

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, 2017

Commission file number 1-5467

VALHI, INC.

(Exact name of Registrant as specified in its charter)

Delaware
(State or other jurisdiction of
Incorporation or organization)

5430 LBJ Freeway, Suite 1700, Dallas, Texas
(Address of principal executive offices)

87-0110150
(IRS Employer
Identification No.)

75240-2697
(Zip Code)

Registrant's telephone number, including area code: (972) 233-1700

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

<u>Title of each class</u>	<u>Name of each exchange on which registered</u>
Common stock (\$.01 par value per share)	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 ☒

If the Registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes ☐ No ☒

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 ☐

Whether the registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes ☒ No ☐

If disclosure of delinquent filers pursuant to Item 405 of Regulation S-K 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. Yes ☒ No ☐

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

Large accelerated filer	<input type="checkbox"/>	Accelerated filer	<input type="checkbox"/>
Non-accelerated filer (don't check if smaller reporting company)	<input checked="" type="checkbox"/>	Smaller reporting company	<input type="checkbox"/>
Emerging growth company	<input type="checkbox"/>		

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

Whether the Registrant is a shell company (as defined in Rule 12b-2 of the Act). Yes ☐ No ☒.

The aggregate market value of the 25.1 million shares of voting common stock held by nonaffiliates of Valhi, Inc. as of June 30, 2017 (the last business day of the Registrant's most recently-completed second fiscal quarter) approximated \$74.7 million.

As of March 2, 2018, 339,170,949 shares of the Registrant's common stock were outstanding.

Documents incorporated by reference

The information required by Part III is incorporated by reference from the Registrant's definitive proxy statement to be filed with the Commission pursuant to Regulation 14A not later than 120 days after the end of the fiscal year covered by this report.

ITEM 1. BUSINESS

Valhi, Inc. (NYSE: VHI) is primarily a holding company. We operate through our wholly-owned and majority-owned subsidiaries, including NL Industries, Inc., Kronos Worldwide, Inc., CompX International Inc. and Waste Control Specialists LLC (“WCS”). Kronos (NYSE: KRO), NL (NYSE: NL) and CompX (NYSE MKT: CIX) each file periodic reports with the U.S. Securities and Exchange Commission (“SEC”).

Our principal executive offices are located at Three Lincoln Center 5430 LBJ Freeway, Suite 1700, Dallas, Texas 75240. Our telephone number is (972) 233-1700. We maintain a worldwide website at www.valhi.net.

Brief History

LLC Corporation, our legal predecessor, was incorporated in Delaware in 1932. We are the successor company of the 1987 merger of LLC Corporation and another entity controlled by Contran Corporation. One of Contran’s wholly-owned subsidiaries held approximately 93% of Valhi’s outstanding common stock at December 31, 2017. As discussed in Note 1 to our Consolidated Financial Statements, Lisa K. Simmons and Serena Simmons Connelly may be deemed to control Contran and us.

Key events in our history include:

- 1979—Contran acquires control of LLC;
- 1981—Contran acquires control of our other predecessor company;
- 1982—Contran acquires control of Keystone Consolidated Industries, Inc., a predecessor to CompX;
- 1984—Keystone spins-off an entity that includes what is to become CompX; this entity subsequently merges with LLC;
- 1986—Contran acquires control of NL, which at the time owns 100% of Kronos and a 50% interest in Titanium Metals Corporation (“TIMET”);
- 1987—LLC and another Contran controlled company merge to form Valhi, our current corporate structure;
- 1988—NL spins-off an entity that includes its investment in TIMET;
- 1995—WCS begins start-up operations;
- 1996—TIMET completes an initial public offering;
- 2003—NL completes the spin-off of Kronos through the pro-rata distribution of Kronos shares to its shareholders including us;
- 2004 through 2005—NL distributes Kronos shares to its shareholders, including us, through quarterly dividends;
- 2007—We distribute all of our TIMET common stock to our shareholders through a stock dividend;
- 2008—WCS receives a license for the disposal of byproduct material and begins construction of the byproduct facility infrastructure;
- 2009—WCS receives a license for the disposal of Class A, B and C low-level radioactive waste (“LLRW”) and completes construction of the byproduct facility;
- 2010—Kronos completes a secondary offering of its common stock lowering our ownership of Kronos to 80%;
- 2011—WCS begins construction on its Compact and Federal “LLRW” and mixed LLRW disposal facilities;
- 2012—WCS completes construction of its Compact and Federal LLRW disposal facilities and commences operations at the Compact facility;
- 2012—In December we sell all of our remaining interest in TIMET and TIMET is no longer our affiliate;
- 2012—In December CompX completes the sale of its furniture components business;
- 2013—WCS commences operations at the Federal LLRW facility;
- 2013—In December we purchased an additional ownership interest in and became the majority owner of Basic Management, Inc. and The LandWell Company; both companies are now included in our Consolidated Financial Statements effective December 31, 2013;

- 2015—The first homes in our Cadence planned community were completed by third-party builders and sold to the public; and
- 2018—In January we completed the sale of WCS.

Unless otherwise indicated, references in this report to “we”, “us” or “our” refer to Valhi, Inc. and its subsidiaries, taken as a whole.

Forward-Looking Statements

This Annual Report on Form 10-K contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995, as amended. Statements in this Annual Report that are not historical facts are forward-looking in nature and represent management’s beliefs and assumptions based on currently available information. In some cases, you can identify forward-looking statements by the use of words such as “believes,” “intends,” “may,” “should,” “could,” “anticipates,” “expects” or comparable terminology, or by discussions of strategies or trends. Although we believe that the expectations reflected in such forward-looking statements are reasonable, we do not know if these expectations will be correct. Such statements by their nature involve substantial risks and uncertainties that could significantly impact expected results. Actual future results could differ materially from those predicted. The factors that could cause actual future results to differ materially from those described herein are the risks and uncertainties discussed in this Annual Report and those described from time to time in our other filings with the SEC include, but are not limited to, the following:

- Future supply and demand for our products;
- The extent of the dependence of certain of our businesses on certain market sectors;
- The cyclical nature of certain of our businesses (such as Kronos’ TiO₂ operations);
- Customer and producer inventory levels;
- Unexpected or earlier-than-expected industry capacity expansion (such as the TiO₂ industry);
- Changes in raw material and other operating costs (such as ore, zinc, brass, aluminum, steel and energy costs) and our ability to pass those costs on to our customers or offset them with reductions in other operating costs;
- Changes in the availability of raw materials (such as ore);
- General global economic and political conditions (such as changes in the level of gross domestic product in various regions of the world and the impact of such changes on demand for, among other things, TiO₂ and component products);
- Competitive products and prices and substitute products, including increased competition from low-cost manufacturing sources (such as China);
- Possible disruption of our business or increases in the cost of doing business resulting from terrorist activities or global conflicts;
- Customer and competitor strategies;
- Potential difficulties in integrating future acquisitions;
- Potential difficulties in upgrading or implementing new accounting and manufacturing software systems (such as the Chemicals Segment’s new enterprise resource planning system);
- Potential consolidation of our competitors;
- Potential consolidation of our customers;
- The impact of pricing and production decisions;
- Competitive technology positions;
- The introduction of trade barriers;
- The ability of our subsidiaries to pay us dividends;
- The impact of current or future government regulations (including employee healthcare benefit related regulations);
- Uncertainties associated with new product development and the development of new product features;

