

QUAKER CHEMICAL CORP  
Form 10-K  
February 28, 2019

**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, 2018**

**or**

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

**For the transition period from** \_\_\_\_\_ **to** \_\_\_\_\_

**Commission file number 001-12019**

**QUAKER CHEMICAL CORPORATION**

**(Exact name of Registrant as specified in its charter)**

**A Pennsylvania Corporation**  
**(State or other jurisdiction of incorporation or**  
**organization)**

**No. 23-0993790**  
**(I.R.S. Employer Identification No.)**

**One Quaker Park, 901 E. Hector Street,**

**Conshohocken, Pennsylvania  
(Address of principal executive offices)**

**19428-2380  
(Zip Code)**

**Registrant's telephone number, including area code: (610) 832-4000**

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

**Title of each class  
Common Stock, \$1.00 par value**

**Name of each Exchange on which registered  
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. Yes  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. Yes  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. Yes   
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 and post such files). Yes  No

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K (§ 229.405 of this chapter) is not contained herein, and will not be contained, to the best of Registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K.

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Indicate by check mark whether the Registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company or 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.

Large accelerated filer

Accelerated filer

Non-accelerated filer

Smaller reporting company

Emerging growth company

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.

Indicate by check mark whether the Registrant is a shell company (as defined in Rule 12b-2 of the Act). Yes No

State the aggregate market value of the voting and non-voting common equity held by non-affiliates of the Registrant. (The aggregate market value is computed by reference to the last reported sale on the New York Stock Exchange on June 30, 2018): \$2,037,718,906

Indicate the number of shares outstanding of each of the Registrant’s classes of common stock as of the latest practicable date: 13,337,601 shares of Common Stock, \$1.00 Par Value, as of January 31, 2019.

**DOCUMENTS INCORPORATED BY REFERENCE**

Portions of the Registrant’s definitive Proxy Statement relating to the 2019 Annual Meeting of Shareholders are incorporated by reference into Part III.

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## PART I

As used in this Report, the terms “Quaker,” the “Company,” “we” and “our” refer to Quaker Chemical Corporation, its subsidiaries, and associated companies, unless the context otherwise requires.

### Item 1. *Business.*

#### *General Description*

Quaker develops, produces, and markets a broad range of formulated chemical specialty products and offers chemical management services (“CMS”) for various heavy industrial and manufacturing applications in a global portfolio throughout its four regions: the North America region, the Europe, Middle East and Africa (“EMEA”) region, the Asia/Pacific region and the South America region. The principal products and services in Quaker’s global portfolio include: (i) rolling lubricants (used by manufacturers of steel in the hot and cold rolling of steel and by manufacturers of aluminum in the hot rolling of aluminum); (ii) machining and grinding compounds (used by metalworking customers in cutting, shaping, and grinding metal parts which require special treatment to enable them to tolerate the manufacturing process, achieve closer tolerance, and improve tool life); (iii) corrosion preventives (used by steel and metalworking customers to protect metal during manufacture, storage, and shipment) (iv) hydraulic fluids (used by steel, metalworking, and other customers to operate hydraulic equipment); (v) specialty greases (used in automotive and aerospace production processes and applications, the manufacturing of steel, and various other applications); (vi) metal finishing compounds (used to prepare metal surfaces for special treatments such as galvanizing and tin plating and to prepare metal for further processing); (vii) forming compounds (used to facilitate the drawing and extrusion of metal products); (viii) chemical milling maskants for the aerospace industry; (ix) temporary and permanent coatings for metal and concrete products; (x) construction products such as flexible sealants and protective coatings, for various applications; (xi) bio-lubricants (that are mainly used in machinery in the forestry and construction industries); (xii) die casting lubricants; and (xiii) programs to provide CMS. The following are the respective contributions to consolidated net sales of each individual product line representing approximately 10% or more of consolidated net sales for any of the past three years:

	<b>2018</b>	<b>2017</b>	<b>2016</b>
Rolling lubricants	16.9%	17.8%	19.0%
Machining and grinding compounds	16.1%	15.8%	14.9%
Corrosion preventives	11.6%	11.4%	11.8%
Hydraulic fluids	11.4%	11.6%	12.0%
Specialty greases	9.7%	10.0%	10.1%

#### *Acquisition Activity*

In April 2017, Quaker entered into a share purchase agreement with Gulf Houghton Lubricants, Ltd. (“Gulf”) to purchase the entire issued and outstanding share capital of Houghton International, Inc. (“Houghton”) (herein referred to as “the Combination”). The shares will be bought for aggregate purchase consideration consisting of: (i) \$172.5 million in cash; (ii) a number of shares of common stock, \$1.00 par value per share, of the Company comprising 24.5% of the common stock outstanding upon the closing of the Combination; and (iii) the Company’s assumption of Houghton’s net indebtedness as of the closing of the Combination, which was approximately \$690 million at signing. At closing, the total aggregate purchase consideration is dependent on the Company’s stock price and the level of Houghton’s indebtedness.

The Company secured \$1.15 billion in commitments from Bank of America Merrill Lynch and Deutsche Bank to fund the Combination and to provide additional liquidity, and has since replaced these commitments with a syndicated bank agreement (“the New Credit Facility”) with a group of lenders for \$1.15 billion. The New Credit Facility is contingent

upon and will not be effective until the closing of the Combination. During the fourth quarter of 2018, the Company extended the bank commitment for the New Credit Facility through March 15, 2019. The New Credit Facility is comprised of a \$400.0 million multicurrency revolver, a \$600.0 million USD term loan and a \$150.0 million EUR equivalent term loan, each with a five-year term from the date the New Credit Facility becomes effective. The maximum amount available under the New Credit Facility can be increased by \$200.0 million at the Company's option if the lenders agree and the Company satisfies certain conditions. Borrowings under the New Credit Facility will bear interest at a base rate, LIBOR rate plus a margin, or Euribor rate plus a margin. The Company currently estimates the annual floating rate cost will be in the 3.75% to 4.0% range based on current market interest rates. The New Credit Facility will be subject to certain financial and other covenants, including covenants that the Company's consolidated net debt to adjusted EBITDA ratio cannot exceed 4.25 to 1 and the Company's consolidated adjusted EBITDA to interest expense ratio cannot be less than 3.0 to 1. Both the USD and EUR equivalent term loans will have quarterly principal amortization during their respective five-year terms, with 5.0% amortization of the principal balance due in years 1 and 2, 7.5% in year 3, and 10.0% in years 4 and 5, with the remaining principal amounts due at maturity. Until closing, the Company will incur certain interest costs paid to maintain the bank commitment, which began to accrue on September 29, 2017 and bear an interest rate of 0.30% per annum.

The Company received regulatory approval for the Combination from China and Australia in 2017. In addition, at a shareholder meeting held during 2017, the Company's shareholders overwhelmingly approved the issuance of the new shares of the Company's common stock at closing of the Combination. The European Commission ("EC") conditionally approved the Combination in December 2018, including the remedy proposed by Quaker and Houghton. Quaker expects final approval from the EC once the final

purchase agreement is in place between Quaker, Houghton, and the buyer of the divested product lines. Quaker continues to be in productive discussions with the U.S. Federal Trade Commission (“FTC”), although the process is taking longer than anticipated. Given the time lapse since Quaker’s initial filing, the FTC requested updated information as part of their approval process late in the fourth quarter of 2018. In addition, the government shutdown in the U.S. during the first quarter of 2019 extended the timeline to receive the final approval. The proposed remedy being discussed with the FTC continues to be consistent with Quaker’s previous guidance that the total divested product lines will be approximately 3% of the combined company’s revenue. Given current information, the Company estimates that FTC and EC final approval and closing of the combination will occur within the next few months.

### *Sales Revenue*

A substantial portion of Quaker’s sales worldwide are made directly through its own employees and its CMS programs with the balance being handled through distributors and agents. Quaker employees visit the plants of customers regularly, some work on site, and through training and experience identify production issues which can be resolved or alleviated either by reformulating Quaker’s existing products or by developing new formulations in Quaker’s laboratories. Quaker’s new business development relies heavily upon its reputation in the markets which it serves, and less on the use of advertising. Also, separate manufacturing facilities of a single customer are generally served by different personnel.

The Company recognizes revenue in an amount which reflects the consideration the Company expects to be entitled to in exchange for goods or services transferred to its customers. To do this, the Company applies a five-step model which requires the Company to: (i) identify the contract with a customer; (ii) identify the performance obligations in the contract; (iii) determine the transaction price; (iv) allocate the transaction price to the performance obligations in the contract; and (v) recognize revenue when, or as, the Company satisfies a performance obligation.

As part of the Company’s CMS, certain third-party product sales to customers are managed by the Company. Where the Company acts as principal, revenues are recognized on a gross reporting basis at the selling price negotiated with its customers. Where the Company acts as an agent, such revenue is recorded using the net reporting method and generally is at the amount of the administrative fee earned by the Company for ordering the goods. The Company transferred third-party products under arrangements resulting in net reporting of \$47.1 million, \$44.5 million and \$43.5 million for the years ended December 31, 2018, 2017 and 2016, respectively.

### *Competition*

The chemical specialty industry comprises a number of companies of similar size as well as companies larger and smaller than Quaker. Quaker cannot readily determine its precise position in every industry it serves. Based on information available to Quaker, however, the Company estimates it holds a leading global position in the market for process fluids to produce sheet steel. The Company also believes it holds significant global positions in the markets for process fluids in portions of the automotive and industrial markets. The offerings of many of our competitors differ from those of Quaker; for example, some offer a broad portfolio of fluids, including general lubricants, while others have more specialized product ranges. All competitors provide different levels of technical services to individual customers. Competition in the industry is based primarily on the ability to provide products that meet the needs of the customer and render technical services and laboratory assistance to the customer, and to a lesser extent on price.

### *Major Customers and Markets*

In 2018, Quaker’s five largest customers (each composed of multiple subsidiaries or divisions with semi-autonomous purchasing authority) accounted for approximately 17% of consolidated net sales, with its largest customer accounting

for approximately 8% of consolidated net sales. A significant portion of Quaker's revenues are realized from the sale of process fluids and services to manufacturers of steel, automobiles, aircraft, appliances, and durable goods, and, therefore, Quaker is subject to the same business cycles as those experienced by these manufacturers and their customers. Quaker's financial performance is generally correlated to the volume of global production within the industries it serves, rather than discretely related to the financial performance of such industries. Furthermore, steel customers typically have limited manufacturing locations compared to metalworking customers and generally use higher volumes of products at a single location.

*Raw Materials*

Quaker uses over 1,000 raw materials including mineral oils and derivatives, animal fats and derivatives, vegetable oils and derivatives, ethylene derivatives, solvents, surface active agents, various chemical compounds that act as additives to our base formulations ("additives") and a wide variety of other organic and inorganic compounds. The price of mineral oil and its derivatives can be affected by the price of crude oil and industry refining capacity. Animal fat and vegetable oil prices are impacted by their own unique supply and demand factors, as well as by biodiesel consumption which is also affected by the price of crude oil. In addition, other significant raw material purchases including ethylene derivatives, solvents, surface active agents and additives are also indirectly impacted by trends in mineral oil and derivatives and, therefore, crude oil trends. Accordingly, significant fluctuations in the price of crude oil could have a material impact on the cost of these raw materials. In addition, many of the raw materials used by Quaker are commodity chemicals which can experience significant price volatility. Accordingly, Quaker's earnings could be affected by market changes in raw material prices. Reference is made to the disclosure contained in Item 7A of this Report.



### *Patents and Trademarks*

Quaker has a limited number of patents and patent applications, including patents issued, applied for, or acquired in the United States and in various foreign countries, some of which may prove to be material to its business. However, Quaker relies principally on its proprietary formulae and the application of its skills and experience to meet customer needs. Quaker's products are identified by trademarks that are registered throughout its marketing area.

### *Research and Development—Laboratories*

Quaker's research and development laboratories are directed primarily toward applied research and development since the nature of Quaker's business requires continual modification and improvement of formulations to provide chemical specialties to satisfy customer requirements. Quaker maintains quality control laboratory facilities in each of its manufacturing locations. In addition, Quaker maintains laboratory facilities in Conshohocken, Pennsylvania; Santa Fe Springs, California; Batavia, New York; Aurora, Illinois; Dayton, Ohio; Uithoorn, The Netherlands; Navarra, Spain; Barcelona, Spain; Rio de Janeiro, Brazil; Qingpu, China; and Kolkata, India that, in addition to quality control, are devoted primarily to applied research and development. If problems are encountered which cannot be resolved by local laboratories, such problems are generally referred to the laboratory staff in Conshohocken, Aurora, Santa Fe Springs, Uithoorn or Qingpu.

Research and development costs are expensed as incurred. Research and development expenses during the years ended December 31, 2018, 2017 and 2016 were \$24.5 million, \$23.9 million and \$22.5 million, respectively.

### *Regulatory Matters*

In order to facilitate compliance with applicable federal, state, and local statutes and regulations relating to occupational health and safety and protection of the environment, the Company has an ongoing program of site assessment for the purpose of identifying capital expenditures or other actions that may be necessary to comply with such requirements. The program includes periodic inspections of each facility by Quaker and/or independent experts, as well as ongoing inspections and training by on-site personnel. Such inspections address operational matters, record keeping, reporting requirements and capital improvements. Capital expenditures directed solely or primarily to regulatory compliance amounted to approximately \$1.5 million, \$1.6 million and \$0.9 million during the years ended December 31, 2018, 2017 and 2016, respectively.

### *Number of Employees*

On December 31, 2018, Quaker had approximately 2,160 full-time employees globally of whom approximately 650 were employed by the parent company and its U.S. subsidiaries, and approximately 1,510 were employed by its non-U.S. subsidiaries. Associated companies of Quaker (in which it owns 50% or less and has significant influence) employed approximately 70 people on December 31, 2018.

### *Company Segmentation*

The Company's reportable operating segments reflect the structure of the Company's internal organization, the method by which the Company's resources are allocated and the manner by which the Company assesses and manages its performance. The Company's reportable operating segments are organized by geography as follows: North America, EMEA, Asia/Pacific and South America. See Note 5 of Notes to Consolidated Financial Statements, which appears in Item 8 of this Report and is incorporated herein by this reference.

### *Non-U.S. Activities*

Since significant revenues and earnings are generated by non-U.S. operations, Quaker's financial results are affected by currency fluctuations, particularly between the U.S. dollar and the euro, the Brazilian real, the Mexican peso, the Chinese renminbi and the Indian rupee, and the impact of those currency fluctuations on the underlying economies. Incorporated by reference is (i) the foreign exchange risk information contained in Item 7A of this Report, (ii) the geographic information in Note 5 of Notes to Consolidated Financial Statements included in Item 8 of this Report and (iii) information regarding risks attendant to foreign operations included in Item 1A of this Report.

*Quaker on the Internet*

Financial results, news and other information about Quaker can be accessed from the Company's website at <https://www.quakerchem.com>. This site includes important information on the Company's locations, products and services, financial reports, news releases and career opportunities. The Company's periodic and current reports on Forms 10-K, 10-Q, 8-K, and other filings, including exhibits and supplemental schedules filed therewith, and amendments to those reports, filed with the Securities and Exchange Commission ("SEC") are available on the Company's website, free of charge, as soon as reasonably practicable after they are electronically filed with or furnished to the SEC. Information contained on, or that may be accessed through, the Company's website is not incorporated by reference in this Report and, accordingly, you should not consider that information part of this Report.

*Factors that May Affect Our Future Results*

(Cautionary Statements under the Private Securities Litigation Reform Act of 1995)

Certain information included in this Report and other materials filed or to be filed by Quaker with the SEC (as well as information included in oral statements or other written statements made or to be made by us) contain or may contain forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. These statements can be identified by the fact that they do not relate strictly to historical or current facts. We have based these forward-looking statements on our current expectations about future events. These forward-looking statements include statements with respect to our beliefs, plans, objectives, goals, expectations, anticipations, intentions, financial condition, results of operations, future performance, and business, including:

- statements relating to our business strategy;
- our current and future results and plans; and
- statements that include the words “may,” “could,” “should,” “would,” “believe,” “expect,” “anticipate,” “estimate,” “plan” or similar expressions.

