ 7,428		

1. Assumes the option to extend the Term Loan Facility will be exercised.

2. Equivalent to Euro 400 million.

Secured Borrowings

In September 2018, the Company renewed its North American accounts receivable securitization facility for a one year term and amended the terms of the agreement from an off-balance sheet arrangement to a secured borrowing arrangement, with a borrowing capacity up to \$800 million. Under the structure of the amended agreement, the Company had the option to use select trade accounts receivable to collateralize the credit facility with certain lenders. In November 2019, the facility was amended and is no longer a secured borrowing arrangement. It had not been drawn upon during its term as a secured borrowing arrangement.

In October 2018, the Company renewed its European accounts receivable securitization facility for a two year term and amended the terms of the agreement from an off-balance sheet arrangement to a secured borrowing arrangement, with a borrowing capacity up to Euro 400 million. Under the structure of the amended agreement, the Company will use select trade accounts receivable to collateralize the credit facility with certain lenders. At December 31, 2019 and 2018, the facility had not been drawn upon.

Letters of Credit

The Company utilizes letters of credit to support commitments made in the ordinary course of business. While the terms and amounts of letters of credit change, the Company generally has approximately \$400 million of outstanding letters of credit at any given time.

Debt Covenants and Default Provisions

TDCC's outstanding long-term debt has been issued primarily under indentures which contain, among other provisions, certain customary restrictive covenants with which TDCC must comply while the underlying notes are outstanding. Failure of TDCC to comply with any of its covenants, could result in a default under the applicable indenture and allow the note holders to accelerate the due date of the outstanding principal and accrued interest on the underlying notes.

TDCC's indenture covenants include obligations to not allow liens on principal U.S. manufacturing facilities, enter into sale and lease-back transactions with respect to principal U.S. manufacturing facilities, merge or consolidate with any other corporation, or sell, lease or convey, directly or indirectly, all or substantially all of TDCC's assets. The outstanding debt also contains customary default provisions. TDCC remains in compliance with these covenants.

TDCC's primary, private credit agreements also contain certain customary restrictive covenant and default provisions in addition to the covenants set forth above with respect to TDCC's debt. Significant other restrictive covenants and default provisions related to these agreements include:

- (a) the obligation to maintain the ratio of TDCC's consolidated indebtedness to consolidated capitalization at no greater than 0.65 to 1.00 at any time the aggregate outstanding amount of loans under the Five Year Competitive Advance and Revolving Credit Facility Agreement ("Revolving Credit Agreement") dated October 30, 2018, equals or exceeds \$500 million,
- (b) a default if TDCC or an applicable subsidiary fails to make any payment, including principal, premium or interest, under the applicable agreement on other indebtedness of, or guaranteed by, TDCC or such applicable subsidiary in an aggregate amount of \$100 million or more when due, or any other default or other event under the applicable agreement with respect to such indebtedness occurs which permits or results in the acceleration of \$400 million or more in the aggregate of principal, and
- (c) a default if TDCC or any applicable subsidiary fails to discharge or stay within 60 days after the entry of a final judgment against TDCC or such applicable subsidiary of more than \$400 million.

Failure of TDCC to comply with any of the covenants or default provisions could result in a default under the applicable credit agreement which would allow the lenders to not fund future loan requests and to accelerate the due date of the outstanding principal and accrued interest on any outstanding indebtedness.

On April 1, 2019, DowDuPont completed the separation of its materials science business and Dow Inc. became the direct parent company of TDCC. In conjunction with the separation, Dow Inc. is obligated, substantially concurrently with the issuance of any guarantee in respect of outstanding or committed indebtedness under TDCC's Revolving Credit Agreement, to enter into a supplemental indenture with TDCC and the trustee under TDCC's existing 2008 base indenture governing certain notes issued by TDCC. Under such supplemental indenture, Dow Inc. will guarantee all outstanding debt securities and all amounts due under such existing base indenture and will become subject to certain covenants and events of default under the existing base indenture.

In addition, the Revolving Credit Agreement includes an event of default which would be triggered in the event Dow Inc. incurs or guarantees third party indebtedness for borrowed money in excess of \$250 million or engages in any material activity or directly owns any material assets, in each case, subject to certain conditions and exceptions. Dow Inc. may, at its option, cure the event of default by delivering an unconditional and irrevocable guarantee to the administrative agent within thirty days of the event or events giving rise to such event of default.

No such events have occurred or have been triggered at the time of the filing of this Annual Report on Form 10-K.

NOTE 17 – COMMITMENTS AND CONTINGENT LIABILITIES

Environmental Matters

Introduction

Accruals for environmental matters are recorded when it is probable that a liability has been incurred and the amount of the liability can be reasonably estimated based on current law and existing technologies. At December 31, 2019, the Company had accrued obligations of \$1,155 million for probable environmental remediation and restoration costs, including \$207 million for the remediation of Superfund sites. These obligations are included in "Accrued and other current liabilities" and "Other noncurrent obligations" in the consolidated balance sheets. This is management's best estimate of the costs for remediation and restoration with respect to environmental matters for which the Company has accrued liabilities, although it is reasonably possible that the ultimate cost with respect to these particular matters could range up to approximately one and a half times that amount. Consequently, it is reasonably possible that environmental remediation and restoration costs in excess of amounts accrued could have a material impact on the Company's results of operations, financial condition and cash flows. It is the opinion of the Company's management, however, that the possibility is remote that costs in excess of the range disclosed will have a material impact on the Company's results of operations, financial condition or cash flows. Inherent uncertainties exist in these estimates primarily due to unknown conditions, changing governmental regulations and legal standards regarding liability, and emerging remediation technologies for handling site remediation and restoration. As new or additional information becomes available and/or certain spending trends become known, management will evaluate such information in determination of the current estimate of the environmental liability. At December 31, 2018, the Company had accrued obligations of \$810 million for probable environmental remediation and restoration costs, including \$156 million for the remediation of Superfund sites.

In the third quarter of 2019, the Company recorded a pretax charge related to environmental remediation matters at a number of current and historical locations. The charge primarily resulted from: the culmination of long-standing negotiations and discussions with regulators and agencies, including technical studies supporting higher cost estimates for final or staged remediation plans; the Company's evaluation of the cost required to manage remediation activities at sites affected by Dow's separation from DowDuPont and related agreements with Corteva and DuPont; and, the Company's review of its closure strategies and obligations to monitor ongoing operations and maintenance activities. In addition, the Company recorded indemnification assets of \$48 million related to Dow Silicones' environmental matters. The Company recognized a pretax charge, net of indemnifications, of \$399 million related to these environmental matters, included in "Cost of sales" in the consolidated statements of income and related to Packaging & Specialty Plastics (\$5 million), Industrial Intermediates & Infrastructure (\$8 million), Performance Materials & Coatings (\$50 million) and Corporate (\$336 million).

The following table summarizes the activity in the Company's accrued obligations for environmental matters for the years ended December 31, 2019 and 2018:

Accrued Obligations for Environmental Matters		
In millions	2019	2018
Balance at Jan 1	\$ 810	\$ 865
Accrual adjustment	590	176
Payments against reserve	(241)	(208)
Foreign currency impact	(4)	(23)
Balance at Dec 31	\$ 1,155	\$ 810

The amounts charged to income on a pretax basis related to environmental remediation totaled \$588 million in 2019, \$176 million in 2018 and \$163 million in 2017. Capital expenditures for environmental protection were \$83 million in 2019, \$55 million in 2018 and \$57 million in 2017.

Midland Off-Site Environmental Matters

On June 12, 2003, the Michigan Department of Environmental Quality ("MDEQ") issued a Hazardous Waste Operating License (the "License") to the Company's Midland, Michigan, manufacturing site (the "Midland Site"), which was renewed and replaced by the MDEQ on September 25, 2015, and included provisions requiring the Company to conduct an investigation to determine the nature and extent of off-site contamination in the City of Midland soils, the Tittabawassee River and Saginaw River sediment and floodplain soils, and the Saginaw Bay, and, if necessary, undertake remedial action. In 2016, final regulatory approval was received from the MDEQ for the City of Midland and the Company is continuing the long term monitoring requirements of the Remedial Action Plan.

Tittabawassee and Saginaw Rivers, Saginaw Bay

The Company, the U.S. Environmental Protection Agency ("EPA") and the State of Michigan ("State") entered into an administrative order on consent ("AOC"), effective January 21, 2010, that requires the Company to conduct a remedial investigation, a feasibility study and a remedial design for the Tittabawassee River, the Saginaw River and the Saginaw Bay, and pay the oversight costs of the EPA and the State under the authority of the Comprehensive Environmental Response, Compensation, and Liability Act. These actions, to be conducted under the lead oversight of the EPA, will build upon the investigative work completed under the State Resource Conservation Recovery Act program from 2005 through 2009.

The Tittabawassee River, beginning at the Midland Site and extending down to the first six miles of the Saginaw River, are designated as the first Operable Unit for purposes of conducting the remedial investigation, feasibility study and remedial design work. This work will be performed in a largely upriver to downriver sequence for eight geographic segments of the Tittabawassee and upper Saginaw Rivers. In the first quarter of 2012, the EPA requested the Company address the Tittabawassee River floodplain ("Floodplain") as an additional segment. In January 2015, the Company and the EPA entered into an order to address remediation of the Floodplain. The remedial work is expected to continue over the next three years. The remainder of the Saginaw River and the Saginaw Bay are designated as a second Operable Unit and the work associated with that unit may also be geographically segmented. The AOC does not obligate the Company to perform removal or remedial action; that action can only be required by a separate order. The Company and the EPA have been negotiating orders separate from the AOC that obligate the Company to perform remedial actions under the scope of work of the AOC. The Company and the EPA have entered into six separate orders to perform limited remedial actions in seven of the eight geographic segments in the first Operable Unit, including the Floodplain. Dow has received from the EPA a Notice of Completion of Work for three of these six orders and the Company continues the long-term monitoring requirements.

Alternative Dispute Resolution Process

The Company, the EPA, the U.S. Department of Justice ("DOJ"), and the natural resource damage trustees (which include the Michigan Office of the Attorney General, the Michigan Department of Environment, Great Lakes and Energy, the Michigan Department of Natural Resources, the U.S. Fish and Wildlife Service, the U.S. Bureau of Indian Affairs and the Saginaw-Chippewa Indian Tribe of Michigan) have been engaged in negotiations to seek to resolve potential governmental claims against the Company for natural resource damages related to historical off-site contamination associated with the City of Midland, the Tittabawassee and Saginaw Rivers and the Saginaw Bay. The Company and the governmental parties started meeting in the fall of 2005 and entered into a Confidentiality Agreement in December 2005.

On November 8, 2019, a proposed consent decree on this matter was filed in the U.S. District Court for the Eastern District of Michigan ("District Court"), Civil Action No. 1:19-cv-13292 between the Company and federal, state and tribal trustees to resolve allegations of natural resource damages arising from the historic operations of the Company's Midland Site. On November 14, 2019, a Notice of Lodging and Notice of Availability and Request for Comments on Draft Restoration Plan/Environmental Assessment was published in the Federal Register. Public comments on the proposed consent decree and the draft Restoration Plan/Environmental Assessment were required to be submitted within 45 days of that publication.

At December 31, 2019, the accrual for these off-site matters was \$135 million (included in the total accrued obligation of \$1,155 million). At December 31, 2018, the Company had an accrual for these off-site matters of \$95 million (included in the total accrued obligation of \$810 million).

Environmental Matters Summary

It is the opinion of the Company's management that the possibility is remote that costs in excess of those disclosed will have a material impact on the Company's results of operations, financial condition or cash flows.

Litigation

Asbestos-Related Matters of Union Carbide Corporation

Introduction

Union Carbide is and has been involved in a large number of asbestos-related suits filed primarily in state courts during the past four decades. These suits principally allege personal injury resulting from exposure to asbestos-containing products and frequently seek both actual and punitive damages. The alleged claims primarily relate to products that Union Carbide sold in the past, alleged exposure to asbestos-containing products located on Union Carbide's premises and Union Carbide's responsibility for asbestos suits filed against a former Union Carbide subsidiary, Amchem Products, Inc. ("Amchem"). In many cases, plaintiffs are unable to demonstrate that they have suffered any compensable loss as a result of such exposure, or that injuries incurred in fact resulted from exposure to Union Carbide's products. Union Carbide expects more asbestos-related suits to be filed against Union Carbide and Amchem in the future, and will aggressively defend or reasonably resolve, as appropriate, both pending and future claims.

Estimating the Asbestos-Related Liability

Based on a study completed by Ankura Consulting Group, LLC ("Ankura") in January 2003, Union Carbide increased its December 31, 2002, asbestos-related liability for pending and future claims for a 15-year period ending in 2017 to \$2.2 billion, excluding future defense and processing costs. In subsequent years, Union Carbide compared current asbestos claim and resolution activity to the results of the most recent Ankura study at each balance sheet date to determine whether the accrual continued to be appropriate.

In 2016, Ankura completed a study to provide estimates for the undiscounted cost of disposing of pending and future claims against Union Carbide and Amchem through the terminal year of 2049, including a reasonable forecast of future defense and processing costs. Based on the study and Union Carbide's internal review of asbestos claim and resolution activity, Union Carbide determined estimating the liability through the terminal year of 2049 was more appropriate due to increased knowledge and data about the costs to resolve claims and diminished volatility in filing rates. Union Carbide and the Company also determined that estimating and accruing a liability for future asbestos-related defense and processing costs was more appropriate as such costs represent expenditures related to legacy activities that do not contribute to current or future revenue generating activities of Union Carbide and the Company and is also reflective of the manner in which Union Carbide manages its asbestos-related exposure, including careful monitoring of the correlation between defense spending and resolution costs. As a result, in the fourth quarter of 2016, Union Carbide recorded a \$1,113 million increase in its asbestos-related liability for pending and future claims, including future defense and processing costs. Each October, Union Carbide requests Ankura to review its historical asbestos claim and resolution activity through the third quarter of the current year, including asbestos-related defense and processing costs, to determine the appropriateness of updating the most recent study.

In December 2017, Ankura stated that an update of its December 2016 study would not provide a more likely estimate of future events than the estimate reflected in the study and, therefore, the estimate in the study remained applicable. Based on Union Carbide's internal review process and Ankura's response, Union Carbide determined that no change to the accrual was required.

In December 2018, Ankura completed a study of Union Carbide's historical asbestos claim and resolution activity through September 30, 2018, including asbestos-related defense and processing costs, and provided estimates for the undiscounted cost of disposing of pending and future claims against Union Carbide and Amchem through the terminal year of 2049. Based on the study and Union Carbide's internal review process, it was determined that no adjustment to the accrual was required. At December 31, 2018, Union Carbide's asbestos-related liability for pending and future claims and defense and processing costs was \$1,260 million, and approximately 16 percent of the recorded liability related to pending claims and approximately 84 percent related to future claims.

In December 2019, Ankura stated that an update of its December 2018 study would not provide a more likely estimate of future events than the estimate reflected in the study and, therefore, the estimate in the study remained applicable. Based on Union Carbide's internal review process and Ankura's response, Union Carbide determined that no change to the accrual was required. At December 31, 2019, the asbestos-related liability for pending and future claims against Union Carbide and Amchem, including future asbestos-related defense and processing costs, was \$1,165 million, and approximately 18 percent of the recorded liability related to pending claims and approximately 82 percent related to future claims.

Summary

The Company's management believes the amounts recorded by Union Carbide for the asbestos-related liability, including defense and processing costs, reflect reasonable and probable estimates of the liability based upon current, known facts. However, future events, such as the number of new claims to be filed and/or received each year, the average cost of defending and disposing of each such claim, as well as the numerous uncertainties surrounding asbestos litigation in the United States over a significant period of time, could cause the actual costs for Union Carbide to be higher or lower than those projected or those recorded. Any such events could result in an increase or decrease in the recorded liability.

Because of the uncertainties described above, Union Carbide cannot estimate the full range of the cost of resolving pending and future asbestos-related claims facing Union Carbide and Amchem. As a result, it is reasonably possible that an additional cost of disposing of Union Carbide's asbestos-related claims, including future defense and processing costs, could have a material impact on the Company's results of operations and cash flows for a particular period and on the consolidated financial position.

Dow Silicones Chapter 11 Related Matters

Introduction

In 1995, Dow Silicones, then a 50:50 joint venture between the Company and Corning Incorporated ("Corning"), voluntarily filed for protection under Chapter 11 of the U.S. Bankruptcy Code in order to resolve Dow Silicones' breast implant liabilities and related matters (the "Chapter 11 Proceeding"). Dow Silicones emerged from the Chapter 11 Proceeding on June 1, 2004 (the "Effective Date") and is implementing the Joint Plan of Reorganization (the "Plan"). The Plan provides funding for the resolution of breast implant and other product liability litigation covered by the Chapter 11 Proceeding and provides a process for the satisfaction of commercial creditor claims in the Chapter 11 Proceeding. As of June 1, 2016, Dow Silicones is a wholly owned subsidiary of the Company.

Breast Implant and Other Product Liability Claims

Under the Plan, a product liability settlement program administered by an independent claims office (the "Settlement Facility") was created to resolve breast implant and other product liability claims. Product liability claimants rejecting the settlement program in favor of pursuing litigation must bring suit against a litigation facility (the "Litigation Facility"). Under the Plan, total payments committed by Dow Silicones to resolving product liability claims are capped at a maximum \$2,350 million net present value ("NPV") determined as of the Effective Date using a discount rate of seven percent (approximately \$4,019 million undiscounted at December 31, 2019). Of this amount, no more than \$400 million NPV determined as of the Effective Date can be used to fund the Litigation Facility.

Dow Silicones has an obligation to fund the Settlement Facility and the Litigation Facility over a 16-year period, commencing at the Effective Date. At December 31, 2019, Dow Silicones and its insurers have made life-to-date payments of \$1,762 million to the Settlement Facility and the Settlement Facility reported an unexpended balance of \$74 million.

In accordance with ASC 450 "Accounting for Contingencies," the Company records a liability for breast implant and other product liability claims ("Implant Liability"), which reflects the estimated impact of the settlement of future claims primarily based on reported claim filing levels in the Revised Settlement Program (the "RSP") and on the resolution of almost all cases pending against the Litigation Facility. The RSP was a program sponsored by certain other breast implant manufacturers in the context of multi-district, coordinated federal breast implant cases and was open from 1995 through 2010. The RSP was also a revised successor to an earlier settlement plan involving Dow Silicones (prior to its bankruptcy filing). While Dow Silicones withdrew from the RSP, many of the benefit categories and payment levels in Dow Silicones settlement program were drawn from the RSP. Based on the comparability in design and actual claim experience of both plans, management concluded that claim information from the RSP provides a reasonable basis to estimate future claim filing levels for the Settlement Facility.

In the third quarter of 2019, with the assistance of a third party consultant ("Consultant"), Dow Silicones updated its Implant Liability estimate to \$165 million, primarily reflecting a decrease in Class 16 claims, a decrease resulting from the passage of time, decreased claim filing activity and administrative costs compared with the previous estimate, and an increase in investment income resulting from insurance proceeds. Based on the Consultant's updated estimate and Dow Silicones own review of claim filing activity, Dow Silicones determined that an adjustment to the Implant Liability was required. Accordingly, Dow Silicones decreased its Implant Liability in the third quarter of 2019 by \$98 million, included in "Sundry income (expense) - net" in the consolidated statements of income, and also decreased its corresponding Class 16 receivable in the third quarter of 2019, resulting in a charge of \$13 million, included in "Sundry income (expense) - net" in the consolidated statements of income (both related to the Corporate segment). Dow Silicones' Implant Liability was \$165 million at December 31, 2019 (\$263 million at December 31, 2018), of which \$20 million at December 31, 2019 (\$111 million at December 31, 2018) was included in "Accrued and other current liabilities" and \$145 million at December 31, 2019 (\$152 million at December 31, 2018) was included in "Other noncurrent obligations" in the consolidated balance sheets.

Dow Silicones is not aware of circumstances that would change the factors used in estimating the Implant Liability and believes the recorded liability reflects the best estimate of the remaining funding obligations under the Plan; however, the estimate relies upon a number of significant assumptions, including: future acceptance rates, disease mix, and payment values will be materially consistent with historical experience; no material negative outcomes in future controversies or disputes over Plan interpretation will occur; and the Plan will not be modified. If actual outcomes related to any of these assumptions prove to be materially different, the future liability to fund the Plan may be materially different than the amount estimated. If Dow Silicones was ultimately required to fund the full liability up to the maximum capped value, the liability would be \$2,257 million at December 31, 2019.

Commercial Creditor Issues

The Plan provides that each of Dow Silicones commercial creditors (the "Commercial Creditors") would receive in cash the sum of (a) an amount equal to the principal amount of their claims and (b) interest on such claims. Upon the Plan becoming effective, Dow Silicones paid approximately \$1,500 million to the Commercial Creditors, representing principal and an amount of interest that Dow Silicones considers undisputed.

In 2006, the U.S. Court of Appeals for the Sixth Circuit concluded that there is a general presumption that contractually specified default interest should be paid by a solvent debtor to unsecured creditors (the "Interest Rate Presumption") and permitting the Commercial Creditors to recover fees, costs, and expenses where allowed by relevant loan agreements. The matter was remanded to the U.S. District Court for the Eastern District of Michigan ("District Court") for further proceedings, including rulings on the facts surrounding specific claims and consideration of any equitable factors that would preclude the application of the Interest Rate Presumption. On May 10, 2017, the District Court entered a stipulated order resolving pending discovery motions and established a discovery schedule for the Commercial Creditors matter. As a result, Dow Silicones and its third party consultants conducted further analysis of the Commercial Creditors claims and defenses. This analysis indicated the estimated remaining liability to the Commercial Creditors to be within a range of \$77 million to \$260 million. No single amount within the range appeared to be a better estimate than any other amount within the range. Therefore, Dow Silicones recorded the minimum liability within the range, which resulted in a decrease to the Commercial Creditor liability of \$33 million in the second quarter of 2017, which was included in "Sundry income (expense) - net" in the consolidated statements of income and related to Corporate. At December 31, 2018, the liability related to Dow Silicones' potential obligation to its Commercial Creditors was \$82 million, included in "Accrued and other current liabilities" in the consolidated balance sheets.

On August 19, 2019, Dow Silicones entered into a settlement agreement with the Commercial Creditors, obligating Dow Silicones to pay \$172 million, inclusive of the Commercial Creditors' legal costs. The settlement was approved by the District Court. As a result of the settlement agreement, in the third quarter of 2019, the Company recorded a pretax charge of \$50 million, net of indemnifications of \$37 million, included in "Sundry Income (expense) - net" in the consolidated statements of income and related to the Corporate segment. The settlement was paid to the Commercial Creditors in the fourth quarter of 2019. The litigation is now concluded.

Summary

The amounts recorded by Dow Silicones for the Chapter 11 related matters described above were based upon current, known facts, which management believes reflect reasonable and probable estimates of the liability. However, future events could cause the actual costs for Dow Silicones to be higher or lower than those projected or those recorded. Any such events could result in an increase or decrease in the recorded liability.

Other Litigation Matters

In addition to the specific matters described above, the Company is party to a number of other claims and lawsuits arising out of the normal course of business with respect to product liability, patent infringement, employment matters, governmental tax and regulation disputes, contract and commercial litigation, and other actions. Certain of these actions purport to be class actions and seek damages in very large amounts. All such claims are being contested. The Company has an active risk management program consisting of numerous insurance policies secured from many carriers at various times. These policies may provide coverage that could be utilized to minimize the financial impact, if any, of certain contingencies described above. It is the opinion of the Company's management that the possibility is remote that the aggregate of all such other claims and lawsuits will have a material adverse impact on the results of operations, financial condition and cash flows of the Company.

Indemnifications with Corning

In connection with the June 1, 2016 ownership restructure of Dow Silicones, the Company is indemnified by Corning for at least 50 percent of future losses associated with certain pre-closing liabilities, including the Implant Liability, Commercial Creditors issues and certain environmental matters described in the preceding sections, subject to certain conditions and limits. The maximum amount of indemnified losses which may be recovered are subject to a cap that declines over time. Indemnified losses are capped at (1) \$1 billion between May 31, 2018 and May 31, 2023, and (2) no recoveries are permitted after May 31, 2023. The Company had indemnification assets of \$100 million at December 31, 2019 (zero at December 31, 2018), of which \$37 million was included in "Other current assets" and \$63 million was included in "Noncurrent receivables" in the consolidated balance sheets.

Gain Contingency - Dow v. Nova Chemicals Corporation Patent Infringement Matter

On December 9, 2010, Dow filed suit in the Federal Court in Ontario, Canada ("Federal Court") alleging that Nova Chemicals Corporation ("Nova") was infringing the Company's Canadian polyethylene patent 2,106,705 (the "'705 Patent"). Nova counterclaimed on the grounds of invalidity and non-infringement. In accordance with Canadian practice, the suit was bifurcated into a merits phase, followed by a damages phase. Following trial in the merits phase, in May 2014 the Federal Court ruled that the Company's '705 Patent was valid and infringed by Nova. Nova appealed to the Canadian Federal Court of Appeal, which affirmed the Federal Court decision in August 2016. Nova then sought leave to appeal its loss to the Supreme Court of Canada, which dismissed Nova's petition in April 2017. As a result, Nova has exhausted all appeal rights on the merits, and it is undisputed that Nova owes the Company the profits it earned from its infringing sales as determined in the trial for the damages phase.