- Fluctuations in currency exchange rates (such as changes in the exchange rate between the U.S. dollar and each of the euro, the Norwegian krone and the Canadian dollar) or possible disruptions to our business resulting from potential instability resulting from uncertainties associated with the euro or other currencies;
- Operating interruptions (including, but not limited to, labor disputes, leaks, natural disasters, fires, explosions, unscheduled or unplanned downtime, transportation interruptions and cyber-attacks);
- Decisions to sell operating assets other than in the ordinary course of business;
- The timing and amounts of insurance recoveries;
- Our ability to renew, amend, refinance or establish credit facilities;
- Our ability to maintain sufficient liquidity;
- The ultimate outcome of income tax audits, tax settlement initiatives or other tax matters, including future tax reform;
- Our ultimate ability to utilize income tax attributes, the benefits of which may or may not presently have been recognized under the more-likely-than-not recognition criteria;
- Environmental matters (such as those requiring compliance with emission and discharge standards for existing and new facilities, or new developments regarding environmental remediation at sites related to our former operations);
- Government laws and regulations and possible changes therein (such as changes in government regulations which might impose various obligations on former manufacturers of lead pigment and lead-based paint, including NL, with respect to asserted health concerns associated with the use of such products);
- The ultimate resolution of pending litigation (such as NL's lead pigment litigation, environmental and other litigation and Kronos' class action litigation);
- Our ability to comply with covenants contained in our revolving bank credit facilities;
- Our ability to complete and comply with the conditions of our licenses and permits;
- Changes in real estate values and construction costs in Henderson, Nevada;
- Water levels in Lake Mead; and
- Possible future litigation.

Should one or more of these risks materialize (or the consequences of such development worsen), or should the underlying assumptions prove incorrect, actual results could differ materially from those currently forecasted or expected. We disclaim any intention or obligation to update or revise any forward-looking statement whether as a result of changes in information, future events or otherwise.

Segments

We currently have three consolidated reportable operating segments at December 31, 2017:

Chemicals

Kronos Worldwide, Inc.

Our chemicals segment is operated through our majority control of Kronos. Kronos is a leading global producer and marketer of value-added titanium dioxide pigments (“TiO₂”). TiO₂ is used to impart whiteness, brightness, opacity and durability to a wide variety of products, including paints, plastics, paper, fibers and ceramics. Additionally, TiO₂ is a critical component of everyday applications, such as coatings, plastics and paper, as well as many specialty products such as inks, foods and cosmetics.

Component Products

CompX International Inc.

We operate in the component products industry through our majority control of CompX. CompX is a leading manufacturer of security products used in the recreational transportation, postal, office and institutional furniture, cabinetry, tool storage, healthcare and a variety of other industries. CompX is also a leading manufacturer of stainless steel exhaust systems, gauges, throttle controls and trim tabs for the recreational marine industry.

Real Estate Management and Development

Basic Management, Inc. and The LandWell Company

We operate in real estate management and development through our majority control of BMI and LandWell. BMI provides utility services to certain industrial and municipal customers and owns real property in Henderson, Nevada. LandWell is engaged in efforts to develop certain land holdings for commercial, industrial and residential purposes in Henderson, Nevada.

For additional information about our segments and equity investments see “Part II—Item 7. Management’s Discussion and Analysis of Financial Condition and Results of Operations” and Notes 2 and 7 to our Consolidated Financial Statements.

CHEMICALS SEGMENT—KRONOS WORLDWIDE, INC.

Business Overview

Through our majority-controlled subsidiary, Kronos, we are a leading global producer and marketer of value-added titanium dioxide pigments, or TiO₂, a base industrial product used in a wide range of applications. We, along with our distributors and agents, sell and provide technical services for our products to approximately 4,000 customers in 100 countries with the majority of sales in Europe and North America. We believe we have developed considerable expertise and efficiency in the manufacture, sale, shipment and service of our products in domestic and international markets.

TiO₂ is a white inorganic pigment used in a wide range of products for its exceptional durability and its ability to impart whiteness, brightness and opacity. TiO₂ is a critical component of everyday applications, such as coatings, plastics and paper, as well as many specialty products such as inks, food and cosmetics. TiO₂ is widely considered to be superior to alternative white pigments in large part due to its hiding power (or opacity), which is the ability to cover or mask other materials effectively and efficiently. TiO₂ is designed, marketed and sold based on specific end-use applications.

TiO₂ is the largest commercially used whitening pigment because it has a high refractive rating, giving it more hiding power than any other commercially produced white pigment. In addition, TiO₂ has excellent resistance to interaction with other chemicals, good thermal stability and resistance to ultraviolet degradation. Although there are other white pigments on the market, we believe there are no effective substitutes for TiO₂ because no other white pigment has the physical properties for achieving comparable opacity and brightness or can be incorporated in as cost-effective a manner. Pigment extenders such as kaolin clays, calcium carbonate and polymeric opacifiers are used together with TiO₂ in a number of end-use markets. However, these products are not able to duplicate the opacity performance characteristics of TiO₂ and we believe these products are unlikely to have a significant impact on the use of TiO₂.

TiO₂ is considered a “quality-of-life” product. Demand for TiO₂ has generally been driven by worldwide gross domestic product and has generally increased with rising standards of living in various regions of the world. According to industry estimates, TiO₂ consumption has grown at a compound annual growth rate of approximately 3% since 1990. Per capita consumption of TiO₂ in

Western Europe and North America far exceeds that in other areas of the world, and these regions are expected to continue to be the largest consumers of TiO₂ on a per capita basis. We believe Western Europe and North America currently account for approximately 20% and 17% of global TiO₂ consumption, respectively. Markets for TiO₂ are generally increasing in South America, Eastern Europe, the Asia Pacific region and China and we believe these are significant markets where we expect continued growth as economies in these regions continue to develop and quality-of-life products, including TiO₂, experience greater demand.

Products and end-use markets

Including our predecessors, we have produced and marketed TiO₂ in North America and Europe, our primary markets, for over 100 years. We believe we are the largest producer of TiO₂ in Europe with approximately one-half of our sales volumes attributable to markets in Europe. The table below shows our market share for our significant markets, Europe and North America, for the last three years.

	2015	2016	2017
Europe	18%	17%	17%
North America	15%	16%	18%

We believe we are the leading seller of TiO₂ in several countries, including Germany, with an estimated 10% share of worldwide TiO₂ sales volume in 2017. Overall, we are one of the top six producers of TiO₂ in the world.