Such statements include information relating to current and future business activities, operational matters, capital spending, and financing sources. From time to time, forward-looking statements are also included in Quaker’s other periodic reports on Forms 10-K, 10-Q and 8-K, press releases, and other materials released to, or statements made to, the public.

Any or all of the forward-looking statements in this Report, in Quaker’s Annual Report to Shareholders for 2018 and in any other public statements we make may turn out to be wrong. This can occur as a result of inaccurate assumptions or as a consequence of known or unknown risks and uncertainties. Many factors discussed in this Report will be important in determining our future performance. Consequently, actual results may differ materially from those that might be anticipated from our forward-looking statements.

We undertake no obligation to publicly update any forward-looking statements, whether as a result of new information, future events or otherwise. However, any further disclosures made on related subjects in Quaker’s subsequent reports on Forms 10-K, 10-Q, 8-K and other related filings should be consulted. Our forward-looking statements are subject to risks, uncertainties and assumptions about us and our operations that are subject to change based on various important factors, some of which are beyond our control. A major risk is that the demand for the Company’s products and services is largely derived from the demand for our customers’ products, which subjects the Company to uncertainties related to downturns in a customer’s business and unanticipated customer production shutdowns. Other major risks and uncertainties include, but are not limited to, significant increases in raw material costs, customer financial stability, worldwide economic and political conditions, foreign currency fluctuations, significant changes in applicable tax rates and regulations, future terrorist attacks and other acts of violence, each of which is discussed in greater detail in Item 1A of this Report. Other factors could also adversely affect us, including factors related to the previously announced pending Houghton combination and the risk that the transaction may not receive regulatory approval or that regulatory approval may include conditions or other terms not acceptable to us. Furthermore, the Company is subject to the same business cycles as those experienced by steel, automobile, aircraft, appliance, and durable goods manufacturers. These risks, uncertainties, and possible inaccurate assumptions relevant to our business could cause our actual results to differ materially from expected and historical results. Other factors beyond those discussed in this Report, could also adversely affect us including, but not limited to the following related to the Combination:

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the risk that a required regulatory approval will not be obtained or is subject to conditions that are not anticipated or acceptable to us;

- the potential that regulatory authorities may require that we make divestitures in connection with the Combination of a greater amount than we anticipated, which would result in a smaller than anticipated combined business;
- the risk that a closing condition to the Combination may not be satisfied in a timely manner;
- risks associated with the financing of the Combination;
- the occurrence of any event change or other circumstance that could give rise to a material change in the share purchase agreement;
- potential adverse effects on Quaker Chemical's business, properties or operations caused by the implementation of the Combination;
- Quaker Chemical's ability to promptly, efficiently and effectively integrate the operations of Houghton and Quaker Chemical;
- risks related to each company's distraction from ongoing business operations due to the Combination; and,
- the outcome of any legal proceedings that may be instituted against the companies related to the Combination.

Therefore, we caution you not to place undue reliance on our forward-looking statements. For more information regarding these risks and uncertainties as well as certain additional risks that we face, refer to the Risk Factors section, which appears in Item 1A of this report, as well as the proxy statement the Company filed on July 31, 2017 and in our quarterly and other reports filed from time to time with the SEC. This discussion is provided as permitted by the Private Securities Litigation Reform Act of 1995.

**Item 1A. Risk Factors.**

***Changes to the industries and markets that Quaker serves could have a material adverse effect on the Company's liquidity, financial position and results of operations.***

The business environment in which the Company operates remains uncertain. The Company is subject to the same business cycles as those experienced by steel, automobile, aircraft, appliance, and durable goods manufacturers. A major risk is that demand for the Company's products and services is largely derived from the global demand for its customers' products, which subjects the Company to uncertainties related to downturns in our customers' business and unanticipated shutdowns or curtailments of our customers' production. The Company has limited ability to adjust its cost level contemporaneously with changes in sales and gross profit. Thus, a significant downturn in sales or gross profit due to reductions in global production within the industries the Company serves, and/or weak end-user markets could have a material adverse effect on the Company's liquidity, financial position, and results of operations.

***Changes in competition in the industries and markets Quaker serves could have a material adverse effect on the Company's liquidity, financial position, and results of operations.***

The specialty chemical industry comprises a number of companies of similar size as well as companies larger and smaller than Quaker. It is estimated that Quaker holds a leading and significant global position in the markets for process fluids to produce sheet steel, and significant global positions in portions of the automotive and industrial markets. These industries are highly competitive, and a number of companies with significant financial resources and/or customer relationships compete with us to provide similar products and services. Some competitors may be positioned to offer more favorable pricing and service terms, potentially resulting in reduced profitability and/or a loss of market share for us. In addition, several competitors could potentially consolidate their businesses to gain scale to better position their product offerings, which could have a negative impact on our profitability and market share. Competition in the industry has primarily been based on the ability to provide products that meet the needs of the customer and render technical services and laboratory assistance to the customer and, to a lesser extent, on price. Factors critical to the Company's business include successfully differentiating the Company's offerings from its competition, operating efficiently and profitably as a globally integrated Company, and increasing market share and customer penetration through internally developed business programs and strategic acquisitions. If the Company is unsuccessful with differentiation, it could have a material adverse effect on the Company's liquidity, financial position, and results of operations.

***Our business depends on attracting and retaining qualified management and other key personnel.***

The unanticipated departure of any key member of our management team or other key personnel could have an adverse effect on our business. Given the relative size of the Company and the breadth of its global operations, there are a limited number of qualified personnel to assume the responsibilities of our management or other key employees. In addition, because of the specialized and technical nature of our business, our future performance is dependent on our ability to attract, develop and retain qualified management, commercial, technical, and other key personnel. Competition for such personnel is intense, and we may be unable to continue to attract or retain such personnel. In an effort to mitigate such risks, the Company utilizes retention bonuses, offers competitive pay and maintains continuous succession planning, but there can be no assurance that these mitigating factors will be adequate to attract or retain qualified management or other key personnel.

***Inability to obtain sufficient price increases or contract concessions to offset increases in the costs of raw materials could result in a loss of sales, gross profit, and/or market share and could have a material adverse effect on the Company's liquidity, financial position and results of operations. Conversely, an inability to implement timely price decreases to compensate for changes in raw material costs could also result in a loss of sales, gross profit,***

*and/or market share and could have a material adverse effect on the Company's liquidity, financial position and results of operations.*

Quaker uses over 1,000 raw materials, including mineral oils and derivatives, animal fats and derivatives, vegetable oils and derivatives, ethylene derivatives, solvents, surface active agents, various chemical compounds that act as additives to our base formulations and a wide variety of other organic and inorganic compounds. The price of mineral oils and its derivatives can be affected by the price of crude oil and industry refining capacity. Animal fat and vegetable oil prices are impacted by their own unique supply and demand factors, as well as by biodiesel consumption which is also affected by the price of crude oil. In addition, other significant raw material purchases including ethylene derivatives, solvents, surface active agents and additives are also indirectly impacted by trends in mineral oil and derivatives and, therefore, crude oil trends. Accordingly, significant fluctuations in the price of crude oil could have a material impact on the cost of these raw materials. In addition, many of the raw materials used by Quaker are commodity chemicals, which can experience significant price volatility.

Although the Company has been successful in the past in recovering a substantial amount of raw material cost increases while retaining its customers, there can be no assurance that the Company can continue to recover higher raw material costs or retain customers in the future. Conversely, the Company has been successful in maintaining acceptable levels of margin in periods of raw material price declines, but there can be no assurance that the Company can continue to maintain its margins through appropriate price and contract concessions while retaining its customers in the future. A significant change in margin or the loss of customers due to pricing actions could result in a material adverse effect on the Company's liquidity, financial position, and results of operations.

***Lack of availability of raw materials and issues associated with sourcing from certain single suppliers and some suppliers in volatile economic environments could have a material adverse effect on the Company's liquidity, financial position and results of operations.***

The chemical specialty industry can experience tightness of supply for certain raw materials. In addition, in some cases, we source from a single supplier and/or suppliers in economies that have experienced instability. Any significant disruption in supply could affect our ability to obtain raw materials, or increase the cost of such raw materials, which could have a material adverse effect on our liquidity, financial position and results of operations. In addition, certain raw materials that the Company uses are subject to various regulatory laws, and a change in the ability to legally use such raw materials may impact Quaker's liquidity, financial position and results of operations. Quaker seeks to mitigate these risks through developing multiple sources of supply for key raw materials.

***Loss of a significant manufacturing facility could have a material adverse effect on the Company's liquidity, financial position and results of operations.***

Quaker has multiple manufacturing facilities throughout the world. In certain countries, such as Brazil and China, there is only one such facility. If one of the Company's facilities is damaged to such an extent that production is halted for an extended period, the Company may not be able to timely supply its customers. This could result in a loss of sales over an extended period, or permanently. The Company does take steps to mitigate against this risk, including business continuity and contingency planning and procuring property and casualty insurance (including business interruption insurance). Nevertheless, the loss of sales in any one region over an extended period of time could have a material adverse effect on Quaker's liquidity, financial position and results of operations.

***Loss of a significant customer, bankruptcy of a major customer, or the closure of a customer site could have a material adverse effect on the Company's liquidity, financial position and results of operations.***

During 2018, the Company's five largest customers (each composed of multiple subsidiaries or divisions with semi-autonomous purchasing authority) together accounted for approximately 17% of the Company's consolidated net sales, with the largest customer accounting for approximately 8% of our consolidated net sales. The loss of a significant customer could have a material adverse effect on Quaker's liquidity, financial position and results of operation.

Also, a significant portion of Quaker's revenues is derived from sales to customers in the steel and automotive industries; including some of our larger customers, where bankruptcies have occurred in the past and where companies have experienced past financial difficulties. As part of a bankruptcy process, the Company's pre-petition receivables may not be collected, and customer manufacturing sites may be closed or contracts voided. The bankruptcy of a major customer could have a material adverse effect on the Company's liquidity, financial position and results of operations. Also, steel customers typically have limited manufacturing locations compared to metalworking customers and generally use higher volumes of products at a single location. The loss or closure of one or more steel mills or other major sites of a significant customer could have a material adverse effect on Quaker's business.

***Impairment evaluations of goodwill, intangible assets, investments or other long-lived assets could result in a reduction in our recorded asset values, which could have a material adverse effect on the Company's liquidity, financial position and results of operation.***

The Company performs reviews of goodwill and indefinite-lived intangible assets on an annual basis, or more frequently if triggering events indicate a possible impairment. The Company tests goodwill at the reporting unit level by comparing the carrying value of the net assets of the reporting unit, including goodwill, to the unit's fair value. Similarly, the Company tests indefinite-lived intangible assets by comparing the fair value of the assets to their

carrying values. If the carrying values of goodwill or indefinite-lived intangible assets exceed their fair value, the goodwill or indefinite-lived intangible assets may be considered impaired. In addition, the Company will perform a review of a definite-lived intangible asset or other long-lived asset when changes in circumstances or events indicate a possible impairment. An estimate of undiscounted cash flows produced by the asset or appropriate group of assets is compared with its carrying value to determine if an impairment charge is warranted. If any impairment or related charge is warranted, then Quaker's liquidity, financial position and results of operations could be materially affected.

***Changes in tax laws could result in fluctuations in our effective tax rate and could have a material effect on the Company's liquidity, financial position and results of operation.***

The Company is subject to income taxes in the U.S. and various foreign jurisdictions; with our U.S. and international tax liabilities being subject to the allocation of income among these different jurisdictions. Our effective tax rate is derived from a combination of local tax rates and tax attributes, applicable to the Company, in the various countries, states and other jurisdictions in which we operate. Our effective tax rate and respective tax liabilities could, therefore, be materially affected by changes in the mix of earnings in countries with differing statutory tax rates, changes in tax rates, expiration or lapses of tax credits or incentives, changes in uncertain tax positions, changes in the valuation of deferred tax assets and liabilities, or changes in tax laws, including matters such as transfer pricing. One such example of the potential impact from changes in tax law is the impact of the U.S. Tax Cuts and Jobs Act ("U.S. Tax Reform"). The Company has made reasonable interpretations and assumptions with regard to various uncertainties and ambiguities in the application of certain provisions of U.S. Tax Reform. It is possible that the Internal Revenue Service ("IRS") could issue subsequent guidance or take positions on audit that differ from the Company's interpretations and assumptions. Incorporated by reference is further information regarding U.S. Tax Reform in Note 9 of Notes to Consolidated Financial Statements included in Item 8 of this Report. In addition, we are regularly under audit by tax authorities, and the final decisions of such audits could



materially affect our current tax estimates and tax positions. Any of these factors, or similar tax-related risks, could cause the Company to experience an effective tax rate and tax-related payments that significantly differ from previous periods and current or future expectations, which could have a material effect on Quaker's liquidity, financial position and results of operations.

***Failure to comply with any material provision of our primary credit facility or other debt agreements could have a material adverse effect on our liquidity, financial position and results of operations.***

The Company's current primary credit facility ("the Credit Facility") is a \$300.0 million syndicated multicurrency credit agreement with a group of lenders which matures in March 2020. The amount available under this facility can be increased to \$400.0 million at the Company's option if the lenders agree and the Company satisfies certain conditions. The Credit Facility provides the availability of revolving credit borrowings and bears interest at either a base rate or LIBOR plus a margin based on the Company's consolidated leverage ratio.

The Credit Facility contains covenants that impose certain restrictions, including limitations on investments, acquisitions and liens, as well as default provisions customary for facilities of its type. While these covenants and restrictions are not currently considered to be overly restrictive, they could become more difficult to comply with as our business or financial conditions change. In addition, deterioration in the Company's results of operations or financial position could significantly increase borrowing costs.

Quaker is exposed to market rate risk for changes in interest rates due to the variable interest rate applied to the Company's borrowings under the Credit Facility and certain other, similar, but smaller credit facilities. Accordingly, if interest rates rise significantly, the cost of debt to Quaker will increase, perhaps significantly, depending on the extent and timing of Quaker's borrowings under its credit facilities. As of December 31, 2018, the Company had \$24.0 million in outstanding borrowings under its credit facilities. Incorporated by reference is the interest rate risk information contained in Item 7A of this Report.

***Pending and future legal proceedings, including environmental matters, could have a material adverse effect on the Company's liquidity, financial position, and results of operations, as well as its reputation in the markets it serves.***

The Company is routinely party to proceedings, cases, and requests for information from, and negotiations with, various claimants and federal and state agencies relating to various matters, including environmental matters. An adverse result in one or more pending or on-going matters or any potential future matter of a similar nature could materially and adversely affect the Company's liquidity, financial position, and results of operations, as well as its reputation in the markets it serves. In addition, non-compliance with applicable laws and regulations, particularly the U.S. Foreign Corrupt Practices Act, the U.K. Bribery Act and other similar laws and regulations, could result in a negative impact to the Company's reputation, potential fines or ongoing monitoring, which could also have a material adverse effect on the Company's liquidity, financial position, and results of operations. Incorporated herein by reference is the information concerning pending asbestos-related litigation against an inactive subsidiary, amounts accrued associated with certain environmental, non-capital remediation costs and other potential commitments or contingencies highlighted in Note 25 of Notes to Consolidated Financial Statements, which appears in Item 8 of this Report.

***Failure to comply with the complex global regulatory environment in which the Company operates could have an adverse impact on the Company's reputation and/or a material adverse effect on the Company's liquidity, financial position and results of operations.***

Changes in the regulatory environment in which the Company operates, particularly, but not limited to, the United States, Mexico, Brazil, China, India and the European Union, could lead to heightened regulatory scrutiny, could adversely impact our ability to continue selling certain products in our U.S. or foreign markets, and/or could increase the cost of doing business. While the Company mitigates these risks through various actions, including receiving Responsible Care certification, on-going employee training and administering a comprehensive environmental, health and safety program, there is no guarantee these actions will prevent all potential regulatory compliance issues. For instance, failure to comply with the European Union's Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) or other similar laws and regulations, could result in the inability to sell certain non-compliant products, fines, ongoing monitoring and other future business consequences, which could have a material adverse effect on the Company's liquidity, financial position and results of operations.