On April 19, 2017, the Federal Court issued a Public Judgment in the damages phase, which detailed its conclusions on how to calculate the profits to be awarded to the Company. The Company and Nova submitted their respective calculations of the damages to the Federal Court in May 2017. On June 29, 2017, the Federal Court issued a Confidential Supplemental Judgment, concluding that Nova must pay \$645 million Canadian dollars (equivalent to \$495 million U.S. dollars) to the Company, plus pre- and post-judgment interest, for which the Company received payment of \$501 million from Nova on July 6, 2017. Although Nova is appealing portions of the damages judgment, certain portions of it are indisputable and will be owed to the Company regardless of the outcome of any further appeals by Nova. As a result of these actions and in accordance with ASC 450-30 "Gain Contingencies," the Company recorded a \$160 million pretax gain in the second quarter of 2017, related to the Packaging & Specialty Plastics segment, of which \$137 million was included in "Sundry income (expense) - net" and \$23 million was included in "Selling, general and administrative expenses" in the consolidated statements of income. At December 31, 2019, the Company had \$341 million (\$341 million at December 31, 2018) included in "Other noncurrent obligations" related to the disputed portion of the damages judgment. The Company is confident of its chances of defending the entire judgment on appeal, particularly the trial court's determinations on important factual issues, which will be accorded deferential review on appeal.

Gain Contingency - Dow v. Nova Chemicals Corporation Ethylene Asset Matter

On September 18, 2019, the Court of the Queen's Bench in Alberta, Canada, signed a judgment ordering Nova to pay the Company \$1.43 billion Canadian dollars (equivalent to approximately \$1.08 billion U.S. dollars) by October 11, 2019, for damages the Company incurred through 2012 related to the companies' jointly-owned ethylene asset in Joffre, Alberta, Canada. The Court, which initially ruled in June 2018, found that Nova failed to operate the ethylene asset at full capacity for more than ten years, and furthermore, that Nova violated several contractual agreements related to the Company receiving its share of the asset's ethylene production. These actions resulted in reduced productivity and sales for the Company. Nova has appealed the judgment, however, certain portions of it are not in dispute and are owed to the Company regardless of the outcome of Nova's appeal. As a result of these actions and in accordance with ASC 450-30 "Gain Contingencies," the Company recorded a \$186 million pretax gain in the third quarter of 2019, of which \$170 million was included in "Sundry income (expense) - net" and \$16 million was included in

"Selling, general and administrative expenses" in the consolidated statements of income and related to Packaging & Specialty Plastics. In October 2019, Nova paid \$1.08 billion Canadian dollars (equivalent to approximately \$0.8 billion U.S. dollars) directly to the Company, and remitted \$347 million Canadian dollars to the Canada Revenue Agency ("CRA") for the tax account of one of the Company's subsidiaries. The Company has sought a refund of the entire amount remitted to the CRA. At December 31, 2019, \$265 million was included in "Noncurrent receivables" in the Company's consolidated balance sheets related to the withholding tax and \$893 million was included in "Other noncurrent obligations" in the Company's consolidated balance sheets related to the disputed portion of the damages judgment. Dow is confident of its chances of defending the entire judgment on appeal, particularly the trial court's determinations on important factual and discretionary issues, which will be accorded deferential review on appeal.

Purchase Commitments

The Company has outstanding purchase commitments and various commitments for take-or-pay or throughput agreements. The Company was not aware of any purchase commitments that were negotiated as part of a financing arrangement for the facilities that will provide the contracted goods or services or for the costs related to those goods or services at December 31, 2019 and 2018.

Guarantees

The following table provides a summary of the final expiration, maximum future payments and recorded liability reflected in the consolidated balance sheets for guarantees:

Guarantees	Dec 31, 2019			Dec 31, 2018		
	<i>Final Expiration</i>	<i>Maximum Future Payments</i>	<i>Recorded Liability</i>	<i>Final Expiration</i>	<i>Maximum Future Payments</i>	<i>Recorded Liability</i>
In millions						
Guarantees	2023	\$ 3,952	\$ 10	2023	\$ 4,273	\$ 22

Guarantees arise during the ordinary course of business from relationships with customers, committed accounts receivable facilities and nonconsolidated affiliates when the Company undertakes an obligation to guarantee the performance of others (via delivery of cash or other assets) if specified triggering events occur. With guarantees, such as commercial or financial contracts, non-performance by the guaranteed party triggers the obligation of the Company to make payments to the beneficiary of the guarantee. The majority of the Company's guarantees relate to debt of nonconsolidated affiliates, which have expiration dates ranging from less than one year to less than four years. The Company's current expectation is that future payment or performance related to the non-performance of others is considered remote.

The Company has entered into guarantee agreements ("Guarantees") related to project financing for Sadara. The total of an Islamic bond and additional project financing (collectively "Total Project Financing") obtained by Sadara is approximately \$12.5 billion. Sadara had \$10.8 billion of Total Project Financing outstanding at December 31, 2019 (\$11.7 billion at December 31, 2018). The Company's guarantee of the Total Project Financing is in proportion to the Company's 35 percent ownership interest in Sadara, or up to approximately \$3.9 billion when the project financing is fully drawn. Sadara successfully completed an extensive operational testing program in December 2018, however, the Guarantees will be released upon the satisfactory fulfillment of certain project completion conditions, which is expected by the end of the first quarter of 2020, and must occur no later than December 2020.

Asset Retirement Obligations

The Company has 109 manufacturing sites in 31 countries. Most of these sites contain numerous individual manufacturing operations, particularly at the Company's larger sites. Asset retirement obligations are recorded as incurred and reasonably estimable, including obligations for which the timing and/or method of settlement are conditional on a future event that may or may not be within the control of the Company. The retirement of assets may involve such efforts as remediation and treatment of asbestos, contractually required demolition, and other related activities, depending on the nature and location of the assets; and retirement obligations are typically realized only upon demolition of those facilities. In identifying asset retirement obligations, the Company considers identification of legally enforceable obligations, changes in existing law, estimates of potential settlement dates and the calculation of an appropriate discount rate to be used in calculating the fair value of the obligations. The Company has a well-established global process to identify, approve and track the demolition of retired or to-be-retired facilities; and no assets are retired from service until this process has been followed. The Company typically forecasts demolition projects based on the usefulness of the assets; environmental, health and safety concerns; and other similar considerations. Under this process, as demolition projects are identified and approved, reasonable estimates are determined for the time frames during which any related asset retirement obligations are expected to be settled. For those assets where a range of potential settlement dates may be reasonably estimated, obligations are recorded. The Company routinely reviews all changes to items under consideration for demolition to determine if an adjustment to the value of the asset retirement obligation is required.

The Company has recognized asset retirement obligations for the following activities: demolition and remediation activities at manufacturing sites primarily in the United States, Canada, Brazil, Argentina, Japan, United Arab Emirates, Australia and Europe; and capping activities at landfill sites in the United States, Canada and Brazil. The Company has also recognized conditional asset retirement obligations related to asbestos encapsulation as a result of planned demolition and remediation activities at manufacturing and administrative sites primarily in the United States, Canada, Argentina, Australia and Europe. The aggregate carrying amount of conditional asset retirement obligations recognized by the Company (included in the asset retirement obligations balance shown below) was \$19 million at December 31, 2019 (\$22 million at December 31, 2018).

The following table shows changes in the aggregate carrying amount of the Company's asset retirement obligations for the years ended December 31, 2019 and 2018:

Asset Retirement Obligations		
In millions	2019	2018
Balance at Jan 1	\$ 109	\$ 100
Additional accruals	10	9
Liabilities settled	(7)	(3)
Accretion expense	2	3
Revisions in estimated cash flows	3	—
Other	(13)	—
Balance at Dec 31	\$ 104	\$ 109

The discount rate used to calculate the Company's asset retirement obligations at December 31, 2019, was 2.12 percent (3.54 percent at December 31, 2018). These obligations are included in the consolidated balance sheets as "Accrued and other current liabilities" and "Other noncurrent obligations."

The Company has not recognized conditional asset retirement obligations for which a fair value cannot be reasonably estimated in its consolidated financial statements. Assets that have not been submitted/reviewed for potential demolition activities are considered to have continued usefulness and are generally still operating normally. Therefore, without a plan to demolish the assets or the expectation of a plan, such as shortening the useful life of assets for depreciation purposes in accordance with the accounting guidance related to property, plant and equipment, the Company is unable to reasonably forecast a time frame to use for present value calculations. As such, the Company has not recognized obligations for individual plants/buildings at its manufacturing sites where estimates of potential settlement dates cannot be reasonably made. In addition, the Company has not recognized conditional asset retirement obligations for the capping of its approximately 36 underground storage wells and 131 underground brine mining and other wells at Company-owned sites when there are no plans or expectations of plans to exit the sites. It is the opinion of the Company's management that the possibility is remote that such conditional asset retirement obligations, when estimable, will have a material impact on the Company's consolidated financial statements based on current costs.

NOTE 18 - LEASES

Operating lease ROU assets are included in "Operating lease right-of-use assets" while finance lease ROU assets are included in "Net property" in the consolidated balance sheets. With respect to lease liabilities, operating lease liabilities are included in "Operating lease liabilities - current" and "Operating lease liabilities - noncurrent," and finance lease liabilities are included in "Long-term debt due within one year" and "Long-Term Debt" in the consolidated balance sheets.

Dow routinely leases sales and administrative offices, power plants, production facilities, warehouses and tanks for product storage, aircraft, motor vehicles, railcars, computers, office machines and equipment. Some leases contain renewal provisions, purchase options and escalation clauses and the terms for these leased assets vary depending on the lease agreement. These leased assets have remaining lease terms of up to 50 years. See Notes 1 and 2 for additional information on leases.

The components of lease cost for operating and finance leases for the year ended December 31, 2019 were as follows:

Lease Cost	<i>Year Ended Dec 31, 2019</i>
In millions	
Operating lease cost	\$ 532
Finance lease cost	
Amortization of right-of-use assets - finance	\$ 39
Interest on lease liabilities - finance	25
Total finance lease cost	\$ 64
Short-term lease cost	\$ 204
Variable lease cost	198
Sublease income	(4)
Total lease cost	\$ 994

The following table provides supplemental cash flow information related to leases:

Other Lease Information	<i>Year Ended Dec 31, 2019</i>
In millions	
Cash paid for amounts included in the measurement of lease liabilities:	
Operating cash flows for operating leases	\$ 544
Operating cash flows for finance leases	\$ 25
Financing cash flows for finance leases	\$ 34

The following table summarizes the lease-related assets and liabilities recorded in the consolidated balance sheets at December 31, 2019.

Lease Position	<i>Balance Sheet Classification</i>	<i>Dec 31, 2019</i>
In millions		
Right-of-use assets obtained in exchange for lease obligations:		
Operating leases ¹		\$ 2,476
Finance leases		\$ 89
Assets		
Operating lease assets	Operating lease right-of-use assets	\$ 2,072
Finance lease assets	Property	486
Finance lease amortization	Accumulated depreciation	(167)
Total lease assets		\$ 2,391
Liabilities		
Current		
Operating	Operating lease liabilities - current	\$ 421
Finance	Long-term debt due within one year	32
Noncurrent		
Operating	Operating lease liabilities - noncurrent	1,739
Finance	Long-Term Debt	363
Total lease liabilities		\$ 2,555

1. Includes \$2.3 billion related to the adoption of Topic 842. See Note 2 for additional information.

Lease Term and Discount Rate	<i>Dec 31, 2019</i>
Weighted-average remaining lease term	
Operating leases	8.0 years
Finance leases	12.3 years
Weighted-average discount rate	
Operating leases	4.09%
Finance leases	6.28%

The following table provides the maturities of lease liabilities at December 31, 2019:

Maturities of Lease Liabilities at Dec 31, 2019	<i>Operating Leases</i>	<i>Finance Leases</i>
In millions		
2020	\$ 492	\$ 60
2021	422	55
2022	355	50
2023	285	84
2024	219	29
2025 and thereafter	803	310
Total future undiscounted lease payments	\$ 2,576	\$ 588
Less imputed interest	416	193
Total present value of lease liabilities	\$ 2,160	\$ 395

At December 31, 2019, Dow had additional leases of approximately \$71 million, primarily for equipment, which had not yet commenced. These leases are expected to commence in 2020 and 2021, with lease terms of up to 20 years.

Future minimum lease payments for operating leases accounted for under ASC 840, "Leases," with remaining non-cancelable terms in excess of one year at December 31, 2018 were as follows:

Minimum Lease Commitments at Dec 31, 2018	
In millions	
2019	\$ 366
2020	329
2021	296
2022	269
2023	227
2024 and thereafter	855
Total	\$ 2,342

Dow provides guarantees related to certain leased assets, specifying the residual value that will be available to the lessor at lease termination through the sale of the assets to the lessee or third parties. The following table provides a summary of the final expiration, maximum future payments and recorded liability reflected in the consolidated balance sheets for residual value guarantees at December 31, 2019 and 2018. There was no recorded liability related to these residual value guarantees at December 31, 2019, as payment of such residual value guarantees was not determined to be probable. The lease agreements do not contain any material restrictive covenants.

Lease Guarantees	<i>Dec 31, 2019</i>			<i>Dec 31, 2018</i>		
In millions	<i>Final Expiration</i>	<i>Maximum Future Payments</i>	<i>Recorded Liability</i>	<i>Final Expiration</i>	<i>Maximum Future Payments</i>	<i>Recorded Liability</i>
Residual value guarantees	2028	\$ 792	\$ —	2028	\$ 885	\$ 130

NOTE 19 – STOCKHOLDERS' EQUITY

Merger with Historical DuPont

Effective with the Merger, each share of TDCC Common Stock (excluding any shares of TDCC Common Stock that were held in treasury, which were automatically canceled and retired for no consideration) was converted into the right to receive one fully paid and non-assessable share of DowDuPont Common Stock. As a result, in the third quarter of 2017, the Company recorded a reduction in "Treasury stock" of \$935 million, a reduction in "Common stock" of \$3,107 million and an increase in "Additional paid in capital" of \$2,172 million in the consolidated balance sheets. See Note 3 for additional information.

Common Stock

Dow Inc.

Dow Inc. was incorporated in 2018 with 100 authorized and issued shares of common stock, par value \$0.01 per share, owned solely by its parent company, DowDuPont. In the first quarter of 2019, in connection with the separation and distribution of DowDuPont's materials science business, the number of authorized shares of common stock was increased to 5,000,000,000 shares, par value \$0.01 per share, and Dow Inc.'s 100 shares of issued common stock were recapitalized into 748,771,240 shares of common stock. Dow Inc.'s common stock was solely owned by DowDuPont through March 31, 2019, and on April 1, 2019, Dow Inc. became an independent, publicly traded company. Dow Inc. common stock is listed on the NYSE under the symbol "DOW." See Notes 3 and 4 for additional information.

The Company may issue Dow Inc. common stock shares out of treasury stock or as new common stock shares for purchases under the Employee Stock Purchase Plan ("ESPP"), for options exercised and for the release of restricted stock units ("RSUs") (formerly termed deferred stock), performance stock units ("PSUs") (formerly termed performance deferred stock) and restricted stock. Subsequent to the separation from DowDuPont, the number of new Dow Inc. common stock shares issued to employees and non-employee directors was approximately 2.5 million in 2019. Prior to the Merger, the number of new TDCC common stock shares issued to employees and non-employee directors was zero in 2017. See Note 22 for additional information on changes to the Company's equity awards in connection with the Merger and separation from DowDuPont.

TDCC

Effective with the Merger and through March 31, 2019, TDCC had 100 authorized and issued shares of common stock, par value \$0.01 per share, owned solely by DowDuPont. Effective with the separation from DowDuPont, TDCC became a wholly owned subsidiary of Dow Inc., which now holds all 100 authorized and issued shares of common stock of TDCC. See Notes 3 and 4 for additional information.

Retained Earnings

Dow Inc.

There are no significant restrictions limiting Dow Inc.'s ability to pay dividends. Subsequent to the separation from DowDuPont, Dow Inc. declared dividends of \$2.10 per share in 2019.

Undistributed earnings of nonconsolidated affiliates included in retained earnings were \$852 million at December 31, 2019 and \$1,856 million at December 31, 2018.

TDCC

Prior to the Merger, TDCC declared dividends of \$1.38 per share in 2017. Effective with the Merger, TDCC no longer had publicly traded common stock. TDCC's common shares were owned solely by DowDuPont, prior to the separation on April 1, 2019, and TDCC's Board of Directors determined whether or not there would be a dividend distribution to DowDuPont. Effective with the separation from DowDuPont on April 1, 2019, TDCC became a wholly owned subsidiary of Dow Inc. and TDCC's Board of Directors determines whether or not there will be a dividend distribution to Dow Inc. See Note 26 for additional information on dividends paid by TDCC to DowDuPont and Dow Inc.

See Note 4 for information on the impact of the receipt of ECP, which was accounted for as a transfer between entities under common control.

Employee Stock Ownership Plan

The Dow Employee Stock Ownership Plan (the "ESOP") is an integral part of The Dow Chemical Company Employees' Savings Plan (the "Plan"). A significant majority of full-time employees in the United States are eligible to participate in the Plan. The Company uses the ESOP to provide its matching contribution in the form of stock to Plan participants. Prior to the Merger, contributions were in the form of TDCC Common Stock. Effective with the Merger, shares of TDCC Common Stock held by the ESOP were converted into shares of DowDuPont Common Stock at a ratio of 1:1. Effective with the separation from DowDuPont, the DowDuPont Common Stock held by the ESOP received a Dow Inc. Common Stock share dividend at a ratio of 3:1, resulting

in the ESOP holding both DowDuPont and Dow Inc. shares. Subsequent to the separation from DowDuPont, the ESOP independent fiduciary sold the DowDuPont shares and purchased additional Dow Inc. shares with the proceeds.

In connection with the acquisition of Rohm and Haas on April 1, 2009, the Rohm and Haas Employee Stock Ownership Plan (the "Rohm and Haas ESOP") was merged into the Plan, and the Company assumed the \$78 million balance of debt at 9.8 percent interest with final maturity in 2020 that was used to finance share purchases by the Rohm and Haas ESOP in 1990. The outstanding balance of the debt was \$3 million at December 31, 2019 and \$10 million at December 31, 2018.

Dividends on unallocated shares held by the ESOP are used by the ESOP to make debt service payments and to purchase additional shares if dividends exceed the debt service payments. Dividends on allocated shares are used by the ESOP to make debt service payments to the extent needed; otherwise, they are paid to the Plan participants. Shares are released for allocation to participants based on the ratio of the current year's debt service to the sum of the principal and interest payments over the life of the loan. The shares are allocated to Plan participants in accordance with the terms of the Plan.

Compensation expense for allocated shares is recorded at the fair value of the shares on the date of allocation. Compensation expense reflected in income from continuing operations for ESOP shares was \$77 million in 2019, \$144 million in 2018 and \$200 million in 2017. At December 31, 2019, 12.6 million shares out of a total 16.1 million shares held by the ESOP had been allocated to participants' accounts and 3.5 million shares, at a fair value of \$190 million, were considered unearned.

Treasury Stock

Dow Inc.

On April 1, 2019, Dow Inc.'s Board of Directors ratified the share repurchase program originally approved on March 15, 2019, authorizing up to \$3 billion to be spent on the repurchase of the Company's common stock, with no expiration date. In 2019, Dow Inc. repurchased \$500 million of Dow Inc. common stock. At December 31, 2019, \$2.5 billion of the share repurchase program authorization remained available for repurchases.

TDCC

In 2013, TDCC's Board of Directors approved a share buy-back program. As a result of subsequent authorizations approved by TDCC's Board of Directors, the total authorized amount of the share repurchase program was \$9.5 billion. Effective with the Merger, the share repurchase program was canceled. Over the duration of the program, a total of \$8.1 billion was spent on the repurchase of TDCC Common Stock.

The Company may issue shares for purchases under the ESPP, for options exercised as well as for the release of RSUs, PSUs and restricted stock out of treasury stock or as new common stock shares. The number of treasury shares issued to employees and non-employee directors under the Company's stock-based compensation programs are summarized in the following table. See Note 22 for additional information on changes to the Company equity awards in connection with the Merger and separation from DowDuPont.

Treasury Shares Issued Under Stock-Based Compensation Programs	<i>2019¹</i>	<i>2018</i>	<i>2017²</i>
To employees and non-employee directors	—	N/A	14,194,282

1. Reflects Dow Inc. activity subsequent to the separation from DowDuPont.

2. Reflects TDCC activity prior to the Merger.

The following table provides a reconciliation of Dow Inc. common stock activity for the years ended December 31, 2019 and 2018:

Shares of Dow Inc. Common Stock	<i>Issued</i>	<i>Held in Treasury</i>
Balance at Jan 1, 2018	—	—
Issued ¹	100	—
Balance at Jan 1, 2019	100	—
Impact of recapitalization	748,771,140	—
Issued ²	2,457,404	—
Repurchased	—	9,729,834
Balance at Dec 31, 2019	751,228,644	9,729,834

1. Dow Inc. was incorporated in 2018 with 100 authorized and issued shares of common stock, par value \$0.01 per share.

2. Shares issued to employees and non-employee directors under the Company's equity compensation plans.

Accumulated Other Comprehensive Loss

The changes in each component of AOCL for the years ended December 31, 2019, 2018 and 2017 were as follows:

Accumulated Other Comprehensive Loss In millions	2019	2018	2017
Unrealized Gains (Losses) on Investments			
Beginning balance ¹	\$ (51)	\$ 17	\$ 43
Unrealized gains (losses) on investments	178	(93)	38
Less: Tax (expense) benefit	(38)	19	(13)
Net unrealized gains (losses) on investments	140	(74)	25
(Gains) losses reclassified from AOCL to net income ²	(33)	9	(110)
Less: Tax expense (benefit) ³	8	(2)	39
Net (gains) losses reclassified from AOCL to net income	(25)	7	(71)
Other comprehensive income (loss), net of tax	115	(67)	(46)
Reclassification of stranded tax effects ⁴	—	(1)	—
Ending balance	\$ 64	\$ (51)	\$ (3)
Cumulative Translation Adjustment			
Beginning balance	\$ (1,813)	\$ (1,481)	\$ (2,381)
Gains (losses) on foreign currency translation	59	(215)	1,006
Less: Tax (expense) benefit	(2)	(6)	(98)
Net gains (losses) on foreign currency translation	57	(221)	908
(Gains) losses reclassified from AOCL to net income ⁵	(89)	(4)	(8)
Other comprehensive income (loss), net of tax	(32)	(225)	900
Impact of common control transaction ⁶	710	—	—
Reclassification of stranded tax effects ⁴	—	(107)	—
Ending balance	\$ (1,135)	\$ (1,813)	\$ (1,481)
Pension and Other Postretirement Benefits			
Beginning balance	\$ (7,965)	\$ (6,998)	\$ (7,389)
Gains (losses) arising during the period	(1,699)	(625)	(3)
Less: Tax (expense) benefit	413	130	(20)
Net gains (losses) arising during the period	(1,286)	(495)	(23)
Amortization and recognition of net loss and prior service credits ⁷	504	594	607
Less: Tax expense (benefit) ³	(117)	(139)	(193)
Net loss and prior service credits reclassified from AOCL to net income	387	455	414
Other comprehensive income (loss), net of tax	(899)	(40)	391
Impact of common control transaction ⁶	83	—	—
Reclassification of stranded tax effects ⁴	—	(927)	—
Ending balance	\$ (8,781)	\$ (7,965)	\$ (6,998)
Derivative Instruments			
Beginning balance	\$ (56)	\$ (109)	\$ (95)
Gains (losses) on derivative instruments	(470)	6	2
Less: Tax (expense) benefit	101	(2)	(1)
Net gains (losses) on derivative instruments	(369)	4	1
(Gains) losses reclassified from AOCL to net income ⁸	44	89	(13)
Less: Tax expense (benefit) ³	(13)	(18)	(2)
Net (gains) losses reclassified from AOCL to net income	31	71	(15)
Other comprehensive income (loss), net of tax	(338)	75	(14)
Reclassification of stranded tax effects ⁴	—	(22)	—
Ending balance	\$ (394)	\$ (56)	\$ (109)
Total AOCL ending balance	\$ (10,246)	\$ (9,885)	\$ (8,591)

1. The beginning balance of "Unrealized gains (losses) on investments" for 2018 was increased by \$20 million to reflect the impact of adoption of ASU 2016-01.

2. Reclassified to "Net sales" and "Sundry income (expense) - net."

3. Reclassified to "Provision for income taxes."

4. Amounts reclassified to "Retained earnings" as a result of the adoption of ASU 2018-02.

5. Reclassified to "Sundry income (expense) - net."

6. Reclassified to "Retained earnings" as a result of the separation from DowDuPont on April 1, 2019. See Note 4 for additional information.

7. These AOCL components are included in the computation of net periodic benefit cost of the Company's defined benefit pension and other postretirement benefit plans. See Note 21 for additional information.

8. Reclassified to "Cost of sales," "Sundry income (expense) - net" and "Interest expense and amortization of debt discount."

NOTE 20 – NONCONTROLLING INTERESTS

Ownership interests in the Company's subsidiaries held by parties other than the Company are presented separately from the Company's equity in the consolidated balance sheets as "Noncontrolling interests." The amount of consolidated net income attributable to the Company and the noncontrolling interests are both presented on the face of the consolidated statements of income.