We offer our customers a broad portfolio of products that include over 40 different TiO₂ pigment grades under the KRONOS® trademark, which provide a variety of performance properties to meet customers' specific requirements. Our major customers include domestic and international paint, plastics, decorative laminate and paper manufacturers. We ship TiO₂ to our customers in either a powder or slurry form via rail, truck and/or ocean carrier. Sales of our core TiO₂ pigments represented approximately 94% of our net sales in 2017. We and our agents and distributors primarily sell our products in three major end-use markets: coatings, plastics and paper.

The following tables show our approximate TiO₂ sales volume by geographic region and end use for the year ended December 31, 2017:

Sales volumes percentages by geographic region		Sales volumes percentages by end-use	
Europe	50%	Coatings	58%
North America	31%	Plastics	30%
Asia Pacific	9%	Paper	5%
Rest of World	10%	Other	7%

Some of the principal applications for our products include the following:

TiO₂ for coatings – Our TiO₂ is used to provide opacity, durability, tinting strength and brightness in industrial coatings, as well as coatings for commercial and residential interiors and exteriors, automobiles, aircraft, machines, appliances, traffic paint and other special purpose coatings. The amount of TiO₂ used in coatings varies widely depending on the opacity, color and quality desired. In general, the higher the opacity requirement of the coating, the greater the TiO₂ content.

TiO₂ for plastics – We produce TiO₂ pigments that improve the optical and physical properties in plastics, including whiteness and opacity. TiO₂ is used to provide opacity in items such as containers and packaging materials, and vinyl products such as windows, door profiles and siding. TiO₂ also generally provides hiding power, neutral undertone, brightness and surface durability for housewares, appliances, toys, computer cases and food packages. TiO₂'s high brightness along with its opacity, is used in some engineering plastics to help mask their undesirable natural color. TiO₂ is also used in masterbatch, which is a concentrate of TiO₂ and other additives and is one of the largest uses for TiO₂ in the plastics end-use market. In masterbatch, the TiO₂ is dispersed at high concentrations into a plastic resin and is then used by manufacturers of plastic containers, bottles, packaging and agricultural films.

TiO₂ for paper – Our TiO₂ is used in the production of several types of paper, including laminate (decorative) paper, filled paper and coated paper to provide whiteness, brightness, opacity and color stability. Although we sell our TiO₂ to all segments of the paper end-use market, our primary focus is on the TiO₂ grades used in paper laminates, where several layers of paper are laminated together using melamine resin under high temperature and pressure. The top layer of paper contains TiO₂ and plastic resin and is the layer that is printed with decorative patterns. Paper laminates are used to replace materials such as wood and tile for such applications as counter tops, furniture and wallboard. TiO₂ is beneficial in these applications because it assists in preventing the material from fading or changing color after prolonged exposure to sunlight and other weathering agents.

TiO₂ for other applications – We produce TiO₂ to improve the opacity and hiding power of printing inks. TiO₂ allows inks to achieve very high print quality while not interfering with the technical requirements of printing machinery, including low abrasion, high printing speed and high temperatures. Our TiO₂ is also used in textile applications where TiO₂ functions as an opacifying and delustering agent. In man-made fibers such as rayon and polyester, TiO₂ corrects an otherwise undesirable glossy and translucent appearance. Without the presence of TiO₂, these materials would be unsuitable for use in many textile applications.

We produce high purity sulfate process anatase TiO₂ used to provide opacity, whiteness and brightness in a variety of cosmetic and personal care products, such as skin cream, lipstick, eye shadow and toothpaste. Our TiO₂ is also found in food products, such as candy and confectionaries, and in pet foods where it is used to obtain uniformity of color and appearance. In pharmaceuticals, our TiO₂ is used commonly as a colorant in tablet and capsule coatings as well as in liquid medicines to provide uniformity of color and appearance. KRONOS® purified anatase grades meet the applicable requirements of the CTFA (Cosmetics, Toiletries and Fragrances Association), USP and BP (United States Pharmacopoeia and British Pharmacopoeia) and the FDA (United States Food and Drug Administration).

Our TiO₂ business is enhanced by the following three complementary businesses, which comprised approximately 6% of our net sales in 2017:

- We own and operate two ilmenite mines in Norway pursuant to a governmental concession with an unlimited term. Ilmenite is a raw material used directly as a feedstock by some sulfate-process TiO₂ plants. We also sell ilmenite ore to third parties, some of whom are our competitors, and we sell an ilmenite-based specialty product to the oil and gas industry. The mines have estimated ilmenite reserves that are expected to last at least 50 years.
- We manufacture and sell iron-based chemicals, which are co-products and processed co-products of the sulfate and chloride process TiO₂ pigment production. These co-product chemicals are marketed through our Ecochem division and are primarily used as treatment and conditioning agents for industrial effluents and municipal wastewater as well as in the manufacture of iron pigments, cement and agricultural products.
- We manufacture and sell titanium oxychloride and titanyl sulfate, which are side-stream specialty products from the production of TiO₂. Titanium oxychloride is used in specialty applications in the formulation of pearlescent pigments, production of electroceramic capacitors for cell phones and other electronic devices. Titanyl sulfate productions are used in pearlescent pigments, natural gas pipe and other specialty applications.

Manufacturing, operations and properties

We produce TiO₂ in two crystalline forms: rutile and anatase. Rutile TiO₂ is manufactured using both a chloride production process and a sulfate production process, whereas anatase TiO₂ is only produced using a sulfate production process. Manufacturers of many end-use applications can use either form, especially during periods of tight supply for TiO₂. The chloride process is the preferred form for use in coatings and plastics, the two largest end-use markets. Due to environmental factors and customer considerations, the proportion of TiO₂ industry sales represented by chloride process pigments has increased relative to sulfate process pigments, and in 2017, chloride process production facilities represented approximately 50% of industry capacity. The sulfate process is preferred for use in selected paper products, ceramics, rubber tires, man-made fibers, food products, pharmaceuticals and cosmetics. Once an intermediate TiO₂ pigment has been produced by either the chloride or sulfate process, it is “finished” into products with specific performance characteristics for particular end-use applications through proprietary processes involving various chemical surface treatments and intensive micronizing (milling).

Chloride process – The chloride process is a continuous process in which chlorine is used to extract rutile TiO₂. The chloride process produces less waste than the sulfate process because much of the chlorine is recycled and feedstock bearing higher titanium content is used. The chloride process also has lower energy requirements and is less labor-intensive than the sulfate process, although the chloride process requires a higher-skilled labor force. The chloride process produces an intermediate base pigment with a wide range of properties.

Sulfate process – The sulfate process is a batch process in which sulfuric acid is used to extract the TiO₂ from ilmenite or titanium slag. After separation from the impurities in the ore (mainly iron), the TiO₂ is precipitated and calcined to form an intermediate base pigment ready for sale or can be upgraded through finishing treatments.