***Potential product, service or other related liability claims could have a material adverse effect on the Company's liquidity, financial position and results of operations.***

The development, manufacture and sale of specialty chemical products and other related services involve inherent exposure to potential product liability claims, service level claims, product recalls and related adverse publicity. Any of these potential product or service risks could also result in substantial and unexpected expenditures and affect customer confidence in our products and services, which could have a material adverse effect on the Company's liquidity, financial position and results of operations. Although the Company maintains product and other general liability insurance, there can be no assurance that the types or levels of coverage maintained are adequate to cover these potential risks. In addition, the Company may not be able to continue to maintain its existing insurance coverage or obtain comparable or additional insurance coverage at a reasonable cost, if at all, in the event a significant product or service claim arises.

***We may be unable to adequately protect our proprietary rights and trade brands, which may limit the Company's ability to compete in its markets and could adversely affect the Company's liquidity, financial position and results of operations.***

Quaker has a limited number of patents and patent applications, including patents issued, applied for, or acquired in the United States and in various foreign countries, some of which may prove to be material to its business. However, Quaker relies principally on its proprietary formulae and the application of its skills and experience to meet customer needs. Also, Quaker's products are identified by trademarks that are registered throughout its marketing area. Despite our efforts to protect such proprietary information through patent and trademark filings, through the use of appropriate trade secret protections and through the inability of certain products to be effectively replicated by others, it is possible that competitors or other unauthorized third parties may obtain, copy, use or disclose our technologies, products, and processes. In addition, the laws and/or judicial systems of foreign countries in which we design, manufacture, market and sell our products may afford little or no effective protection of our proprietary technology or trade brands. Also, security over our global information technology structure is subject to increasing risks associated with cyber-crime and other related cyber-security threats. These potential risks to our proprietary information and trade brands could subject the Company to increased competition and negatively impact our liquidity, financial position and results of operations.

***We might not be able to timely develop, manufacture and gain market acceptance of new and enhanced products required to maintain or expand our business, which could adversely affect the Company's liquidity, financial position and results of operations.***

We believe that our continued success depends on our ability to continuously develop and manufacture new products and product enhancements on a timely and cost-effective basis in response to customers' demands for higher performance process chemicals and other product offerings. Our competitors may develop new products or enhancements to their products that offer performance, features and lower prices that may render our products less competitive or obsolete, and, as a consequence, we may lose business and/or significant market share. The development and commercialization of new products requires significant expenditures over an extended period of time, and some products that we seek to develop may never become profitable. In addition, we may not be able to develop and introduce products incorporating new technologies in a timely manner that will satisfy our customers' future needs or achieve market acceptance.

***An inability to appropriately capitalize on growth, including organic growth, leveraging prior acquisitions, or integrating future acquisitions, could adversely affect the Company's liquidity, financial position and results of operations.***

The Company continues to grow organically through increased end-market growth, incremental market share gains, and extending previously acquired technologies through its existing channels. Such growth is dependent on prevailing market conditions and the Company's ability to execute over time. In addition, the Company has completed multiple acquisitions over the past several years and expects to seek acquisitions to grow its business in the future. The success of the Company's growth depends on its ability to successfully integrate these acquisitions, including, but not limited to its ability to do the following:

- successfully execute the integration or consolidation of the acquired or additional business into existing processes and operations;
- develop or modify financial reporting, information systems and other related financial tools to ensure overall financial integrity and adequacy of internal control procedures;
- identify and take advantage of potential synergies, including cost reduction opportunities, while maintaining legacy business and other related attributes; and

- further penetrate existing, and expand into new, markets with the product capabilities acquired in acquisitions.

The Company may fail to derive significant benefits or may not create the appropriate infrastructure to support such additional growth from organic or acquired businesses, which could have a material adverse effect on Quaker's liquidity, financial position and results of operations.

***The scope of our international operations subjects the Company to risks that could adversely affect the Company's liquidity, financial position and results of operations, including, but not limited to, risks from currency fluctuations, changes in trade regulations, political and economic instability, and complex local tax environments.***

Since significant revenues and earnings are generated by non-U.S. operations, Quaker's financial results are affected by currency fluctuations, particularly between the U.S. dollar and the euro, the Brazilian real, the Mexican peso, the Chinese renminbi, and the Indian rupee, and the impact of those currency fluctuations on the underlying economies. During the past three years, sales by non-U.S. subsidiaries accounted for approximately 60% of our consolidated net sales. Generally, all of the Company's non-U.S. subsidiaries use their local currency as their functional currency. The Company generally does not use financial instruments that expose it to significant risk involving foreign currency transactions; however, the relative size of its non-U.S. activities has a significant impact on reported operating results and the Company's net assets. Therefore, as exchange rates change, Quaker's results can be materially affected. Incorporated by reference is the foreign exchange risk information contained in Item 7A of this Report and the geographic information in Note 5 of Notes to Consolidated Financial Statements included in Item 8 of this Report.

Also, the Company occasionally sources inventory in a different country than that of the intended sale. This practice can give rise to foreign exchange risk. The Company mitigates this risk through local sourcing of raw materials in the majority of its locations.

As of December 31, 2018, the Company held approximately \$99.5 million of its total cash and cash equivalents in its non-U.S. subsidiaries. The Company can access this cash without restriction, however, it is subject to possible risks including currency fluctuations and tax-related impacts.

Additional risks associated with the Company's international operations include, but are not limited to: instability in economic conditions in certain countries; changes in a country's political situation; trade protection measures; longer customer payment cycles; different payment practices such as the use of bankers acceptance drafts or other similar credit instruments; licensing and other legal requirements; the difficulties of staffing and managing dispersed international operations; less protective foreign intellectual property laws; legal systems that may be less developed and predictable than those in the United States; and complex and dynamic local tax regulations. Also, the Company could be adversely impacted by changes in the perceived or actual global economic climate, such as global or regional recessions, uncertainty resulting from the U.K.'s potential exit from the European Union, existing or future trade restrictions or imposed tariffs like those between the U.S. and China implemented during 2018, and heightened U.S. or global stock market volatility and potential changes in access to capital markets.

***The pending Houghton Combination subjects the Company to new and heightened risks which could adversely affect the Company's liquidity, financial position and results of operations.***

As previously described in the Business section, in Item 1 of this report, in April 2017, Quaker entered into a share purchase agreement with Gulf to purchase the entire issued and outstanding share capital of Houghton. In connection with the Combination, the Company secured \$1.15 billion in commitments and has since replaced these commitments with the New Credit Facility with a group of lenders for \$1.15 billion. There are several areas of risk related to the pending Houghton Combination which could negatively impact the Company's liquidity, financial position and results of operations, including, but not limited to:

- issuance of the Company's common stock as a part of the consideration paid for the Combination, equal to 24.5% of the common stock outstanding after the issuance, will have a dilutive effect on the existing holders of the Company's common stock and may result in a decline in the market price of the Company's common stock;
- the percentage of outstanding shares of the Company's common stock to be issued in connection with the Combination is not adjustable based on the market price of the Company's common stock and, as a result, the Combination consideration at closing may have greater or less implied value than at the time the share purchase agreement was signed;
- issuance of the Company's common stock to Gulf as part of the consideration paid for the Combination will provide Gulf with an almost 24.5% ownership interest in the Company, and Gulf will also have the contractual ability to nominate certain directors of the Company, which may enable Gulf to influence the direction of the Company's business, or could prevent the Company's other shareholders from determining significant corporate decisions without Gulf participation;
- the Combination will present the Company with integration and consolidation risks, and the Company may be unable to profitably operate the consolidated company, or may fail to achieve expected cost synergies or expand the Company's business into new markets and geographies;
- failure to retain key employees could diminish the benefits of the Combination and subject the Company to further integration risks;
- the Company has and will continue to incur significant transaction and integration costs in connection with the Combination, including, but not limited to, fees paid to legal, financial, tax and accounting advisors and filing fees;
- the potential for regulatory authorities to require divestitures in connection with the Combination of a greater amount than the Company anticipated, which would result in a smaller than anticipated combined business;

- the Company may fail to complete the Combination if required conditions, many of which are outside of the Company's control, are not satisfied, including various customary closing conditions as well as potential divestitures required in connection with obtaining regulatory approval;
- the Combination did not close by the one-year anniversary of the share purchase agreement, so the Company and Gulf each have the right to terminate the share purchase agreement. If the Combination is not completed, then the price of the Company's common stock could decline, and the Company's future business and operations could be harmed, including failing to realize the expected benefits of the Combination, incurring costs which must be paid even if the Combination is not completed, and exposing the Company to potential litigation relating to failure to complete the Combination;
- the Company will significantly increase its debt obligations upon closing of the Combination and execution of the New Credit Facility which requires the Company to comply with certain provisions and covenants, and, while the Company does not currently anticipate the New Credit Facility provisions and covenants to be overly restrictive, they could become more difficult to comply with as business or financial conditions change;
- the Company will be subject to interest rate risk due to the variable interest rates within the New Credit Facility and, if interest rates rise significantly, these interest costs will increase, perhaps significantly; and
- if the Combination has not closed by March 15, 2019, the New Credit Facility will expire; however, the Company expects to negotiate an extension of the New Credit Facility, if necessary, in a timely manner, but could be subject to additional fees or conditions as a result.

Incorporated herein by reference is information concerning the Combination included in Note 2 of Notes to Consolidated Financial Statements, which appears in Item 8 of this Report. For more information regarding certain of the risks and uncertainties related to the Combination, you should refer to the proxy statement the Company filed on July 31, 2017 with the SEC.

***Disruption of critical information systems or material breaches in the security of our systems could adversely affect our business and our customer relationships, and subject us to fines or other regulatory actions.***

Quaker relies on information technology systems to process, transmit, and store electronic information in our day-to-day operations. The Company also relies on its technology infrastructure, among other functions, to interact with customers and suppliers, fulfill orders and bill, collect and make payments, ship products, provide support to customers, fulfill contractual obligations and otherwise conduct business. Our information technology systems are subject to potential disruptions, including significant network or power outages, cyberattacks, computer viruses, other malicious codes, and/or unauthorized access attempts, any of which, if successful, could result in data leaks or otherwise compromise our confidential or proprietary information and disrupt our operations. Cybersecurity incidents, such as these, are becoming more sophisticated and frequent, and there can be no assurance that our protective measures will prevent security breaches that could have a significant impact on our business, reputation and financial results. Also, new laws and regulations governing data privacy and the unauthorized disclosure of confidential information, including the European Union General Data Protection Regulation and recent California legislation, pose increasingly complex compliance challenges and could potentially elevate our costs over time, as a failure to comply with such laws could subject us to fines or penalties issued by a regulatory agency. Therefore, a failure to monitor, maintain or protect our information technology systems and data integrity effectively or to anticipate, plan for and recover from significant disruptions to these systems could have a material adverse effect on our business, results of operations or financial condition.

***Terrorist attacks, other acts of violence or war, natural disasters or other uncommon global events may affect the markets in which we operate and our profitability, which could adversely affect the Company's liquidity, financial position and results of operations.***

Terrorist attacks, other acts of violence or war, natural disasters or other uncommon global events may negatively affect our operations. There can be no assurance that there will not be terrorist attacks against the U.S. or other locations where we do business. Also, other uncommon global events such as earthquakes, hurricanes, fires and tsunamis cannot be predicted. Terrorist attacks, other acts of violence or armed conflicts, and natural disasters may directly impact our physical facilities and/or those of our suppliers or customers. Additional terrorist attacks or natural disasters may disrupt the global insurance and reinsurance industries with the result that we may not be able to obtain insurance at historical terms and levels, if at all, for all of our facilities. Furthermore, any of these events may make travel and the transportation of our supplies and products more difficult and more expensive, and ultimately affect the sales of our products. The consequences of terrorist attacks, other acts of violence or armed conflicts, natural disasters or other uncommon global events can be unpredictable, and we may not be able to foresee or effectively plan for these events, resulting in a material adverse effect on our business, results of operations or financial condition.

**Item 1B. Unresolved Staff Comments.**

None.

**Item 2. Properties.**

Quaker's corporate headquarters and a laboratory facility are located in its North America segment's Conshohocken, Pennsylvania location. The Company's other principal facilities in its North America segment are located in Aurora, Illinois; Detroit, Michigan; Middletown, Ohio; Santa Fe Springs, California; Batavia, New York; Dayton, Ohio; Waterloo, Ontario; and Monterrey, N.L., Mexico. The Company's EMEA segment has principal facilities in Uithoorn, The Netherlands; Barcelona, Spain; Navarra, Spain; Karlshamn, Sweden; and Tradate, Italy. The Company's Asia/Pacific segment operates out of its principal facilities located in Qingpu, China; Kolkata, India; and Sydney,

Australia, while its South America segment operates out of its principal facility in Rio de Janeiro, Brazil. With the exception of the Conshohocken, Santa Fe Springs, Aurora, Karlshamn, and Sydney sites, which are leased, the remaining principal facilities are owned by Quaker and, as of December 31, 2018, were mortgage free. Quaker also leases sales, laboratory, manufacturing, and warehouse facilities in other locations.

Quaker's principal facilities (excluding Conshohocken) consist of various manufacturing, administrative, warehouse, and laboratory buildings. Substantially all of the buildings (including Conshohocken) are of fire-resistant construction and are equipped with sprinkler systems. The Company has a program to identify needed capital improvements that are implemented as management considers necessary or desirable. Most locations have various numbers of raw material storage tanks, ranging from 2 to 58, at each location with a capacity ranging from 1,000 to 82,000 gallons, and processing or manufacturing vessels ranging in capacity from 8 to 16,000 gallons.

Each of Quaker's non-U.S. associated companies (in which it owns a 50% or less interest and has significant influence) owns or leases a plant and/or sales facilities in various locations, with the exception of Primex, Ltd.

**Item 3. *Legal Proceedings.***

The Company is a party to proceedings, cases, and requests for information from, and negotiations with, various claimants and Federal and state agencies relating to various matters, including environmental matters. For information concerning pending asbestos-related litigation against an inactive subsidiary, certain environmental non-capital remediation costs and other legal-related matters, reference is made to Note 25 of Notes to Consolidated Financial Statements, included in Item 8 of this Report, which is incorporated herein by this reference. The Company is a party to other litigation which management currently believes will not have a material adverse effect on the Company's results of operations, cash flow or financial condition.



**Item 4. Mine Safety Disclosures.**

Not Applicable

**Item 4(a). Executive Officers of the Registrant.**

Set forth below is information regarding the executive officers of the Company, each of whom (with the exception of Ms. Hall) have been employed by the Company for more than five years, including the respective positions and offices with the Company held by each over the respective periods indicated. Each of the executive officers, with the exception of Mr. Hostetter, is elected annually to a one-year term. Mr. Hostetter is considered an executive officer in his capacity as principal accounting officer for purposes of this Item.

**Name, Age, and Present**

**Business Experience During the Past Five**

**Position with the Company**

**Years and Period Served as an Officer**

Michael F. Barry, 60

Chairman of the Board, Chief Executive Officer and President and Director

Mr. Barry, who has been employed by the Company since 1998, has served as Chairman of the Board since May 2009, in addition to his position as Chief Executive Officer and President held since October 2008. He served as interim Chief Financial Officer from October through November 2015. He served as Senior Vice President and Managing Director – North America from January 2006 to October 2008. He served as Senior Vice President and Global Industry Leader – Metalworking and Coatings from July through December 2005. He served as Vice President and Global Industry Leader – Industrial Metalworking and Coatings from January 2004 through June 2005 and Vice President and Chief Financial Officer from 1998 to August 2004.

Joseph A. Berquist, 47

Vice President and Managing

Director – North America

Mr. Berquist, who has been employed by the Company since 1997, has served as Vice President and Managing Director – North America since April 2010.

Mary Dean Hall, 61

Vice President, Chief Financial Officer

and Treasurer

Ms. Hall has served as Vice President, Chief Financial Officer and Treasurer since she joined the Company in November 2015. Prior to joining the Company, Ms. Hall served as the Vice President and Treasurer of Eastman Chemical Company from April 2009 until October 2015. Prior to that role, she held various senior-level financial positions of increasing responsibility with Eastman from 1995 through 2009, including Treasurer, Vice President and Controller, and Vice President,

Finance.

Shane W. Hostetter, 37

Global Controller and Principal

Accounting Officer

Mr. Hostetter, who has been employed by the Company since July 2011, has served as Global Controller and Principal Accounting Officer since September 2014. He served as Corporate Controller and Principal Accounting Officer from May 2013 to August 2014.