The following table summarizes the activity for equity attributable to noncontrolling interests for the years ended December 31, 2019, 2018 and 2017:

Noncontrolling Interests			
In millions	<i>2019</i>	<i>2018</i>	<i>2017</i>
Balance at Jan 1	\$ 1,138	\$ 1,186	\$ 1,242
Net income attributable to noncontrolling interests - continuing operations	74	102	102
Net income attributable to noncontrolling interests - discontinued operations	13	32	28
Distributions to noncontrolling interests ¹	(77)	(145)	(109)
Impact of common control transaction ²	(353)	—	—
Purchase of noncontrolling interests ³	(254)	—	—
Deconsolidation of noncontrolling interests ⁴	—	—	(119)
Cumulative translation adjustments	12	(39)	41
Other	—	2	1
Balance at Dec 31	\$ 553	\$ 1,138	\$ 1,186

1. Distributions to noncontrolling interests are net of \$7 million in 2019 (\$27 million in 2018 and \$20 million in 2017) in dividends paid to a joint venture, which were reclassified to "Equity in earnings of nonconsolidated affiliates" in the consolidated statements of income. Also includes amounts attributable to discontinued operations of \$7 million in 2019 (\$37 million in 2018 and \$28 million in 2017)

2. Related to the separation from DowDuPont. See Note 4 for additional information.

3. Relates to the acquisition of full ownership in a propylene oxide manufacturing joint venture, which occurred on October 1, 2019. See Note 25 for additional information. As a result of this arrangement, the carrying value of the noncontrolling interest was removed, and "Additional paid-in capital" was adjusted by \$38 million.

4. On June 30, 2017, the Company sold its ownership interest in the SKC Haas Display Films group of companies.

NOTE 21 – PENSION PLANS AND OTHER POSTRETIREMENT BENEFITS

As a result of the Company's separation from DowDuPont, the number of significant defined benefit pension plans administered by the Company decreased from 45 plans to 35 plans, with approximately \$270 million of net unfunded pension liabilities transferred to DowDuPont. Plans administered by other subsidiaries of DowDuPont that were transferred to the Company were not significant. There were no changes in the number of significant other postretirement benefit plans administered by the Company as a result of the separation. Existing Company plans that were significantly impacted by the transfer of active plan participants to DowDuPont were remeasured, resulting in curtailment gains and losses and recognition of special termination benefits.

Defined Benefit Pension Plans

The Company has both funded and unfunded defined benefit pension plans that cover employees in the United States and a number of other countries. The U.S. qualified plan covering the parent company is the largest plan. Benefits for employees hired before January 1, 2008, are based on length of service and the employee's three highest consecutive years of compensation. Employees hired after January 1, 2008, earn benefits that are based on a set percentage of annual pay, plus interest.

The Company's funding policy is to contribute to the plans when pension laws and/or economics either require or encourage funding. In 2019, the Company contributed \$261 million to its continuing operations pension plans (\$266 million, including contributions to plans of discontinued operations). Total contributions in 2019 also included contributions to fund benefit payments for the Company's non-qualified pension plans. The Company expects to contribute approximately \$250 million to its pension plans in 2020.

The provisions of a U.S. non-qualified pension plan require the payment of plan obligations to certain participants upon a change in control of the Company, which occurred at the time of the Merger. Certain participants could elect to receive a lump-sum payment or direct the Company to purchase an annuity on their behalf using the after-tax proceeds of the lump sum. In the fourth quarter of 2017, the Company paid \$940 million to plan participants and \$230 million to an insurance company for the purchase of annuities, which were included in "Pension contributions" in the consolidated statements of cash flows. The Company also paid \$205 million for income and payroll taxes for participants electing the annuity option, of which \$201 million was included in "Cost of sales" and \$4 million was included in "Selling, general and administrative expenses" in the consolidated statements of income and related to the Corporate segment. The Company recorded a settlement charge of \$687 million associated with the payout in the fourth quarter of 2017, which was included in "Sundry income (expense) - net" in the consolidated statements of income and related to the Corporate segment.

The weighted-average assumptions used to determine pension plan obligations and net periodic benefit costs for all plans are summarized in the table below:

Weighted-Average Assumptions for All Pension Plans	Benefit Obligations at Dec 31		Net Periodic Costs for the Year Ended		
	2019	2018	2019	2018	2017
Discount rate	2.81%	3.69%	3.50%	3.17%	3.52%
Interest crediting rate for applicable benefits	3.51%	3.72%	3.72%	3.61%	3.45%
Rate of compensation increase	3.92%	3.84%	3.92%	3.88%	3.90%
Expected return on plan assets	—	—	7.11%	7.11%	7.16%

The weighted-average assumptions used to determine pension plan obligations and net periodic benefit costs for U.S. plans are summarized in the table below:

Weighted-Average Assumptions for U.S. Pension Plans	Benefit Obligations at Dec 31		Net Periodic Costs for the Year Ended		
	2019	2018	2019	2018	2017
Discount rate	3.41%	4.39%	4.15%	3.66%	4.11%
Interest crediting rate for applicable benefits	4.50%	4.50%	4.50%	4.50%	4.50%
Rate of compensation increase	4.25%	4.25%	4.25%	4.25%	4.25%
Expected return on plan assets	—	—	7.92%	7.92%	7.91%

Other Postretirement Benefit Plans

The Company provides certain health care and life insurance benefits to retired employees and survivors. The Company's plans outside of the United States are not significant; therefore, this discussion relates to the U.S. plans only. The plans provide health care benefits, including hospital, physicians' services, drug and major medical expense coverage, and life insurance benefits. In general, for employees hired before January 1, 1993, the plans provide benefits supplemental to Medicare when retirees are eligible for these benefits. The Company and the retiree share the cost of these benefits, with the Company portion increasing as the retiree has increased years of credited service, although there is a cap on the Company portion. The Company has the ability to change these benefits at any time. Employees hired after January 1, 2008, are not covered under the plans.

The Company funds most of the cost of these health care and life insurance benefits as incurred. In 2019, the Company did not make any contributions to its other postretirement benefit plan trusts. The trusts did not hold assets at December 31, 2019. The Company does not expect to contribute assets to its other postretirement benefit plan trusts in 2020.

The weighted-average assumptions used to determine other postretirement benefit plan obligations and net periodic benefit costs for the U.S. plans are provided below:

Weighted-Average Assumptions for U.S. Other Postretirement Benefits Plans	Benefit Obligations at Dec 31		Net Periodic Costs for the Year Ended		
	2019	2018	2019	2018	2017
Discount rate	3.19%	4.24%	4.01%	3.51%	3.83%
Health care cost trend rate assumed for next year	6.25%	6.50%	6.50%	6.75%	7.00%
Rate to which the cost trend rate is assumed to decline (the ultimate health care cost trend rate)	5.00%	5.00%	5.00%	5.00%	5.00%
Year that the rate reaches the ultimate health care cost trend rate	2025	2025	2025	2025	2025

Assumptions

The Company determines the expected long-term rate of return on plan assets by performing a detailed analysis of key economic and market factors driving historical returns for each asset class and formulating a projected return based on factors in the current environment. Factors considered include, but are not limited to, inflation, real economic growth, interest rate yield, interest rate spreads and other valuation measures and market metrics. The expected long-term rate of return for each asset class is then weighted based on the strategic asset allocation approved by the governing body for each plan. The Company's historical experience with the pension fund asset performance is also considered.

The Company uses the spot rate approach to determine the discount rate utilized to measure the service cost and interest cost components of net periodic pension and other postretirement benefit costs for the U.S. and other selected countries. Under the spot rate approach, the Company calculates service costs and interest costs by applying individual spot rates from the Willis Towers Watson RATE:Link yield curve (based on high-quality corporate bond yields) for each selected country to the separate expected cash flow components of service cost and interest cost. Service cost and interest cost for all other plans are determined on the basis of the single equivalent discount rates derived in determining those plan obligations.

The discount rates utilized to measure the pension and other postretirement obligations of the U.S. qualified plans are based on the yield on high-quality corporate fixed income investments at the measurement date. Future expected actuarially determined cash flows for the Company's U.S. plans are individually discounted at the spot rates under the Willis Towers Watson U.S. RATE:Link 60-90 corporate yield curve (based on 60th to 90th percentile high-quality corporate bond yields) to arrive at the plan's obligations as of the measurement date.

The Company utilizes a modified version of the Society of Actuaries' mortality tables released in 2014 and a modified version of the generational mortality improvement scale released in 2018 for purposes of measuring the U.S. pension and other postretirement obligations, based on an evaluation of the mortality experience of the Company's pension plans.

Summarized information on the Company's pension and other postretirement benefit plans is as follows:

Change in Projected Benefit Obligations, Plan Assets and Funded Status of All Significant Plans In millions	<i>Defined Benefit Pension Plans</i>		<i>Other Postretirement Benefit Plans</i>	
	2019	2018	2019	2018
<i>Change in projected benefit obligations:</i>				
Benefit obligations at beginning of year	\$ 29,600	\$ 31,851	\$ 1,478	\$ 1,567
Impact of plans transferred to DowDuPont at separation	(331)	—	—	—
Service cost	396	520	8	12
Interest cost	921	886	49	45
Plan participants' contributions	12	19	—	—
Actuarial changes in assumptions and experience	3,904	(1,754)	148	(13)
Benefits paid	(1,684)	(1,476)	(148)	(123)
Plan amendments	—	17	—	—
Acquisitions/divestitures/other ¹	(37)	(45)	—	—
Effect of foreign exchange rates	14	(418)	3	(10)
Termination benefits/curtailments/settlements	(174)	—	(3)	—
Benefit obligations at end of year	\$ 32,621	\$ 29,600	\$ 1,535	\$ 1,478

<i>Change in plan assets:</i>				
Fair value of plan assets at beginning of year	\$ 22,544	\$ 23,401	\$ —	\$ —
Impact of plans transferred to DowDuPont at separation	(61)	—	—	—
Actual return on plan assets	3,790	(742)	—	—
Employer contributions	266	1,656	—	—
Plan participants' contributions	12	19	—	—
Benefits paid	(1,684)	(1,476)	—	—
Effect of foreign exchange rates	41	(314)	—	—
Fair value of plan assets at end of year	\$ 24,908	\$ 22,544	\$ —	\$ —

<i>Funded status:</i>				
U.S. plans with plan assets	\$ (4,768)	\$ (4,066)	\$ —	\$ —
Non-U.S. plans with plan assets	(2,207)	(2,041)	—	—
All other plans	(738)	(695)	(1,535)	(1,478)
Plans of discontinued operations	—	(254)	—	—
Funded status at end of year	\$ (7,713)	\$ (7,056)	\$ (1,535)	\$ (1,478)

<i>Amounts recognized in the consolidated balance sheets at Dec 31:</i>				
Deferred charges and other assets	\$ 623	\$ 491	\$ —	\$ —
Accrued and other current liabilities	(49)	(50)	(128)	(131)
Pension and other postretirement benefits - noncurrent	(8,287)	(7,227)	(1,407)	(1,347)
Liabilities of discontinued operations - current	—	(270)	—	—
Net amount recognized	\$ (7,713)	\$ (7,056)	\$ (1,535)	\$ (1,478)

<i>Pretax amounts recognized in accumulated other comprehensive loss at Dec 31:</i>				
Net loss (gain)	\$ 11,761	\$ 10,841	\$ (147)	\$ (315)
Prior service credit	(177)	(224)	—	—
Pretax balance in accumulated other comprehensive loss at end of year	\$ 11,584	\$ 10,617	\$ (147)	\$ (315)

1. The 2019 impact includes the divestiture of a business with pension benefit obligations of \$53 million. The 2018 impact includes the divestiture of a business with pension benefit obligations of \$37 million.

A significant component of the overall increase in the Company's benefit obligation for the year ended December 31, 2019 was due to the change in weighted-average discount rates, which decreased from 3.69 percent at December 31, 2018 to 2.81 percent at December 31, 2019. A significant component of the overall decrease in the Company's benefit obligation for the year ended December 31, 2018 was due to the change in weighted-average discount rates, which increased from 3.17 percent at December 31, 2017 to 3.69 percent at December 31, 2018.

The accumulated benefit obligation for all significant pension plans was \$31.4 billion and \$28.3 billion at December 31, 2019 and 2018, respectively.

Pension Plans with Accumulated Benefit Obligations in Excess of Plan Assets at Dec 31		
In millions	2019	2018
Accumulated benefit obligations	\$ 26,959	\$ 25,392
Fair value of plan assets	\$ 19,571	\$ 18,902

Pension Plans with Projected Benefit Obligations in Excess of Plan Assets at Dec 31		
In millions	2019	2018
Projected benefit obligations	\$ 28,013	\$ 26,599
Fair value of plan assets	\$ 19,677	\$ 19,051

Net Periodic Benefit Costs for All Significant Plans for the Year Ended Dec 31	<i>Defined Benefit Pension Plans</i>			<i>Other Postretirement Benefit Plans</i>		
	2019	2018	2017	2019	2018	2017
In millions						
<i>Net Periodic Benefit Costs:</i>						
Service cost	\$ 396	\$ 520	\$ 506	\$ 8	\$ 12	\$ 14
Interest cost	921	886	883	49	45	54
Expected return on plan assets	(1,679)	(1,644)	(1,548)	—	—	—
Amortization of prior service credit	(20)	(24)	(25)	—	—	—
Amortization of unrecognized (gain) loss	574	642	638	(20)	(24)	(6)
Curtailment/settlement/other ¹	(27)	—	683	(3)	—	—
Net periodic benefit costs	\$ 165	\$ 380	\$ 1,137	\$ 34	\$ 33	\$ 62
Less: discontinued operations	21	101	105	—	3	3
Net periodic benefit costs - continuing operations	\$ 144	\$ 279	\$ 1,032	\$ 34	\$ 30	\$ 59
<i>Changes in plan assets and benefit obligations recognized in other comprehensive (income) loss:</i>						
Net (gain) loss	\$ 1,606	\$ 584	\$ 845	\$ 145	\$ (13)	\$ (199)
Prior service cost	—	17	14	—	—	—
Amortization of prior service credit	20	24	25	—	—	—
Amortization of unrecognized gain (loss)	(574)	(642)	(638)	20	24	6
Common control transaction ²	(112)	—	—	—	—	—
Curtailment and settlement (gain) loss ¹	27	—	(687)	3	—	—
Total recognized in other comprehensive (income) loss	\$ 967	\$ (17)	\$ (441)	\$ 168	\$ 11	\$ (193)
Total recognized in net periodic benefit cost and other comprehensive (income) loss	\$ 1,132	\$ 363	\$ 696	\$ 202	\$ 44	\$ (131)

1. The 2019 impact relates to plan curtailments and associated special termination benefits resulting from the reduction in plan participation due to the separation of the Company from DowDuPont. The 2017 impact relates to the settlement of a U.S. non-qualified plan triggered by a change in control provision.
2. The 2019 impact is the result of the separation of the Company from DowDuPont.

Net periodic benefit cost, other than the service cost component, is included in "Sundry income (expense) - net" in the consolidated statements of income. See Note 8 for additional information.

Estimated Future Benefit Payments

The estimated future benefit payments of continuing operations, reflecting expected future service, as appropriate, are presented in the following table:

Estimated Future Benefit Payments at Dec 31, 2019	<i>Defined Benefit Pension Plans</i>	<i>Other Postretirement Benefit Plans</i>
In millions		
2020	\$ 1,561	\$ 129
2021	1,571	124
2022	1,603	121
2023	1,636	118
2024	1,646	114
2025-2029	8,523	496
Total	\$ 16,540	\$ 1,102

Plan Assets

Plan assets consist primarily of equity and fixed income securities of U.S. and foreign issuers, and include alternative investments such as real estate, private market securities and absolute return strategies. At December 31, 2019, plan assets totaled \$24.9 billion and included no directly held common stock of Dow Inc. At December 31, 2018, plan assets totaled \$22.5 billion and included no directly held DowDuPont common stock.

The Company's investment strategy for the plan assets is to manage the assets in relation to the liability in order to pay retirement benefits to plan participants over the life of the plans. This is accomplished by identifying and managing the exposure to various market risks, diversifying investments across various asset classes and earning an acceptable long-term rate of return consistent with an acceptable amount of risk, while considering the liquidity needs of the plans.

The plans are permitted to use derivative instruments for investment purposes, as well as for hedging the underlying asset and liability exposure and rebalancing the asset allocation. The plans use value-at-risk, stress testing, scenario analysis and Monte Carlo simulations to monitor and manage both the risk within the portfolios and the surplus risk of the plans.

Equity securities primarily include investments in large- and small-cap companies located in both developed and emerging markets around the world. Fixed income securities include investment and non-investment grade corporate bonds of companies diversified across industries, U.S. treasuries, non-U.S. developed market securities, U.S. agency mortgage-backed securities, emerging market securities and fixed income related funds. Alternative investments primarily include investments in real estate, private equity limited partnerships and absolute return strategies. Other significant investment types include various insurance contracts and interest rate, equity, commodity and foreign exchange derivative investments and hedges.

The Company mitigates the credit risk of investments by establishing guidelines with investment managers that limit investment in any single issue or issuer to an amount that is not material to the portfolio being managed. These guidelines are monitored for compliance both by the Company and external managers. Credit risk related to derivative activity is mitigated by utilizing multiple counterparties, collateral support agreements and centralized clearing, where appropriate.

The Northern Trust Collective Government Short Term Investment money market fund is utilized as the sweep vehicle for the U.S. plans, which from time to time can represent a significant investment. For one U.S. plan, approximately 34 percent of the liability is covered by a participating group annuity issued by Prudential Insurance Company.

The weighted-average target allocation for plan assets of the Company's pension plans is summarized as follows:

Target Allocation for Plan Assets at Dec 31, 2019	
<i>Asset Category</i>	<i>Target Allocation</i>
Equity securities	35%
Fixed income securities	36
Alternative investments	28
Other investments	1
Total	100%

Fair value calculations may not be indicative of net realizable value or reflective of future fair values. Furthermore, although the Company believes its valuation methods are appropriate and consistent with other market participants, the use of different methodologies or assumptions to determine the fair value of certain financial instruments could result in a different fair value measurement at the reporting date.

For pension plan assets classified as Level 1 measurements (measured using quoted prices in active markets), total fair value is either the price of the most recent trade at the time of the market close or the official close price, as defined by the exchange on which the asset is most actively traded on the last trading day of the period, multiplied by the number of units held without consideration of transaction costs.

For pension plan assets classified as Level 2 measurements, where the security is frequently traded in less active markets, fair value is based on the closing price at the end of the period; where the security is less frequently traded, fair value is based on the price a dealer would pay for the security or similar securities, adjusted for any terms specific to that asset or liability. Market inputs are obtained from well-established and recognized vendors of market data and subjected to tolerance and quality checks. For derivative assets and liabilities, standard industry models are used to calculate the fair value of the various financial instruments based on significant observable market inputs, such as foreign exchange rates, commodity prices, swap rates, interest rates and implied volatilities obtained from various market sources. For other pension plan assets for which observable inputs are used, fair value is derived through the use of fair value models, such as a discounted cash flow model or other standard pricing models.

For pension plan assets classified as Level 3 measurements, total fair value is based on significant unobservable inputs including assumptions where there is little, if any, market activity for the investment.

Certain pension plan assets are held in funds where fair value is based on an estimated net asset value per share (or its equivalent) as of the most recently available fund financial statements which are received on a monthly or quarterly basis. These valuations are reviewed for reasonableness based on applicable sector, benchmark and company performance. Adjustments to valuations are made where appropriate to arrive at an estimated net asset value per share at the measurement date. These funds are not classified within the fair value hierarchy.

The following table summarizes the bases used to measure the Company's pension plan assets at fair value for the years ended December 31, 2019 and 2018:

Basis of Fair Value Measurements In millions	Dec 31, 2019				Dec 31, 2018			
	Total	Level 1	Level 2	Level 3	Total	Level 1	Level 2	Level 3
Cash and cash equivalents	\$ 754	\$ 675	\$ 79	\$ —	\$ 877	\$ 818	\$ 59	\$ —
Equity securities:								
U.S. equity securities ¹	\$ 3,844	\$ 3,752	\$ 91	\$ 1	\$ 3,493	\$ 3,251	\$ 241	\$ 1
Non - U.S. equity securities	4,646	3,819	801	26	4,242	3,497	707	38
Total equity securities	\$ 8,490	\$ 7,571	\$ 892	\$ 27	\$ 7,735	\$ 6,748	\$ 948	\$ 39
Fixed income securities:								
Debt - government-issued	\$ 4,992	\$ 197	\$ 4,795	\$ —	\$ 4,751	\$ 285	\$ 4,466	\$ —
Debt - corporate-issued	3,697	607	3,089	1	2,929	411	2,518	—
Debt - asset-backed	70	—	69	1	90	—	89	1
Total fixed income securities	\$ 8,759	\$ 804	\$ 7,953	\$ 2	\$ 7,770	\$ 696	\$ 7,073	\$ 1
Alternative investments:								
Private market securities	\$ 11	\$ —	\$ —	\$ 11	\$ 1	\$ —	\$ —	\$ 1
Real estate	25	25	—	—	19	19	—	—
Derivatives - asset position	574	2	572	—	451	17	434	—
Derivatives - liability position	(513)	(2)	(511)	—	(506)	(19)	(487)	—
Total alternative investments	\$ 97	\$ 25	\$ 61	\$ 11	\$ (35)	\$ 17	\$ (53)	\$ 1
Other investments	\$ 411	\$ 28	\$ 383	\$ —	\$ 380	\$ 47	\$ 333	\$ —
Subtotal	\$ 18,511	\$ 9,103	\$ 9,368	\$ 40	\$ 16,727	\$ 8,326	\$ 8,360	\$ 41
Investments measured at net asset value:								
Hedge funds	\$ 1,595				\$ 1,637			
Private market securities	2,794				2,196			
Real estate	2,110				2,080			
Total investments measured at net asset value	\$ 6,499				\$ 5,913			
Items to reconcile to fair value of plan assets:								
Pension trust receivables ²	\$ 70				\$ 29			
Pension trust payables ³	(172)				(125)			
Total	\$ 24,908				\$ 22,544			

1. No Dow Inc. common stock was directly held at December 31, 2019. No DowDuPont common stock was directly held at December 31, 2018.

2. Primarily receivables for investment securities sold.

3. Primarily payables for investment securities purchased.

The following table summarizes the changes in the fair value of Level 3 pension plan assets for the years ended December 31, 2019 and 2018:

Fair Value Measurement of Level 3 Pension Plan Assets	<i>Equity Securities</i>	<i>Fixed Income Securities</i>	<i>Alternative Investments</i>	<i>Other Investments</i>	<i>Total</i>
In millions					
Balance at Jan 1, 2018	\$ 40	\$ 16	\$ —	\$ —	\$ 56
Actual return on assets:					
Relating to assets sold during 2018	—	4	(1)	1	4
Relating to assets held at Dec 31, 2018	(3)	(4)	—	—	(7)
Purchases, sales and settlements, net	2	(15)	2	(1)	(12)
Balance at Dec 31, 2018	\$ 39	\$ 1	\$ 1	\$ —	\$ 41
Actual return on assets:					
Relating to assets sold during 2019	(2)	—	—	—	(2)
Relating to assets held at Dec 31, 2019	1	—	(14)	—	(13)
Purchases, sales and settlements, net	(11)	1	24	—	14
Balance at Dec 31, 2019	\$ 27	\$ 2	\$ 11	\$ —	\$ 40

Defined Contribution Plans

U.S. employees may participate in defined contribution plans (Employee Savings Plans or 401(k) plans) by contributing a portion of their compensation, which is partially matched by the Company. Defined contribution plans also cover employees in some subsidiaries in other countries, including Australia, Brazil, Canada, Italy, Spain and the United Kingdom. Expense of continuing operations recognized for all defined contribution plans was \$163 million in 2019, \$186 million in 2018 and \$286 million in 2017.

NOTE 22 – STOCK-BASED COMPENSATION

The Company grants stock-based compensation to employees and non-employee directors in the form of stock incentive plans, which include stock options, RSUs and restricted stock. The Company also provides stock-based compensation in the form of PSUs. The Company previously provided the Employee Stock Purchase Plan (“ESPP”), which granted eligible employees the right to purchase shares of the Company's common stock at a discounted price.

In connection with the Merger, on August 31, 2017 (“Conversion Date”), all outstanding TDCC stock options and RSU awards were converted into stock options and RSU awards with respect to DowDuPont common stock. The stock options and RSU awards had the same terms and conditions under the applicable plans and award agreements prior to the Merger. All outstanding and nonvested PSU awards were converted into RSU awards with respect to DowDuPont common stock at the greater of the applicable performance target or the actual performance as of the effective time of the Merger. Changes in the fair value of liability instruments are recognized as compensation expense each quarter. TDCC and Historical DuPont did not merge their stock-based compensation plans as a result of the Merger. TDCC and Historical DuPont stock-based compensation plans were assumed by DowDuPont and continued in place with the ability to grant and issue DowDuPont common stock until separation.

In connection with the separation on April 1, 2019, outstanding stock options, RSU and PSU awards were converted to Dow Inc. denominated awards under the “Employer Method,” or DowDuPont denominated awards under the “Shareholder Method,” and adjusted to maintain the intrinsic value of those awards before and after the date of the separation. In connection with the Corteva separation transaction on June 3, 2019, the outstanding DowDuPont denominated stock options, RSU and PSU awards were converted to Corteva and DuPont denominated awards and adjusted to maintain the intrinsic value of those awards before and after the date of the Corteva separation. The awards have the same terms and conditions under the applicable plans and award agreements prior to the separation transactions.

The conversions of stock awards resulted in no incremental compensation expense. Approximately 5,000 employees were impacted by the conversion on April 1, 2019 in connection with Dow Inc.'s separation from DowDuPont. Approximately 4,000 employees were impacted by the conversion on June 3, 2019 in connection with the Corteva separation transaction.

The total stock-based compensation expense included in continuing operations in the consolidated statements of income was \$158 million, \$188 million and \$310 million in 2019, 2018 and 2017, respectively. The income tax benefits related to stock-based compensation arrangements were \$36 million, \$42 million and \$115 million in 2019, 2018 and 2017, respectively. Amounts disclosed throughout the remainder of this footnote are inclusive of activity attributable to both continuing operations and discontinued operations, as the impact of discontinued operations is not significant.