We produced 576,000 metric tons of TiO₂ in 2017, up from the 546,000 metric tons we produced in 2016. Our production volumes in 2017 set a new overall record for a full-year period. Our production amounts include our share of the output produced by our TiO₂ manufacturing joint venture discussed below in “TiO₂ Manufacturing Joint Venture.” Our average production capacity utilization rates were approximately 95% and 98% of capacity in 2015 and 2016, respectively, and at full practical capacity in 2017. Our production rate in the first quarter of 2015 was impacted by the implementation of certain productivity-enhancing improvement projects at facilities, as well as necessary improvements to ensure continued compliance with our permit regulations, which resulted in longer-than-normal maintenance shutdowns in some instances.

We operate facilities throughout North America and Europe, including the only sulfate process plant in North America and four TiO₂ plants in Europe (one in each of Leverkusen, Germany; Nordenham, Germany; Langerbrugge, Belgium; and Fredrikstad, Norway). In North America, we have a TiO₂ plant in Varennes, Quebec, Canada and, through the manufacturing joint venture described below in “TiO₂ Manufacturing Joint Venture,” a 50% interest in a TiO₂ plant in Lake Charles, Louisiana.

Our production capacity has increased by approximately 6% over the past ten years due to debottlenecking programs, with only moderate capital expenditures. We currently expect to operate our TiO₂ plants at full practical capacity levels in 2018.

The following table presents the division of our expected 2018 manufacturing capacity by plant location and type of manufacturing process:

Facility	Description	% of capacity by TiO ₂ manufacturing process	
		Chloride	Sulfate
Leverkusen, Germany (1)	TiO ₂ production, chloride and sulfate process, co-products	30%	6%
Nordenham, Germany	TiO ₂ production, sulfate process, co-products	-	10
Langerbrugge, Belgium	TiO ₂ production, chloride process, co-products, titanium chemicals products	16	-
Fredrikstad, Norway (2)	TiO ₂ production, sulfate process, co-products	-	7
Varennes, Canada	TiO ₂ production, chloride and sulfate process, slurry facility, titanium chemicals products	15	3
Lake Charles, LA, US (3)	TiO ₂ production, chloride process	13	-
Total		74%	26%

- (1) The Leverkusen facility is located within an extensive manufacturing complex owned by Bayer AG. We own the Leverkusen facility, which represents about one-third of our current TiO₂ production capacity, but we lease the land under the facility from Bayer under a long-term agreement which expires in 2050. Lease payments are periodically negotiated with Bayer for periods of at least two years at a time. A majority-owned subsidiary of Bayer provides some raw materials including chlorine, auxiliary and operating materials, utilities and services necessary to operate the Leverkusen facility under separate supplies and services agreements.
- (2) The Fredrikstad facility is located on public land and is leased until 2063.
- (3) We operate the Lake Charles facility in a joint venture with Huntsman P&A Investments LLC (HPA), a wholly-owned subsidiary of Tioxide Group, of which Venator Materials PLC (Venator) owns 100% and the amount indicated in the table above represents the share of TiO₂ produced by the joint venture to which we are entitled. See Note 7 to our Consolidated Financial Statements and “TiO₂ Manufacturing Joint Venture.”

We own the land underlying all of our principal production facilities unless otherwise indicated in the table above.

We also operate two ilmenite mines in Norway pursuant to a governmental concession with an unlimited term. In addition, we operate a rutile slurry manufacturing plant in Lake Charles, Louisiana, which converts dry pigment manufactured for us at the Lake Charles TiO₂ facility into a slurry form that is then shipped to customers.

We have various corporate and administrative offices located in the U.S., Germany, Norway, Canada, Belgium, France and the United Kingdom and various sales offices located in North America.

TiO₂ Manufacturing Joint Venture

Kronos Louisiana, Inc., one of our Chemicals Segment’s subsidiaries, and HPA each own a 50% interest in a manufacturing joint venture, Louisiana Pigment Company, L.P., or LPC. LPC owns and operates a chloride-process TiO₂ plant located in Lake Charles, Louisiana. We and Venator share production from the plant equally pursuant to separate offtake agreements, unless we and Venator otherwise agree (such as in 2015, when we purchased approximately 52% of the production from the plant).

A supervisory committee directs the business and affairs of the joint venture, including production and output decisions. This committee is composed of four members, two of whom we appoint and two of whom Venator appoints. Two general managers manage the operations of the joint venture acting under the direction of the supervisory committee. We appoint one general manager and Venator appoints the other.

The joint venture is not consolidated in our financial statements, because we do not control it. We account for our interest in the joint venture by the equity method. The joint venture operates on a break-even basis and therefore we do not have any equity in earnings of the joint venture. We are required to purchase one half of the TiO₂ produced by the joint venture. All costs and capital expenditures are shared equally with Venator with the exception of feedstock (purchased natural rutile ore or slag) and packaging costs for the pigment grades produced. Our share of net costs is reported as cost of sales as the TiO₂ is sold. See Notes 5 and 16 to our Consolidated Financial Statements.

Raw materials

The primary raw materials used in chloride process TiO₂ are titanium-containing feedstock (purchased natural rutile ore or slag), chlorine and coke. Chlorine is available from a number of suppliers, while petroleum coke is available from a limited number of suppliers. Titanium-containing feedstock suitable for use in the chloride process is available from a limited but increasing number of suppliers principally in Australia, South Africa, Canada, India and the United States. We purchase chloride process grade slag from Rio Tinto Iron and Titanium Limited under a long-term supply contract that automatically renews at the end of 2018 for successive two-year renewal periods, unless terminated before December 31, 2018. We also purchase upgraded slag from Rio Tinto Iron and Titanium Limited under a long-term supply contract that expires at the end of 2019. We purchase natural rutile ore primarily from Iluka Resources, Limited under a contract which expires in 2018. In the past we have been, and we expect that we will continue to be, successful in obtaining short-term and long-term extensions to these and other existing supply contracts prior to their expiration. We expect the raw materials purchased under these contracts, and contracts that we may enter into, will meet our chloride process feedstock requirements over the next several years.

The primary raw materials used in sulfate process TiO₂ are titanium-containing feedstock, primarily ilmenite or purchased sulfate grade slag and sulfuric acid. Sulfuric acid is available from a number of suppliers. Titanium-containing feedstock suitable for use in the sulfate process is available from a limited number of suppliers principally in Norway, Canada, Australia, India and South Africa. As one of the few vertically-integrated producers of sulfate process TiO₂, we operate two rock ilmenite mines in Norway, which provided all of the feedstock for our European sulfate process TiO₂ plants in 2017. We expect ilmenite production from our mines to meet our European sulfate process feedstock requirements for the foreseeable future. For our Canadian sulfate process plant, we purchase sulfate grade slag primarily from Rio Tinto Fer et Titane Inc. under a supply contract that renews annually, subject to termination upon twelve months written notice. We expect the raw materials purchased under these contracts, and contracts that we may enter into, to meet our sulfate process feedstock requirements over the next several years.