Dieter Laininger, 55

Vice President and Managing

Director – Asia / Pacific and South  
America and Global Leader –  
Primary Metals

Mr. Laininger, who has been employed by the Company since 1991, has served as Vice President and Managing Director – Asia / Pacific since April 1, 2018, in addition to his role as Vice President and Managing Director - South America, since January 2013, and his position as Vice President and Global Leader – Primary Metals, to which he was appointed in June 2011.

Joseph F. Matrange, 76

Vice President and Global Leader –  
Coatings

Mr. Matrange, who has been employed by the Company since 2000, has served as Vice President and Global Leader – Coatings since October 2008. He has also served as President of AC Products, Inc., a California subsidiary, since October 2000, and Epmar Corporation, a California subsidiary, since April 2002.

Jan F. Nieman, 57

Vice President and Global Leader –  
Grease and Fluid Power, Global  
Strategy and Marketing

Mr. Nieman, who has been employed by the Company since 1992, has served as Vice President – Global Strategy and Marketing since May 2014, in addition to his position as Global Leader – Grease and Fluid Power since August 2013. He also served as Global Leader – Mining from August 2013 through April 2014.

**Name, Age, and Present**

**Business Experience During the Past Five**

**Position with the  
Company**

**Years and Period Served as an Officer**

Wilbert Platzer, 57

Vice President Global Operations,  
EHS and Procurement

Mr. Platzer, who has been employed by the Company since 1995, has served as Vice President Global Operations, EHS and Procurement since April 1, 2018. He served as Vice President and Managing Director – EMEA from January 2006 through March 2018.

Adrian Steeples, 58

Vice President and Managing  
Director – EMEA

Mr. Steeples, who has been employed by the Company since 2010, has served as Vice President and Managing Director – EMEA since April 1, 2018. He served as Vice President and Managing Director - Asia/Pacific from July 2013 through March 2018.

## PART II

**Item 5. Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities.**

The Company's common stock is listed on the New York Stock Exchange ("NYSE") under the trading symbol KWR. The following table sets forth, for the calendar quarters during the two most recent fiscal years, the range of high and low sales prices for the common stock as reported on the NYSE composite tape (amounts rounded to the nearest penny), and the quarterly dividends declared and paid:

	Price Range				Dividends Declared		Dividends Paid	
	2018		2017		2018	2017	2018	2017
	High	Low	High	Low				
First quarter	\$ 164.10	\$ 139.26	\$ 138.95	\$ 124.92	\$ 0.355	\$ 0.345	\$ 0.355	\$ 0.345
Second quarter	163.64	137.95	153.90	127.70	0.37	0.355	0.355	0.345
Third quarter	203.78	152.40	154.38	129.98	0.37	0.355	0.37	0.355
Fourth quarter	217.15	165.40	165.93	146.48	0.37	0.355	0.37	0.355

There are no restrictions that currently limit the Company's ability to pay dividends or that the Company believes are likely to materially limit the payment of future dividends. If a default under the Company's Credit Facility were to occur and continue, the payment of dividends would be prohibited. Reference is made to the "Liquidity and Capital Resources" disclosure contained in Item 7 of this Report.

As of January 17, 2019, there were 789 shareholders of record of the Company's common stock, its only outstanding class of equity securities. As of January 17, 2019, 13,337,049 shares of Quaker common stock were issued, outstanding and entitled to one vote per share.

Reference is made to the information in Item 12 of this Report under the caption "Equity Compensation Plans," which is incorporated herein by this reference.

The following table sets forth information concerning shares of the Company's common stock acquired by the Company during the fourth quarter of the period covered by this report:

Period	<u>Issuer Purchases of Equity Securities</u>			
	(a) Total Number of Shares Purchased (1)	(b) Average Price Paid Per Share (2)	(c) Total Number of Shares Purchased as part of Publicly Announced Plans or Programs	(d) Approximate Dollar Value of Shares that May Yet be Purchased Under the Plans or Programs (3)
October 1 - October 31	16	\$ 190.54	—	\$ 86,865,026
November 1 - November 30	1,131	\$ 203.45	—	\$ 86,865,026
December 1 - December 31	—	\$ —	—	\$ 86,865,026

Total	1,147	\$	203.27	—	\$	86,865,026
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- (1) All of these shares were acquired from employees upon their surrender of Quaker shares in payment of the exercise price of employee stock options exercised or for the payment of taxes upon exercise of employee stock options or the vesting of restricted stock.
- (2) The price paid for shares acquired from employees pursuant to employee benefit and share-based compensation plans, is, in each case, based on the closing price of the Company's common stock on the date of exercise or vesting, as specified by the plan pursuant to which the applicable option or restricted stock was granted.
- (3) On May 6, 2015, the Board of Directors of the Company approved, and the Company announced, a new share repurchase program, pursuant to which the Company is authorized to repurchase up to \$100,000,000 of Quaker Chemical Corporation common stock (the "2015 Share Repurchase Program"). The 2015 Share Repurchase Program, which replaced the Company's other share repurchase plans then in effect, has no expiration date. There were no shares acquired by the Company pursuant to the 2015 Share Repurchase Program during the quarter ended December 31, 2018.

The following graph compares the cumulative total return (assuming reinvestment of dividends) from December 31, 2013 to December 31, 2018 for (i) Quaker’s common stock, (ii) the S&P SmallCap 600 Index (the “SmallCap Index”), and (iii) the S&P 600 Materials Group Index (the “Materials Group Index”). The graph assumes the investment of \$100 on December 31, 2013 in each of Quaker’s common stock, the stocks comprising the SmallCap Index and the stocks comprising the Materials Group Index.

	<b>12/31/2013</b>	<b>12/31/2014</b>	<b>12/31/2015</b>	<b>12/31/2016</b>	<b>12/31/2017</b>	<b>12/31/2018</b>
Quaker	\$ 100.00	\$ 121.21	\$ 103.27	\$ 173.53	\$ 206.55	\$ 245.59
SmallCap Index	100.00	105.76	103.67	131.20	148.56	135.96
Materials Group Index	100.00	100.30	74.58	115.37	126.81	98.59

**Item 6. Selected Financial Data.**

The following table sets forth selected financial data for the Company and its consolidated subsidiaries:

<i>(in thousands, except dividends and per share data):</i>	<b>Year Ended December 31,</b>				
	<b>2018 (1)(6)</b>	<b>2017 (2)</b>	<b>2016 (3)</b>	<b>2015 (4)</b>	<b>2014 (5)</b>
<b>Summary of Operations:</b>					
Net sales	\$ 867,520	\$ 820,082	\$ 746,665	\$ 737,555	\$ 765,860
Income before taxes and equity in net income of associated companies	83,098	60,668	84,009	70,230	78,293
Net income attributable to Quaker Chemical Corporation	59,473	20,278	61,403	51,180	56,492
<b>Per share:</b>					
Net income attributable to Quaker Chemical Corporation Common Shareholders - basic	\$ 4.46	\$ 1.53	\$ 4.64	\$ 3.84	\$ 4.27
Net income attributable to Quaker Chemical Corporation Common Shareholders - diluted	\$ 4.45	\$ 1.52	\$ 4.63	\$ 3.84	\$ 4.26
Dividends declared	1.465	1.41	1.355	1.26	1.15
Dividends paid	1.45	1.40	1.33	1.24	1.10
<b>Financial Position</b>					
Working capital (6)	\$ 267,040	\$ 251,843	\$ 249,057	\$ 233,517	\$ 218,982
Total assets (6)	709,665	722,126	692,028	680,727	664,376
Long-term debt	35,934	61,068	65,769	81,439	75,328
Total equity (6)	436,369	409,618	412,606	381,243	365,135

Notes to the above table:

(1) Net income attributable to Quaker Chemical Corporation in 2018 includes equity income from a captive insurance company of \$1.0 million after tax, a \$0.4 million foreign currency transaction gain related to the liquidation of an inactive legal entity and a \$0.1 million insurance insolvency recovery, offset by \$19.5 million of combination-related expenses, including approximately \$3.5 million of interest costs to maintain committed capital and a \$0.6 million gain on the sale of a held-for-sale asset, \$5.8 million of tax charges related to the U.S. Tax Cuts and Jobs Act, \$0.4 million of currency conversion impacts related to hyper-inflationary accounting at the Company's affiliate in Argentina, and \$0.3 million of after-tax currency conversion impacts related to hyper-inflationary accounting at the Company's 50% owned affiliate in Venezuela. See the Non-GAAP Measures section, which appears in Item 7 of this report.

(2) Net income attributable to Quaker Chemical Corporation in 2017 includes equity income from a captive insurance company of \$2.5 million after tax and a \$0.6 million insurance insolvency recovery, offset by \$30.8 million of combination-related expenses, including \$0.9 million of interest costs to maintain committed capital, \$22.2 million of tax charges related to the U.S. Tax Cuts and Jobs Act, a \$1.9 million U.S. pension plan settlement charge, \$0.3 million of charges related to cost streamlining initiatives in the Company's corporate group, a \$0.1 million loss on disposal of a held-for-sale asset, and \$0.4 million of after-tax currency conversion impacts related to hyper-inflationary accounting at the Company's 50% owned affiliate in Venezuela. See the Non-GAAP Measures section, which appears in Item 7 of this report.

(3) Net income attributable to Quaker Chemical Corporation in 2016 includes equity income from a captive insurance company of \$1.7 million after tax and a \$0.4 million credit related to the Company's 2015 global restructuring program, offset by \$1.5 million of combination-related expenses and \$0.1 million of after-tax currency conversion impacts related to hyper-inflationary accounting at the Company's 50% owned affiliate in Venezuela. See the Non-GAAP Measures section, which appears in Item 7 of this report.

(4) Net income attributable to Quaker Chemical Corporation in 2015 includes equity income from a captive insurance company of \$2.1 million after tax, offset by \$2.8 million of after-tax currency conversion impacts related to hyper-inflationary accounting at the Company's 50% owned affiliate in Venezuela, \$2.8 million of Verkol transaction-related expenses, \$0.2 million of charges related to cost streamlining initiatives in the Company's South America segment, \$0.3 million of charges related to certain U.S. customer bankruptcies and \$6.8 million of charges related to the Company's 2015 global restructuring program.

(5) Net income attributable to Quaker Chemical Corporation in 2014 includes equity income from a captive insurance company of \$2.4 million after tax, offset by \$0.3 million of after-tax currency conversion impacts related to hyper-inflationary accounting at the Company's 50% owned affiliate in Venezuela, \$1.2 million of charges related to cost streamlining initiatives in the Company's EMEA and South America segments, a \$0.9 million charge related to a U.K. pension plan amendment and \$0.8 million of charges related to certain customer bankruptcies.



(6) During the first quarter of 2018, the Company adopted the provisions of the Financial Accounting Standards Board's revenue recognition guidance, as required, electing to use a modified retrospective adoption approach applied to those contracts which were not completed as of January 1, 2018. Comparative information has not been restated and continues to be reported under the accounting standards in effect for those periods. As a result of the Company's adoption using the modified retrospective adoption approach, the Company recorded a cumulative effect of an accounting change as of January 1, 2018, to adjust the Company's estimate of variable consideration relating to customers' expected rights to return product. This adjustment resulted in a decrease to Working capital of \$1.0 million, an increase to Total assets of \$0.2 million and a decrease to Total equity of \$0.8 million, recorded during the first quarter of 2018. There were no other impacts recorded as a result of adopting the revenue recognition guidance. See Note 3 of Notes to Consolidated Financial Statements, which appears in Item 8 of this report.

## **Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations.**

### ***Executive Summary***

Quaker Chemical Corporation is a leading global provider of process fluids, chemical specialties, and technical expertise to a wide range of industries, including steel, aluminum, automotive, mining, aerospace, tube and pipe, cans, and others. For 100 years, Quaker has helped customers around the world achieve production efficiency, improve product quality, and lower costs through a combination of innovative technology, process knowledge, and customized services. Headquartered in Conshohocken, Pennsylvania USA, Quaker serves businesses worldwide with a network of dedicated and experienced professionals whose mission is to make a difference.

The Company delivered strong operating results in 2018 on solid net sales growth coupled with a higher gross margin year-over-year. Specifically, net sales increased 6% to \$867.5 million in 2018 compared to \$820.1 million in 2017 driven by volume growth of 3% and increases in selling price and product mix of 2%. This increase in net sales, coupled with a higher gross margin of 36.0% in 2018 compared to 35.5% in 2017, drove a 7% increase in the Company's gross profit year-over-year. The increase in the Company's current year gross margin was primarily driven by pricing initiatives and the mix of certain products sold which more than offset increases in raw material costs year-over-year. In addition, current year operating income as a percentage of sales benefited from the Company's continued discipline in managing its selling, general and administrative expenses ("SG&A").

The Company's 2018 net income and earnings per diluted share were \$59.5 million and \$4.45, respectively, compared to \$20.3 million and \$1.52 per diluted share, respectively, in 2017. During 2018, the Company incurred \$19.5 million or \$1.21 per diluted share of total costs associated with the Company's previously announced combination with Houghton International, Inc. ("Houghton") (herein referred to as "the Combination"), compared to \$30.8 million or \$1.90 per diluted share of total costs related to the Combination during 2017. The Company's 2018 and 2017 results were also impacted by the Company's initial fourth quarter of 2017 estimate of \$22.2 million or \$1.67 per diluted share and subsequent 2018 adjustments of \$5.8 million or \$0.43 per diluted share related to the 2017 U.S. Tax Cuts and Jobs Act ("U.S. Tax Reform"). Excluding expenses related to the Combination, charges related to U.S Tax Reform and other non-core items in each period, the Company's strong current year operating performance coupled with a lower 2018 effective tax rate resulted in a 21% increase in its non-GAAP earnings per diluted share to \$6.04 in 2018 compared to \$5.01 in 2017. The Company's 2018 adjusted EBITDA was a record \$125.6 million, an increase of 9% compared to \$115.2 million in the prior year. These results were achieved despite a negative impact from foreign exchange on current year earnings of approximately \$0.08 per diluted share, or 1%. See the Non-GAAP Measures section of this Item below, as well as other items discussed in the Company's Consolidated Operations Review in the Operations section of this Item, below.

From a regional perspective, the Company's 2018 operating performance was highlighted by year-over-year operating earnings increases in its three largest regions. The Company's North America and Asia/Pacific regions had particularly strong operating earnings in 2018, increasing 14% and 16% year-over-year, respectively. North America's results were driven by net sales growth of 8% on higher volumes and selling price and product mix while Asia/Pacific had net sales growth of 7% primarily on higher volumes, with both regions also benefiting from higher gross margins year-over-year. The Company's Europe, Middle East and Africa ("EMEA") region benefited from the positive impact of foreign currency translation year-over-year and increases in selling price and product mix, as well as a higher gross margin in 2018 compared to 2017, which offset a decline in volume year-over-year primarily driven by an atypically high sales pattern in EMEA during the first quarter of 2017, a decrease in volume associated with a specific piece of business which the Company stopped selling during the middle of 2018 primarily due to its limited profitability, and a slowing of orders at the end of 2018 due to market challenges. The Company's smallest region, South America, had a relatively consistent level of operating earnings year-over-year as strong net sales growth from increases in volume and selling price and product mix as well as lower SG&A were offset by the significant negative impact of foreign currency translation. See the Reportable Operating Segments Review, in the Operations section of this Item, below.

The Company generated net operating cash flow of \$78.8 million in 2018 compared to \$64.8 million in 2017. The increase in net operating cash flow year-over-year was primarily due to the Company's solid current year operating performance. The key drivers of the Company's operating cash flow and overall liquidity are further discussed in the Company's Liquidity and Capital Resources section of this Item, below.

Overall, the Company is pleased to have delivered another strong year. While operating conditions were mixed throughout all of its regions and foreign exchange became a headwind in the second half of 2018, the Company's continued market share gains drove solid volume and net sales growth that exceeded the Company's estimate of year-over-year growth in its end markets. In addition, the

benefit of current year pricing initiatives and the mix of products sold continued to outpace higher raw material costs and contributed to the Company's gross margin improvement compared to the prior year. These increases in the Company's operating performance coupled with a continued discipline in managing SG&A drove a 9% increase in adjusted EBITDA and, coupled with a lower effective tax rate, resulted in a 21% increase in non-GAAP earnings per diluted share compared to 2017.