Accounting for Stock-Based Compensation

The Company grants stock-based compensation awards that vest over a specified period or upon employees meeting certain performance and/or retirement eligibility criteria. The fair value of equity instruments issued to employees is measured on the grant date. The fair value of liability instruments (granted to executive employees subject to stock ownership requirements, that provide the recipient the option to elect to receive a cash payment equal to the value of the stock award on the date of delivery) is measured at the end of each quarter. The fair value of equity and liability instruments is expensed over the vesting period or, in the case of retirement, from the grant date to the date on which retirement eligibility provisions have been met and additional service is no longer required. The Company estimates expected forfeitures.

The Company historically used a lattice-based option valuation model to estimate the fair value of stock options and used a Monte Carlo simulation for the market portion of PSU awards. Effective with the first quarter of 2018 grant, the Company began using the Black-Scholes option valuation model to estimate the fair value of stock options. This valuation methodology was adopted as a result of the Merger to align valuation methodologies with Historical DuPont and better align with industry practice. The Company used the Black-Scholes option valuation model for subscriptions to purchase shares under the ESPP. The weighted-average assumptions used to calculate total stock-based compensation are included in the following table:

Weighted-Average Assumptions	2019	2018	2017
Dividend yield	5.10%	2.13%	3.01%
Expected volatility	26.10%	23.34%	23.71%
Risk-free interest rate	2.43%	2.83%	1.28%
Expected life of stock options granted during period (years)	6.1	6.2	7.5
Life of Employee Stock Purchase Plan (months)	0	0	3

The dividend yield assumption was equal to the dividend yield on the grant date, which reflected the Company's quarterly dividend payments of \$0.70 per share in 2019 on Dow Inc. Common Stock (\$0.38 per share in 2018 on DowDuPont Common Stock and \$0.46 per share in 2017 on TDCC Common Stock). The expected volatility assumptions for the 2017 stock options and ESPP were based on an equal weighting of the historical daily volatility for the contractual term of the awards and current implied volatility from exchange-traded options. The expected volatility assumptions for the 2018 and 2019 stock options were based on an equal weighting of the historical daily volatility for the expected term of the awards and current implied volatility from exchange-traded options. The expected volatility assumption for the market portion of the 2017 and 2019 PSU awards were based on historical daily volatility for the term of the award. The risk-free interest rate was based on the weighted-average of U.S. Treasury strip rates over the contractual term of the 2017 options. The risk-free interest rate was based on the U.S. Treasury strip rates over the expected life of the 2018 and 2019 options. The expected life of stock options granted was based on an analysis of historical exercise patterns.

Stock Incentive Plan

The Company has historically granted equity awards under various plans (the "Prior Plans"). On February 9, 2012, the Board authorized The Dow Chemical Company 2012 Stock Incentive Plan (the "2012 Plan"), which was approved by stockholders at TDCC's annual meeting on May 10, 2012 ("2012 Plan Effective Date") and became effective on that date. On February 13, 2014, the Board adopted The Dow Chemical Company Amended and Restated 2012 Stock Incentive Plan (the "2012 Restated Plan"). The 2012 Restated Plan was approved by stockholders at TDCC's annual meeting on May 15, 2014, and became effective on that date. The Prior Plans were superseded by the 2012 Plan and the 2012 Restated Plan (collectively, the "2012 Plan"). Under the 2012 Plan, the Company may grant options, RSUs, PSUs, restricted stock, stock appreciation rights and stock units to employees and non-employee directors until the tenth anniversary of the 2012 Plan Effective Date, subject to an aggregate limit and annual individual limits. The terms of the grants are fixed at the grant date. TDCC's stock-based compensation programs were assumed by DowDuPont and continued in place with the ability to grant and issue DowDuPont common stock until separation.

On April 1, 2019 ("Original Effective Date"), in connection with the separation, the Company adopted the 2019 Stock Incentive Plan (the "2019 Plan"). Under the 2019 Plan, the Company may grant stock options, RSUs, PSUs, stock appreciation rights and stock units to employees and non-employee directors until the tenth anniversary of the Original Effective Date, subject to an aggregate limit and annual individual limits. The terms of the grants are fixed at the grant date. At December 31, 2019, there were approximately 25 million shares of common stock available for grant under the 2019 Plan.

Stock Options

The Company grants stock options to certain employees, subject to certain annual and individual limits, with terms of the grants fixed at the grant date. The exercise price of each stock option equals the market price of the common stock on the grant date. Options vest from one to three years and have a maximum term of ten years.

The following table summarizes stock option activity for 2019:

Stock Options	<i>2019</i>	
	<i>Shares</i>	<i>Exercise Price¹</i>
Shares in thousands		
Outstanding at Jan 1, 2019	28,846	\$ 46.70
Granted	1,588	\$ 54.89
Exercised	(3,196)	\$ 30.02
Forfeited/Expired	(239)	\$ 60.77
Conversion impact ²	(5,734)	\$ 59.62
Outstanding at Dec 31, 2019	21,265	\$ 45.96
Remaining contractual life in years		4.62
Aggregate intrinsic value in millions	\$ 237	
Exercisable at Dec 31, 2019	18,248	\$ 43.34
Remaining contractual life in years		3.99
Aggregate intrinsic value in millions	\$ 237	

1. Weighted-average per share.

2. Awards converted at April 1 and June 3 separations.

Additional Information about Stock Options	<i>2019</i>	<i>2018</i>	<i>2017</i>
In millions, except per share amounts			
Weighted-average fair value per share of options granted	\$ 7.99	\$ 15.38	\$ 14.44
Total compensation expense for stock option plans	\$ 23	\$ 68	\$ 37
Related tax benefit	\$ 5	\$ 15	\$ 14
Total amount of cash received from the exercise of options	\$ 93	\$ 112	\$ 310
Total intrinsic value of options exercised ¹	\$ 77	\$ 160	\$ 286
Related tax benefit	\$ 17	\$ 36	\$ 106

1. Difference between the market price at exercise and the price paid by the employee to exercise the options.

Total unrecognized compensation cost related to unvested stock option awards of \$18 million at December 31, 2019, is expected to be recognized over a weighted-average period of 1.37 years.

Restricted Stock Units

The Company grants RSUs to certain employees and non-employee directors. The grants vest after a designated period of time, generally three years for employees and two years for non-employee directors. The following table shows changes in nonvested RSUs:

RSU Awards	<i>2019</i>	
	<i>Shares</i>	<i>Grant Date Fair Value¹</i>
Shares in thousands		
Nonvested at Jan 1, 2019	9,735	\$ 57.41
Granted	1,821	\$ 54.78
Vested	(7,045)	\$ 53.22
Canceled	(156)	\$ 60.84
Conversion impact ²	(1,901)	\$ 65.87
Nonvested at Dec 31, 2019	2,454	\$ 59.98

1. Weighted-average per share.

2. Awards converted at April 1 and June 3 separations.

Additional Information about RSUs			
In millions, except per share amounts	2019	2018	2017
Weighted-average fair value per share of RSUs granted	\$ 54.78	\$ 71.46	\$ 61.29
Total fair value of RSUs vested ¹	\$ 375	\$ 382	\$ 179
Related tax benefit	\$ 84	\$ 86	\$ 66
Total compensation expense for RSU awards	\$ 110	\$ 144	\$ 178
Related tax benefit	\$ 25	\$ 32	\$ 66

1. Includes the fair value of shares vested in prior years and delivered in the reporting year.

In 2019, the Company paid \$17 million in cash, equal to the value of the stock award on the date of delivery, to certain executive employees to settle approximately 341,000 RSUs (625,000 RSUs settled in cash for \$45 million in 2018 and no RSUs settled in cash in 2017). Total unrecognized compensation cost related to RSU awards of \$80 million at December 31, 2019 is expected to be recognized over a weighted-average period of 1.83 years. At December 31, 2019, approximately 2.2 million RSUs with a grant date weighted-average fair value per share of \$60.79 had previously vested, but were not issued. These shares are scheduled to be issued to employees within six months to three years or upon retirement.

Total incremental pretax compensation expense resulting from the conversion of PSU awards into RSU awards was \$25 million (\$20 million was recognized in the second half of 2017 and \$5 million was recognized over the remaining service period). Approximately 5,000 employees were impacted by the conversion.

Performance Stock Units

The Company grants PSUs to certain employees. The grants vest when the Company attains specified performance targets, such as return on capital and relative total shareholder return, over a predetermined period, generally one to three years. In November 2017, the Company granted PSUs to senior leadership measured on the realization of cost savings in connection with cost synergy commitments, as well as the Company's ability to complete the business separations. Performance and payouts are determined independently for each metric. Compensation expense related to PSU awards is recognized over the lesser of the service or performance period. Changes in the fair value of liability instruments are recognized as compensation expense each quarter.

The following table shows the PSU awards granted:

PSU Awards		Target Shares Granted ¹	Grant Date Fair Value ²
Shares in thousands			
Year	Performance Period		
2019	Apr 1, 2019 – Dec 31, 2021	1,173	\$ 57.58
2017	Sep 1, 2017 – Aug 31, 2019	232	\$ 71.16
2017 ³	Jan 1, 2017 – Dec 31, 2019	1,728	\$ 81.99

1. At the end of the performance period, the actual number of shares issued can range from zero to 200 percent of target shares granted.

2. Weighted-average per share.

3. Converted to RSUs as a result of the Merger.

The following table shows changes in nonvested PSUs:

PSUs	2019	
	<i>Shares</i>	<i>Grant Date Fair Value</i> ¹
Shares in thousands		
Nonvested at Jan 1, 2019	232	\$ 71.16
Granted	1,173	\$ 57.58
Vested	(232)	\$ 71.16
Canceled	(52)	\$ 57.58
Nonvested at Dec 31, 2019	1,121	\$ 57.58

1. Weighted-average per share.

Additional Information about PSUs			
In millions, except share amounts	2019	2018	2017
Total fair value of PSUs vested and delivered ¹	\$ 18	\$ —	\$ 202
Related tax benefit	\$ 4	\$ —	\$ 75
Total compensation expense for PSU awards	\$ 25	\$ 12	\$ 106
Related tax benefit	\$ 6	\$ 3	\$ 39
Shares of PSUs settled in cash (in thousands) ²	162	—	616
Total cash paid to settle PSUs ³	\$ 13	\$ —	\$ 38

1. Includes the fair value of shares vested in prior years and delivered in the reporting year.

2. PSU awards vested in prior years and delivered in the reporting year.

3. Cash paid to certain executive employees for PSU awards vested in prior periods and delivered in the reporting year, equal to the value of the stock award on the date of delivery.

Total unrecognized compensation cost related to PSU awards of \$12 million at December 31, 2019, is expected to be recognized over a weighted-average period of 1.86 years.

Restricted Stock

Under the 2012 Plan, the Company granted shares (including options, stock appreciation rights, stock units and restricted stock) to non-employee directors over the 10-year duration of the program, subject to the plan's aggregate limit as well as annual individual limits. The restricted stock issued under this plan cannot be sold, assigned, pledged or otherwise transferred by the non-employee director, until retirement or termination of service to the Company. The following table shows the restricted stock issued under this plan:

Restricted Stock		
<i>Year</i>	<i>Shares Issued (in thousands)</i>	<i>Weighted-Average Fair Value</i>
2019	N/A	N/A
2018	36	\$ 62.82
2017	33	\$ 62.04

Employee Stock Purchase Plan

On February 9, 2012, the Board authorized The Dow Chemical Company 2012 Employee Stock Purchase Plan (the "2012 ESPP") which was approved by stockholders at TDCC's annual meeting on May 10, 2012. When offered, most employees are eligible to purchase shares of common stock of TDCC valued at up to 10 percent of their annual base salary. The value is determined using the plan price multiplied by the number of shares subscribed to by the employee. The plan price of the stock is set at an amount equal to at least 85 percent of the fair market value (closing price) of the common stock on a date during the fourth quarter of the year prior to the offering, or the average fair market value (closing price) of the common stock over a period during the fourth quarter of the year prior to the offering, in each case, specified by the Chief Human Resources Officer. The most recent offering of the 2012 ESPP closed on July 15, 2017. The ESPP was not offered in 2018 and 2019 and no current offerings remain outstanding.

Additional Information about Employee Stock Purchase Plan	
In millions, except per share amounts	2017
Weighted-average fair value per share of purchase rights granted	\$ 10.70
Total compensation expense for ESPP	\$ 38
Related tax benefit	\$ 14
Total amount of cash received from the exercise of purchase rights	\$ 179
Total intrinsic value of purchase rights exercised ¹	\$ 48
Related tax benefit	\$ 18

1. Difference between the market price at exercise and the price paid by the employee to exercise the purchase rights.

NOTE 23 – FINANCIAL INSTRUMENTS

The following table summarizes the fair value of financial instruments at December 31, 2019 and 2018:

Fair Value of Financial Instruments at Dec 31 ¹	2019				2018			
	Cost	Gain	Loss	Fair Value	Cost	Gain	Loss	Fair Value
In millions								
Cash equivalents:								
Held to maturity securities ²	\$ 220	\$ —	\$ —	\$ 220	\$ 410	\$ —	\$ —	\$ 410
Money market funds	408	—	—	408	156	—	—	156
Total cash equivalents	\$ 628	\$ —	\$ —	\$ 628	\$ 566	\$ —	\$ —	\$ 566
Marketable securities	\$ 21	\$ —	\$ —	\$ 21	\$ 100	\$ —	\$ —	\$ 100
Other investments:								
Debt securities:								
Government debt ³	\$ 533	\$ 33	\$ (11)	\$ 555	\$ 714	\$ 9	\$ (23)	\$ 700
Corporate bonds	944	80	(10)	1,014	1,026	20	(63)	983
Total debt securities	\$ 1,477	\$ 113	\$ (21)	\$ 1,569	\$ 1,740	\$ 29	\$ (86)	\$ 1,683
Equity securities ⁴	10	6	(1)	15	16	1	(1)	16
Total other investments	\$ 1,487	\$ 119	\$ (22)	\$ 1,584	\$ 1,756	\$ 30	\$ (87)	\$ 1,699
Total cash equivalents, marketable securities and other investments	\$ 2,136	\$ 119	\$ (22)	\$ 2,233	\$ 2,422	\$ 30	\$ (87)	\$ 2,365
Long-term debt including debt due within one year ⁵	\$ (16,410)	\$ 7	\$ (2,258)	\$ (18,661)	\$ (19,591)	\$ 351	\$ (972)	\$ (20,212)
Derivatives relating to:								
Interest rates ⁶	\$ —	\$ 8	\$ (283)	\$ (275)	\$ —	\$ —	\$ (64)	\$ (64)
Foreign currency	—	101	(21)	80	—	120	(43)	77
Commodities ⁶	—	59	(115)	(56)	—	91	(178)	(87)
Total derivatives	\$ —	\$ 168	\$ (419)	\$ (251)	\$ —	\$ 211	\$ (285)	\$ (74)

1. Prior period amounts were updated to conform with the current year presentation.

2. The Company had held-to-maturity securities (primarily treasury bills and time deposits) classified as cash equivalents.

3. U.S. Treasury obligations, U.S. agency obligations, agency mortgage-backed securities and other municipalities' obligations.

4. Equity securities with a readily determinable fair value.

5. Cost includes fair value hedge adjustment gains of \$1 million at December 31, 2019 and losses of \$18 million at December 31, 2018 on \$3,490 million of debt at December 31, 2019 and \$2,290 million of debt at December 31, 2018.

6. Presented net of cash collateral where master netting arrangements allow.

Cost approximates fair value for all other financial instruments.

Debt Securities

The Company's investments in debt securities are primarily classified as available-for-sale. The following table provides the investing results from available-for-sale securities for the years ended December 31, 2019, 2018 and 2017.

Investing Results	2019	2018	2017
In millions			
Proceeds from sales of available-for-sale securities	\$ 1,138	\$ 1,053	\$ 245
Gross realized gains	\$ 51	\$ 21	\$ 5
Gross realized losses	\$ 18	\$ 30	\$ —

The following table summarizes the contractual maturities of the Company's investments in debt securities:

Contractual Maturities of Debt Securities at Dec 31, 2019¹	<i>Amortized Cost</i>	<i>Fair Value</i>
In millions		
Within one year	\$ 36	\$ 39
One to five years	391	406
Six to ten years	534	554
After ten years	516	570
Total	\$ 1,477	\$ 1,569

1. Includes marketable securities with maturities of less than one year.

Portfolio managers regularly review the Company's holdings to determine if any investments in debt securities are other-than-temporarily impaired. The analysis includes reviewing the amount of the impairment, as well as the length of time it has been impaired.

The credit rating of the issuer, current credit rating trends, the trends of the issuer's overall sector, the ability of the issuer to pay expected cash flows and the length of time the security has been in a loss position are considered in determining whether unrealized losses represent an other-than-temporary impairment. The Company did not have any credit-related losses in 2019, 2018 or 2017.

The following table provides the fair value and gross unrealized losses of the Company's investments in debt securities that were deemed to be temporarily impaired at December 31, 2019 and 2018, aggregated by investment category:

Temporarily Impaired Debt Securities at Dec 31	<i>Less than 12 months</i>		<i>12 months or more</i>		<i>Total</i>	
	<i>Fair Value</i>	<i>Unrealized Losses</i>	<i>Fair Value</i>	<i>Unrealized Losses</i>	<i>Fair Value</i>	<i>Unrealized Losses</i>
In millions						
2019						
Government debt ¹	\$ 55	\$ (3)	\$ 23	\$ (8)	\$ 78	\$ (11)
Corporate bonds	79	(3)	52	(7)	131	(10)
Total temporarily impaired debt securities	\$ 134	\$ (6)	\$ 75	\$ (15)	\$ 209	\$ (21)
2018						
Government debt ¹	\$ 287	\$ (17)	\$ 187	\$ (6)	\$ 474	\$ (23)
Corporate bonds	724	(58)	64	(5)	788	(63)
Total temporarily impaired debt securities	\$ 1,011	\$ (75)	\$ 251	\$ (11)	\$ 1,262	\$ (86)

1. U.S. Treasury obligations, U.S. agency obligations, agency mortgage-backed securities and other municipalities' obligations.

Equity Securities

The Company's investments in equity securities with a readily determinable fair value totaled \$15 million at December 31, 2019 (\$16 million at December 31, 2018). The net unrealized gains recognized in earnings on readily determinable equity securities totaled \$5 million for the year ended December 31, 2019 (\$7 million for the year ended December 31, 2018). The aggregate carrying value of the Company's investments in equity securities where fair value is not readily determinable totaled \$189 million at December 31, 2019 (\$204 million at December 31, 2018), reflecting the carrying value of the investments. There were no material adjustments to the carrying value of the not readily determinable investments for impairment or observable price changes for the year ended December 31, 2019.

Repurchase and Reverse Repurchase Agreement Transactions

The Company enters into repurchase and reverse repurchase agreements. These transactions are accounted for as collateralized borrowings and lending transactions bearing a specified rate of interest and are short-term in nature with original maturities of 30 days or less. The underlying collateral is typically treasury bills with longer maturities than the repurchase agreement. The impact of these transactions is not material to the Company's results. There were no repurchase or reverse repurchase agreements outstanding at December 31, 2019 and 2018.

Risk Management

The Company's business operations give rise to market risk exposure due to changes in foreign exchange rates, interest rates, commodity prices and other market factors such as equity prices. To manage such risks effectively, the Company enters into hedging transactions, pursuant to established guidelines and policies that enable it to mitigate the adverse effects of financial market risk. Derivatives used for this purpose are designated as hedges per the accounting guidance related to derivatives and

hedging activities, where appropriate. A secondary objective is to add value by creating additional non-specific exposure within established limits and policies; derivatives used for this purpose are not designated as hedges. The potential impact of creating such additional exposures is not material to the Company's results. Accounting guidance requires companies to recognize all derivative instruments as either assets or liabilities at fair value.

The Company's risk management program for interest rate, foreign currency and commodity risks is based on fundamental, mathematical and technical models that take into account the implicit cost of hedging. Risks created by derivative instruments and the mark-to-market valuations of positions are strictly monitored at all times, using value-at-risk and stress tests. Counterparty credit risk arising from these contracts is not significant because the Company minimizes counterparty concentration, deals primarily with major financial institutions of solid credit quality, and the majority of its hedging transactions mature in less than three months. In addition, the Company minimizes concentrations of credit risk through its global orientation by transacting with large, internationally diversified financial counterparties. It is the Company's policy to not have credit risk-related contingent features in its derivative instruments. No significant concentration of counterparty credit risk existed at December 31, 2019. The Company does not anticipate losses from credit risk, and the net cash requirements arising from counterparty risk associated with risk management activities are not expected to be material in 2020.

The Company revises its strategies as market conditions dictate and management reviews its overall financial strategies and the impacts from using derivatives in its risk management program with the Company's senior leadership who also reviews these strategies with the Dow Inc. Board and/or relevant committees thereof.

The notional amounts of the Company's derivative instruments presented on a net basis at December 31, 2019 and 2018, were as follows:

Notional Amounts - Net In millions	<i>Dec 31, 2019</i>	<i>Dec 31, 2018</i>
<i>Derivatives designated as hedging instruments:</i>		
Interest rate contracts	\$ 922	\$ 2,049
Foreign currency contracts	\$ 6,253	\$ 4,457
<i>Derivatives not designated as hedging instruments:</i>		
Interest rate contracts	\$ 145	\$ 5
Foreign currency contracts	\$ 5,567	\$ 19,285

The notional amounts of the Company's commodity derivatives at December 31, 2019 and 2018, were as follows:

Commodity Notionals - Net	<i>Dec 31, 2019</i>	<i>Dec 31, 2018</i>	<i>Notional Volume Unit</i>
<i>Derivatives designated as hedging instruments:</i>			
Hydrocarbon derivatives	6.1	39.9	million barrels of oil equivalent
<i>Derivatives not designated as hedging instruments:</i>			
Hydrocarbon derivatives	0.1	1.2	million barrels of oil equivalent
Power derivatives	87.5	73.9	thousands of megawatt hours

Maturity Dates of Derivatives Designated as Hedges	<i>Year</i>
Interest rate contracts	2021
Foreign currency contracts ¹	2020
Commodity contracts	2022

1. The Company had foreign currency contracts primarily through 2020 with a nominal impact into the first quarter of 2021.

Interest Rate Risk Management

The main objective of interest rate risk management is to reduce the total funding cost to the Company and to alter the interest rate exposure to the desired risk profile. To achieve this objective, the Company hedges using interest rate swaps, "swaptions," and exchange-traded instruments.

Foreign Currency Risk Management

The global nature of the Company's business requires active participation in the foreign exchange markets. The Company has assets, liabilities and cash flows in currencies other than the U.S. dollar. The primary objective of the Company's foreign currency risk management is to optimize the U.S. dollar value of net assets and cash flows. To achieve this objective, the Company hedges on a net exposure basis using foreign currency forward contracts, over-the-counter option contracts, cross-currency swaps and nonderivative instruments in foreign currencies. Exposures primarily relate to assets, liabilities and bonds denominated in foreign currencies, as well as economic exposure, which is derived from the risk that currency fluctuations could affect the dollar value of future cash flows related to operating activities.

Commodity Risk Management

The Company has exposure to the prices of commodities in its procurement of certain raw materials. The primary purpose of commodity hedging activities is to manage the price volatility associated with these forecasted inventory purchases.

Derivatives Not Designated in Hedging Relationships

Foreign Currency Contracts

The Company also uses foreign exchange forward contracts, options and cross-currency swaps that are not designated as hedging instruments primarily to manage foreign currency exposure.

Commodity Contracts

The Company utilizes futures, options and swap instruments that are effective as economic hedges of commodity price exposures, but do not meet hedge accounting criteria for derivatives and hedging, to reduce exposure to commodity price fluctuations on purchases of raw materials and inventory.

Interest Rate Contracts

The Company uses swap instruments that are not designated as hedging instruments to manage interest rate exposures. The Company uses interest rate swaps, "swaptions," and exchange-traded instruments to accomplish this objective.

Accounting for Derivative Instruments and Hedging Activities

Cash Flow Hedges

For derivatives that are designated and qualify as cash flow hedging instruments, the gain or loss on the derivative is recorded in AOCL; it is reclassified to income in the same period or periods that the hedged transaction affects income. The unrealized amounts in AOCL fluctuate based on changes in the fair value of open contracts at the end of each reporting period. The Company anticipates volatility in AOCL and net income from its cash flow hedges. The amount of volatility varies with the level of derivative activities and market conditions during any period.

The portion of the mark-to-market effects of the foreign currency contracts is recorded in AOCL; it is reclassified to income in the same period or periods that the underlying item affects income.

Commodity swaps, futures and option contracts with maturities of not more than 48 months are utilized and designated as cash flow hedges of forecasted commodity purchases. The designated portion of the mark-to-market effect of the cash flow hedge instrument is recorded in AOCL; it is reclassified to income in the same period or periods that the underlying commodity purchase affects income.

Fair Value Hedges

For interest rate instruments that are designated and qualify as fair value hedges, the gain or loss on the derivative as well as the offsetting loss or gain on the hedge item attributable to the hedged risk are recognized in current period income and reflected as "Interest expense and amortization of debt discount" in the consolidated statements of income, except for amounts excluded from the assessment of effectiveness that are recognized in earnings through an amortization approach.

Net Foreign Investment Hedges

The Company designates derivatives that qualify as effective net foreign investment hedges, the results of which are presented in the effect of derivative instruments table. In addition, the Company utilizes non-derivative instruments as net foreign investment hedges. The Company had outstanding foreign-currency denominated debt designated as a hedge of net foreign investment of \$184 million at December 31, 2019 (\$182 million at December 31, 2018).