Many of our raw material contracts contain fixed quantities we are required to purchase, or specify a range of quantities within which we are required to purchase. The pricing under these agreements is generally negotiated quarterly.

The following table summarizes our raw materials purchased or mined in 2017.

Production process/raw material	Raw materials procured or mined (In thousands of metric tons)
Chloride process plants -	
Purchased slag or rutile ore	535
Sulfate process plants:	
Ilmenite ore mined and used internally	360
Purchased slag	27

Sales and marketing

Our marketing strategy is aimed at developing and maintaining strong customer relationships with new and existing accounts. Because TiO₂ represents a significant raw material cost for our customers, the purchasing decisions are often made by our customers' senior management. We work to maintain close relationships with the key decision makers, through in-depth and frequent in-person meetings. We endeavor to extend these commercial and technical relationships to multiple levels within our customers' organization using our direct sales force and technical service group to accomplish this objective. We believe this has helped build customer loyalty to Kronos and strengthened our competitive position. Close cooperation and strong customer relationships enable us to stay closely attuned to trends in our customers' businesses. Where appropriate, we work in conjunction with our customers to solve formulation or application problems by modifying specific product properties or developing new pigment grades. We also focus our sales and marketing efforts on those geographic and end-use market segments where we believe we can realize higher selling prices. This focus includes continuously reviewing and optimizing our customer and product portfolios.

Our marketing strategy is also aimed at working directly with customers to monitor the success of our products in their end-use applications, evaluate the need for improvements in product and process technology and identify opportunities to develop new product solutions for our customers. Our marketing staff closely coordinates with our sales force and technical specialists to ensure that the needs of our customers are met, and to help develop and commercialize new grades where appropriate.

We sell a majority of our products through our direct sales force operating in Europe and North America. We also utilize sales agents and distributors who are authorized to sell our products in specific geographic areas. In Europe, our sales efforts are conducted primarily through our direct sales force and our sales agents. Our agents do not sell any TiO₂ products other than KRONOS® brand products. In North America, our sales are made primarily through our direct sales force and supported by a network of distributors. In export markets, where we have increased our marketing efforts over the last several years, our sales are made through our direct sales force, sales agents and distributors. In addition to our direct sales force and sales agents, many of our sales agents also act as distributors to service our customers in all regions. We offer customer and technical service to the customers who purchase our products through distributors as well as to our larger customers serviced by our direct sales force.

We sell to a diverse customer base and no single customer comprised more than 10% of our sales in 2017. Our largest ten customers accounted for approximately 34% of sales in 2017.

Neither our business as a whole nor any of our principal product groups is seasonal to any significant extent. However, TiO₂ sales are generally higher in the second and third quarters of the year, due in part to the increase in paint production in the spring to meet demand during the spring and summer painting seasons. With certain exceptions, we have historically operated our production facilities at near full capacity rates throughout the entire year, which among other things helps to minimize our per-unit production costs. As a result, we normally will build inventories during the first and fourth quarters of each year, in order to maximize our product availability during the higher demand periods normally experienced in the second and third quarters.

Competition

The TiO₂ industry is highly competitive. We compete primarily on the basis of price, product quality, technical service and the availability of high performance pigment grades. Since TiO₂ is not a traded commodity, its pricing is largely a product of negotiation between suppliers and their respective customers. Price and availability are the most significant competitive factors along with quality and customer service for the majority of our product grades. Increasingly we are focused on providing pigments that are differentiated to meet specific customer request, and specialty grades that are differentiated from our competitors' products. During 2017, we had an estimated 10% share of worldwide TiO₂ sales volume, and based on sales volumes, we believe we are the leading seller of TiO₂ in several countries, including Germany.

Our principal competitors are The Chemours Company, or Chemours; Cristal Global; Venator Materials PLC (formerly a wholly-owned subsidiary, and now a majority-owned subsidiary, of Huntsman Corporation); Tronox Incorporated; and Lomon Billions. The top six TiO₂ producers (i.e. we and our five principal competitors) account for approximately 66% of the world's production capacity. Chemours added a new 200,000 metric ton capacity line at its plant in Mexico which commenced production in the second quarter of 2016. In 2016, Venator announced it was closing its sulfate process facility in South Africa, reducing its overall capacity by 25,000 metric tons. In 2017, one of Venator's European sulfate plants, which has a capacity of 130,000 metric tons, operated at significantly reduced rates due to a fire at the facility.

The following chart shows our estimate of worldwide production capacity in 2017:

Worldwide production capacity - 2017	
Chemours	18%
Cristal	13%
Venator	10%
Lomon Billions	9%
Kronos	9%
Tronox	7%
Other	34%

Chemours has over one-half of total North American TiO₂ production capacity and is our principal North American competitor. In February 2017, Tronox announced a definitive agreement to acquire the TiO₂ assets of Cristal, but in December 2017 the U.S. Federal Trade Commission filed an administrative complaint challenging the merger. Tronox has indicated it intends to vigorously defend against such action.

Over the past ten years, we and our competitors increased industry capacity through debottlenecking projects, which in part compensated for the shut-down of various TiO₂ plants throughout the world. Although overall industry demand is expected to remain strong in 2018 as a result of improving worldwide economic conditions, we do not expect any other significant efforts will be undertaken by us or our principal competitors to further increase capacity for the foreseeable future, other than through debottlenecking projects. If actual developments differ from our expectations, the TiO₂ industry's performance and that of our own could be unfavorably affected.

The TiO₂ industry is characterized by high barriers to entry consisting of high capital costs, proprietary technology and significant lead times (typically three to five years in our experience) required to construct new facilities or to expand existing capacity. We believe it is unlikely any new TiO₂ plants will be constructed in Europe or North America in the foreseeable future.

Research and development

We employ scientists, chemists, process engineers and technicians who are engaged in research and development, process technology and quality assurance activities in Leverkusen, Germany. These individuals have the responsibility for improving our chloride and sulfate production processes, improving product quality and strengthening our competitive position by developing new applications. Our Chemicals Segment's expenditures for these activities were approximately \$16 million in 2015, \$13 million in 2016 and \$20 million in 2017. We expect to spend approximately \$19 million on research and development in 2018.

We continually seek to improve the quality of our grades and have been successful at developing new grades for existing and new applications to meet the needs of our customers and increase product life cycles. Since the beginning of 2013, we have added five new grades for pigments and other applications.

Patents, trademarks, trade secrets and other intellectual property rights

We have a comprehensive intellectual property protection strategy that includes obtaining, maintaining and enforcing our patents, primarily in the United States, Canada and Europe. We also protect our trademark and trade secret rights and have entered into license agreements with third parties concerning various intellectual property matters. We have also from time to time been involved in disputes over intellectual property.