Looking forward to 2019, the Company estimates that it will receive final regulatory approval and close the Combination within the next few months. As previously disclosed, the Combination will approximately double the Company's annual sales and adjusted EBITDA, not including estimated synergies, which are expected to meet or exceed \$45 million once fully achieved by the third year. Depending upon the exact timing of the Combination's close, the Company anticipates it will realize a portion of the Houghton sales and adjusted EBITDA in 2019.

For Quaker's current business, the Company expects some headwinds particularly in the early months of 2019, such as the impacts from a strong U.S. dollar and some base market challenges due to global economic uncertainty. However, the Company also expects continued market share gains to help offset these headwinds. Overall, the Company remains confident in its future given its modestly growing global end markets and continued market share gains and expects 2019 to be another good year for the current Quaker business.

### ***Critical Accounting Policies and Estimates***

Quaker's discussion and analysis of its financial condition and results of operations are based upon Quaker's consolidated financial statements which have been prepared in accordance with accounting principles generally accepted in the United States ("U.S. GAAP"). The preparation of these financial statements requires Quaker to make estimates and judgments that affect the reported amounts of assets, liabilities, revenues and expenses, and related disclosure of contingent assets and liabilities. On an ongoing basis, Quaker evaluates its estimates, including those related to customer sales incentives, product returns, bad debts, inventories, property, plant and equipment, investments, goodwill, intangible assets, income taxes, business combinations, restructuring, incentive compensation plans (including equity-based compensation), pensions and other postretirement benefits, contingencies and litigation. Quaker bases its estimates on historical experience and on various other assumptions that are believed to be reasonable under such circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. However, actual results may differ from these estimates under different assumptions or conditions.

Quaker believes the following critical accounting policies describe the more significant judgments and estimates used in the preparation of its consolidated financial statements:

1. Accounts receivable and inventory exposures — Quaker establishes allowances for doubtful accounts for estimated losses resulting from the inability of its customers to make required payments. If the financial condition of Quaker's customers were to deteriorate, resulting in an impairment of their ability to make payments, additional allowances may be required. As part of its terms of trade, Quaker may custom manufacture products for certain large customers and/or may ship products on a consignment basis. Further, a significant portion of Quaker's revenues is derived from sales to customers in industries where companies have experienced past financial difficulties. If a customer bankruptcy occurs, then Quaker must judge the amount of proceeds, if any, that may ultimately be received through the bankruptcy or liquidation process. These matters may increase the Company's exposure, should a bankruptcy occur, and may require a write down or a disposal of certain inventory. Reserves for customers filing for bankruptcy protection are established based on a percentage of the amount outstanding at the bankruptcy filing date. However, initially establishing this reserve and the amount thereto is dependent on the Company's evaluation of likely proceeds to be received from the bankruptcy process, which could result in the Company recognizing minimal or no reserve at the date of bankruptcy. Large and/or financially distressed customers are generally reserved for on a specific review

basis, while a general reserve is maintained for other customers based on historical experience. The Company's consolidated allowance for doubtful accounts was \$5.2 million and \$5.5 million as of December 31, 2018 and 2017, respectively. The Company recorded expense to increase its provision for doubtful accounts by \$0.5 million, \$0.1 million and \$1.4 million for the years ended December 31, 2018, 2017 and 2016, respectively. Changing the amount of expense recorded to the Company's provisions by 10% would have increased or decreased the Company's pre-tax earnings by \$0.1 million, less than \$0.1 million and \$0.1 million for the years ended December 31, 2018, 2017 and 2016, respectively. See Note 12 of Notes to Consolidated Financial Statements, which appears in Item 8 of this Report.

2. Environmental and litigation reserves — Accruals for environmental and litigation matters are recorded when it is probable that a liability has been incurred and the amount of the liability can be reasonably estimated. Accrued liabilities are exclusive of claims against third parties and are not discounted. Environmental costs and remediation costs are capitalized if the costs extend the life, increase the capacity or improve the safety or efficiency of the property from the date acquired or constructed, and/or mitigate or prevent contamination in the future. Estimates for accruals for environmental matters are based on a variety of potential technical solutions, governmental regulations and other factors, and are subject to a wide range of potential costs for remediation and other actions. A considerable amount of judgment is required in determining the most likely estimate within the range of total costs, and the factors determining this judgment may vary over time. Similarly, reserves for litigation and similar matters are based on a range of potential outcomes and require considerable judgment in determining the most probable outcome. If no amount within the range is considered more probable than any other amount, the Company accrues the lowest amount in that range in accordance with generally accepted accounting principles. See Note 25 of Notes to Consolidated Financial Statements, which appears in Item 8 of this Report.

3. Realizability of equity investments — Quaker holds equity investments in various foreign companies, where it has the ability to influence, but not control, the operations of the entity and its future results. Quaker would record an impairment charge to an investment if it believed a decline in value that was other than temporary occurred. Adverse changes in market conditions, poor operating results of underlying investments, devaluation of foreign currencies or other events or circumstances could result in losses or an inability to recover the carrying value of the investments, potentially leading to an impairment charge in the future. The carrying amount of the Company's equity investments as of December 31, 2018 was \$21.3 million, which included three investments: \$14.7 million for a 33% interest in Primex, Ltd. (Barbados); \$6.2 million for a 50% interest in Nippon Quaker Chemical, Ltd. (Japan); and \$0.4 million for a 50% interest in Kelko Quaker Chemical, S.A. (Panama), respectively. The Company also has a 50-50 joint venture in a Venezuelan affiliate, Kelko Quaker Chemical, S.A ("Kelko Venezuela"). Due to heightened foreign exchange controls, current economic circumstances and other restrictions in Venezuela, during the third quarter of 2018 the Company concluded that it no longer had significant influence over this affiliate. Prior to this determination, the Company historically accounted for this affiliate under the equity method. As of December 31, 2018, the Company has no remaining carrying value for its investment in Kelko Venezuela. See Note 16 of Notes to Consolidated Financial Statements, which appears in Item 8 of this Report.

4. Tax exposures, uncertain tax positions and valuation allowances — Quaker records expenses and liabilities for taxes based on estimates of amounts that will be determined as deductible in tax returns filed in various jurisdictions. The filed tax returns are subject to audit, which often occur several years subsequent to the date of the financial statements. Disputes or disagreements may arise during audits over the timing or validity of certain items or deductions, which may not be resolved for extended periods of time. Quaker also evaluates for uncertain tax positions on all income tax positions taken on previously filed tax returns or expected to be taken on a future tax return, which prescribes the recognition threshold and measurement attributes for financial statement recognition and measurement of tax positions taken or expected to be taken on a tax return and, also, whether the benefits of tax positions are probable or if they will be more likely than not sustained upon audit based upon the technical merits of the tax position. For tax positions that are determined to be more likely than not sustained upon audit, the Company would recognize the largest amount of benefit that is greater than 50% likely of being realized upon ultimate settlement in the financial statements. For tax positions that are not determined to be more likely than not sustained upon audit, the Company would not recognize any portion of the benefit in its financial statements. In addition, the Company's continuing practice is to recognize interest and/or penalties related to income tax matters in income tax expense. Also, the Company would net its liability for unrecognized tax benefits against deferred tax assets related to net operating losses or other tax credit carryforwards if the uncertain tax position were settled for the presumed amount at the balance sheet date.

Quaker also records valuation allowances when necessary to reduce its deferred tax assets to the amount that is more likely than not to be realized. While Quaker has considered future taxable income and employs prudent and feasible tax planning strategies in assessing the need for a valuation allowance, in the event Quaker were to determine that it would be able to realize its deferred tax assets in the future in excess of its net recorded amount, an adjustment to the deferred tax asset would increase income in the period such determination was made. Likewise, should Quaker determine that it would not be able to realize all or part of its net deferred tax assets in the future, an adjustment to the deferred tax asset would be charged to income in the period such determination was made. Both determinations could have a material impact on the Company's financial statements.

On December 22, 2017, the U.S. government enacted comprehensive tax legislation commonly referred to as U.S. Tax Reform. Among other provisions, U.S. Tax Reform reduced the U.S. corporate income tax rate from 35% to 21% effective January 1, 2018, implemented a new system of taxation for non-U.S. earnings which eliminates U.S. federal income taxes on dividends from certain foreign subsidiaries, and imposed a one-time tax on the deemed repatriation of undistributed earnings of certain foreign subsidiaries. The Securities and Exchange Commission issued guidance on accounting for the tax effects of U.S. Tax Reform and provided a one-year measurement period for companies to

complete the accounting. Based on reasonable interpretations and assumptions with regard to various uncertainties and ambiguities in the application of certain provisions of U.S. Tax Reform and subsequent to numerous temporary regulations, notices, and other formal guidance published by the Internal Revenue Service (“IRS”), U.S. Treasury, and various state taxing authorities in 2018, the Company completed its accounting for the tax effects of U.S. Tax Reform as of December 22, 2018. It is possible that the IRS could issue subsequent guidance or take positions on audit that differ from the Company’s interpretations and assumptions. The Company currently believes that subsequent guidance, or interpretations made by the IRS will not be materially different from the Company’s application of the provisions of U.S. Tax Reform and would not have a material adverse effect on the Company’s tax liabilities, earnings, or financial condition.

Pursuant to U.S. Tax Reform, specifically the one-time tax on deemed repatriation of foreign earnings, the Company has recorded a charge for U.S. income tax on its undistributed earnings of non-U.S. subsidiaries; however, the Company could be subject to other taxes, such as withholding taxes and dividend distribution taxes if these undistributed earnings are ultimately remitted to the U.S. As a result of the impacts from U.S. Tax reform, the Company re-evaluated its global cash strategy, resulting in a change to its indefinite reinvestment assertion attributable to a portion of its undistributed foreign earnings, and recognized a deferred tax liability and corresponding deferred tax expense of \$7.9 million as of December 31, 2018, which primarily represents the Company’s estimate of the non-U.S. taxes the Company will incur to ultimately remit these earnings to the U.S. It is the Company’s current intention to reinvest its additional undistributed earnings of non-U.S. subsidiaries to support working capital needs and certain other growth initiatives. The amount of such undistributed earnings at December 31, 2018 was approximately \$210.0 million. Any tax liability which might result from ultimate remittance of these earnings is expected to be substantially offset by foreign tax credits (subject to certain limitations). It is currently impractical to estimate any such incremental tax expense. See Note 9 of Notes to Consolidated Financial Statements, which appears in Item 8 of this Report.

5. Goodwill and other intangible assets — The Company accounts for business combinations under the acquisition method of accounting. This method requires the recording of acquired assets, including separately identifiable intangible assets, at their acquisition date fair values. Any excess of the purchase price over the estimated fair value of the identifiable net assets acquired is recorded as goodwill. The determination of the estimated fair value of assets acquired requires management’s judgment and often involves the use of significant estimates and assumptions, including assumptions with respect to future cash inflows and outflows, discount rates, royalty rates, asset lives and market multiples, among other items. When necessary, the Company consults with external advisors to help determine fair value. For non-observable market values, the Company may determine fair value using acceptable valuation principles, including the excess earnings, relief from royalty, lost profit or cost methods.

The Company amortizes definite-lived intangible assets on a straight-line basis over their useful lives. Goodwill and intangible assets which have indefinite lives are not amortized and are required to be assessed at least annually for impairment. The Company compares the assets’ fair value to their carrying value, primarily based on future discounted cash flows, in order to determine if an impairment charge is warranted. The estimates of future cash flows involve considerable management judgment and are based upon assumptions about expected future operating performance. Assumptions used in these forecasts are consistent with internal planning, but the actual cash flows could differ from management’s estimates due to changes in business conditions, operating performance, and economic conditions. The Company’s assumed weighted average cost of capital (“WACC”) and estimated future net operating profit after tax (“NOPAT”) by reporting unit are particularly important in determining estimated future cash flows.

The Company completed its annual impairment assessment during the fourth quarter of 2018, and no impairment charge was warranted. Furthermore, the estimated fair value of each of the Company’s reporting units substantially exceeded its carrying value, with none of the Company’s reporting units at risk for failing step one of the goodwill impairment test. The Company’s consolidated goodwill and indefinite-lived intangible assets at December 31, 2018 and 2017 were \$84.4 million and \$87.1 million, respectively. The Company used a WACC of approximately 9%, and at October 1, 2018, this assumption would have had to increase by more than 229% before any of the Company’s reporting units would fail step one of the impairment analysis. Further, at October 1, 2018, the Company’s estimate of future NOPAT by reporting unit would have had to decrease by more than 75% before any of the Company’s reporting units would be considered potentially impaired. See Note 15 of Notes to Consolidated Financial Statements, which appears in Item 8 of this Report.

6. Postretirement benefits — The Company provides certain defined benefit pension and other postretirement benefits to current employees, former employees and retirees. Independent actuaries, in accordance with U.S. GAAP, perform the required valuations to determine benefit expense and, if necessary, non-cash charges to equity for additional minimum pension liabilities. Critical assumptions used in the actuarial valuation include the weighted average discount rate, including the use of a split discount rate (spot-rate approach) for the U.S. plans and certain foreign plans, rates of increase in compensation levels, and expected long-term rates of return on assets. If different assumptions were used, additional pension expense or charges to equity might be required.

The Company’s primary noncontributory U.S. pension plan (the “U.S. Pension Plan”) has a November 30 year-end and a measurement date of December 31. In the fourth quarter of 2018, the Company began the process of terminating the U.S. Pension Plan after receiving Board of Director approval to do so. The Company expects to record a pension settlement charge at plan termination. This settlement charge will include the immediate recognition into expense of the unrecognized losses within accumulated other comprehensive loss (“AOCI”) on the balance sheet as of the plan termination date. The Company does not have a current estimate for this future settlement charge, however, the gross AOCI related to this plan was approximately \$19 million as of December 31, 2018. The Company currently estimates that the U.S. Pension Plan termination will be completed during 2020. See Note 20 of Notes to Consolidated Financial Statements, which appears in Item 8 of this Report.

The following table highlights the potential impact on the Company's pre-tax earnings due to changes in assumptions with respect to the Company's pension plans, based on assets and liabilities as of December 31, 2018:

<i>(dollars in millions)</i>	<b>1/2 Percentage Point Increase</b>			<b>1/2 Percentage Point Decrease</b>		
	<b>Foreign</b>	<b>U.S.</b>	<b>Total</b>	<b>Foreign</b>	<b>U.S.</b>	<b>Total</b>
Discount rate (1)	\$ 0.5	\$ 0.1	\$ 0.6	\$ (0.6)	\$ (0.1)	\$ (0.7)
Expected rate of return on plan assets (2)	0.4	0.3	0.7	(0.5)	(0.3)	(0.8)

(1) The weighted-average discount rate used to determine net periodic benefit costs for the year ended December 31, 2018 was 2.33% for Foreign plans and 3.44% for U.S. plans.

(2) The weighted average expected rate of return on plan assets used to determine net periodic benefit costs for the year ended December 31, 2018 was 2.22% for Foreign plans and 5.95% for U.S. plans.



7. Restructuring and other related liabilities – A restructuring related program may consist of charges for employee severance, rationalization of manufacturing facilities and other related expenses. To account for such, the Company applies the Financial Accounting Standards Board’s guidance regarding exit or disposal cost obligations. This guidance requires that a liability for a cost associated with an exit or disposal activity be recognized when the liability is incurred, is estimable, and payment is probable. See Note 6 of Notes to Consolidated Financial Statements, which appears in Item 8 of this Report.

### ***Recently Issued Accounting Standards***

See Note 3 of Notes to the Consolidated Financial Statements, which appears in Item 8 of this Report for a discussion regarding recently issued accounting standards.

### ***Liquidity and Capital Resources***

At December 31, 2018, Quaker had cash, cash equivalents and restricted cash of \$124.4 million, including \$20.3 million of restricted cash. Total cash, cash equivalents and restricted cash was approximately \$111.1 million at December 31, 2017, which included \$21.2 million of restricted cash. The inclusion of restricted cash in total cash on the Company’s Consolidated Statements of Cash Flows is the result of a change in presentation required by the Financial Accounting Standards Board. See Note 3 of Notes to Consolidated Financial Statements. The \$13.4 million increase was the net result of \$78.8 million of cash provided by operating activities offset by \$12.4 million of cash used in investing activities, \$46.9 million of cash used in financing activities and a \$6.1 million negative impact due to the effect of foreign exchange rate changes on cash.