The following tables provide the fair value and gross balance sheet classification of derivative instruments at December 31, 2019 and 2018:

Fair Value of Derivative Instruments		<i>Dec 31, 2019</i>		
In millions	<i>Balance Sheet Classification</i>	<i>Gross</i>	<i>Counterparty and Cash Collateral Netting¹</i>	<i>Net Amounts Included in the Consolidated Balance Sheets</i>
Asset derivatives:				
Derivatives designated as hedging instruments:				
Interest rate contracts	Other current assets	\$ 21	\$ (13)	\$ 8
Foreign currency contracts	Other current assets	105	(36)	69
Commodity contracts	Other current assets	44	(25)	19
Commodity contracts	Deferred charges and other assets	28	(3)	25
Total		\$ 198	\$ (77)	\$ 121
Derivatives not designated as hedging instruments:				
Interest rate contracts	Other current assets	\$ 14	\$ (14)	\$ —
Interest rate contracts	Deferred charges and other assets	—	—	—
Foreign currency contracts	Other current assets	44	(12)	32
Commodity contracts	Other current assets	18	(3)	15
Commodity contracts	Deferred charges and other assets	—	—	—
Total		\$ 76	\$ (29)	\$ 47
Total asset derivatives		\$ 274	\$ (106)	\$ 168
Liability derivatives:				
Derivatives designated as hedging instruments:				
Interest rate contracts	Accrued and other current liabilities	\$ 23	\$ (13)	\$ 10
Interest rate contracts	Other noncurrent obligations	1	—	1
Foreign currency contracts	Accrued and other current liabilities	46	(36)	10
Commodity contracts	Accrued and other current liabilities	95	(29)	66
Commodity contracts	Other noncurrent obligations	38	(4)	34
Total		\$ 203	\$ (82)	\$ 121
Derivatives not designated as hedging instruments:				
Interest rate contracts	Accrued and other current liabilities	\$ 136	\$ (14)	\$ 122
Interest rate contracts	Other noncurrent obligations	150	—	150
Foreign currency contracts	Accrued and other current liabilities	23	(12)	11
Commodity contracts	Accrued and other current liabilities	17	(3)	14
Commodity contracts	Other noncurrent obligations	1	—	1
Total		\$ 327	\$ (29)	\$ 298
Total liability derivatives		\$ 530	\$ (111)	\$ 419

1. Counterparty and cash collateral amounts represent the estimated net settlement amount when applying netting and set-off rights included in master netting arrangements between the Company and its counterparties and the payable or receivable for cash collateral held or placed with the same counterparty.

Fair Value of Derivative Instruments		Dec 31, 2018		
In millions	Balance Sheet Classification	Gross	Counterparty and Cash Collateral Netting ¹	Net Amounts Included in the Consolidated Balance Sheets
Asset derivatives:				
Derivatives designated as hedging instruments:				
Foreign currency contracts	Other current assets	\$ 98	\$ (42)	\$ 56
Commodity contracts	Other current assets	47	(13)	34
Commodity contracts	Deferred charges and other assets	18	(3)	15
Total		\$ 163	\$ (58)	\$ 105
Derivatives not designated as hedging instruments:				
Foreign currency contracts	Other current assets	\$ 128	\$ (64)	\$ 64
Commodity contracts	Other current assets	41	(1)	40
Commodity contracts	Deferred charges and other assets	4	(2)	2
Total		\$ 173	\$ (67)	\$ 106
Total asset derivatives		\$ 336	\$ (125)	\$ 211
Liability derivatives:				
Derivatives designated as hedging instruments:				
Interest rate contracts	Other noncurrent obligations	\$ 64	\$ —	\$ 64
Foreign currency contracts	Accrued and other current liabilities	46	(42)	4
Commodity contracts	Accrued and other current liabilities	111	(18)	93
Commodity contracts	Other noncurrent obligations	86	(9)	77
Total		\$ 307	\$ (69)	\$ 238
Derivatives not designated as hedging instruments:				
Foreign currency contracts	Accrued and other current liabilities	\$ 103	\$ (64)	\$ 39
Commodity contracts	Accrued and other current liabilities	7	(4)	3
Commodity contracts	Other noncurrent obligations	8	(3)	5
Total		\$ 118	\$ (71)	\$ 47
Total liability derivatives		\$ 425	\$ (140)	\$ 285

1. Counterparty and cash collateral amounts represent the estimated net settlement amount when applying netting and set-off rights included in master netting arrangements between the Company and its counterparties and the payable or receivable for cash collateral held or placed with the same counterparty.

Assets and liabilities related to forward contracts, interest rate swaps, currency swaps, options and other conditional or exchange contracts executed with the same counterparty under a master netting arrangement are netted. Collateral accounts are netted with corresponding assets or liabilities, when applicable. The Company posted cash collateral of \$5 million at December 31, 2019 (\$26 million at December 31, 2018). Counterparties posted cash collateral of \$3 million with the Company at December 31, 2019 (\$34 million at December 31, 2018).

Effect of Derivative Instruments	Amount of gain (loss) ¹ recognized in OCI			Amount of gain (loss) ² recognized in income			Income Statement Classification
	2019	2018	2017	2019	2018	2017	
In millions							
Derivatives designated as hedging instruments:							
Fair value hedges:							
Interest rate contracts	\$ —	\$ —	\$ —	\$ 17	\$ —	\$ (2)	Interest expense and amortization of debt discount ³
Excluded components ⁴	(3)	—	—	—	—	—	
Cash flow hedges:							
Interest rate contracts	(316)	26	2	1	(3)	4	Interest expense and amortization of debt discount
Foreign currency contracts	16	19	(30)	28	(18)	7	Cost of sales
Foreign currency contracts	10	(3)	(5)	8	—	(17)	Sundry income (expense) - net
Commodity contracts	(6)	(46)	37	(81)	(69)	10	Cost of sales
Net investment hedges:							
Foreign currency contracts	(52)	116	(73)	—	—	—	
Excluded components ⁴	162	—	—	99	—	—	Sundry income (expense) - net
Total derivatives designated as hedging instruments	\$ (189)	\$ 112	\$ (69)	\$ 72	\$ (90)	\$ 2	
Derivatives not designated as hedging instruments:							
Interest rate contracts	\$ —	\$ —	\$ —	\$ (4)	\$ —	\$ —	Interest expense and amortization of debt discount
Foreign currency contracts	—	—	—	45	101	(289)	Sundry income (expense) - net
Commodity contracts	—	—	—	(28)	(12)	(9)	Cost of sales
Total derivatives not designated as hedging instruments	\$ —	\$ —	\$ —	\$ 13	\$ 89	\$ (298)	
Total derivatives	\$ (189)	\$ 112	\$ (69)	\$ 85	\$ (1)	\$ (296)	

1. OCI is defined as other comprehensive income (loss).

2. Pretax amounts.

3. Gain (loss) recognized in income of derivatives is offset by gain (loss) recognized in income of the hedged item.

4. The excluded components are related to the time value of the derivatives designated as hedges.

The following table provides the net after-tax amounts to be reclassified from AOCL to income within the next 12 months:

Expected Reclassifications from AOCL within the next 12 months	Dec 31, 2019
<i>Cash flow hedges</i>	
Interest rate contracts	\$ 2
Commodity contracts	\$ (23)
Foreign currency contracts	\$ 5
<i>Net investment hedges</i>	
Excluded components	\$ 26

NOTE 24 – FAIR VALUE MEASUREMENTS

Fair Value Measurements on a Recurring Basis

The following table summarizes the bases used to measure certain assets and liabilities at fair value on a recurring basis:

Basis of Fair Value Measurements on a Recurring Basis ¹ In millions	Dec 31, 2019			Dec 31, 2018		
	Level 1	Level 2	Total	Level 1	Level 2	Total
Assets at fair value:						
Cash equivalents						
Held to maturity securities ²	\$ —	\$ 220	\$ 220	\$ —	\$ 410	\$ 410
Money market funds	—	408	408	—	156	156
Marketable securities	—	21	21	—	100	100
Equity securities ³	15	—	15	16	—	16
Debt securities: ³						
Government debt ⁴	—	555	555	—	700	700
Corporate bonds	22	992	1,014	—	983	983
Derivatives relating to: ⁵						
Interest rates	—	35	35	—	—	—
Foreign currency	—	149	149	—	226	226
Commodities	23	67	90	17	93	110
Total assets at fair value	\$ 60	\$ 2,447	\$ 2,507	\$ 33	\$ 2,668	\$ 2,701
Liabilities at fair value:						
Long-term debt including debt due within one year ⁶	\$ —	\$ 18,661	\$ 18,661	\$ —	\$ 20,212	\$ 20,212
Derivatives relating to: ⁵						
Interest rates	—	310	310	—	64	64
Foreign currency	—	69	69	—	149	149
Commodities	14	137	151	23	189	212
Total liabilities at fair value	\$ 14	\$ 19,177	\$ 19,191	\$ 23	\$ 20,614	\$ 20,637

1. Prior period amounts were updated to conform with the current year presentation.

2. The Company had held-to-maturity securities (primary treasury bills and time deposits) classified as cash equivalents.

3. The Company's investments in debt securities, which are primarily available-for-sale, and equity securities are included in "Other investments" in the consolidated balance sheets.

4. U.S. Treasury obligations, U.S. agency obligations, agency mortgage-backed securities and other municipalities' obligations.

5. See Note 23 for the classification of derivatives in the consolidated balance sheets.

6. See Note 23 for information on fair value measurements of long-term debt.

For assets and liabilities classified as Level 1 measurements (measured using quoted prices in active markets), total fair value is either the price of the most recent trade at the time of the market close or the official close price, as defined by the exchange on which the asset is most actively traded on the last trading day of the period, multiplied by the number of units held without consideration of transaction costs.

For assets and liabilities classified as Level 2 measurements, where the security is frequently traded in less active markets, fair value is based on the closing price at the end of the period; where the security is less frequently traded, fair value is based on the price a dealer would pay for the security or similar securities, adjusted for any terms specific to that asset or liability, or by using observable market data points of similar, more liquid securities to imply the price. Market inputs are obtained from well-established and recognized vendors of market data and subjected to tolerance and quality checks.

For derivative assets and liabilities, standard industry models are used to calculate the fair value of the various financial instruments based on significant observable market inputs, such as foreign exchange rates, commodity prices, swap rates, interest rates and implied volatilities obtained from various market sources. Market inputs are obtained from well-established and recognized vendors of market data and subjected to tolerance/quality checks.

For all other assets and liabilities for which observable inputs are used, fair value is derived through the use of fair value models, such as a discounted cash flow model or other standard pricing models. See Note 23 for further information on the types of instruments used by the Company for risk management.

There were no transfers between Levels 1 and 2 in the years ended December 31, 2019 and 2018.

For assets classified as Level 3 measurements, the fair value is based on significant unobservable inputs including assumptions where there is little, if any, market activity. The fair value of the Company's interests held in trade accounts receivable conduits is determined by calculating the expected amount of cash to be received using the key input of anticipated credit losses in the portfolio of receivables sold that have not yet been collected. Given the short-term nature of the underlying receivables, discount rate and prepayments are not factors in determining the fair value of the interests. See Note 15 for further information on assets classified as Level 3 measurements.

For equity securities calculated at net asset value per share (or its equivalent), the Company had \$117 million in private market securities and \$18 million in real estate at December 31, 2019 (\$120 million in private market securities and \$29 million in real estate at December 31, 2018). There are no redemption restrictions and the underfunded commitments on these investments were \$76 million at December 31, 2019 (\$89 million at December 31, 2018).

The following table summarizes the changes in fair value measurements using Level 3 inputs for the year ended December 31, 2018:

Fair Value Measurements Using Level 3 Inputs for Interests Held in Trade Accounts Receivable Conduits ¹	
In millions	2018
Balance at Jan 1	\$ 677
Gain (loss) included in earnings ²	3
Settlements ³	(680)
Balance at Dec 31	\$ —

1. Included in "Accounts and notes receivable – Other" in the consolidated balance sheets. See Note 15 for additional information.

2. Included in "Selling, general and administrative expenses" in the consolidated statements of income.

3. Includes noncash transactions of \$23 million for the year ended December 31, 2018.

Fair Value Measurements on a Nonrecurring Basis

The following table summarizes the bases used to measure certain assets at fair value on a nonrecurring basis in the consolidated balance sheets in 2019, 2018 and 2017:

Basis of Fair Value Measurements on a Nonrecurring Basis at Dec 31		
In millions	(Level 3)	Total Losses
2019		
Assets at fair value:		
Long-lived assets, other assets and equity method investments	\$ 162	\$ (2,031)
Goodwill	\$ —	\$ (1,039)
2018		
Assets at fair value:		
Long-lived assets and other assets	\$ —	\$ (67)
2017		
Assets at fair value:		
Long-lived assets, intangible assets, other assets and equity method investments	\$ 61	\$ (955)
Goodwill	\$ —	\$ (1,491)

2019 Fair Value Measurements on a Nonrecurring Basis

As part of the Synergy Program, the Company has or will shut down and write-off several small manufacturing facilities, non-manufacturing assets and certain corporate facilities around the world. In 2019, manufacturing facilities associated with this plan were written down to zero. In addition, impairments of leased, non-manufacturing facilities, which were classified as Level 3 measurements, resulted in a write-down of right-of-use assets to a fair value of \$152 million using unobservable inputs. The impairment charges related to the Synergy Program, totaling \$143 million, were included in "Restructuring, goodwill impairment and asset related charges - net" in the consolidated statements of income and related to Industrial Intermediates & Infrastructure (\$2 million), Performance Materials & Coatings (\$28 million) and Corporate (\$113 million).

In 2019, the Company recognized an additional pretax impairment charge of \$44 million related to capital additions made to Santa Vitoria, which was impaired in 2017. The assets were written down to zero in 2019. The impairment charge was included in "Restructuring, goodwill impairment and asset related charges - net" in the consolidated statements of income and related to Packaging & Specialty Plastics.

In 2019, the Company recognized impairment charges of \$14 million related to non-manufacturing assets. The assets, classified as Level 3 measurements, were valued at \$10 million using unobservable inputs. The impairment charges were included in "Restructuring, goodwill impairment and asset related charges - net" in the consolidated statements of income and related to Performance Materials & Coatings (\$9 million) and Corporate (\$5 million).

In 2019, the Company recognized an impairment charge of \$75 million resulting from the planned divestiture of its acetone derivatives business to ALTIVIA Ketones & Additives, LLC. The transaction closed on November 1, 2019 and included the Company's acetone derivatives related inventory and production assets, located in Institute, West Virginia, in addition to the site infrastructure, land and utilities. The assets, classified as Level 3 measurements and valued using unobservable inputs, were written down to zero in 2019, except for inventory, which was sold at the lower of cost or market. The impairment charge was included in "Restructuring, goodwill impairment and asset related charges - net" in the consolidated statements of income and related to Packaging & Specialty Plastics (\$24 million) and Corporate (\$51 million).

In the fourth quarter of 2019, the Company performed its annual goodwill impairment testing utilizing a discounted cash flow methodology as its valuation technique. As a result, the Company determined the fair value of the C&PM reporting unit was lower than its carrying amount and recorded an impairment charge of \$1,039 million, included in "Restructuring, goodwill impairment and asset related charges - net" in the consolidated statements of income and related to Performance Materials & Coatings. See Note 14 for additional information on the impairment charge.

In the fourth quarter of 2019, the Company concluded that its equity method investment in Sadara, classified as a Level 3 measurement and valued using unobservable inputs, was other-than-temporarily impaired and written down to zero. Additionally, the Company reserved certain accounts and notes receivable and accrued interest balances due to uncertainty on the timing of collection. As a result, the Company recorded a \$1,755 million charge related to Sadara. The charge was included in "Restructuring, goodwill impairment and asset related charges - net" in the consolidated statements of income and related to Packaging & Specialty Plastics (\$370 million), Industrial Intermediates & Infrastructure (\$1,168 million) and Corporate (\$217 million). See Note 13 for additional information.

2018 Fair Value Measurements on a Nonrecurring Basis

The Company has or will shut down a number of manufacturing and other non-manufacturing facilities and corporate facilities around the world as part of its restructuring programs. In 2018, the manufacturing facilities and related assets and corporate facilities associated with these programs were written down to zero. The impairment charges related to the restructuring programs, totaling \$33 million, were included in "Restructuring, goodwill impairment and asset related charges - net" in the consolidated statements of income and related to Packaging & Specialty Plastics (\$10 million), Performance Materials & Coatings (\$7 million) and Corporate (\$16 million).

In 2018, the Company recognized an additional pretax impairment charge of \$34 million related primarily to capital additions made to Santa Vitoria, which was impaired in 2017. The assets were written down to zero in 2018. The impairment charge was included in "Restructuring, goodwill impairment and asset related charges - net" in the consolidated statements of income and related to the Packaging & Specialty Plastics segment.

2017 Fair Value Measurements on a Nonrecurring Basis

The Company has or will shut down a number of manufacturing, R&D and corporate facilities around the world as part of the Synergy Program. The manufacturing facilities and related assets (including intangible assets), corporate facilities and data centers associated with this plan were written down to zero in the fourth quarter of 2017. The impairment charges related to the Synergy Program, totaling \$87 million, were included in "Restructuring, goodwill impairment and asset related charges - net" in the consolidated statements of income and related to Packaging & Specialty Plastics (\$33 million), Industrial Intermediates & Infrastructure (\$12 million), Performance Materials & Coatings (\$9 million) and Corporate (\$33 million). See Note 7 for additional information on the Company's restructuring activities.

In the fourth quarter of 2017, the Company recognized a \$622 million pretax impairment charge related to Santa Vitoria. The Company determined it would not pursue an expansion of the facility's ethanol mill into downstream derivative products, primarily as a result of cheaper ethane-based production as well as the Company's new assets coming online on the U.S. Gulf Coast which can be used to meet growing market demands in Brazil. As a result of this decision, cash flow analysis indicated the carrying amount of the impacted assets was not recoverable and the assets were written down to zero in the fourth quarter of 2017. The impairment charge was included in "Restructuring, goodwill impairment and asset related charges - net" in the consolidated statements of income and related to the Packaging & Specialty Plastics segment. See Notes 7 and 25 for additional information.

The Company also recognized other pretax impairment charges of \$246 million in the fourth quarter of 2017, including charges related to manufacturing assets of \$159 million, an equity method investment of \$81 million and other assets of \$6 million. The assets, classified as Level 3 measurements, were valued at \$61 million using unobservable inputs, including assumptions a market participant would use to measure the fair value of the group of assets, which included projected cash flows. The impairment charges were included in "Restructuring, goodwill impairment and asset related charges - net" in the consolidated statements of income and related to Packaging & Specialty Plastics (\$83 million), Industrial Intermediates & Infrastructure (\$5 million), Performance Materials & Coatings (\$58 million) and Corporate (\$100 million). See Note 7 for additional information.

In the fourth quarter of 2017, the Company performed its annual goodwill impairment testing utilizing a discounted cash flow methodology as its valuation technique. As a result, the Company determined the fair value of the C&PM reporting unit was lower than its carrying amount and recorded an impairment charge of \$1,491 million, included in "Restructuring, goodwill impairment and asset related charges - net" in the consolidated statements of income and related to Performance Materials & Coatings. See Note 14 for additional information on the impairment charge.

See Note 7 for additional information on the Company's restructuring activities.

NOTE 25 – VARIABLE INTEREST ENTITIES

Consolidated Variable Interest Entities ("VIEs")

The Company holds a variable interest in the following joint ventures or entities for which it is the primary beneficiary:

Asia Pacific joint ventures

The Company has variable interests in two joint ventures that own and operate manufacturing and logistics facilities, which produce chemicals and provide services in Asia Pacific. The Company's variable interests in these joint ventures relate to arrangements between the joint ventures and the Company, involving the majority of the output on take-or-pay terms with pricing ensuring a guaranteed return to the joint ventures.

The Company was a 50 percent indirect owner in a propylene oxide ("PO") manufacturing joint venture in Asia Pacific. The Company had a variable interest in this joint venture relating to arrangements between the joint venture and the Company involving the majority of the output on take-or-pay terms, with pricing ensuring a guaranteed return to the joint venture. On April 30, 2019, the Company executed an agreement to acquire full ownership in the PO manufacturing joint venture. The transaction closed on October 1, 2019, for a cash purchase price of \$331 million. Approximately half of the purchase price was attributed to the Company's proportionate equity interest in the entity that owned the PO manufacturing joint venture, which is accounted for under the equity method of accounting, and was classified as "Investments in and loans to nonconsolidated affiliates" in the consolidated statements of cash flows. The remaining \$166 million was classified as "Purchases of noncontrolling interests" in the consolidated statements of cash flows.

Ethylene storage joint venture

The Company has variable interests in a joint venture that provides ethylene storage in Alberta, Canada. The Company's variable interests relate to arrangements involving a majority of the joint venture's storage capacity on take-or-pay terms with pricing ensuring a guaranteed return to the joint venture; and favorably priced leases provided to the joint venture. The Company provides the joint venture with operation and maintenance services and utilities.

Cogeneration in Brazil

The Company holds variable interests in a cogeneration facility in Brazil related to the production of ethanol from sugarcane. The Company's variable interests are the result of a tolling arrangement where it provides fuel to the entity and purchases a majority of the cogeneration facility's output on terms that ensure a return to the entity's equity holders.

Assets and Liabilities of Consolidated VIEs

The Company's consolidated financial statements include the assets, liabilities and results of operations of VIEs for which the Company is the primary beneficiary. The other equity holders' interests are reflected in "Net income attributable to noncontrolling interests" in the consolidated statements of income and "Noncontrolling interests" in the consolidated balance sheets.

The following table summarizes the carrying amounts of these entities' assets and liabilities included in the Company's consolidated balance sheets at December 31, 2019 and 2018:

Assets and Liabilities of Consolidated VIEs at Dec 31		
In millions	2019	2018
Cash and cash equivalents	\$ 37	\$ 71
Other current assets	51	101
Net property	330	683
Other noncurrent assets	18	14
Total assets¹	\$ 436	\$ 869
Current liabilities	\$ 141	\$ 307
Long-term debt	34	75
Other noncurrent obligations	21	14
Total liabilities²	\$ 196	\$ 396

1. All assets were restricted at December 31, 2019 and 2018.

2. All liabilities were nonrecourse at December 31, 2019 and 2018.

Amounts presented in the consolidated balance sheets and the table above as restricted assets or nonrecourse obligations relating to consolidated VIEs at December 31, 2019 and 2018 are adjusted for intercompany eliminations and parental guarantees.

Nonconsolidated VIEs

The Company holds a variable interest in the following entities for which the Company is not the primary beneficiary:

Silicon joint ventures

The Company holds minority voting interests in certain joint ventures that produce silicon inputs for the Company. These joint ventures operate under supply agreements that sell inventory to the equity owners using pricing mechanisms that guarantee a return, therefore shielding the joint ventures from the obligation to absorb expected losses. As a result of the pricing mechanisms of these agreements, these entities are determined to be VIEs. The Company is not the primary beneficiary, as it does not hold the power to direct the activities that most significantly impact the economic performance of these entities; therefore, the entities are accounted for under the equity method of accounting. The Company's maximum exposure to loss as a result of its involvement with these variable interest entities is determined to be the carrying value of the investment in these entities. At December 31, 2019, the Company's investment in these joint ventures was \$100 million (\$100 million at December 31, 2018), classified as "Investment in nonconsolidated affiliates" in the consolidated balance sheets, representing the Company's maximum exposure to loss.

AgroFresh Solutions Inc.

The Company held a variable interest in AgroFresh Solutions Inc. ("AFSI"), a company that produces and sells proprietary technologies for the horticultural market. The variable interest in AFSI related to a tax receivable agreement that entitled the Company to additional consideration in the form of tax savings, which was contingent on the operations and earnings of AFSI. The Company was not the primary beneficiary, as it is a minority shareholder in AFSI and AFSI is governed by a board of directors, the composition of which is mandated by AFSI's corporate governance requirements that a majority of the directors be independent. In December 2019, the Company and AFSI settled the tax receivable agreement and the Company's receivable with AFSI was zero at December 31, 2019 (\$8 million at December 31, 2018, classified as "Accounts and notes receivable - Other" in the consolidated balance sheets). The Company continues to be a minority shareholder, but does not have a controlling financial interest in AFSI.

NOTE 26 – RELATED PARTY TRANSACTIONS

Effective with the separation from DowDuPont on April 1, 2019, TDCC became a wholly owned subsidiary of Dow Inc. and reported transactions with Dow Inc. as related party transactions. From the Merger date through March 31, 2019, TDCC reported transactions with DowDuPont and Historical DuPont and its affiliates as related party transactions.

TDCC

TDCC has committed to fund Dow Inc.'s dividends paid to common stockholders, share repurchases and certain governance expenses. Funding is accomplished through intercompany loans. TDCC's Board reviews and determines a dividend distribution to Dow Inc. to settle the intercompany loans. In the fourth quarter of 2019, TDCC declared and paid a dividend of \$201 million to Dow Inc. At December 31, 2019, TDCC's intercompany loan balance with Dow Inc. was insignificant.

DowDuPont

Pursuant to the Merger Agreement, TDCC committed to fund a portion of DowDuPont's dividends paid to common stockholders and certain governance expenses. In addition, share repurchases by DowDuPont were partially funded by TDCC through 2018. Funding was accomplished through intercompany loans. On a quarterly basis, TDCC's Board reviewed and determined a dividend distribution to DowDuPont to settle the intercompany loans. The dividend distribution considered the level of TDCC's earnings and cash flows and the outstanding intercompany loan balances. In 2019, TDCC declared and paid dividends to DowDuPont of \$535 million (\$3,711 million in 2018). At December 31, 2018, TDCC's outstanding intercompany loan balance was insignificant.