Patents – We have obtained patents and have numerous patent applications pending that cover our products and the technology used in the manufacture of our products. Our patent strategy is important to us and our continuing business activities. In addition to maintaining our patent portfolio, we seek patent protection for our technical developments, principally in the United States, Canada and Europe. U.S. Patents are generally in effect for 20 years from the date of filing. Our U.S. patent portfolio includes patents having remaining terms ranging from four years to 20 years.

Trademarks and trade secrets – Our trademarks, including KRONOS®, are covered by issued and/or pending registrations, including in Canada and the United States. We protect the trademarks that we use in connection with the products we manufacture and sell and have developed goodwill in connection with our long-term use of our trademarks. We conduct research activities in secret and we protect the confidentiality of our trade secrets through reasonable measures, including confidentiality agreements and security procedures, including data security. We rely upon unpatented proprietary knowledge and continuing technological innovation and other trade secrets to develop and maintain our competitive position. Our proprietary chloride production process is an important part of our technology and our business could be harmed if we fail to maintain confidentiality of our trade secrets used in this technology.

Employees

As of December 31, 2017, our Chemicals Segment employed the following number of people:

Europe	1,835
Canada	360
United States (1)	50
Total	<u>2,245</u>

(1) Excludes employees of our Louisiana joint venture.

Certain employees at each of our Chemicals Segment's production facilities are organized by labor unions. In Europe, our union employees are covered by master collective bargaining agreements for the chemical industry that are generally renewed annually. In Canada, our union employees are covered by a collective bargaining agreement that expires in June 2018. We currently

expect a new collective bargaining agreement with our Canadian union employees will be entered into before the expiration of the current agreement. At December 31, 2017, approximately 86% of our worldwide workforce is organized under collective bargaining agreements. It is possible that there could be future work stoppages or other labor disruptions that could materially and adversely affect our business, results of operations, financial position or liquidity.

Regulatory and environmental matters

Our operations and properties are governed by various environmental laws and regulations, which are complex, change frequently and have tended to become stricter over time. These environmental laws govern, among other things, the generation, storage, handling, use and transportation of hazardous materials; the emission and discharge of hazardous materials into the ground, air or water; and the health and safety of our employees. Certain of our operations are, or have been, engaged in the generation, storage, handling, manufacture or use of substances or compounds that may be considered toxic or hazardous within the meaning of applicable environmental laws and regulations. As with other companies engaged in similar businesses, certain of our past and current operations and products have the potential to cause environmental or other damage. We have implemented and continue to implement various policies and programs in an effort to minimize these risks. Our policy is to comply with applicable environmental laws and regulations at all our facilities and to strive to improve our environmental performance. It is possible that future developments, such as stricter requirements in environmental laws and enforcement policies, could adversely affect our operations, including production, handling, use, storage, transportation, sale or disposal of hazardous or toxic substances or require us to make capital and other expenditures to comply, and could adversely affect our consolidated financial position and results of operations or liquidity.

Our U.S. manufacturing operations are governed by federal, state and local environmental and worker health and safety laws and regulations. These include the Resource Conservation and Recovery Act, or RCRA, the Occupational Safety and Health Act, the Clean Air Act, the Clean Water Act, the Safe Drinking Water Act, the Toxic Substances Control Act and the Comprehensive Environmental Response, Compensation and Liability Act, as amended by the Superfund Amendments and Reauthorization Act, or CERCLA, as well as the state counterparts of these statutes. Some of these laws hold current or previous owners or operators of real property liable for the costs of cleaning up contamination, even if these owners or operators did not know of, and were not responsible for, such contamination. These laws also assess liability on any person who arranges for the disposal or treatment of hazardous substances, regardless of whether the affected site is owned or operated by such person. Although we have not incurred and do not currently anticipate any material liabilities in connection with such environmental laws, we may be required to make expenditures for environmental remediation in the future.

While the laws regulating operations of industrial facilities in Europe vary from country to country, a common regulatory framework is provided by the European Union, or the EU. Germany and Belgium are members of the EU and follow its initiatives. Norway is not a member but generally patterns its environmental regulatory actions after the EU.

At our sulfate plant facilities in Germany, we recycle spent sulfuric acid either through contracts with third parties or at our own facilities. In addition, at our German locations we have a contract with a third-party to treat certain sulfate-process effluents. At our Norwegian plant, we ship spent acid to a third-party location where it is used as a neutralization agent. These contracts may be terminated by either party after giving three or four years advance notice, depending on the contract.

From time to time, our facilities may be subject to environmental regulatory enforcement under U.S. and non-U.S. statutes. Typically we establish compliance programs to resolve these matters. Occasionally, we may pay penalties. To date such penalties have not involved amounts having a material adverse effect on our consolidated financial position, results of operations or liquidity. We believe that all of our facilities are in substantial compliance with applicable environmental laws.

Our Chemicals Segment's capital expenditures related to ongoing environmental compliance, protection and improvement programs, including capital expenditures which are primarily focused on increasing operating efficiency but also result in improved environmental protection such as lower emissions from our manufacturing facilities, were \$16.1 million in 2017 and are currently expected to be approximately \$26 million in 2018.

COMPONENT PRODUCTS SEGMENT—COMPX INTERNATIONAL INC.

Business Overview

Through our majority-controlled subsidiary, CompX, we are a leading manufacturer of security products including mechanical and electrical cabinet locks and other locking mechanisms used in the recreational transportation, postal, office and institutional furniture, cabinetry, tool storage and healthcare applications. We are also a leading manufacturer of stainless steel exhaust systems, gauges, throttle controls, and trim tabs for the recreational marine industry. We also manufacture stainless steel exhaust systems, gauges, throttle controls and trim tabs for the recreational marine and other industries. Our products are principally designed for use in medium to high-end product applications, where design, quality and durability are valued by our customers. We

continuously seek to diversify into new markets and identify new applications and features for our products, which we believe provide a greater potential for higher rates of earnings growth as well as diversification of risk.

Manufacturing, Operations and Products

Security Products. CompX's security products reporting unit manufactures mechanical and electronic cabinet locks and other locking mechanisms used in a variety of applications including ignition systems, mailboxes, file cabinets, desk drawers, tool storage cabinets, vending and gaming machines, high security medical cabinetry, electronic circuit panels, storage compartments and gas station security. Our security products reporting unit has one manufacturing facility in Mauldin, South Carolina and one in Grayslake, Illinois shared with Marine Components. We believe we are a North American market leader in the manufacture and sale of cabinet locks and other locking mechanisms. These products include:

- disc tumbler locks which provide moderate security and generally represent the lowest cost lock to produce;
- pin tumbler locking mechanisms which are more costly to produce and are used in applications requiring higher levels of security, including *KeSet®* and *System 64®* (which each allow the user to change the keying on a single lock 64 times without removing the lock from its enclosure), *TuBar®* and *Turbine™*; and
- our innovative *CompX eLock®* and *StealthLock®* electronic locks which provide stand-alone or networked security and audit trail capability for drug storage and other valuables through the use of a proximity card, magnetic stripe or keypad credentials.