Net cash provided by operating activities was \$78.8 million in 2018 compared to \$64.8 million in 2017. The \$14.0 million increase was primarily due to increased cash generation as a result of the Company’s strong year-over-year operating performance growth as well as a \$4.1 million second quarter of 2018 cash dividend received from its equity investment, Primex, Ltd (“Primex”), compared to no dividend received in the prior year. The Company’s level of cash invested in working capital was higher in 2018 compared to 2017, including increased accounts receivables related to higher net sales year-over-year. Also, the Company recorded a significant collection of receivables from a certain customer late in the fourth quarter of 2017 which was uncommon and did not recur in 2018. In addition, the Company recorded higher cash outflows from inventory in 2018 as the Company re-stocked inventory levels throughout 2018 to a level sufficient to address increased customer demand compared to lower inventory levels held at the end of 2017. Operating cash flow related to current and non-current estimated taxes on income were impacted by additional tax payments related to U.S. Tax Reform during 2018. The Company’s operating cash flows in 2018 and 2017 were also impacted by the timing and amount of combination-related expenses and associated cash payments, described below. Finally, 2017 included restructuring payments made as part of the Company’s global restructuring program initiated in the fourth quarter of 2015 and completed during the first half of 2017, described below.

Net cash used in investing activities decreased from \$14.6 million in 2017 to \$12.4 million in 2018, primarily due to lower payments for acquisitions in the current year. During 2017, the Company had cash outflows of \$5.4 million for the acquisition of assets associated with a business that markets, sells and manufactures certain metalworking fluids, whereas during 2018, the Company paid \$0.5 million for certain formulations and product technology in the mining industry. In accordance with the terms of that acquisition agreement, an additional \$0.5 million of the purchase price was paid during the first quarter of 2019. In addition, the Company had higher cash proceeds from dispositions of assets during 2017 as compared to 2018, primarily as a result of \$1.4 million of cash proceeds received during the fourth quarter of 2017 for the disposition of a held-for-sale asset compared to \$0.6 million of cash proceeds received during the second quarter of 2018. These lower investing cash flows were partially offset by slightly higher additions to property, plant and equipment during 2018 as compared to 2017, primarily due to an increase in spending related to a new manufacturing facility in India that is expected to be completed during the first quarter of 2019.

Net cash used in financing activities was \$46.9 million in 2018 compared to \$55.2 million in 2017. The \$8.3 million decrease in cash outflows was primarily due to \$31.8 million of cash used in the fourth quarter of 2017 to purchase the remaining noncontrolling interest in the Company's India affiliate. These impacts of lower 2018 cash outflows were partially offset by higher repayments of long-term debt year-over-year, with repayments of \$26.8 million during 2018 compared to repayments of \$2.9 million during 2017. Also, during 2018, one of the Company's less than 100% owned consolidated affiliates made a distribution to the noncontrolling affiliate shareholder of \$0.9 million. There were no similar distributions during 2017. In addition, the Company paid \$19.3 million in cash dividends during 2018, a \$0.7 million increase in cash dividends compared to the prior year.

The Company's primary credit facility ("the Credit Facility") is a \$300.0 million syndicated multicurrency credit agreement with a group of lenders. The maximum amount available under the Credit Facility can be increased to \$400.0 million at the Company's option if the lenders agree and the Company satisfies certain conditions. Borrowings under the Credit Facility generally bear interest at a base rate or LIBOR rate plus a margin. The Credit Facility has certain financial and other covenants, with the key financial covenant requiring that the Company's consolidated total debt to adjusted EBITDA ratio cannot exceed 3.50 to 1. As of December 31, 2018 and 2017, the Company's consolidated total debt to adjusted EBITDA ratio was below 1.0 to 1, and the Company was also in compliance with all of its other covenants. During the fourth quarter of 2018, the Credit Facility was amended and restated to extend the maturity date to March 15, 2020. As of December 31, 2018 and 2017, the Company had total credit facility borrowings of \$24.0 million and \$48.5 million, respectively, primarily under the Credit Facility. The Company's other debt obligations as of December 31, 2018 and 2017, respectively, were primarily industrial development bonds, including a \$5.0 million industrial development bond which matured and was paid off during the fourth quarter of 2018, and municipality-related loans.

Quaker's management approved a global restructuring plan in the fourth quarter of 2015 (the "2015 Program") to reduce its operating costs. The Company completed all of the initiatives under the 2015 Program during the first half of 2017. The Company did not incur related costs in 2018 and does not expect to incur any further restructuring charges under this program. During 2017, the company incurred \$0.7 million of cash payments utilizing operating cash flows for the settlement of these restructuring liabilities.

On April 4, 2017, Quaker entered into a share purchase agreement with Gulf Houghton Lubricants, Ltd. to purchase the entire issued and outstanding share capital of Houghton. The shares will be bought for aggregate purchase consideration consisting of: (i) \$172.5 million in cash; (ii) a number of shares of common stock, \$1.00 par value per share, of the Company comprising 24.5% of the common stock outstanding upon the closing of the Combination; and (iii) the Company's assumption of Houghton's net indebtedness as of the closing of the Combination, which was approximately \$690 million at signing. See Note 2 to Consolidated Financial Statements.

In connection with the Combination, the Company secured \$1.15 billion in commitments from Bank of America Merrill Lynch and Deutsche Bank to fund the purchase consideration and provide additional liquidity, and has since replaced these commitments with a syndicated bank agreement ("the New Credit Facility") with a group of lenders for \$1.15 billion. The New Credit Facility is contingent upon and will not be effective until the closing of the Combination. During the fourth quarter of 2018, the Company extended the bank commitment through March 15, 2019. The New Credit Facility is comprised of a \$400.0 million multicurrency revolver, a \$600.0 million USD term loan and a \$150.0 million EUR equivalent term loan, each with a five-year term from the date the New Credit Facility becomes effective. The maximum amount available under the New Credit Facility can be increased by \$200.0 million at the Company's option if the lenders agree and the Company satisfies certain conditions. Borrowings under the New Credit Facility will bear interest at a base rate, LIBOR rate plus a margin or Euribor rate plus a margin, and the Company currently estimates the annual floating rate cost will be in the 3.75% to 4.0% range based on current market interest rates. The New Credit Facility will be subject to certain financial and other covenants, including covenants that the Company's consolidated net debt to adjusted EBITDA ratio cannot exceed 4.25 to 1 and the Company's consolidated adjusted EBITDA to interest expense ratio cannot be less than 3.0 to 1. Both the USD and EUR equivalent term loans will have quarterly principal amortization during their respective five-year terms, with 5.0% amortization of the principal balance due in years 1 and 2, 7.5% in year 3, and 10.0% in years 4 and 5, with the remaining principal amounts due at maturity. Until closing, the Company will incur certain interest costs paid to maintain the bank commitment ("ticking fees"), which began to accrue on September 29, 2017. The ticking fees bear an interest rate of 0.30% per annum.

The Company incurred \$19.5 million of total combination-related expenses during 2018, which includes approximately \$3.5 million of ticking fees as well as a \$0.6 million gain on the sale of a held-for-sale asset, described in the Non-GAAP measures section of this Item below. The Company had net cash outflows related to these costs of approximately \$16.8 million during 2018. Comparatively, during 2017, combination-related expenses totaled \$30.8 million, including \$0.9 million of ticking fees, with cash outflows related to these costs of approximately \$25.9 million. The Company currently estimates it will incur additional costs and have associated cash outflows of approximately \$25 to \$30 million through closing of the Combination for similar combination-related expenses, including cash payments for bank fees which we expect to capitalize. In addition, post-closing of the combination, the Company expects it will incur additional costs and make associated cash payments to integrate the Company and Houghton and to begin realizing the Combination's total anticipated cost synergies, which we currently estimate to meet or exceed \$45 million. The timing and an accurate range of these additional costs and cash payments post-closing are not estimable at this time. However, based on market precedents, the Company currently projects these costs to approximate one times anticipated synergies, and the Company expects them to be incurred over a three-year period post-close.

The Company received regulatory approval for the Combination from China and Australia in 2017. In addition, at a shareholder meeting held during 2017, the Company's shareholders overwhelmingly approved the issuance of the new shares of the Company's common stock at closing of the Combination. The European Commission ("EC") conditionally approved the Combination in December 2018. Quaker expects final approval from the EC once the final purchase agreement is in place between Quaker, Houghton, and the buyer of the divested product lines. Quaker continues to be in productive discussions with the U.S. Federal Trade Commission ("FTC"), although the process is taking longer than anticipated. Given the time lapse since Quaker's initial filing, the FTC requested updated information as part of their approval process late in the fourth quarter of 2018. In addition, the government shutdown in the U.S. in the first quarter of 2019 extended the timeline to receive the final approval. The proposed remedy being discussed with the FTC continues to be consistent with Quaker's previous guidance that the total divested product lines will be approximately 3% of the combined company's revenue. Given current information, the Company estimates that FTC and EC final approval and closing of the combination will occur within the next few months. Given these contingencies and the overall timing of the Combination, the Company has not recorded any estimated costs for additional expenses that the Company expects, but had yet to incur as of December 31, 2018, related to the Combination.

As of December 31, 2018, the Company's gross liability for uncertain tax positions, including interest and penalties, was \$8.5 million. The Company cannot determine a reliable estimate of the timing of cash flows by period related to its uncertain tax position liability. However, should the entire liability be paid, the amount of the payment may be reduced by up to \$4.9 million as a result of offsetting benefits in other tax jurisdictions. Related to the impact of U.S. Tax Reform, as of December 31, 2018, the Company's remaining gross deemed repatriation transition tax ("Transition Tax") on previously untaxed accumulated and current earnings and profits of certain of the Company's foreign subsidiaries is \$8.9 million. The Company elected to pay the U.S. federal Transition Tax over 8 years, as allowed, \$7.6 million of which is considered a long-term tax payable due after 2019 with the remainder due during 2019, as presented in the contractual obligations table, below.

In the fourth quarter of 2018, the Company began the process of terminating the U.S. Pension Plan after receiving the Company's Board of Director approval to do so. Participants of the U.S. Pension Plan will have their benefits either converted into a lump sum cash payment or an annuity contract placed with an insurance carrier. The U.S. Pension Plan is fully-funded on a U.S. GAAP basis. In order to terminate the plan in accordance with IRS and pension benefit guaranty corporation requirements, the Company will be required to fully fund the plan on a termination basis and will commit to contribute the additional assets necessary, if any, to do so. The amount necessary to do so is not yet known but is currently estimated to be between \$0 and \$10 million. The Company currently estimates that the U.S. Pension Plan termination will be completed during 2020. See Note 20 of Notes to Consolidated Financial Statements, which appears in Item 8 of this Report.

The Company believes it is capable of supporting its operating requirements and funding its business objectives, including but not limited to, payments of dividends to shareholders, costs related to the Combination, pension plan contributions, capital expenditures, other business opportunities and other potential contingencies, through internally generated funds supplemented with debt or equity as needed.

The following table summarizes the Company's contractual obligations as of December 31, 2018, and the effect such obligations are expected to have on its liquidity and cash flows in future periods. Pension and other postretirement plan contributions beyond 2019 are not determinable since the amount of any contribution is heavily dependent on the future economic environment and investment returns on pension trust assets. The timing of payments related to other long-term liabilities which consists primarily of deferred compensation agreements, also cannot be readily determined due to their uncertainty. Interest obligations on the Company's long-term debt and capital leases assume the current debt levels will be outstanding for the entire respective period and apply the interest rates in effect as of December 31, 2018.

<i>(dollars in thousands)</i>	<b>Payments due by period</b>						<b>2024 and Beyond</b>
	<b>Total</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	
<b>Contractual Obligations</b>							
Long-term debt	\$ 36,694	\$ 670	\$ 24,714	\$ 393	\$ 270	\$ 240	\$ 10,407
Interest obligations	5,230	787	586	526	526	526	2,279
Capital lease obligations	21	8	8	5	-	-	-
Operating leases	31,173	7,068	5,635	4,509	3,523	2,659	7,779
Purchase obligations	1,664	1,664	-	-	-	-	-
Transition Tax	8,917	1,273	1,273	1,273	1,273	2,386	1,439
Pension and other postretirement plan contributions	5,675	5,675	-	-	-	-	-
Other long-term liabilities (See Note 21 of Notes to Consolidated Financial Statements)	7,510	-	-	-	-	-	7,510
<b>Total contractual cash obligations</b>	<b>\$ 96,884</b>	<b>\$ 17,145</b>	<b>\$ 32,216</b>	<b>\$ 6,706</b>	<b>\$ 5,592</b>	<b>\$ 5,811</b>	<b>\$ 29,414</b>

**Non-GAAP Measures**

Included in this Form 10-K filing are two non-GAAP (unaudited) financial measures: non-GAAP earnings per diluted share and adjusted EBITDA. The Company believes these non-GAAP financial measures provide meaningful supplemental information as they enhance a reader's understanding of the financial performance of the Company, are more indicative of future operating performance of the Company, and facilitate a better comparison among fiscal periods, as the non-GAAP financial measures exclude items that are not considered core to the Company's operations. Non-GAAP results are presented for supplemental informational purposes only and should not be considered a substitute for the financial information presented in accordance with GAAP. The following tables reconcile non-GAAP earnings per diluted share (unaudited) and adjusted EBITDA (unaudited) to their most directly comparable GAAP financial measures:

	<b>For the years ended December 31,</b>		
	<b>2018</b>	<b>2017</b>	<b>2016</b>
GAAP earnings per diluted share attributable to Quaker Chemical Corporation Common Shareholders	\$ 4.45	\$ 1.52	\$ 4.63
Equity income in a captive insurance company per diluted share (a)	(0.07)	(0.19)	(0.13)
Restructuring credit per diluted share (b)	—	—	(0.02)
Houghton combination-related expenses per diluted share (c)	1.21	1.90	0.11
U.S. Tax Reform charges, net, per diluted share (d)	0.43	1.67	—
U.S. pension plan settlement charge per diluted share (e)	—	0.09	—
Cost streamlining initiative per diluted share (f)	—	0.01	—
Loss on disposal of held-for-sale asset per diluted share (g)	—	0.01	—
Insurance insolvency recovery per diluted share (h)	(0.01)	(0.03)	—
Gain on liquidation of an inactive legal entity per diluted share (i)	(0.03)	—	—
Currency conversion impacts of hyper-inflationary economies per diluted share (j)	0.06	0.03	0.01
Non-GAAP earnings per diluted share (k)	\$ 6.04	\$ 5.01	\$ 4.60
	<b>For the years ended December 31,</b>		
	<b>2018</b>	<b>2017</b>	<b>2016</b>
<i>(dollars in thousands unless otherwise noted)</i>			
Net income attributable to Quaker Chemical Corporation	\$ 59,473	\$ 20,278	\$ 61,403
Depreciation and amortization	19,714	19,966	19,566
Interest expense (c)	6,158	3,892	2,889
Taxes on income before equity in net income of associated companies (d)	25,050	41,653	23,226
Equity income in a captive insurance company (a)	(966)	(2,547)	(1,688)
Restructuring credit (b)	—	—	(439)
Houghton combination-related expenses (c)	16,051	29,938	1,531
U.S. pension plan settlement charge (e)	—	1,860	—
Cost streamlining initiative (f)	—	286	—
Loss on disposal of held-for-sale asset (g)	—	125	—
Insurance insolvency recovery (h)	(90)	(600)	—
Gain on liquidation of an inactive legal entity (i)	(446)	—	—
Currency conversion impacts of hyper-inflationary economies (j)	664	388	88
Adjusted EBITDA	\$ 125,608	\$ 115,239	\$ 106,576
Adjusted EBITDA margin (%) (l)	14.5%	14.1%	14.3%

(a) Equity income in a captive insurance company represents the after-tax income attributable to the Company's interest in Primex, a captive insurance company. The Company holds a 33% investment in and has significant influence over Primex, and therefore accounts for this interest under the equity method of accounting. The income attributable to Primex is not indicative of the future operating performance of the Company and is not considered core to the Company's operations. See Note 16 of Notes to Consolidated Financial Statements, which appears in Item 8 of this Report.

(b) Restructuring credit represents the credit recorded by the Company as part of finalizing a global restructuring program which was initiated in the fourth quarter of 2015. This credit is not indicative of the future operating performance of the Company. See Note 6 of Notes to Consolidated Financial Statements, which appears in Item 8 of this Report.