Historical DuPont and its Affiliates

Prior to the separation from DowDuPont, TDCC sold to and procured from Historical DuPont and its affiliates certain raw materials that were consumed in each company's manufacturing process. The following table presents amounts due to or due from Historical DuPont and its affiliates at December 31, 2018:

Balances Due To or Due From Historical DuPont and its Affiliates		<i>Dec 31, 2018</i>
In millions		
Accounts and notes receivable - Other		\$ 89
Accounts payable - Other		\$ 19

The following table presents revenue earned and expenses incurred related to transactions with Historical DuPont and its affiliates, prior to the separation from DowDuPont:

Sales to Historical DuPont and its Affiliates		<i>2019</i>	<i>2018</i>
In millions			
Net sales		\$ 12	\$ 55
Cost of sales		\$ 9	\$ 42

Purchases from Historical DuPont and its affiliates were insignificant for 2019 and 2018.

NOTE 27 – SEGMENTS AND GEOGRAPHIC REGIONS

Dow combines one of the broadest technology sets in the industry with asset integration, focused innovation and global scale to achieve profitable growth and become the most innovative, customer centric, inclusive and sustainable materials science company. Dow's portfolio of performance materials, industrial intermediates and plastics businesses delivers a broad range of differentiated science-based products and solutions for our customers in high-growth segments, such as packaging, infrastructure and consumer care. Dow operates 109 manufacturing sites in 31 countries and employs approximately 36,500 people.

Effective with the Merger, TDCC's business activities were components of DowDuPont's business operations and were reported as a single operating segment. Following the separation from DowDuPont, the Company changed the manner in which its business activities were managed. The Company's portfolio now includes six global businesses which are organized into the following operating segments: Packaging & Specialty Plastics, Industrial Intermediates & Infrastructure and Performance Materials & Coatings. Corporate contains the reconciliation between the totals for the operating segments and the Company's totals. The Company did not aggregate any operating segments when determining its reportable segments.

Following the separation from DowDuPont, the Company changed its practice of transferring ethylene to its downstream derivative businesses at cost to transferring ethylene at market prices. The Company also changed certain of its Corporate segment allocation practices including costs previously assigned to AgCo and SpecCo, which are now allocated to the operating segments. These changes have been consistently applied to all periods presented.

Dow reported geographic information for the following regions: U.S. & Canada, Asia Pacific, Latin America, and EMEAI. As a result of the separation from DowDuPont, the Company changed the geographic alignment for the country of India to be reflected in EMEAI (previously reported in Asia Pacific).

Dow's measure of profit/loss for segment reporting purposes is pro forma Operating EBIT as this is the manner in which the Company's chief operating decision maker ("CODM") assesses performance and allocates resources. The Company defines pro forma Operating EBIT as earnings (i.e., "Income from continuing operations before income taxes") before interest, plus pro forma adjustments, excluding the impact of significant items. Pro forma Operating EBIT by segment includes all operating items relating

to the businesses; items that principally apply to Dow as a whole are assigned to Corporate. Pro forma Operating EBIT has been reflected retrospectively for all periods presented, and reconciliations are provided at the end of this footnote. The Company also presents pro forma net sales in this footnote as it is included in management's measure of segment performance and is regularly reviewed by the CODM. Pro forma net sales includes the impact of ECP from January 1, 2017 through August 31, 2017, as well as the impact of various manufacturing, supply and service related agreements entered into with DuPont and Corteva in connection with the separation which provide for different pricing than the historical intercompany and intracompany pricing practices of TDCC and Historical DuPont.

Corporate Profile

Dow conducts its worldwide operations through global businesses which are reflected in the following reportable segments:

Packaging & Specialty Plastics

Packaging & Specialty Plastics consists of two highly integrated global businesses: Hydrocarbons & Energy and Packaging and Specialty Plastics. The segment employs the industry's broadest polyolefin product portfolio, supported by the Company's proprietary catalyst and manufacturing process technologies, to work at the customer's design table throughout the value chain to deliver more reliable and durable, higher performing, and more sustainable plastics to customers in food and specialty packaging; industrial and consumer packaging; health and hygiene; caps, closures and pipe applications; consumer durables; automotive; and infrastructure. This segment includes the results of The Kuwait Styrene Company K.S.C.C. and The SCG-Dow Group, as well as a portion of the results of EQUATE, The Kuwait Olefins Company K.S.C.C. ("TKOC"), Map Ta Phut and Sadara, all joint ventures of the Company.

Industrial Intermediates & Infrastructure

Industrial Intermediates & Infrastructure consists of two customer-centric global businesses - Industrial Solutions and Polyurethanes & Construction Chemicals - that develop important intermediate chemicals that are essential to manufacturing processes, as well as downstream, customized materials and formulations that use advanced development technologies. These businesses primarily produce and market ethylene oxide and propylene oxide derivatives that are aligned to market segments as diverse as appliances, coatings, infrastructure and oil and gas. The global scale and reach of these businesses, world-class technology and R&D capabilities and materials science expertise enable the Company to be a premier solutions provider offering customers value-add sustainable solutions to enhance comfort, energy efficiency, product effectiveness and durability across a wide range of home comfort and appliances, building and construction, adhesives and lubricant applications, among others. This segment includes a portion of the Company's share of the results of EQUATE, TKOC, Map Ta Phut and Sadara.

Performance Materials & Coatings

Performance Materials & Coatings includes industry-leading franchises that deliver a wide array of solutions into consumer and infrastructure end-markets. The segment consists of two global businesses: Coatings & Performance Monomers and Consumer Solutions. These businesses primarily utilize the Company's acrylics-, cellulose- and silicone-based technology platforms to serve the needs of the architectural and industrial coatings, home care and personal care end-markets. Both businesses employ materials science capabilities, global reach and unique products and technology to combine chemistry platforms to deliver differentiated offerings to customers.

Corporate

Corporate includes certain enterprise and governance activities (including insurance operations, environmental operations, etc.); non-business aligned joint ventures; non-business aligned litigation expenses; and discontinued or non-aligned businesses.

Sales are attributed to geographic region based on customer location; long-lived assets are attributed to geographic region based on asset location.

Geographic Region Information In millions	<i>United States</i>	<i>EMEA</i>	<i>Rest of World</i>	<i>Total</i>
2019				
Sales to external customers	\$ 14,437	\$ 14,612	\$ 13,902	\$ 42,951
Long-lived assets	\$ 14,571	\$ 2,649	\$ 3,776	\$ 20,996
2018				
Sales to external customers	\$ 16,613	\$ 17,406	\$ 15,585	\$ 49,604
Long-lived assets	\$ 14,750	\$ 2,657	\$ 4,011	\$ 21,418
2017				
Sales to external customers	\$ 15,316	\$ 15,226	\$ 13,188	\$ 43,730
Long-lived assets	\$ 14,771	\$ 2,547	\$ 4,266	\$ 21,584

Segment Information	<i>Pack. & Spec. Plastics</i>	<i>Ind. Inter. & Infrast.</i>	<i>Perf. Materials & Coatings</i>	<i>Corp.</i>	<i>Total</i>
In millions					
2019					
Net sales	\$ 20,245	\$ 13,440	\$ 8,923	\$ 343	\$ 42,951
Pro forma net sales	20,245	13,449	8,961	343	42,998
Restructuring, goodwill impairment and asset related charges - net ¹	439	1,175	1,076	529	3,219
Equity in earnings (losses) of nonconsolidated affiliates	162	(241)	5	(20)	(94)
Pro forma Operating EBIT ²	2,904	845	918	(315)	4,352
Depreciation and amortization	1,435	594	877	32	2,938
Total assets	29,522	11,753	14,059	5,190	60,524
Investments in nonconsolidated affiliates	675	568	101	60	1,404
Capital expenditures	1,039	452	470	—	1,961
2018					
Net sales	\$ 24,195	\$ 15,447	\$ 9,677	\$ 285	\$ 49,604
Pro forma net sales	24,237	15,465	9,865	285	49,852
Restructuring, goodwill impairment and asset related charges - net ¹	46	11	21	143	221
Equity in earnings (losses) of nonconsolidated affiliates	287	284	4	(20)	555
Pro forma Operating EBIT ²	3,593	1,767	1,246	(370)	6,236
Depreciation and amortization	1,385	607	888	29	2,909
Total assets ³	30,279	14,092	16,050	3,378	63,799
Investments in nonconsolidated affiliates	1,278	1,850	99	93	3,320
Capital expenditures	1,231	433	427	—	2,091
2017					
Net sales	\$ 21,504	\$ 12,951	\$ 8,892	\$ 383	\$ 43,730
Pro forma net sales	22,546	12,951	8,892	383	44,772
Restructuring, goodwill impairment and asset related charges - net ¹	716	17	1,578	428	2,739
Equity in earnings (losses) of nonconsolidated affiliates	190	172	40	(8)	394
Pro forma Operating EBIT ²	3,712	1,470	817	(422)	5,577
Depreciation and amortization	1,055	572	885	34	2,546
Total assets ³	30,633	14,115	17,483	4,342	66,573
Investments in nonconsolidated affiliates	1,184	1,700	103	120	3,107
Capital expenditures	2,034	310	463	—	2,807

1. See Note 7 for information regarding the Company's restructuring programs, goodwill impairment and other asset related charges.

2. Pro forma Operating EBIT for TDCC in 2019 is substantially the same as that of Dow Inc. (same for 2018 and 2017) and therefore is not disclosed separately in the table above. A reconciliation of "Income (loss) from continuing operations, net of tax" to pro forma Operating EBIT is provided on the following page.

3. Excludes assets of discontinued operations of \$19,900 million and \$19,279 million for 2018 and 2017, respectively.

Reconciliation of "Income (loss) from continuing operations, net of tax" to Pro Forma Operating EBIT			
In millions	<i>2019</i>	<i>2018</i>	<i>2017</i>
Income (loss) from continuing operations, net of tax	\$ (1,717)	\$ 2,940	\$ (1,287)
+ Provision for income taxes on continuing operations	470	809	1,524
Income (loss) from continuing operations before income taxes	\$ (1,247)	\$ 3,749	\$ 237
- Interest income	81	82	66
+ Interest expense and amortization of debt discount	933	1,063	914
+ Pro forma adjustments ¹	65	180	1,120
- Significant items	(4,682)	(1,326)	(3,372)
Pro forma Operating EBIT	\$ 4,352	\$ 6,236	\$ 5,577

1. Pro forma adjustments include: (1) the margin impact of various manufacturing, supply and service related agreements entered into with DuPont and Corteva in connection with the separation which provide for different pricing than the historical intercompany and intracompany pricing practices of TDCC and Historical DuPont (included for 2019 and 2018 only), (2) the inclusion of ECP for the period of January 1, 2017 through August 31, 2017, (3) the removal of the amortization of ECP's inventory step-up recognized in connection with the Merger (4) the elimination of the impact of events directly attributable to the Merger, internal reorganization and business realignment, separation, distribution and other related transactions (e.g., one-time transaction costs) and (5) the elimination of the effect of a consummated divestiture agreed to with certain regulatory agencies as a condition of approval for the Merger.

The following tables summarize the pretax impact of significant items by segment that are excluded from pro forma Operating EBIT:

Significant Items by Segment for 2019	<i>Pack. & Spec. Plastics</i>	<i>Ind. Interm. & Infrac.</i>	<i>Perf. Materials & Coatings</i>	<i>Corp.</i>	<i>Total</i>
In millions					
Indemnification and other transaction related costs ¹	\$ —	\$ —	\$ —	\$ (144)	\$ (144)
Integration and separation costs ²	—	—	—	(1,013)	(1,013)
Restructuring, goodwill impairment and asset related charges - net ³	(439)	(1,175)	(1,076)	(529)	(3,219)
Loss on divestitures ⁴	—	(5)	—	(44)	(49)
Loss on early extinguishment of debt ⁵	—	—	—	(102)	(102)
Environmental charges ⁶	(5)	(8)	(50)	(336)	(399)
Warranty accrual adjustment of exited business ⁷	—	—	—	39	39
Litigation related charges, awards and adjustments ⁸	170	—	—	35	205
Total	\$ (274)	\$ (1,188)	\$ (1,126)	\$ (2,094)	\$ (4,682)

1. Includes charges primarily associated with agreements entered into with DuPont and Corteva as part of the separation and distribution which, among other matters, provides for cross-indemnities and allocations of obligations and liabilities for periods prior to, at and after the completion of the separation.
2. Costs related to post-Merger integration and business separation activities. Excludes one-time transaction costs directly attributable to the Merger.
3. Includes Board approved restructuring plans and asset-related charges (see Note 7 for additional information); a charge related to Sadara (see Note 13 for additional information) and an impairment charge related to goodwill associated with the Coatings & Performance Monomers reporting unit (see Note 14 for additional information).
4. Includes post-closing adjustments on previous divestitures.
5. The Company retired outstanding long-term debt resulting in a loss on early extinguishment. See Note 16 for additional information.
6. Related to environmental remediation, primarily resulting from the culmination of long-standing negotiations with regulators and/or agencies and review of additional costs to manage ongoing remediation activities resulting from Dow's separation from DowDuPont and related agreements with Corteva and DuPont. See Note 17 for additional information.
7. Includes an adjustment to the warranty accrual of an exited business.
8. Includes a gain associated with a legal settlement with Nova, as well as a gain related to an adjustment of the Dow Silicones breast implant liability and a charge related to the settlement of the Dow Silicones commercial creditor matters. See Note 17 for additional information.

Significant Items by Segment for 2018	<i>Pack. & Spec. Plastics</i>	<i>Ind. Interm. & Infrac.</i>	<i>Perf. Materials & Coatings</i>	<i>Corp.</i>	<i>Total</i>
In millions					
Impact of Dow Silicones ownership restructure ¹	\$ —	\$ —	\$ (20)	\$ —	\$ (20)
Integration and separation costs ²	—	—	—	(1,074)	(1,074)
Restructuring, goodwill impairment and asset related charges - net ³	(46)	(11)	(21)	(120)	(198)
Gain on divestiture ⁴	—	20	—	—	20
Transaction costs and productivity actions ⁵	—	—	—	(54)	(54)
Total	\$ (46)	\$ 9	\$ (41)	\$ (1,248)	\$ (1,326)

1. Includes a loss related to a post-closing adjustment related to the Dow Silicones ownership restructure.
2. Costs related to post-Merger integration and separation and distribution activities, and costs related to the Dow Silicones ownership restructure.
3. Includes Board approved restructuring plans and asset-related charges, which include other asset impairments. See Note 7 for additional information.
4. Includes a gain related to the Company's sale of its equity interest in MEGlobal.
5. The Company retired outstanding notes payable resulting in a loss on early extinguishment. See Note 16 for additional information.

Significant Items by Segment for 2017	<i>Pack. & Spec. Plastics</i>	<i>Ind. Interm. & Infrac.</i>	<i>Perf. Materials & Coatings</i>	<i>Corp.</i>	<i>Total</i>
In millions					
Litigation related charges, awards and adjustments ¹	\$ 137	\$ —	\$ —	\$ —	\$ 137
Integration and separation costs ²	—	—	—	(716)	(716)
Restructuring, goodwill impairment and asset related charges - net ³	(716)	(17)	(1,578)	(431)	(2,742)
Gain on divestiture ⁴	—	—	—	7	7
Transaction costs and productivity actions ⁵	—	—	—	(58)	(58)
Total	\$ (579)	\$ (17)	\$ (1,578)	\$ (1,198)	\$ (3,372)

1. Includes a gain associated with a patent infringement matter with Nova. See Note 17 for additional information.
2. Costs related to post-Merger integration, separation and distribution activities, and costs related to the Dow Silicones ownership restructure.
3. Includes Board approved restructuring plans, goodwill impairment and asset-related charges, which includes other asset impairments. See Note 7 for additional information.
4. Includes post-closing adjustments related to the split-off of the Company's chlorine value chain.
5. Includes implementation costs associated with the Company's restructuring programs and other productivity actions.

NOTE 28 - SELECTED QUARTERLY FINANCIAL DATA

2019					
In millions, except per share amounts (Unaudited)	<i>1st</i> ¹	<i>2nd</i>	<i>3rd</i>	<i>4th</i>	<i>Year</i>
Dow Inc.					
Net sales	\$ 10,969	\$ 11,014	\$ 10,764	\$ 10,204	\$ 42,951
Cost of sales	\$ 9,142	\$ 9,420	\$ 9,377	\$ 8,718	\$ 36,657
Gross margin	\$ 1,827	\$ 1,594	\$ 1,387	\$ 1,486	\$ 6,294
Restructuring, goodwill impairment and asset related charges - net ²	\$ 156	\$ 65	\$ 147	\$ 2,851	\$ 3,219
Integration and separation costs ³	\$ 452	\$ 348	\$ 164	\$ 99	\$ 1,063
Income (loss) from continuing operations, net of tax	\$ 156	\$ 90	\$ 347	\$ (2,310)	\$ (1,717)
Income from discontinued operations net of tax	\$ 445	\$ —	\$ —	\$ —	\$ 445
Net income (loss) ⁴	\$ 601	\$ 90	\$ 347	\$ (2,310)	\$ (1,272)
Net income (loss) attributable to Dow Inc.	\$ 556	\$ 75	\$ 333	\$ (2,323)	\$ (1,359)
Earnings (loss) per common share from continuing operations - basic ⁵	\$ 0.16	\$ 0.10	\$ 0.45	\$ (3.14)	\$ (2.42)
Earnings (loss) per common share from continuing operations - diluted ⁵	\$ 0.16	\$ 0.10	\$ 0.45	\$ (3.14)	\$ (2.42)
Dividends declared per share of common stock ⁶	N/A	\$ 0.70	\$ 0.70	\$ 0.70	\$ 2.10
Market price range of common stock:					
High ⁶	N/A	\$ 59.71	\$ 52.79	\$ 55.99	\$ 59.71
Low ⁶	N/A	\$ 46.76	\$ 40.71	\$ 43.85	\$ 40.71
TDCC					
Net sales	\$ 10,969	\$ 11,014	\$ 10,764	\$ 10,204	\$ 42,951
Cost of sales	\$ 9,142	\$ 9,419	\$ 9,377	\$ 8,719	\$ 36,657
Gross margin	\$ 1,827	\$ 1,595	\$ 1,387	\$ 1,485	\$ 6,294
Restructuring, goodwill impairment and asset related charges - net ²	\$ 156	\$ 65	\$ 147	\$ 2,851	\$ 3,219
Integration and separation costs	\$ 452	\$ 324	\$ 164	\$ 99	\$ 1,039
Income (loss) from continuing operations, net of tax	\$ 156	\$ 217	\$ 324	\$ (2,292)	\$ (1,595)
Income from discontinued operations net of tax	\$ 445	\$ —	\$ —	\$ —	\$ 445
Net income (loss) ³	\$ 601	\$ 217	\$ 324	\$ (2,292)	\$ (1,150)
Net income (loss) attributable to The Dow Chemical Company	\$ 556	\$ 202	\$ 310	\$ (2,305)	\$ (1,237)

1. The amounts presented for the first quarter of 2019 have been updated from the amounts reported in the Company's Quarterly Report on Form 10-Q for the period ended March 31, 2019, to reflect the effects of the separation from DowDuPont. See reconciliation on the following page.

2. See Note 7 for additional information.

3. See Note 4 for additional information.

4. See Notes 4, 9, 16 and 17 for information on additional items materially impacting "Net income (loss)." The fourth quarter of 2019 included a gain related to the effects of Swiss tax reform and a loss on the early extinguishment of debt. The third quarter of 2019 included a charge related to environmental remediation, a charge related to the settlement of the Dow Silicones commercial creditor matters, a gain related to an adjustment to the Dow Silicones breast implant liability and a gain associated with a legal settlement with Nova. The second quarter of 2019 included charges associated with agreements entered into with DuPont and Corteva as part of the separation from DowDuPont.

5. Earnings per common share amounts relate only to Dow Inc. as TDCC common shares are not publicly traded and are all owned by Dow Inc. Due to quarterly changes in the share count and the allocation of income to participating securities, the sum of the four quarters does not equal the earnings per share amount calculated for the year.

6. Dow Inc.'s common stock was solely owned by DowDuPont through March 31, 2019, and on April 1, 2019, Dow Inc. became an independent, publicly traded company.

2018					
In millions, except per share amounts (Unaudited)	<i>1st</i>	<i>2nd</i>	<i>3rd</i>	<i>4th</i>	<i>Year</i>
Net sales	\$ 12,237	\$ 12,789	\$ 12,634	\$ 11,944	\$ 49,604
Cost of sales	\$ 9,980	\$ 10,540	\$ 10,456	\$ 10,098	\$ 41,074
Gross margin	\$ 2,257	\$ 2,249	\$ 2,178	\$ 1,846	\$ 8,530
Restructuring, goodwill impairment and asset related charges - net ¹	\$ 87	\$ 40	\$ 48	\$ 46	\$ 221
Integration and separation costs ²	\$ 224	\$ 262	\$ 313	\$ 380	\$ 1,179
Income from continuing operations, net of tax	\$ 925	\$ 810	\$ 714	\$ 491	\$ 2,940
Income from discontinued operations, net of tax	\$ 514	\$ 554	\$ 335	\$ 432	\$ 1,835
Net income ³	\$ 1,439	\$ 1,364	\$ 1,049	\$ 923	\$ 4,775
Net income attributable to Dow Inc. and The Dow Chemical Company	\$ 1,404	\$ 1,333	\$ 1,013	\$ 891	\$ 4,641
Earnings per common share from continuing operations - basic ⁴	\$ 1.21	\$ 1.05	\$ 0.91	\$ 0.63	\$ 3.80
Earnings per common share from continuing operations - diluted ⁴	\$ 1.21	\$ 1.05	\$ 0.91	\$ 0.63	\$ 3.80

1. See Note 7 for additional information.

2. See Note 4 for additional information.

3. Includes tax adjustments related to The Act, enacted on December 22, 2017. See Note 9 for additional information.

4. Earnings per common share amounts relate only to Dow Inc. as TDCC common shares are not publicly traded and are all owned by Dow Inc.

Effective with the separation from DowDuPont, the Company's consolidated financial results reflect the distribution of AgCo and SpecCo as discontinued operations, as well as the receipt of ECP as a common control transaction from the closing of the Merger on August 31, 2017. The following table provides the reconciliation of the amounts reported in the Company's Quarterly Report on Form 10-Q for the period ended March 31, 2019, to the amounts presented for the first quarter of 2019 on the previous page. See Note 4 for additional information on the separation from DowDuPont.

Reconciliation - First Quarter 2019				
In millions (Unaudited)	<i>As Filed</i>	<i>Distribution of AgCo and SpecCo</i>	<i>Receipt of ECP</i>	<i>Updated</i>
Net sales	\$ 13,582	\$ (2,954)	\$ 341	\$ 10,969
Cost of sales	\$ 10,707	\$ (1,805)	\$ 240	\$ 9,142
Gross margin	\$ 2,875	\$ (1,149)	\$ 101	\$ 1,827
Restructuring, goodwill impairment and asset related charges - net	\$ 232	\$ (78)	\$ 2	\$ 156
Integration and separation costs	\$ 408	\$ —	\$ 44	\$ 452
Income from continuing operations, net of tax	\$ 586	\$ (445)	\$ 15	\$ 156
Income from discontinued operations, net of tax	\$ —	\$ 445	\$ —	\$ 445
Net income	\$ 586	\$ —	\$ 15	\$ 601
Net income available for common stockholders	\$ 541	\$ —	\$ 15	\$ 556

ITEM 9. CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE

Not applicable.

ITEM 9A. CONTROLS AND PROCEDURES

Evaluation of Disclosure Controls and Procedures

As of the end of the period covered by this Annual Report on Form 10-K, Dow Inc. and The Dow Chemical Company (the "Companies") carried out an evaluation, under the supervision and with the participation of the Companies' Disclosure Committee and the Companies' management, including the Chief Executive Officer and the Chief Financial Officer, of the effectiveness of the design and operation of the Companies' disclosure controls and procedures pursuant to paragraph (b) of Exchange Act Rules 13a-15 and 15d-15. Based upon that evaluation, the Chief Executive Officer and the Chief Financial Officer concluded that the Companies' disclosure controls and procedures were effective.

Changes in Internal Control Over Financial Reporting

There were no changes in the Companies' internal control over financial reporting identified in connection with the evaluation required by paragraph (d) of Exchange Act Rules 13a-15 and 15d-15 that was conducted during the last fiscal quarter that have materially affected, or are reasonably likely to materially affect, the Companies' internal control over financial reporting.

Management's Report on Internal Control Over Financial Reporting

Management is responsible for establishing and maintaining adequate internal control over financial reporting. The Companies' internal control framework and processes are designed to provide reasonable assurance to management and the Board of Directors regarding the reliability of financial reporting and the preparation of the Companies' consolidated financial statements in accordance with accounting principles generally accepted in the United States of America.

The Companies' internal control over financial reporting includes those policies and procedures that:

- pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the Companies;
- provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the Companies are being made only in accordance with authorizations of management and Directors of the Companies; and
- provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of the Companies' assets that could have a material effect on the consolidated financial statements.

Because of its inherent limitations, any system of internal control over financial reporting can provide only reasonable assurance and may not prevent or detect misstatements.

Management assessed the effectiveness of the Companies' internal control over financial reporting and concluded that, as of December 31, 2019, such internal control is effective. In making this assessment, management used the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission ("COSO") in *Internal Control—Integrated Framework* (2013).

The Companies' independent auditors, Deloitte & Touche LLP, with direct access to the Companies' Board of Directors through the Audit Committee of Dow Inc., have audited the consolidated financial statements prepared by the Companies. Their reports on the consolidated financial statements are included in Part II, Item 8. Financial Statements and Supplementary Data. Deloitte & Touche LLP's reports on the Companies' internal control over financial reporting are referenced therein and included herein.