A substantial portion of our security products' sales consist of products with specialized adaptations to an individual customer's specifications, some of which are listed above. We also have a standardized product line suitable for many customers, which is offered through a North American distribution network to locksmith and smaller original equipment manufacturer distributors via our *STOCK LOCKS®* distribution program.

Marine Components. CompX's marine components reporting unit manufactures and distributes stainless steel exhaust components, gauges, throttle controls, trim tabs, hardware and accessories primarily for performance and ski/wakeboard boats. Our Marine Components segment has a facility in Neenah, Wisconsin and a facility in Grayslake, Illinois shared with Security Products. Our specialty Marine Component products are high precision components designed to operate within tight tolerances in the highly demanding marine environment. These products include:

- original equipment and aftermarket stainless steel exhaust headers, exhaust pipes, mufflers and other exhaust components;
- high performance gauges such as GPS speedometers and tachometers;
- mechanical and electronic controls and throttles;
- steering wheels, trim tabs and other billet aluminum accessories; and
- dash panels, LED lighting, wire harnesses and other accessories.

Our Component Products Segment operated three manufacturing facilities at December 31, 2017 as shown below. For additional information, see also "Item 2 – Properties", including information regarding leased and distribution-only facilities.

Facility Name	Reporting Unit	Location	Size (square feet)
Owned Facilities:			
National ⁽¹⁾	SP	Mauldin, SC	198,000
Grayslake ⁽¹⁾	SP/MC	Grayslake, IL	133,000
Custom ⁽²⁾	MC	Neenah, WI	95,000
Leased Facilities:			
Distribution Center	SP/MC	Rancho Cucamonga, CA	11,500

⁽¹⁾ ISO-9001 registered facilities

⁽²⁾ ISO-9002 registered facility

Raw Materials

CompX's primary raw materials are:

- zinc and brass (used in the Security Products segment for the manufacture of locking mechanisms); and

- stainless steel (used primarily in the Marine Components segment for the manufacture of exhaust headers and pipes), aluminum (used for the manufacture of throttles and trim tabs), and other components.

These raw materials are purchased from several suppliers, are readily available from numerous sources and accounted for approximately 11% of our total cost of sales for 2017. Total material costs, including purchased components, represented approximately 44% of our cost of sales in 2017.

CompX occasionally enters into short-term commodity-related raw material supply arrangements to mitigate the impact of future price increases in commodity-related raw materials, including zinc, brass and stainless steel. These arrangements generally provide for stated unit prices based upon specified purchase volumes, which help us to stabilize our commodity-related raw material costs to a certain extent. During 2016 and 2017, markets for the primary commodity-related raw materials used in the manufacture of our locking mechanisms, primarily zinc and brass, generally strengthened, resulting in price increases that exceeded general inflation rates. In the case of zinc, our purchases late in 2017 bore unit costs over 50% higher than those acquired two years earlier. Over that same period, the market for stainless steel, the primary raw material used for the manufacture of marine exhaust headers and pipes, remained relatively stable. While we expect the markets for our primary commodity-related raw materials to stabilize during 2018, we recognize that strengthening economic conditions may exert upward price pressure on these and other manufacturing materials. When purchased on the spot market, each of these raw materials may be subject to sudden and unanticipated price increases. We generally seek to mitigate the impact of fluctuations in these raw material costs on our margins through improvements in production efficiencies or other operating cost reductions. In the event we are unable to offset raw material cost increases with other cost reductions, it may be difficult to recover those cost increases through increased product selling prices or raw material surcharges due to the competitive nature of the markets served by our products. Consequently, overall operating margins can be affected by commodity-related raw material cost pressures. Commodity market prices are cyclical, reflecting overall economic trends, specific developments in consuming industries and speculative investor activities.

Patents and Trademarks

We hold a number of patents relating to our component products, certain of which we believe to be important to us and our continuing business activity. Patents generally have a term of 20 years, and our patents have remaining terms ranging from less than 1 year to 17 years at December 31, 2017. Our major trademarks and brand names in addition to *CompX*® include:

Security Products	Security Products	Marine Components
<i>CompX</i> ® Security Products™	<i>Lockview</i> ®	<i>CompX Marine</i> ®
<i>National Cabinet Lock</i> ®	<i>System 64</i> ®	<i>Custom Marine</i> ®
<i>Fort Lock</i> ®	<i>SlamCAM</i> ®	<i>Livorsi</i> ® Marine
<i>Timberline</i> ® Lock	<i>RegulatoR</i> ®	<i>Livorsi II</i> ® Marine
<i>Chicago Lock</i> ®	<i>CompXpress</i> ®	<i>CMI Industrial</i> ®
<i>STOCK LOCKS</i> ®	<i>GEM</i> ®	<i>Custom Marine</i> ® Stainless Exhaust
<i>KeSet</i> ®		<i>The #1 Choice in Performance Boating</i> ®
<i>TuBar</i> ®		<i>Mega Rim</i> ®
<i>StealthLock</i> ®		<i>Race Rim</i> ®
<i>ACE</i> ®		<i>Vantage View</i> ®
<i>ACE</i> ® II		<i>GEN-X</i> ®
<i>CompX eLock</i> ®		

Sales, Marketing and Distribution

A majority of our Component Products Segment's sales are direct to large OEM customers through our factory-based sales and marketing professionals supported by engineers working in concert with field salespeople and independent manufacturer's representatives. We select manufacturer's representatives based on special skills in certain markets or relationships with current or potential customers.

In addition to sales to large OEM customers, a substantial portion of our security product sales are made through distributors. We have a significant North American market share of cabinet lock security product sales as a result of the locksmith distribution channel. We support our locksmith distributor sales with a line of standardized products used by the largest segments of the marketplace. These products are packaged and merchandised for easy availability and handling by distributors and end users.

CompX sells to a diverse customer base with only one customer representing 10% or more of our sales in 2017 (United States Postal Service representing 16%). Our largest ten customers accounted for approximately 44% of our sales in 2017.

Competition

The markets in which we participate are highly competitive. We compete primarily on the basis of product design, including space utilization and aesthetic factors, product quality and durability, price, on-time delivery, service and technical support. We focus our efforts on the middle and high-end segments of the market, where product design, quality, durability and service are valued by the customer. Our Security Products segment competes against a number of domestic and foreign manufacturers. Our Marine Components segment competes with small domestic manufacturers and is minimally affected by foreign competitors.

Regulatory and Environmental Matters

Our operations are subject to federal, state and local laws and regulations relating to the use, storage, handling, generation, transportation, treatment, emission, discharge, disposal, remediation of and exposure to hazardous and non-hazardous substances, materials and wastes (“Environmental Laws”). Our operations also are subject to federal, state and local laws and regulations relating to worker health and safety. We believe we are in substantial compliance with all such laws and regulations. To date, the costs of maintaining compliance with such laws and regulations have not significantly impacted our results. We currently do not anticipate any significant costs or expenses relating to such matters; however, it is possible future laws and regulations may require us to incur significant additional expenditures.