(c) Houghton combination-related expenses include certain legal, environmental, financial, and other advisory and consultant costs incurred in connection with the strategic evaluation of, diligence on, and execution of the definitive agreement to combine with Houghton, as well as regulatory and shareholder approvals and integration planning associated with the pending Combination. These costs are not indicative of the future operating performance of the Company. Certain of these costs were considered non-deductible for the purpose of determining the Company's effective tax rate and, therefore, the earnings per diluted share amount reflects this impact. Also, included in the caption Houghton combination-related expenses for 2018 is a \$0.6 million gain on the sale of a held-for-sale asset recorded in Other expense, net, in the Company's Consolidated Statements of Income. In addition, during 2018, the Company incurred approximately \$3.5 million of ticking fees to maintain the bank commitment related to the pending Combination. Comparatively, the Company began incurring ticking fees as of September 29, 2017 and recognized \$0.9 million during 2017. These interest costs are included in the caption Houghton combination-related expenses in the reconciliation of GAAP earnings per diluted share attributable to Quaker Chemical Corporation common shareholders to Non-GAAP earnings per diluted share above but are included in the caption Interest expense in the reconciliation of Net income attributable to Quaker Chemical Corporation to Adjusted EBITDA above. See Note 2 of Notes to Consolidated Financial Statements, which appears in Item 8 of this Report.

(d) U.S. Tax Reform charges, net, represent the tax expense incurred by the Company related to its initial 2017 estimates and subsequent 2018 adjustments to adopt U.S. Tax Reform. The 2017 tax expense includes the Company's estimated impact of the Transition Tax, net of eliminating U.S. federal income taxes on dividends from certain foreign subsidiaries in 2017, as well as the impact of revaluing certain of the Company's U.S. deferred tax balances from 35% to the new 21% U.S. corporate tax rate. The 2018 tax expense includes certain adjustments recorded by the Company as a result of changes to the Company's initial fourth quarter of 2017 estimates. Specifically, the Company has adjusted the initial amount estimated for the one-time charge on the gross deemed repatriation Transition Tax on previously untaxed accumulated and current earnings and profits of certain of the Company's foreign subsidiaries, as well as updated its assertion related to permanent reinvestment of accumulated earnings and profits of certain of these foreign subsidiaries. In addition, the Company has adjusted its initial estimate of the impact from certain internal revenue code changes associated with the deductibility of certain executive compensation. All of these adjustments were based on guidance issued during 2018 and 2017 by the IRS, the U.S. Treasury and various state taxing authorities and were the result of specific one-time events that are not indicative of future operating performance of the Company. U.S. Tax Reform charges, net, are included within Taxes on income before equity in net income of associated companies in the reconciliation of Net income attributable to Quaker Chemical Corporation to Adjusted EBITDA. See Note 9 of Notes to Consolidated Financial Statements, which appears in Item 8 of this Report.

(e) U.S. pension plan settlement charge represents the expense recorded for the settlement of one of the Company's U.S. pension plans vested terminated participants. This settlement charge represents the immediate recognition into expense of a portion of the unrecognized loss within AOCI on the balance sheet in proportion to the share of the projected benefit obligation that was settled by these payments. This charge was the result of a specific one-time event and is not indicative of the future operating performance of the Company. See Note 20 of Notes to Consolidated Financial Statements, which appears in Item 8 of this Report.

(f) Cost streamlining initiative represents expenses associated with certain actions taken to reorganize the Company's corporate staff. Overall, these costs are non-core and are indirect operating expenses that are not attributable to the product sales of any respective reportable operating segment, and, therefore, are not indicative of the future operating performance of the Company.

(g) Loss on disposal of held-for-sale asset represents a one-time charge to write down the value of a held-for-sale asset at the Company's India affiliate to its fair value. This charge was the result of a specific one-time event and is not indicative of the future operating performance of the Company. See Note 8 of Notes to Consolidated Financial Statements, which appears in Item 8 of this Report.



(h) Insurance insolvency recovery represents income associated with cash receipts from an insolvent insurance carrier for previously submitted claims by an inactive subsidiary of the Company. This other income is not indicative of the future operating performance of the Company. See Notes 8 and 25 of Notes to Consolidated Financial Statements, which appears in Item 8 of this Report.

(i) Gain on liquidation of an inactive legal entity represents the decrease in historical cumulative currency translation adjustments associated with an inactive legal entity which was closed during the third quarter of 2018. These cumulative currency translation adjustments were the result of remeasuring the legal entity's monetary assets and liabilities to the applicable published exchange rates and were a component of AOCI, which was included in total shareholder's equity on the Company's Consolidated Balance Sheets. As required under U.S. GAAP, when a legal entity is liquidated, any amount attributable to that legal entity and accumulated in the currency translation adjustment component of equity is required to be removed from equity and reported as part of the gain or loss on liquidation of the legal entity during the period in which the liquidation occurs. This recognized gain is not indicative of the future operating performance of the Company. See Note 8 of Notes to Consolidated Financial Statements, which appears in Item 8 of this Report.

(j) Currency conversion impacts of hyper-inflationary economies represents the foreign currency remeasurement impacts associated with the Company's Venezuelan and Argentina affiliates whose local economies are designated as hyper-inflationary under U.S. GAAP. An entity which operates within an economy deemed to be hyper-inflationary under U.S. GAAP is required to remeasure its monetary assets and liabilities to the applicable published exchange rates and record the associated gains or losses resulting from the remeasurement directly to the Consolidated Statements of Income. Venezuela's economy has been considered hyper-inflationary under U.S. GAAP since 2010 while Argentina's economy has been considered hyper-inflationary beginning July 1, 2018. The charges incurred related to the immediate recognition of foreign currency remeasurement in the Consolidated Statements of Income associated with these entities are not indicative of the future operating performance of the Company. See Notes 8 and 16 of Notes to Consolidated Financial Statements, which appear in Item 8 of this Report.

(k) Within the Company's calculation of Non-GAAP earnings per diluted share above, each reconciling item includes the impact of any current and deferred income tax expense (benefit) as applicable. The income tax expense (benefit) related to these items was determined utilizing the applicable rates in the taxing jurisdictions in which these adjustments occurred.

(l) The Company calculates Adjusted EBITDA margin as the percentage of Adjusted EBITDA to consolidated net sales.

## ***Operations***

### ***Consolidated Operations Review – Comparison of 2018 with 2017***

Net sales grew \$47.4 million or 6% in 2018, increasing to \$867.5 million compared to \$820.1 million in 2017. The Company's 2018 net sales benefited from increases in volume of 3%, selling price and product mix of 2%, as well as a positive impact from foreign currency translation of less than 1% or \$3.7 million.

Cost of goods sold ("COGS") in 2018 of \$555.2 million increased 5% from \$528.6 million in 2017. The increase in COGS was primarily due to the increase in product volumes, noted above, the impact of certain raw material cost increases, changes in product mix and the negative impact of foreign currency translation year-over-year.

Gross profit in 2018 increased \$20.8 million or 7% compared to 2017, primarily driven by the increase in net sales and product volumes, noted above, as well as a higher gross margin of 36.0% in 2018 compared to 35.5% in 2017. The increase in the Company's gross margin in 2018 was primarily driven by pricing initiatives and the mix of certain products sold which more than offset increases in raw material costs.

SG&A in 2018 increased \$9.1 million compared to 2017 due to higher labor-related costs, primarily from annual merit increases and incentive-based compensation due to the Company's strong operating performance, as well as the negative impact from foreign currency translation. These increases year-over-year were partially offset by a first quarter of 2017 cost streamlining initiative described in the Non-GAAP measures section of this Item, above.

During 2018, the Company incurred \$16.7 million of costs related to its previously announced pending Combination with Houghton, described in the Non-GAAP measures section of this Item, above. Comparatively, the Company incurred \$29.9 million of similar combination-related expenses in 2017 as well as certain due diligence-related costs.

Operating income in 2018 was \$87.8 million compared to \$62.7 million in 2017. The increase in operating income was due to strong net sales and gross profit increases as well as lower Houghton combination-related expenses, noted above, partially offset by an increase in SG&A not related to the pending Houghton combination.

The Company had other expense, net, of \$0.6 million in 2018 compared to \$0.7 million in 2017. The decrease in other expense, net, includes both a \$1.9 million settlement charge in one of the Company's U.S. pension plans and a \$0.1 million loss on the disposal of a held for sale asset in 2017, as well as a 2018 gain of \$0.6 million on the sale of a held-for-sale asset. The positive year-over-year impact of these items was partially offset by \$0.5 million lower year-over-year cash proceeds received from an insolvent insurance carrier with respect to previously filed recovery claims by an inactive subsidiary of the Company. In addition to all of these items, which are described in the Non-GAAP measures section of this Item, above, the Company also had foreign currency transaction losses in 2018 compared to foreign currency transaction gains in 2017. The Company's 2018 foreign currency transaction losses included both recurring transactional activity as well as foreign currency transaction losses of approximately \$0.4 million related to the Company's Argentina subsidiary and a foreign currency transaction gain of approximately \$0.4 million related to the liquidation of an inactive legal entity, both of which are described in the Non-GAAP measures section of this Item, above. Lastly, the Company had a decrease in receipts of local municipality-related grants in one of the Company's regions year-over-year.

Interest expense increased \$2.3 million year-over-year, primarily due to higher 2018 costs incurred to maintain the bank commitment for the pending Houghton Combination, partially offset by a decrease in interest expense due to lower average outstanding borrowings on the Company's existing credit facility during 2018 compared to 2017. Interest income was \$0.4 million lower in 2018 compared to 2017 primarily due to changes in the level of the Company's invested cash in certain regions with higher returns as well as a decrease in interest received on certain tax-related credits year-over-year.

The Company's effective tax rates for 2018 and 2017 were 30.1% and 68.7%, respectively. The Company's elevated 2018 and 2017 effective tax rates were impacted by its initial estimate and subsequent adjustments related to U.S. Tax Reform, as well as certain non-deductible Houghton combination-related expenses in both years, described in the Non-GAAP measures section of this Item, above. Excluding these items in each period, the Company estimates that its 2018 and 2017 effective tax rates would have been approximately 22% and 27%, respectively. The decrease in the Company's effective tax rate year-over-year was primarily due to a shift in earnings to lower tax jurisdictions and a lower U.S. statutory tax rate of 21% in 2018 compared to 35% in 2017. The Company has experienced and expects to continue to experience volatility in its effective tax rates due to several factors, including the timing of tax audits and the expiration of applicable statutes of limitations as they relate to uncertain tax positions, the unpredictability of the timing and amount of certain incentives in various tax jurisdictions, the treatment of certain acquisition-related costs and the timing and amount of certain share-based compensation-related tax benefits, among other factors.

Equity in net income of associated companies ("equity income") decreased \$1.5 million in 2018 compared to 2017. The decrease was primarily due to lower earnings from the Company's interest in a captive insurance company in 2018, partially offset by higher currency conversion charges in 2017 related to the Company's hyper-inflationary Venezuelan affiliate, both described in the Non-GAAP measures section of this Item, above.

The Company had a \$1.7 million decrease in net income attributable to noncontrolling interest in 2018 compared to 2017, primarily due to the Company's purchase of the remaining interest in its India joint venture during December 2017.

Foreign exchange negatively impacted the Company's 2018 earnings by approximately 1% or \$0.08 per diluted share, driven by the negative impact of net foreign currency transaction losses year-over-year, noted above, partially offset by a positive impact from foreign currency translation.

#### Consolidated Operations Review – Comparison of 2017 with 2016

Net sales in 2017 of \$820.1 million increased 10% compared to net sales of \$746.7 million in 2016. The \$73.4 million increase in net sales was the result of a 6% increase in organic volumes, a 1% or \$10.7 million increase from sales attributable to the Company's 2016 acquisition of Lubricor Inc. and its affiliate entities ("Lubricor"), a 2% increase due to changes in selling price and product mix and the positive impact of foreign currency translation of \$4.9 million or 1%.

COGS in 2017 of \$528.6 million increased 13% from \$466.6 million in 2016. The increase in COGS was primarily due to the increase in product volumes, noted above, as well as additional COGS attributed to the Company's 2016 acquisition of Lubricor, the impact of certain raw material cost increases, changes in product mix and the negative impact of foreign currency translation year-over-year.

Gross profit in 2017 increased \$11.4 million or 4% compared to 2016, primarily driven by the increase in sales volumes, noted above, partially offset by a lower gross margin of 35.5% in 2017 compared to 37.5% in 2016. The decrease in the Company's gross margin in 2017 was primarily due to higher raw material costs compared to 2016 and a change in the mix of certain products sold.

SG&A in 2017 increased \$5.1 million compared to 2016 primarily due to additional SG&A associated with the Company's 2016 Lubricor acquisition, an increase due to the impact of foreign currency translation, higher labor-related costs primarily due to annual compensation increases and incentive compensation, as well as a first quarter of 2017 cost streamlining initiative, described in the Non-GAAP measures section of this Item, above. These increases to SG&A were partially offset by decreases as a result of certain cost savings efforts, including the impact of the 2015 global restructuring program in 2017.

The Company substantially completed the 2015 global restructuring program during 2016 and recognized a restructuring credit of \$0.4 million during the fourth quarter of 2016 to update its initial estimates for employee separation costs. There were no comparable restructuring costs or credits during 2017.

During 2017, the Company incurred \$29.9 million of costs related to its previously announced Combination with Houghton, described in the Non-GAAP measures section of this Item, above. The Company incurred \$1.5 million of similar combination-related expenses in 2016.

Operating income in 2017 was \$62.7 million compared to \$85.4 million in 2016. The decrease in operating income was primarily due to the higher Houghton combination-related expenses along with slightly higher levels of SG&A not related to the Houghton Combination, which more than offset gross profit increases on strong volume growth, noted above.

The Company had other expense, net, of \$0.7 million in 2017 compared to \$0.5 million in 2016. The increase in other expense, net, was primarily driven by a second quarter of 2017 U.S. pension plan settlement charge and a fourth quarter of 2017 loss on the disposal of a held-for-sale asset, partially offset by income associated with an insurance insolvency recovery in the fourth quarter of 2017, all of which are described in the Non-GAAP measures section of this Item, above. In addition, the Company had higher foreign currency transaction gains realized in 2017 compared to 2016 and an increase in receipts of local municipality-related grants in one of the Company's regions year-over-year.

Interest expense increased \$1.0 million year-over-year, primarily due to costs incurred to maintain the committed capital for the pending Houghton Combination. Interest income increased \$0.5 million in 2017 compared to 2016, primarily due to an increase in the level of the Company's invested cash in certain regions with higher returns.

The Company's effective tax rates for 2017 and 2016 were 68.7% and 27.6%, respectively. The primary drivers of the increase in the Company's effective tax rate during 2017 were the impact of certain non-deductible Houghton combination-related expenses as well as \$22.2 million of charges related to U.S. Tax Reform, described in the Non-GAAP measures section of this Item, above. The Company estimates that its 2017 effective tax rate would have been approximately 27%, without the impact of U.S. Tax Reform and non-deductible Houghton combination-related expenses. These increases to the 2017 effective tax rate were partially offset by the favorable impact of tax benefits for deductions in excess of compensation cost associated with stock option exercises and restricted stock vesting in 2017. In 2016, there were minimal non-deductible Houghton combination-related expenses, no charges similar to those of the 2017 U.S. Tax Reform and no comparable share-based compensation-related tax benefits. Also, in both 2017 and 2016, the Company's mix of foreign earnings in jurisdictions with lower effective tax rates impacted each year's tax expense.

Equity income increased \$1.0 million in 2017 compared to 2016. The increase in equity income was primarily due to higher earnings from the Company's interest in a captive insurance company in 2017. In addition, the Company recorded hyper-inflationary accounting currency conversion charges in both 2017 and 2016, respectively, associated with the Company's Venezuela affiliate. The Company's interest in a captive insurance company and the currency conversion charges recorded are described in the Non-GAAP measures section of this Item, above.

The Company had a \$0.4 million increase in net income attributable to noncontrolling interest in 2017 compared to 2016, primarily due to an increase in performance from certain consolidated affiliates in the Company's Asia/Pacific region partially offset by the impact of the Company's purchase of the remaining interest in its India joint venture in December 2017.