February 7, 2020

/s/ JIM FITTERLING

Jim Fitterling
Chief Executive Officer

/s/ HOWARD UNGERLEIDER

Howard Ungerleider
President and Chief Financial Officer

/s/ RONALD C. EDMONDS

Ronald C. Edmonds
Controller and Vice President of Controllers and Tax

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Stockholders and the Board of Directors of Dow Inc.

Opinion on Internal Control over Financial Reporting

We have audited the internal control over financial reporting of Dow Inc. and subsidiaries (the “Company”) as of December 31, 2019, based on criteria established in *Internal Control - Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). In our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2019, based on criteria established in *Internal Control - Integrated Framework (2013)* issued by COSO.

We have also audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated financial statements as of and for the year ended December 31, 2019, of the Company and the financial statement schedule listed in the Index at Item 15(a)2 and our report dated February 7, 2020, expressed an unqualified opinion on those financial statements and financial statement schedule and included an explanatory paragraph regarding a) a change in the method of accounting for revenue due to the adoption of Accounting Standards Codification (ASC) Topic 606, *Revenue From Contracts with Customers*, in the first quarter of 2018 and b) a change in the method of accounting for leases due to the adoption of ASC Topic 842, *Leases*, in the first quarter of 2019.

Basis for Opinion

The Company’s management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying *Management’s Report on Internal Control over Financial Reporting*. Our responsibility is to express an opinion on the Company’s internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and Limitations of Internal Control over Financial Reporting

A company’s internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company’s internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company’s assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

/s/ DELOITTE & TOUCHE LLP

Deloitte & Touche LLP

Midland, Michigan

February 7, 2020

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Stockholder and the Board of Directors of The Dow Chemical Company

Opinion on Internal Control over Financial Reporting

We have audited the internal control over financial reporting of The Dow Chemical Company and subsidiaries (the “Company”) as of December 31, 2019, based on criteria established in *Internal Control - Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). In our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2019, based on criteria established in *Internal Control - Integrated Framework (2013)* issued by COSO.

We have also audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated financial statements as of and for the year ended December 31, 2019, of the Company and the financial statement schedule listed in the Index at Item 15(a)2 and our report dated February 7, 2020, expressed an unqualified opinion on those financial statements and financial statement schedule and included an explanatory paragraph regarding a) a change in the method of accounting for revenue due to the adoption of Accounting Standards Codification (ASC) Topic 606, *Revenue From Contracts with Customers*, in the first quarter of 2018 and b) a change in the method of accounting for leases due to the adoption of ASC Topic 842, *Leases*, in the first quarter of 2019.

Basis for Opinion

The Company’s management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying *Management’s Report on Internal Control over Financial Reporting*. Our responsibility is to express an opinion on the Company’s internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and Limitations of Internal Control over Financial Reporting

A company’s internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company’s internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company’s assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

/s/ DELOITTE & TOUCHE LLP

Deloitte & Touche LLP

Midland, Michigan

February 7, 2020

ITEM 9B. OTHER INFORMATION

None.

Dow Inc. and Subsidiaries
The Dow Chemical Company and Subsidiaries
PART III

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

Information relating to Directors, certain executive officers and certain corporate governance matters (including identification of Audit Committee members and financial expert(s)) is contained in the definitive Proxy Statement for the 2020 Annual Meeting of Stockholders of Dow Inc. and is incorporated herein by reference. See also the information regarding executive officers of the registrant set forth in Part I, Item 1. Business under the caption "Executive Officers of the Registrant" in reliance on General Instruction G to Form 10-K.

This information is omitted for The Dow Chemical Company pursuant to General Instruction I of Form 10-K.

ITEM 11. EXECUTIVE COMPENSATION

Information relating to executive compensation and the Company's equity compensation plans is contained in the definitive Proxy Statement for the 2020 Annual Meeting of Stockholders of Dow Inc. and is incorporated herein by reference.

This information is omitted for The Dow Chemical Company pursuant to General Instruction I of Form 10-K.

ITEM 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS

Information with respect to beneficial ownership of Dow Inc. common stock by each Director and all Directors and executive officers of the Company as a group is contained in the definitive Proxy Statement for the 2020 Annual Meeting of Stockholders of Dow Inc. and is incorporated herein by reference.

Information relating to any person who beneficially owns in excess of 5 percent of the total outstanding shares of Dow Inc. common stock is contained in the definitive Proxy Statement for the 2020 Annual Meeting of the Stockholders of Dow Inc. and is incorporated herein by reference.

Information with respect to compensation plans under which equity securities are authorized for issuance is contained in the definitive Proxy Statement for the 2020 Annual Meeting of Stockholders of Dow Inc. and is incorporated herein by reference.

This information is omitted for The Dow Chemical Company pursuant to General Instruction I of Form 10-K.

ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS, AND DIRECTOR INDEPENDENCE

Reportable relationships and related transactions, if any, as well as information relating to director independence are contained in the definitive Proxy Statement for the 2020 Annual Meeting of Stockholders of Dow Inc. and are incorporated herein by reference.

This information is omitted for The Dow Chemical Company pursuant to General Instruction I of Form 10-K.

ITEM 14. PRINCIPAL ACCOUNTING FEES AND SERVICES

Independent Registered Public Accountants

Information with respect to fees and services related to the Company's independent auditors, Deloitte & Touche LLP, and the disclosure of the Audit Committee's pre-approval policies and procedures are contained in the definitive Proxy Statement for the 2020 Annual Meeting of Stockholders of Dow Inc. and are incorporated herein by reference.

The Audit Committee of Dow Inc. carefully considers the qualifications and competence of candidates for the independent registered public accounting firm. In accordance with its pre-approval policies and procedures, the Audit Committee pre-approved all professional services rendered by and associated fees paid to Deloitte, for the Companies, for the years ended December 31, 2019 and 2018. Professional services were performed by Deloitte, its member firms of Deloitte Touche Tohmatsu Limited, and their respective affiliates (“Deloitte Entities”). Total fees paid to the Deloitte Entities are shown by category in the following table:

Type of Fees		
In thousands	<i>2019</i>	<i>2018</i>
Audit Fees ¹	\$ 25,142	\$ 26,199
Audit-Related Fees ²	4,438	6,976
Tax Fees ³	2,780	600
Total	\$ 32,360	\$ 33,775

1. The aggregate fees billed for the integrated audit of the Company's annual financial statements and internal control over financial reporting, the reviews of the financial statements in quarterly reports on Form 10-Q, comfort letters, consents, statutory audits, and other regulatory filings. For 2019, the fees include \$850,000 associated with supporting the DuPont de Nemours, Inc. SEC filings for the period prior to the separation from DowDuPont Inc.
2. The aggregate fees billed primarily for audits of carve-out financial statements, assessment of controls relating to outsourced services, audits and reviews supporting divestiture activities, and agreed-upon procedures engagements.
3. The aggregate fees billed primarily for corporate tax consulting services, the preparation of expatriate employees' tax returns and tax compliance services.

Dow Inc. and Subsidiaries
The Dow Chemical Company and Subsidiaries
PART IV

ITEM 15. EXHIBITS, FINANCIAL STATEMENT SCHEDULES

(a) The following documents are filed as part of this report:

- (1) The Company's 2019 Consolidated Financial Statements and the Report of Independent Registered Public Accounting Firm are included in Part II, Item 8. Financial Statements and Supplementary Data.
- (2) Financial Statement Schedules – The following Financial Statement Schedule should be read in conjunction with the Consolidated Financial Statements and Report of Independent Registered Public Accounting Firm included in Part II, Item 8. Financial Statements and Supplementary Data:

Schedule II Valuation and Qualifying Accounts

Schedules other than the one listed above are omitted due to the absence of conditions under which they are required or because the information called for is included in the Consolidated Financial Statements or the Notes to the Consolidated Financial Statements.

- (3) The following exhibits are filed with or incorporated by reference into this Annual Report on Form 10-K:

<i>Exhibit No.</i>	<i>Description of Exhibit</i>
--------------------	-------------------------------

- | | |
|-------|---|
| 2.1 | Separation and Distribution Agreement, effective as of April 1, 2019, by and among Dow Inc., DuPont de Nemours, Inc. (formerly known as DowDuPont Inc.), and Corteva, Inc. (incorporated by reference to Exhibit 2.1 to Dow Inc.'s Current Report on Form 8-K filed with the SEC on April 2, 2019). |
| 2.2 | Shareholders' Agreement, dated as of October 8, 2011, between Dow Saudi Arabia Holding B.V. and Performance Chemicals Holding Company (incorporated by reference to Exhibit 99.1 to The Dow Chemical Company's Current Report on Form 8-K/A filed with the SEC on June 27, 2012). |
| 2.2.1 | First Amendment, effective June 1, 2012, to the Shareholders' Agreement, dated as of October 8, 2011, between Performance Chemicals Holding Company, Dow Saudi Arabia Holding B.V., Saudi Arabian Oil Company, Dow Europe Holding B.V. and The Dow Chemical Company (incorporated by reference to Exhibit 99.1 to The Dow Chemical Company's Current Report on Form 8-K filed with the SEC on February 14, 2013). |
| 2.3 | Transaction Agreement, dated as of December 10, 2015, among The Dow Chemical Company, Corning Incorporated, Dow Corning Corporation and HS Upstate Inc. (incorporated by reference to Exhibit 2.1 to The Dow Chemical Company's Current Report on Form 8-K filed with the SEC on December 11, 2015). |
| 2.3.1 | Tax Matters Agreement, dated as of December 10, 2015, among The Dow Chemical Company, Corning Incorporated, Dow Corning Corporation and HS Upstate Inc. (incorporated by reference to Exhibit 2.2 to The Dow Chemical Company's Current Report on Form 8-K filed with the SEC on December 11, 2015). |
| 3.1 | Amended and Restated Certificate of Incorporation of Dow Inc. (incorporated by reference to Exhibit 3.1 to Dow Inc.'s Current Report on Form 8-K filed with the SEC on April 2, 2019). |
| 3.2 | Amended and Restated Bylaws of Dow Inc. (incorporated by reference to Exhibit 3.2 to Dow Inc.'s Current Report on Form 8-K filed with the SEC on April 2, 2019). |
| 3.3 | Amended and Restated Certificate of Incorporation of The Dow Chemical Company (incorporated by reference to Exhibit 3.1 to The Dow Chemical Company's Current Report on Form 8-K filed with the SEC on September 1, 2017). |
| 3.4 | Amended and Restated Bylaws of The Dow Chemical Company (incorporated by reference to Exhibit 3.2 to The Dow Chemical Company's Current Report on Form 8-K filed with the SEC on September 1, 2017). |

- 4.1 Indenture, dated as of April 1, 1992 (the "1992 Indenture"), between The Dow Chemical Company and the First National Bank of Chicago, as trustee (incorporated by reference to Exhibit 4.1 to The Dow Chemical Company's Registration Statement on Form S-3, File No. 333-88617, filed with the SEC on October 8, 1999 (the "S-3 Registration Statement")).
- 4.1.1 Supplemental Indenture, dated as of January 1, 1994, between The Dow Chemical Company and The First National Bank of Chicago, as trustee, to the 1992 Indenture (incorporated by reference to Exhibit 4.2 to the S-3 Registration Statement).
- 4.1.2 Second Supplemental Indenture, dated as of October 1, 1999, between The Dow Chemical Company and Bank One Trust Company, N.A. (formerly The First National Bank of Chicago), as trustee, to the 1992 Indenture (incorporated by reference to Exhibit 4.3 to the S-3 Registration Statement).
- 4.1.3 Third Supplemental Indenture, dated as of May 15, 2001, between The Dow Chemical Company and Bank One Trust Company, N.A. (formerly The First National Bank of Chicago), as trustee, to the 1992 Indenture (incorporated by reference to Exhibit 4.4 to The Dow Chemical Company's Registration Statement on Form S-4, File No. 333-67368 filed with the SEC on August 13, 2001).
- 4.2 Indenture, dated May 1, 2008 (the "2008 Indenture"), between The Dow Chemical Company and The Bank of New York Trust Company, N.A., as trustee, (incorporated by reference to Exhibit 4.1 to Post-Effective Amendment No. 1 to The Dow Chemical Company's Registration Statement on Form S-3, File No. 333-140859, filed with the SEC on May 6, 2008).
- 4.2.1 First Supplemental Indenture, dated November 30, 2018, between The Dow Chemical Company, Dow Inc. (formerly known as Dow Holdings Inc.), and The Bank of New York Mellon Trust Company, N.A., as trustee, to the 2008 Indenture (incorporated by reference to Exhibit 4.1 to The Dow Chemical Company's Current Report on Form 8-K filed with the SEC on December 3, 2018).
- 4.2.2 Second Supplemental Indenture, dated May 20, 2019, between The Dow Chemical Company, Dow Inc. and The Bank of New York Mellon Trust Company, N.A., as trustee, to the 2008 Indenture (incorporated by reference to Exhibit 4.1 to The Dow Chemical Company's Current Report on Form 8-K filed with the SEC on May 20, 2019).
- 4.3* Indenture, dated July 26, 2019 (the "2019 Indenture"), between The Dow Chemical Company and The Bank of New York Trust Company, N.A., as trustee.
- 4.4 Dow Inc. agrees to provide the SEC, on request, copies of all other such indentures and instruments that define the rights of holders of long-term debt of Dow Inc. and its consolidated subsidiaries, including The Dow Chemical Company, pursuant to Item 601(b)(4)(iii)(A) of Regulation S-K.
- 4.5* Description of Securities registered under Section 12 of the Securities Exchange Act of 1934.
- 10.1 Tax Matters Agreement, effective as of April 1, 2019, by and among Dow Inc., DuPont de Nemours, Inc. (formerly known as DowDuPont Inc.), and Corteva Inc. (incorporated by reference to Exhibit 10.1 to Dow Inc.'s Current Report on Form 8-K filed with the SEC on April 2, 2019).
- 10.2 Employee Matters Agreement, effective as of April 1, 2019, by and among Dow Inc., DuPont de Nemours, Inc. (formerly known as DowDupont Inc.), and Corteva, Inc. (incorporated by reference to Exhibit 10.2 to Dow Inc.'s Current Report on Form 8-K filed with the SEC on April 2, 2019).
- 10.3 Intellectual Property Cross-License Agreement, effective as of April 1, 2019, by and among Dow Inc. and DuPont de Nemours, Inc. (formerly known as DowDuPont Inc.) (incorporated by reference to Exhibit 10.3 to Dow Inc.'s Current Report on Form 8-K filed with the SEC on April 2, 2019).
- 10.4 Intellectual Property Cross-License Agreement, dated as of April 1, 2019, by and among Dow Inc. and Corteva, Inc. (incorporated by reference to Exhibit 10.4 to Dow Inc.'s Current Report on Form 8-K filed with the SEC on April 2, 2019).
- 10.5 Dow Inc. 2019 Stock Incentive Plan effective as of April 1, 2019 (incorporated by reference to Exhibit 4.4 to Dow Inc.'s Registration Statement on Form S-3 filed with the SEC on April 1, 2019).

- 10.5.1 Form of Performance Stock Unit Award Agreement under the Dow Inc. 2019 Stock Incentive Plan effective as of April 1, 2019 (incorporated by reference to Exhibit 4.4.1 to Dow Inc.'s Registration Statement on Form S-3 filed with the SEC on April 1, 2019).
- 10.5.2 Form of Restricted Stock Award Agreement under the Dow Inc. 2019 Stock Incentive Plan effective as of April 1, 2019 (incorporated by reference to Exhibit 4.4.2 to Dow Inc.'s Registration Statement on Form S-3 filed with the SEC on April 1, 2019).
- 10.5.3 Form of Restricted Stock Unit Award Agreement under the Dow Inc. 2019 Stock Incentive Plan effective as of April 1, 2019 (incorporated by reference to Exhibit 4.4.3 to Dow Inc.'s Registration Statement on Form S-3 filed with the SEC on April 1, 2019).
- 10.5.4 Form of Stock Appreciation Right Award Agreement under the Dow Inc. 2019 Stock Incentive Plan effective as of April 1, 2019 (incorporated by reference to Exhibit 4.4.4 to Dow Inc.'s Registration Statement on Form S-3 filed with the SEC on April 1, 2019).
- 10.5.5 Form of Stock Option Award Agreement under the Dow Inc. 2019 Stock Incentive Plan effective as of April 1, 2019 (incorporated by reference to Exhibit 4.4.5 to Dow Inc.'s Registration Statement on Form S-3 filed with the SEC on April 1, 2019).
- 10.5.6 Form of Restricted Stock Unit Award Agreement (Director) under the Dow Inc. 2019 Stock Incentive Plan effective as of April 1, 2019 (incorporated by reference to Exhibit 4.4.6 to Dow Inc.'s Registration Statement on Form S-3 filed with the SEC on April 1, 2019).
- 10.6 The Dow Chemical Company Executives' Supplemental Retirement Plan - Restricted and Cadre Benefits, as restated and effective September 1, 2017 (incorporated by reference to Exhibit 10(a)(iv) to The Dow Chemical Company's Current Report on Form 8-K filed with the SEC on November 3, 2017).
- 10.6.1 An Amendment to The Dow Chemical Company Executives' Supplemental Retirement Plan - Restricted and Cadre Benefits, effective January 1, 2018 (incorporated by reference to Exhibit 10.1.2 to The Dow Chemical Company's Annual Report on Form 10-K for the year ended December 31, 2018).
- 10.7 The Dow Chemical Company Executives' Supplemental Retirement Plan - Supplemental Benefits, as restated and effective September 1, 2017 (incorporated by reference to Exhibit 10(a)(v) to The Dow Chemical Company's Current Report on Form 8-K filed with the SEC on November 3, 2017).
- 10.8 The Dow Chemical Company Elective Deferral Plan (Pre-2005), restated and effective as of April 1, 2019 (incorporated by reference to Exhibit 10.8 to Dow Inc. and The Dow Chemical Company's Quarterly Report on Form 10-Q filed with the SEC on May 3, 2019).
- 10.9 The Dow Chemical Company Elective Deferral Plan (Post 2004), restated and effective as of April 1, 2019 (incorporated by reference to Exhibit 4.1 to The Dow Chemical Company's Registration Statement on Form S-8 POS filed with the SEC on April 1, 2019).
- 10.10 Dow Inc. Voluntary Deferred Compensation Plan for Non-Employee Directors, restated and effective as of April 1, 2019 (incorporated by reference to Exhibit 10.10 to Dow Inc. and The Dow Chemical Company's Quarterly Report on Form 10-Q filed with the SEC on May 3, 2019).
- 10.11 Employment agreement dated February 14, 2006, between Heinz Haller and The Dow Chemical Company, incorporated by reference to Exhibit 10(ii) to The Dow Chemical Company Annual Report on Form 10-K for the year ended December 31, 2008.
- 21* Subsidiaries of Dow Inc.
- 23.1.1* Consent of Independent Registered Public Accounting Firm for Dow Inc.
- 23.1.2* Consent of Independent Registered Public Accounting Firm for The Dow Chemical Company.
- 23.2* Ankura Consulting Group, LLC's Consent.
- 31.1* Certification Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
- 31.2* Certification Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.

32.1*	Certification Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
32.2*	Certification Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
99.1	Guarantee relating to the 9.80% Debentures of Rohm and Haas Company (incorporated by reference to Exhibit 99.6 to The Dow Chemical Company's Current Report on Form 8-K filed with the SEC on April 1, 2009).
101.INS	The instance document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document.
101.SCH	Inline XBRL Taxonomy Extension Schema Document.
101.CAL	Inline XBRL Taxonomy Extension Calculation Linkbase Document.
101.DEF	Inline XBRL Taxonomy Extension Definition Linkbase Document.
101.LAB	Inline XBRL Taxonomy Extension Label Linkbase Document.
101.PRE	Inline XBRL Taxonomy Extension Presentation Linkbase Document.
104	Cover Page Interactive Data File. The cover page interactive data file does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document.

*Filed herewith

A copy of any exhibit can be obtained via the Internet through the Investor Relations section of the Company's website (www.dow.com/investors), or the Company will provide a copy of any exhibit upon receipt of a written request for the particular exhibit or exhibits desired. All requests should be addressed to the Controller and Vice President of Controllers and Tax of the Company at the address of the Company's principal executive offices. The referenced website and its content are not deemed incorporated by reference into this report.

ITEM 16. FORM 10-K SUMMARY

Not applicable.

Dow Inc. and Subsidiaries
The Dow Chemical Company and Subsidiaries
Valuation and Qualifying Accounts

Schedule II

(In millions) For the years ended Dec 31,	2019	2018	2017
Accounts Receivable - Allowance for Doubtful Receivables			
Balance at beginning of year	\$ 42	\$ 59	\$ 51
Additions charged to expenses ¹	24	10	23
Additions charged to other accounts ²	—	4	2
Deductions from reserves ³	(21)	(31)	(17)
Balance at end of year	\$ 45	\$ 42	\$ 59
Inventory - Obsolescence Reserve			
Balance at beginning of year	\$ 23	\$ 18	\$ 34
Additions charged to expenses	19	7	5
Deductions from reserves ⁴	(7)	(2)	(21)
Balance at end of year	\$ 35	\$ 23	\$ 18
Reserves for Other Investments and Noncurrent Receivables			
Balance at beginning of year	\$ 460	\$ 430	\$ 350
Additions charged to expenses ¹	1,758	44	83
Deductions from reserves	(3)	(14)	(3)
Balance at end of year	\$ 2,215	\$ 460	\$ 430
Deferred Tax Assets - Valuation Allowance			
Balance at beginning of year	\$ 1,225	\$ 1,255	\$ 936
Additions charged to expenses	140	152	369
Deductions from reserves	(103)	(182)	(50)
Balance at end of year	\$ 1,262	\$ 1,225	\$ 1,255

1. In 2019, additions charged to expenses for "Accounts Receivable - Allowance for Doubtful Receivables" included \$2 million and additions charged to expenses for "Reserves for Other Investments and Noncurrent Receivables" included \$1,753 million related to the Company's investment in Sadara Chemical Company. See Note 13 to the Consolidated Financial Statements for additional information.
2. Additions to allowance for doubtful accounts charged to other accounts were classified as "Accounts and notes receivable - Other" in the consolidated balance sheets. These reserves relate to the Company's sale of trade accounts receivable. Anticipated credit losses in the portfolio of receivables sold were used to fair value the Company's interests held in trade accounts receivable conduits. See Notes 15 and 24 to the Consolidated Financial Statements for additional information.
3. Deductions included write-offs, recoveries, currency translation adjustments and other miscellaneous items.
4. Deductions included disposals and currency translation adjustments.

Dow Inc. and Subsidiaries
The Dow Chemical Company and Subsidiaries
Signatures

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

DOW INC.
THE DOW CHEMICAL COMPANY

/s/ RONALD C. EDMONDS

Ronald C. Edmonds, Controller and Vice
President of Controllers and Tax
February 7, 2020

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the registrant and in the capacities and on the dates indicated.

/s/ SAMUEL R. ALLEN

Samuel R. Allen, Director, Dow Inc.

February 7, 2020

/s/ JEFF M. FETTIG

Jeff M. Fettig, Non-Executive Chairman, Dow Inc.

February 7, 2020

/s/ AJAY BANGA

Ajay Banga, Director, Dow Inc.

February 7, 2020

/s/ JIM FITTERLING

Jim Fitterling, Director and Chief Executive
Officer, Dow Inc. and TDCC

February 7, 2020

/s/ JACQUELINE K. BARTON

Jacqueline K. Barton, Director, Dow Inc.

February 7, 2020

/s/ JACQUELINE C. HINMAN

Jacqueline C. Hinman, Director, Dow Inc.

February 7, 2020

/s/ JAMES A. BELL

James A. Bell, Director, Dow Inc.

February 7, 2020

/s/ RUTH G. SHAW

Ruth G. Shaw, Director, Dow Inc.

February 7, 2020

/s/ WESLEY G. BUSH

Wesley G. Bush, Director, Dow Inc.

February 7, 2020

/s/ HOWARD UNGERLEIDER

Howard Ungerleider, President and Chief Financial
Officer, Dow Inc. and TDCC; Director, TDCC

February 7, 2020

/s/ RICHARD K. DAVIS

Richard K. Davis, Director, Dow Inc.

February 7, 2020

/s/ DANIEL W. YOHANNES

Daniel W. Yohannes, Director, Dow Inc.

February 7, 2020

/s/ RONALD C. EDMONDS

Ronald C. Edmonds, Controller and Vice President
of Controllers and Tax

February 7, 2020

Dow Inc. and Subsidiaries
The Dow Chemical Company and Subsidiaries
Trademark Listing

The following trademarks or service marks of The Dow Chemical Company and certain affiliated companies of Dow appear in this report: ACOUSTICRYL, ACRY SOL, AFFINITY, AQUASET, AVANSE, CARBOWAX, DOW, DOWSIL, ECOFAST, ELITE, ENGAGE, EVOLV3D, EVOQUE, FORMASHIELD, IMAGIN3D, MAINCOTE, NORDEL, OPULUX, PRIMAL, RENUVA, RHOPLEX, SENTRY, SILASTIC, SYL-OFF, TAMOL, TERGITOL, TRITON, UCAR, UCARTHERM, UCON, VERSENE, VORARAD, WALOCEL

The following registered trademark of Disability:IN appears in this report: Disability Equality Index®

The following registered trademark of Incapital Holdings appears in this report: InterNotes®

The following registered service mark of American Chemistry Council in the United States appears in this report:
Responsible Care®

The following trademarks of E.I. du Pont de Nemours and Company or an affiliated company of DuPont appear in this report:
GREAT STUFF™, SMART DISPENSER™

Selected Exhibits Follow

Dow Inc. and Subsidiaries
The Dow Chemical Company and Subsidiaries

EXHIBIT 31.1

Certification Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002

I, Jim Fitterling, certify that:

1. I have reviewed this Annual Report on Form 10-K of Dow Inc. and The Dow Chemical Company;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrants as of, and for, the periods presented in this report;
4. The registrants' other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrants and have:
 - a) designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrants, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - b) designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - c) evaluated the effectiveness of the registrants' disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - d) disclosed in this report any change in the registrants' internal control over financial reporting that occurred during the registrants' most recent fiscal quarter (the registrants' fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrants' internal control over financial reporting; and
5. The registrants' other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrants' auditors and the audit committee of registrants' board of directors (or persons performing the equivalent function):
 - a) all significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrants' ability to record, process, summarize and report financial information; and
 - b) any fraud, whether or not material, that involves management or other employees who have a significant role in the registrants' internal control over financial reporting.

/s/ JIM FITTERLING

Jim Fitterling
Chief Executive Officer
February 7, 2020

Certification Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002

I, Howard Ungerleider, certify that:

1. I have reviewed this Annual Report on Form 10-K of Dow Inc. and The Dow Chemical Company;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrants as of, and for, the periods presented in this report;
4. The registrants' other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrants and have:
 - a) designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrants, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - b) designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - c) evaluated the effectiveness of the registrants' disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - d) disclosed in this report any change in the registrants' internal control over financial reporting that occurred during the registrants' most recent fiscal quarter (the registrants' fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrants' internal control over financial reporting; and
5. The registrants' other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrants' auditors and the audit committee of registrants' board of directors (or persons performing the equivalent function):
 - a) all significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrants' ability to record, process, summarize and report financial information; and
 - b) any fraud, whether or not material, that involves management or other employees who have a significant role in the registrants' internal control over financial reporting.

/s/ HOWARD UNGERLEIDER

Howard Ungerleider
President and Chief Financial Officer
February 7, 2020

Certification Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002

I, Jim Fitterling, Chief Executive Officer of Dow Inc. and The Dow Chemical Company (the “Companies”), certify that:

1. the Annual Report on Form 10-K of the Companies for the year ended December 31, 2019 as filed with the Securities and Exchange Commission (the “Report”) fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and
2. the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Companies.

/s/ JIM FITTERLING

Jim Fitterling
Chief Executive Officer
February 7, 2020

Certification Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002

I, Howard Ungerleider, President and Chief Financial Officer of Dow Inc. and The Dow Chemical Company (the “Companies”), certify that:

1. the Annual Report on Form 10-K of the Companies for the year ended December 31, 2019 as filed with the Securities and Exchange Commission (the “Report”) fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and
2. the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Companies.

/s/ HOWARD UNGERLEIDER

Howard Ungerleider
President and Chief Financial Officer
February 7, 2020

Appendix

In order to provide the most meaningful comparison of financial information, supplemental unaudited pro forma financial information has been included in this document. The unaudited pro forma financial information is based on the consolidated financial statements of TDCC, adjusted to give effect to the separation from DowDuPont as if it had been consummated on January 1, 2017. For the years ended December 31, 2019, and 2018, pro forma adjustments have been made for (1) the margin impact of various manufacturing, supply and service related agreements entered into with DuPont and Corteva in connection with the separation, which provide for different pricing than the historical intercompany and intracompany pricing practices of TDCC and Historical DuPont, (2) the removal of the amortization of inventory step-up recognized in connection with the Merger from the receipt of DuPont's ethylene and ethylene copolymers businesses (other than its ethylene acrylic elastomers business) ("ECP"), and (3) the elimination of the impact of events directly attributable to the Merger, internal reorganization and business realignment, separation, distribution and other related transactions (e.g., one-time transaction costs).

The unaudited pro forma financial information has been presented for informational purposes only and is not necessarily indicative of what Dow's results of operations actually would have been had the separation from DowDuPont been completed as of January 1, 2017, nor is it indicative of the future operating results of Dow. The unaudited pro forma information does not reflect restructuring or integration activities or other costs following the separation from DowDuPont that have been incurred to achieve cost or growth synergies of Dow. For further information on the unaudited pro forma financial information, please refer to the Dow Inc. Pro forma consolidated statements of income are included in this appendix as well as the Company's Current Report on Form 8-K dated June 3, 2019.

Pro forma adjusted measures of income are non-GAAP measures. The Company's management believes these measures provide useful information to investors by offering an additional way of viewing the Company's results that helps investors identify the underlying earnings of the Company as compared to prior and future periods and its peers. Pro forma adjusted measures are financial measures not recognized in accordance with U.S. GAAP and should not be viewed as an alternative to U.S. GAAP financial measures of performance.

Significant Items Impacting Results¹

In millions, except per share amounts (Unaudited)	Pretax Impact ²			Net Income ³			EPS - Diluted ⁴		
TWELVE MONTHS ENDED DECEMBER 31	2019	2018	2017	2019	2018	2017	2019	2018	2017
Pro forma results	\$(1,180)	\$3,931	\$1,356	\$(1,739)	\$2,982	\$(672)	\$(2.35)	\$3.99	\$(0.91)
Less: Significant items									
Integration and separation costs	(1,013)	(1,074)	(716)	(824)	(946)	(495)	(1.11)	(1.27)	(0.66)
Restructuring, goodwill impairment and asset related charges – net ⁵	(3,219)	(198)	(2,742)	(3,160)	(162)	(2,566)	(4.26)	(0.22)	(3.44)
Gain (loss) on divestitures	(49)	20	7	(47)	15	5	(0.06)	0.02	–
Loss on early extinguishment of debt	(102)	(54)	–	(83)	(42)	–	(0.11)	(0.06)	–
Litigation related charges, awards and adjustments ⁶	205	–	137	178	–	90	0.24	–	0.12
Environmental charges ⁷	(399)	–	–	(311)	–	–	(0.42)	–	–
Indemnification and other transaction related costs ⁸	(144)	–	(58)	(257)	–	(37)	(0.34)	–	(0.05)
Warranty accrual adjustment of exited business	39	–	–	30	–	–	0.04	–	–
Impact of Dow Silicones ownership restructure ⁹	–	(20)	–	–	(18)	–	–	(0.02)	–
Income tax related items ¹⁰	–	–	–	101	125	(1,182)	0.14	0.17	(1.57)
Total significant items	\$(4,682)	\$(1,326)	\$(3,372)	\$(4,373)	\$(1,028)	\$(4,185)	\$(5.88)	\$(1.38)	\$(5.60)
Operating pro forma results (non-GAAP)	\$3,502	\$5,257	\$4,728	\$2,634	\$4,010	\$3,513	\$3.53	\$5.37	\$4.69

- (1) See Note 27 to the Consolidated Financial Statements contained in the Company's 2019 Annual Report on Form 10-K for additional information related to significant items impacting results.
- (2) Pro forma "Income (loss) from continuing operations before income taxes."
- (3) Pro forma "Net income (loss) available for Dow Inc. common stockholders." The income tax effect on significant items was calculated based upon the enacted tax laws and statutory income tax rates applicable in the tax jurisdiction(s) of the underlying non-GAAP adjustment.
- (4) Pro forma "Earnings (loss) per common share from continuing operations – diluted."
- (5) The 2019 impact primarily related to a \$1,755 million pretax charge associated with Sadara (including an other-than-temporary impairment of the Company's equity method investment in Sadara and the reserve of loan and accounts receivable balances associated with Sadara) and a \$1,039 million pretax impairment charge related to goodwill associated with the Coatings & Performance Monomers reporting unit. The 2017 impact primarily relates to board approved restructuring plans, a \$1,491 million pretax impairment charge related to goodwill associated with the Coatings & Performance Monomers reporting unit, and asset-related charges, which includes other asset impairments.
- (6) In 2018, impact related to a gain associated with a legal judgment with Nova Chemicals Corp., as well as a gain related to an adjustment of the Dow Silicones breast implant liability and a charge related to the settlement of the Dow Silicones commercial creditor matters. In 2017, impact related to a gain associated with a patent infringement matter with Nova Chemicals Corp.
- (7) Related to environmental remediation, primarily resulting from the culmination of long-standing negotiations with regulators and/or agencies and review of additional costs to manage ongoing remediation activities resulting from Dow's separation from DowDuPont and related agreements with Corteva and DuPont.
- (8) The 2019 impact primarily related to charges associated with agreements entered into with DuPont and Corteva as part of the separation and distribution which, among other matters, provides for cross-indemnities and allocations of obligations and liabilities for periods prior to, at and after the completion of the separation. The 2017 impact related to implementation costs associated with the Company's restructuring programs and other productivity actions.
- (9) Post-closing adjustments related to the Dow Silicones ownership restructure.
- (10) Primarily related to effects of Swiss tax reform (2019) and the effects of U.S. tax reform (2018 and 2017).

Reconciliation of “Income (loss) from continuing operations, net of tax” to “Pro forma operating EBITDA”

In millions (Unaudited)			
TWELVE MONTHS ENDED DECEMBER 31	2019	2018	2017
Income (loss) from continuing operations, net of tax	\$(1,717)	\$2,940	\$(1,287)
+ Provision for income taxes on continuing operations	470	809	1,524
Income (loss) from continuing operations before income taxes	\$(1,247)	\$3,749	\$237
- Interest income	81	82	66
+ Interest expense and amortization of debt discount	933	1,063	914
+ Pro forma adjustments ¹	65	180	1,120
- Significant items	(4,682)	(1,326)	(3,372)
Pro forma operating EBIT	\$4,352	\$6,236	\$5,577
+ Depreciation and amortization	2,938	2,909	2,684
Pro forma operating EBITDA	\$7,290	\$9,145	\$8,261

(1) Pro forma adjustments pertain to the three months ended March 31, 2019, and the twelve months ended December 31, 2018 and 2017. For information on pro forma adjustments, please refer to the Company’s Current Report on Form 8-K dated June 3, 2019.

Pro forma operating EBIT and EBITDA margin calculation

In millions (Unaudited)		
TWELVE MONTHS ENDED DECEMBER 31	2019	2018
Pro forma net sales	\$42,998	\$49,852
Pro forma operating EBIT	\$4,352	\$6,236
Pro forma operating EBIT margin	10.1%	12.5%
Pro forma operating EBITDA	\$7,290	\$9,145
Pro forma operating EBITDA margin	17.0%	18.3%

Reconciliation of “Cash providing by operating activities – continuing operations” to “Cash flow from operating activities – continuing operations, excluding impact of ASU 2016-15,” “Free cash flow” and “Operating EBITDA to cash flow from operations”

In millions (Unaudited)			
TWELVE MONTHS ENDED DECEMBER 31	2019	2018	2017
Cash provided by operating activities – continuing operations (GAAP)	\$5,713	\$3,096	\$(6,443)
Impact of ASU 2016-15 and related interpretive guidance	–	657	9,462
Cash flows from operating activities – continuing operations – excluding impact of ASU 2016-15 (Non-GAAP)	\$5,713	\$3,753	\$3,019
Capital expenditures	(1,961)	(2,091)	(2,807)
Free cash flow (FCF) (Non-GAAP)	\$3,752	\$1,662	\$212
Pro forma operating EBITDA	\$7,290	\$9,145	\$8,261
Pro forma operating EBITDA to cash flow from operations (“cash flow conversion”) ¹	78.4%	41.0%	36.55%

(1) Cash flow conversion is defined as cash flow from operating activities – continuing operations, excluding the impact of ASU 2016-15 divided by pro forma operating EBITDA. Pro forma operating EBITDA is defined as pro forma earnings (i.e., “Pro forma income from continuing operations before income taxes”) before interest, depreciation and amortization, excluding the impact of significant items.

Reconciliation of “Earnings (loss) per common share from continuing operations – diluted” to “Pro forma operating earnings per share – diluted”

In millions (Unaudited)		
TWELVE MONTHS ENDED DECEMBER 31	2019	2018
Earnings (loss) per common share from continuing operations – diluted (GAAP)	\$(2.42)	\$3.80
Plus: Pro forma adjustments (net of tax) ¹	0.07	0.19
Less: Significant Items	(5.88)	(1.38)
Pro forma operating earnings per share – diluted	\$3.53	\$5.37

(1) Pro forma adjustments pertain to the three months ended March 31, 2019, and the twelve months ended December 31, 2018. For information on pro forma adjustments, please refer to the Company’s Current Report on Form 8-K dated June 3, 2019.

Dow Inc. pro forma consolidated statements of income

In millions, except per share amounts; for the years ended Dec. 31 (Unaudited)	Twelve Months Ended		
	2019	2018	2017
Net sales	\$42,998	\$49,852	\$44,772
Cost of sales	36,689	41,270	36,713
Research and development expenses	765	798	818
Selling, general and administrative expenses	1,590	1,781	1,833
Amortization of intangibles	419	469	465
Restructuring, goodwill impairment and asset related charges – net	3,219	198	2,742
Integration and separation costs	1,013	1,074	716
Equity in earnings (losses) of nonconsolidated affiliates	(94)	555	398
Sundry income (expense) – net	461	93	322
Interest income	82	83	66
Interest expense and amortization of debt discount	932	1,062	915
Income (loss) from continuing operations before income taxes	(1,180)	3,931	1,356
Provision for income taxes on continuing operations	485	847	1,927
Income (loss) from continuing operations, net of tax	(1,665)	3,084	(571)
Net income attributable to noncontrolling interests	74	102	101
Net income (loss) from continuing operations available for Dow Inc. common stockholders	\$(1,739)	\$2,982	\$(672)

Per common share data:			
Earnings (loss) per common share from continuing operations – basic	\$(2.35)	\$3.99	\$(0.91)
Earnings (loss) per common share from continuing operations – diluted	\$(2.35)	\$3.99	\$(0.91)

Weighted-average common shares outstanding – basic	742.5	747.2	744.8
Weighted-average common shares outstanding – diluted	742.5	747.2	744.8

Definitions

Non-GAAP Financial Measures

This document includes financial information that does not conform to U.S. GAAP and is considered non-GAAP measures. These measures include the Company's pro forma consolidated results and pro forma earnings per share on an adjusted basis. Management uses these measures internally for planning, forecasting and evaluating the performance of the Company's segments, including allocating resources. Dow's management believes that these non-GAAP measures best reflect the ongoing performance of the Company during the periods presented and provide more relevant and meaningful information to investors as they provide insight with respect to ongoing operating results of the Company and a more useful comparison of year-over-year results. These non-GAAP measures supplement the Company's U.S. GAAP disclosures and should not be viewed as alternatives to U.S. GAAP measures of performance. Furthermore, such non-GAAP measures may not be consistent with similar measures provided or used by other companies. Non-GAAP measures included in this release are defined below.

Cash flow conversion is defined as "Cash flows from operating activities – continuing operations, excluding the impact of ASU 2016-15" divided by pro forma operating EBITDA.

Cash flows from operating activities – continuing operations, excluding the impact of ASU 2016-15, is defined as "Cash provided by (used in) operating activities – continuing operations," excluding the impact of ASU 2016-15 "Statement of Cash Flows (Topic 230): Classification of Certain Cash Receipts and Cash Payments" ("ASU 2016-15"), and related interpretive guidance. Management believes this non-GAAP financial measure is relevant and meaningful as it presents cash flows from operating activities inclusive of all trade accounts receivable collection activity, which Dow utilizes in support of its operating activities.

Free cash flow is defined as "Cash Flow from Operating Activities – Continuing Operations," excluding the impact of ASU 2016-15, less capital expenditures. Under this definition, free cash flow represents the cash generated by the Company from operations after investing in its asset base. Free cash flow, combined with cash balances and other sources of liquidity, represent the cash available to fund obligations and provide returns to shareholders. Free cash flow is an integral financial measure used in the Company's financial planning process.

Operating earnings per share is defined as "Earnings per common share from continuing operations – diluted" excluding the after-tax impact of significant items.

Operating EBIT is defined as earnings (i.e., "Income from continuing operations before income taxes") before interest, excluding the impact of significant items.

Operating EBIT margin is defined as Operating EBIT as a percentage of net sales.

Operating EBITDA is defined as earnings (i.e., "Income from continuing operations before income taxes") before interest, depreciation and amortization, excluding the impact of significant items.

Pro forma operating earnings per share is defined as "Pro Forma earnings per common share from continuing operations – diluted" excluding the after-tax impact of significant items.

Pro forma operating EBIT is defined as pro forma earnings (i.e., "Pro Forma income from continuing operations before income taxes") before interest, excluding the impact of significant items.

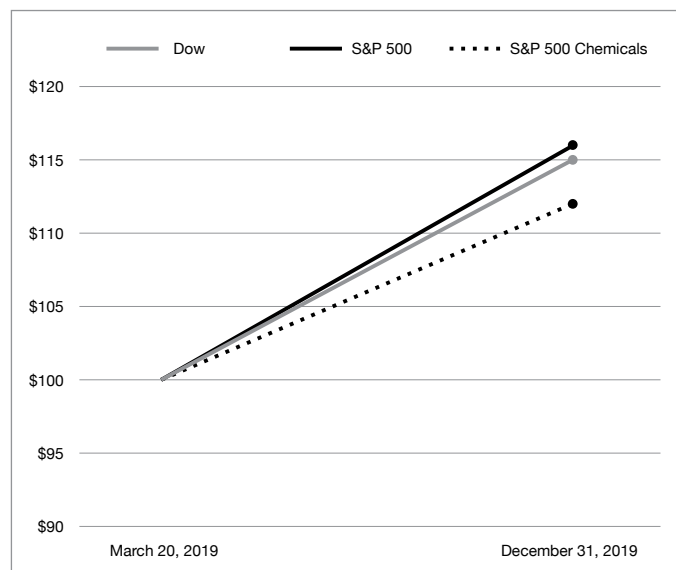
Pro forma Operating EBIT margin is defined as pro forma Operating EBIT as a percentage of pro forma net sales.

Pro forma operating EBITDA is defined as pro forma earnings (i.e., "Pro Forma income from continuing operations before income taxes") before interest, depreciation and amortization, excluding the impact of significant items.

Stockholder Return

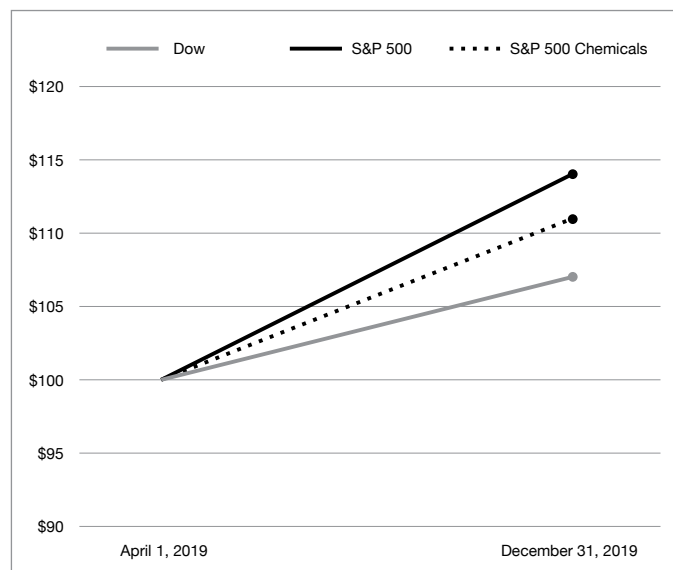
The chart below illustrates the cumulative total return to Dow stockholders following the spin of Dow Inc. from DowDuPont on April 1, 2019. It depicts a hypothetical \$100 investment in Dow common stock on April 1, 2019, and shows the value of that investment over time (assuming the reinvestment of dividends) until December 31, 2019, for Dow common stock. Hypothetical investments of \$100 in the Standard & Poor's ("S&P") 500 Stock Index and the S&P 500 Chemicals Index are shown for comparison.

March 20 – Dec. 31 Cumulative Total Return – When Issued Trading



	Dow	S&P 500	S&P 500 Chemicals
March 20, 2019	\$100	\$100	\$100
December 31, 2019	\$115	\$116	\$112

April 1 – Dec. 31 Cumulative Total Return – Regular Way Trading



	Dow	S&P 500	S&P 500 Chemicals
April 1, 2019	\$100	\$100	\$100
December 31, 2019	\$107	\$114	\$111

The form of the chart presented above is in accordance with requirements of the U.S. Securities and Exchange Commission. Stockholders are cautioned against drawing any conclusions from the data contained therein, as past results are not necessarily indicative of future performance. This does not reflect the Company's forecast of future financial performance.

Stockholder Reference

General Information

Website: corporate.dow.com
dow.com/investors

Transfer Agent and Stockholder Services

Computershare
P.O. Box 505000
Louisville, KY 40233; U.S.A.

Telephone: (800) 369 5606
(201) 680 6685 (Outside the United States & Canada)
(800) 231 5469 (Hearing Impaired – TTY Phone)

Website: www.computershare.com/investor

Investor Relations

Telephone: (800) 422 8193 (U.S. and Canada)
Email: IR@dow.com

New York Stock Exchange Listing

Symbol: DOW

For more Stockholder Information, please contact the transfer agent or visit Dow's Stockholder Information website:
<https://investors.dow.com/en/investor-resources/stockholder-information>.

Cautionary Statement about Forward-Looking Statements

This report contains "forward-looking statements" within the meaning of the federal securities laws, including Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. In this context, forward-looking statements often address expected future business and financial performance, financial condition, and other matters, and often contain words such as "anticipate," "believe," "estimate," "expect," "intend," "may," "opportunity," "outlook," "plan," "project," "seek," "should," "strategy," "target," "will," "will be," "will continue," "will likely result," "would" and similar expressions, and variations or negatives of these words.

Forward-looking statements are based on current expectations and assumptions that are subject to risks and uncertainties which may cause actual results to differ materially from the forward-looking statements. Forward-looking statements include, but are not limited to, expectations as to future sales of Dow's products; the ability to protect Dow's intellectual property in the United States and abroad; estimates regarding Dow's capital requirements and need for and availability of financing; estimates of Dow's expenses, future revenues and profitability; estimates of the size of the markets for Dow's products and services and Dow's ability to compete in such markets; expectations related to the rate and degree of market acceptance of Dow's products; the outcome of certain Dow contingencies, such as litigation and environmental matters; estimates of the success of competing technologies that may become available and expectations regarding the benefits and costs associated with each of the foregoing. Forward-looking statements by their nature address matters that are, to different degrees, uncertain. Forward-looking statements are based on certain assumptions and expectations of future events which may not be realized and speak only as of the date the statements were made. In addition, forward-looking statements also involve risks, uncertainties and other factors that are beyond Dow's control that could cause Dow's actual results to differ materially from those projected, anticipated or implied in the forward-looking statements. These factors include, but are not limited to: fluctuations in energy and raw material prices; failure to develop and market new products and optimally manage product life cycles; significant litigation and environmental matters; failure to appropriately manage process safety and product stewardship issues; changes in laws and regulations or political conditions; global economic and capital markets conditions, such as inflation, market uncertainty, interest and currency exchange rates, and equity and commodity prices; business or supply disruptions; security threats, such as acts of sabotage, terrorism or war; weather events and natural disasters; ability to protect, defend and enforce Dow's intellectual property rights; increased competition; changes in relationships with Dow's significant customers and suppliers; unanticipated expenses such as litigation or legal settlement expenses; unanticipated business disruptions; Dow's ability to predict, identify and interpret changes in consumer preferences and demand; Dow's ability to complete proposed divestitures or acquisitions; Dow's ability to realize the expected benefits of acquisitions if they are completed; the availability of financing to Dow in the future and the terms and conditions of such financing; and disruptions in Dow's information technology networks and systems. Additionally, there may be other risks and uncertainties that Dow is unable to identify at this time or that Dow does not currently expect to have a material impact on its business. Risks related to achieving the anticipated benefits of our separation from DowDuPont Inc. include, but are not limited to, a number of conditions including risks outside the control of Dow including risks related to (i) Dow's inability to achieve some or all of the benefits that it expects to receive from the separation from DowDuPont, (ii) certain tax risks associated with the separation, (iii) Dow's inability to make necessary changes to operate as a stand-alone company, (iv) the failure of Dow's pro forma financial information to be a reliable indicator of Dow's future results, (v) Dow's inability to enjoy the same benefits of diversity, leverage and market reputation that it enjoyed as a combined company, (vi) Dow's inability to receive third-party consents required under the separation agreement, (vii) Dow's customers, suppliers and others' perception of Dow's financial stability on a stand-alone basis, (viii) non-compete restrictions under the separation agreement, (ix) receipt of less favorable terms in the commercial agreements we entered into with E. I. du Pont de Nemours and Company n/k/a/ DuPont de Nemours, Inc. ("DuPont") and Corteva, Inc. ("Corteva"), including restrictions under intellectual property cross-license agreements, than Dow would have received from an unaffiliated third party; and (x) Dow's obligation to indemnify DuPont and/or Corteva for certain liabilities. Where, in any forward-looking statement, an expectation or belief as to future results or events is expressed, such expectation or belief is based on the current plans and expectations of management and expressed in good faith and believed to have a reasonable basis, but there can be no assurance that the expectation or belief will result or be achieved or accomplished. For a more detailed discussion of Dow's risks and uncertainties, see the section titled "Risk Factors" contained in Dow Inc. and TDCC's combined Quarterly Report on Form 10-Q for the quarterly period ended September 30, 2019, in the Current Report on Form 8-K of Dow Inc. and TDCC, filed with the SEC on July 25, 2019, recasting portions of the TDCC 10-K for the fiscal year ended December 31, 2018, and in this Annual Report on Form 10-K of TDCC for the fiscal year ended December 31, 2019. Dow Inc. and TDCC assume no obligation to update or revise publicly any forward-looking statements whether because of new information, future events or otherwise, except as required by securities and other applicable laws.



Dow Inc.
Midland, MI 48674 U.S.A.

Investor Relations
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