Foreign exchange in total had minimal impact on the Company's 2017 earnings, as a negative impact from foreign currency translation of less than 1% or \$0.01 per diluted share and the Venezuela hyper-inflationary currency conversion charges, noted above, were offset by the positive impact of higher foreign currency transaction gains year-over-year.

#### Reportable Operating Segment Review – Comparison of 2018 with 2017

The Company sells its industrial process fluids, chemical specialties and technical expertise to a wide range of industries in a global product portfolio throughout its four segments: (i) North America, (ii) EMEA, (iii) Asia/Pacific and (iv) South America.

##### *North America*

North America represented approximately 44% of the Company's consolidated net sales in 2018. The segment's net sales were \$383.5 million, an increase of \$26.9 million or 8% compared to 2017. The increase in net sales was primarily due to higher volumes of 4% and an increase in selling price and product mix of 4%. This reportable segment's operating earnings, excluding indirect expenses, were \$88.3 million, an increase of \$10.6 million or 14% compared to 2017. The increase in operating earnings year-over-year was the result of higher gross profit on the higher net sales noted above, coupled with an increase in gross margin due to changes in product mix and the impact of pricing initiatives which more than offset raw material cost increases. These increases to the segment's 2018 operating earnings were partially offset by higher SG&A, primarily due to higher labor costs associated with annual merit increases and improved segment performance.

##### *EMEA*

EMEA represented approximately 27% of the Company's consolidated net sales in 2018. The segment's net sales were \$233.6 million, an increase of \$7.4 million or 3% compared to 2017. The increase in net sales was primarily due to the positive impact of foreign currency translation of 4% and increases in selling price and product mix of 3%, partially offset by lower volumes of 4%. The year-over-year volume comparison was impacted by an atypically high sales pattern in EMEA during the first quarter of 2017, a decrease in volume associated with a specific piece of business which the Company stopped selling during the second half of 2018 primarily due to its limited profitability, and a slowing of orders at the end of 2018 due to market challenges in Europe. The foreign exchange impact was primarily due to a strengthening of the euro against the U.S. dollar as this exchange rate averaged 1.18 in 2018 compared to 1.13 in 2017. This reportable segment's operating earnings, excluding indirect expenses, were \$36.0 million, an increase of \$0.6 million or 2% compared to 2017. The increase in operating earnings year-over-year was the result of higher gross profit on the higher net sales noted above, coupled with an increase in gross margin due to changes in product mix and the impact of pricing initiatives which more than offset raw material cost increases. These increases to the segment's 2018 operating earnings were partially offset by higher SG&A, primarily due to the impact of foreign currency translation as well as higher labor costs associated with annual merit increases.

#### *Asia/Pacific*

Asia/Pacific represented approximately 25% of the Company's consolidated net sales in 2018. The segment's net sales were \$214.2 million, an increase of \$13.1 million or 7% compared to 2017. The increase in net sales was primarily due to higher volumes of 8% partially offset by a decrease in selling price and product mix of 1%. This reportable segment's operating earnings, excluding indirect expenses, were \$56.1 million, an increase of \$7.7 million or 16% compared to 2017. The increase in operating earnings year-over-year was primarily driven by higher gross profit on the increase in net sales, noted above, coupled with an increase in gross margin due to changes in product mix and, to a lesser extent, a decrease in SG&A due to lower labor expenses.

### *South America*

South America represented approximately 4% of the Company's consolidated net sales in 2018. The segment's net sales were \$36.3 million, an increase of \$0.1 million or less than 1% compared to 2017. The slight increase in net sales was primarily due to higher volumes of 8% and an increase in selling price and product mix of approximately 7%, offset by the negative impact of foreign currency translation of 15%. The foreign exchange impact was primarily due to a weakening of both the Brazilian real and Argentinian peso against the U.S. dollar as these exchange rates averaged 3.63 and 26.13 in 2018 compared to 3.19 and 16.50 in 2017, respectively. This reportable segment's operating earnings, excluding indirect expenses, were \$3.9 million in both 2018 and 2017. This flat year-over-year operating earnings in South America was the result of the slight increase in net sales, noted above, and lower SG&A largely due to foreign currency translation, partially offset by a lower gross margin on raw material changes and impacts due to foreign currency translation.

### *Reportable Operating Segment Review – Comparison of 2017 with 2016*

#### *North America*

North America represented approximately 43% of the Company's consolidated net sales in 2017. The segment's net sales were \$356.6 million, an increase of \$20.4 million or 6% compared to 2016. The increase in net sales was primarily due to higher volumes of 3%, including acquisitions, and an increase in selling price and product mix of 3%. This reportable segment's operating earnings, excluding indirect expenses, were \$77.7 million, a decrease of \$0.1 million compared to 2016. North America's relatively consistent operating earnings were the net result of a decline in gross margin and higher levels of SG&A, which offset higher gross profit on the increase in net sales, noted above. The decline in gross margin was due to increases in certain raw material costs and changes in product mix. The higher SG&A was primarily due to increases in labor costs primarily associated with annual merit increases and additional SG&A associated with the Lubricor acquisition.

#### *EMEA*

EMEA represented approximately 28% of the Company's consolidated net sales in 2017. The segment's net sales were \$226.2 million, an increase of \$25.3 million or 13% compared to 2016. The increase in net sales was primarily due to higher volumes of 7%, an increase in selling price and product mix of 4% and the positive impact of foreign currency translation of 2%. Included in the 2017 volume increase was an atypically high sales pattern in the first quarter. The foreign exchange impact was primarily due to a strengthening of the euro against the U.S. dollar, as this exchange rate averaged approximately 1.13 in 2017 compared to approximately 1.10 in 2016. This reportable segment's operating earnings, excluding indirect expenses, were \$35.4 million, an increase of \$1.5 million or 5% compared to 2016. The increase in EMEA's operating earnings was driven by higher gross profit on the increase in net sales, noted above, partially offset by a lower gross margin due to increases in certain raw material costs and product mix and slightly higher SG&A year-over-year due to increases in labor costs primarily associated with annual merit increases and improved segment performance.

#### *Asia/Pacific*

Asia/Pacific represented approximately 25% of the Company's consolidated net sales in 2017. The segment's net sales were \$201.0 million, an increase of \$21.9 million or 12% compared to 2016. The increase in net sales was primarily due to higher volumes of 16% partially offset by a decrease in selling price and product mix of 4% and the negative impact of foreign currency translation of less than 1%. The foreign exchange impact was primarily due to a weakening of the Chinese renminbi against the U.S. dollar, which offset a strengthening of the Indian rupee against the U.S. dollar, year-over-year. These exchange rates averaged 6.75 and 65.1 in 2017 compared to 6.64 and 67.18 in



2016, respectively. This reportable segment's operating earnings, excluding indirect expenses, were \$48.3 million, an increase of \$2.5 million or 5% compared to 2016. The increase in Asia/Pacific's operating earnings was driven by higher gross profit on the increase in net sales, noted above, partially offset by a lower gross margin due to increases in certain raw material costs and product mix and slightly higher SG&A year-over-year due to increases in labor costs primarily associated with annual merit increases and improved segment performance.

*South America*

South America represented approximately 4% of the Company's consolidated net sales in 2017. The segment's net sales were \$36.2 million, an increase of \$5.8 million or 19% compared to 2016. The increase in net sales was primarily due to higher volumes of 6%, an increase in selling price and product mix of 7% and the positive impact of foreign currency translation of 6%. The foreign exchange impact was primarily due to a strengthening of the Brazilian real against the U.S. dollar, which offset a weakening of the Argentinian peso against the U.S. dollar, year-over-year. These exchange rates averaged 3.19 and 16.50 in 2017 compared 3.47 and 14.73 in 2016, respectively. This reportable segment's operating earnings, excluding indirect expenses, were \$3.9 million, an increase of \$2.5 million or 183% compared to 2016. The increase in South America's operating earnings was driven by higher gross profit on the increase in net sales, as well as a higher gross margin primarily due to pricing initiatives and lower raw material costs. These increases to operating earnings year-over-year were partially offset by slightly higher SG&A due to increases in labor costs primarily associated with annual merit increases and improved segment performance.

***Environmental Clean-up Activities***

The Company is involved in environmental clean-up activities in connection with an existing plant location and former waste disposal sites. In 1992, the Company identified certain soil and groundwater contamination at AC Products, Inc. (“ACP”), a wholly owned subsidiary. In voluntary coordination with the Santa Ana California Regional Water Quality Board, ACP has been remediating the contamination. In 2007, ACP agreed to operate two groundwater treatment systems, so as to hydraulically contain groundwater contamination emanating from ACP’s site until such time as the concentrations of contaminants are below the current Federal maximum contaminant level for four consecutive quarterly sampling events. In 2014, ACP ceased operation at one of its two groundwater treatment systems, as it had met the above condition for closure. As of December 31, 2018, ACP believes it is close to meeting the conditions for closure of the remaining groundwater treatment system but continues to operate this system while in discussions with the relevant authorities and believes that the range of potential-known liabilities associated with the balance of ACP’s water remediation program is approximately \$0.1 million to \$1.0 million. The low and high ends of the range are based on the length of operation of the treatment system as required by the conditions noted above, as determined by groundwater modeling. Notwithstanding the foregoing, the Company cannot be certain that future liabilities in the form of remediation expenses and damages will not be in excess of the high end of the range. See Note 25 of Notes to Consolidated Financial Statements, which appears in Item 8 of this Report.

***General***

See Item 7A of this Report, below, for further discussion of certain quantitative and qualitative disclosures about market risk.

**Item 7A. Quantitative and Qualitative Disclosures About Market Risk.**

Quaker is exposed to the impact of interest rates, foreign currency fluctuations, changes in commodity prices, and credit risk.

*Interest Rate Risk.* Quaker's exposure to changes in interest rates relates primarily to its credit facilities. Interest rates for Quaker's credit facilities are generally based on a base rate or LIBOR plus a spread. Accordingly, if interest rates rise significantly, the cost of debt to Quaker will increase. This can have an adverse effect on Quaker, depending on the extent of Quaker's borrowings throughout a given year. As of December 31, 2018, Quaker had \$24.0 million outstanding under its credit facilities at a weighted average borrowing rate of approximately 1.0%. If interest rates had changed by 10%, the Company's interest expense on its credit facilities for the year ended December 31, 2018 would have correspondingly increased or decreased by less than \$0.1 million. Quaker's other long-term and short-term debt consists primarily of fixed rate bonds and loans which are not exposed to interest rate fluctuations. The Company has previously used derivative financial instruments primarily for the purposes of hedging exposures to fluctuations in interest rates. The Company did not use any similar instruments in 2018 or 2017 and has not entered into derivative contracts for trading or speculative purposes. See the information included under the caption "Derivatives" in Note 1 of Notes to Consolidated Financial Statements, which appears in Item 8 of this Report and is incorporated herein by reference.

*Foreign Exchange Risk.* A significant portion of Quaker's revenues and earnings are generated by its foreign operations. These foreign operations also represent a significant portion of Quaker's assets and liabilities. Generally, all of these foreign operations use the local currency as their functional currency. Accordingly, Quaker's financial results are affected by foreign currency fluctuations, particularly between the U.S. dollar and the euro, the Brazilian real, the Mexican peso, the Chinese renminbi and the Indian rupee. Quaker's results can be materially affected depending on the volatility and magnitude of foreign exchange rate changes. If the euro, the Brazilian real, the Mexican peso, the Chinese renminbi and the Indian rupee had all weakened or strengthened by 10% against the U.S. dollar, the Company's 2018 revenues and pre-tax earnings would have correspondingly increased or decreased approximately \$44.5 million and \$5.5 million, respectively.

The Company generally does not use financial instruments that expose it to significant risk involving foreign currency transactions. However, the size of its non-U.S. activities has a significant impact on reported operating results and the attendant net assets. During the past three years, sales by its non-U.S. subsidiaries accounted for approximately 60% of our consolidated net sales.

In addition, the Company occasionally sources inventory among its worldwide operations. This practice can give rise to foreign exchange risk resulting from the varying cost of inventory to the receiving location, as well as from the revaluation of intercompany balances. The Company primarily mitigates this risk through local sourcing efforts.

*Commodity Price Risk.* Many of the raw materials used by Quaker are commodity chemicals and derivatives of such, which can experience significant price volatility, and therefore Quaker's earnings can be materially affected by market changes in raw material prices. At times, Quaker has entered into fixed-price purchase contracts to manage this risk. These contracts provide protection to Quaker if the prices for the contracted raw materials rise; however, in certain circumstances, Quaker may not realize the benefit if such prices decline. A gross margin change of one percentage point, would correspondingly have increased or decreased the Company's pre-tax earnings by approximately \$8.7 million.

*Credit Risk.* Quaker establishes allowances for doubtful accounts for estimated losses resulting from the inability of its customers to make required payments. If the financial condition of Quaker's customers were to deteriorate, resulting in an impairment of their ability to make payments, additional allowances might be required. Downturns in

the overall economic climate may also exacerbate specific customer financial issues. A significant portion of Quaker's revenues is derived from sales to customers in the steel and automotive industries, including some of our larger customers, where bankruptcies have occurred in the past and where companies have experienced past financial difficulties. When a bankruptcy occurs, Quaker must judge the amount of proceeds, if any, that may ultimately be received through the bankruptcy or liquidation process. In addition, as part of its terms of trade, Quaker may custom manufacture products for certain large customers and/or may ship product on a consignment basis. These practices may increase the Company's exposure should a bankruptcy occur and may require a write-down or disposal of certain inventory due to its estimated obsolescence or limited marketability. Customer returns of products or disputes may also result in similar issues related to the realizability of recorded accounts receivable or returned inventory. The Company recorded expense to increase its provision for doubtful accounts by \$0.5 million, \$0.1 million and \$1.4 million for the years ended December 31, 2018, 2017 and 2016, respectively. A change of 10% to the expense recorded to the Company's provision would have increased or decreased the Company's pre-tax earnings by \$0.1 million, less than \$0.1 million and \$0.1 million for the years ended December 31, 2018, 2017 and 2016, respectively.

**Item 8. *Financial Statements and Supplementary Data.***

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**Report of Independent Registered Public Accounting Firm**

To the Shareholders and Board of Directors of Quaker Chemical Corporation:

***Opinions on the Financial Statements and Internal Control over Financial Reporting***

We have audited the accompanying consolidated balance sheets of Quaker Chemical Corporation and its subsidiaries (the “Company”) as of December 31, 2018 and 2017, and the related consolidated statements of income, comprehensive income, changes in equity and cash flows for each of the three years in the period ended December 31, 2018, including the related notes (collectively referred to as the “consolidated financial statements”). We also have audited the Company's internal control over financial reporting as of December 31, 2018, 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 consolidated financial statements referred to above present fairly, in all material respects, the financial position of the Company as of December 31, 2018 and 2017, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2018 in conformity with accounting principles generally accepted in the United States of America. Also in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2018, based on criteria established in *Internal Control - Integrated Framework (2013)* issued by the COSO.

***Basis for Opinions***

The Company's management is responsible for these consolidated financial statements, for maintaining effective internal control over financial reporting, and for its assessment of the effectiveness of internal control over financial reporting, included in Management's Report on Internal Control over Financial Reporting. Our responsibility is to express opinions on the Company's consolidated financial statements and on the Company's internal control over financial reporting 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 audits to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud, and whether effective internal control over financial reporting was maintained in all material respects.

Our audits of the consolidated financial statements included performing procedures to assess the risks of material misstatement of the consolidated 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 consolidated 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 consolidated financial statements. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audits also included performing such other procedures as we considered necessary in the circumstances. We believe that our audits provide a reasonable basis for our opinions.

***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 (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (ii) 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 (iii) 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/ PricewaterhouseCoopers LLP

Philadelphia, Pennsylvania

February 28, 2019

We have served as the Company's auditor since at least 1972. We have not been able to determine the specific year we began serving as auditor of the Company.

**QUAKER CHEMICAL CORPORATION**  
**CONSOLIDATED STATEMENTS OF INCOME**

**(Dollars in thousands, except per share data)**

	<b>Year Ended December 31,</b>		
	<b>2018</b>	<b>2017</b>	<b>2016</b>
Net sales	\$ 867,520	\$ 820,082	\$ 746,665
Costs and expenses			
Cost of goods sold	555,206	528,587	466,555
Selling, general and administrative expenses	207,872	198,813	193,665
Restructuring and related activities			