Employees

As of December 31, 2017, we employed 520 people, all in the United States. We believe our labor relations are good at all of our facilities.

REAL ESTATE MANAGEMENT AND DEVELOPMENT SEGMENT—BASIC MANAGEMENT, INC. AND THE LANDWELL COMPANY

Business Overview

Our Real Estate Management and Development Segment consists of BMI and LandWell. BMI provides utility services, among other things, to an industrial park located in Henderson, Nevada and is responsible for the delivery of water to the city of Henderson and various other users through a water distribution system owned by BMI. LandWell is actively engaged in efforts to develop certain real estate in Henderson, Nevada including approximately 2,100 acres zoned for residential/planned community purposes and approximately 400 acres zoned for commercial and light industrial use.

Operations and Services

Over the years, LandWell and BMI have focused on developing and selling the land transferred to LandWell as part of its formation in the early 1950’s as well as additional land holdings acquired by LandWell in the surrounding area subsequent to LandWell’s formation (although BMI and LandWell have not had significant real property acquisitions since 2004). Since LandWell’s formation, LandWell and BMI have a history of successfully developing and selling over 1,200 acres of retail, light industrial, commercial and residential projects in the Henderson, Nevada area. However, a substantial portion of such projects, had been completed prior to the 2008 economic downturn which was particularly acute in the Las Vegas area real estate market that includes Henderson. Following such economic downturn, LandWell’s land sales were substantially reduced as compared to prior years, and LandWell did not recognize any material amount of land sales in the 2008 to 2013 time period. During this time period, LandWell focused primarily on the development of a large tract of land in Henderson zoned for residential/planned community purposes (approximately 2,100 acres). Planning and zoning work on such project began in 2007, but LandWell delayed significant development efforts until economic conditions had improved. As general economic conditions improved in 2011 and 2012, LandWell began intensive development efforts of the residential/planned community in 2013 (with LandWell acting as the master developer for all such development efforts). We market and sell our residential/planned community to established home builders in tracts of land that are pre-zoned for a maximum number of home lots. We support the builders efforts to market and sell specific residential homes within our residential/planned community through joint marketing campaign and community wide education efforts.

In addition, BMI delivers utility services to an industrial park located in Henderson, Nevada and also delivers water to the city of Henderson and various other users through a water delivery system owned by BMI.

Sales

Through December 31, 2017, LandWell has closed or entered into escrow on approximately 480 acres of the residential/planned community and certain other acreage. Contracts for land sales are negotiated on an individual basis and sales terms and prices will vary based on such factors as location (including location within a planned community), expected development work and individual buyer needs. Although land may be under contract, we do not recognize revenue until we have satisfied the

criteria for revenue recognition set forth in Accounting Standards Codification (“ASC”) Topic 976. In some instances, we will receive cash proceeds at the time the contract closes and record deferred revenue for some or all of the cash amount received, with such deferred revenue being recognized in subsequent periods. Because land held for development was initially recognized at estimated fair value at the acquisition date as required by ASC Topic 805, we do not expect to recognize significant operating income on land sales for the land currently under contract. We expect the development work to continue for 10 to 15 years on the rest of the land held for development, consisting primarily of the residential/planned community.

Our Real Estate Management and Development Segment’s sales consist principally of land sales and water and electric delivery fees. During 2017 we had sales to three customers that each exceeded 10% of our Real Estate Management and Development Segment’s net sales: Richmond Homes of Nevada (37%), Grey Stone Nevada LLC (22%) both related to land sales, and the City of Henderson (11%) related to water delivery sales.

Competition

There are multiple new construction residential communities in the greater Las Vegas, Nevada area. We compete with these communities on the basis of location; planned community amenities and features; proximity to major retail and recreational activities; and the perception of quality of life within the new community. We believe our residential/planned community is unique within the greater Las Vegas area due to its location and planned amenities which include: 490 acres of major and neighborhood parks and open space interconnected with major regional trails and parks; and features that no other new construction residential community currently offers including builder floorplans designed exclusively for our community. We are marketing our residential/planned community to builders who target a range of home buyers to maximize sales.

Regulatory and Environmental Matters

We and the subcontractors we use must comply with many federal, state and local laws and regulations, including zoning, density and development requirements, building, environmental, advertising, labor and real estate sales rules and regulations. These regulations and requirements affect substantially all aspects of our land development. Our operations are subject to federal, state and local laws and regulations relating to the use, storage, handling, generation, transportation, treatment, emission, discharge, disposal, remediation of and exposure to hazardous and non-hazardous substances, materials and wastes. Our operations also are subject to federal, state and local laws and regulations relating to worker health and safety. We believe we are in substantial compliance with all such laws and regulations. To date, the costs of maintaining compliance with such laws and regulations have not significantly impacted our results. We currently do not anticipate any significant costs or expenses relating to such matters; however, it is possible future laws and regulations may require us to incur significant additional expenditures.

Employees

At December 31, 2017, BMI had 24 employees. We believe our labor relations are good.

OTHER

NL Industries, Inc.—At December 31, 2017, NL owned 87% of CompX and 30% of Kronos. NL also owns 100% of EWI RE, Inc., an insurance brokerage and risk management services company and also holds certain marketable securities and other investments. See Note 17 to our Consolidated Financial Statements for additional information.

Tremont LLC—Tremont is primarily a holding company through which we hold our 63% ownership interest in BMI and our 77% ownership interest in LandWell. Such 77% ownership interest in LandWell includes 27% we hold through our ownership of Tremont and 50% held by a subsidiary of BMI. Tremont also owns 100% of Tall Pines Insurance Company, an insurance company that also holds certain marketable securities and other investments. See Note 17 to our Consolidated Financial Statements.

In addition, we also own real property related to certain of our former business units.

Discontinued Operations—On January 26, 2018, we completed the sale of the Waste Management Segment to JFL-WCS Partners, LLC, an entity sponsored by certain investment affiliates of J.F. Lehman & Company, for consideration consisting of the assumption of all of the Waste Management Segment's third-party indebtedness and other liabilities. We expect to recognize a pre-tax gain of approximately \$57 million on the transaction in the first quarter of 2018 because the carrying value of the liabilities of the business assumed by the purchaser exceeded the carrying value of the assets sold at the time of sale in large part due to the long-lived asset impairment of \$170.6 million recognized with respect to the Waste Management Segment in the second quarter of 2017. Such pre-tax gain will be classified as part of discontinued operations. See Note 3 to our Consolidated Financial Statements for additional information.

Business Strategy—We routinely compare our liquidity requirements and alternative uses of capital against the estimated future cash flows to be received from our subsidiaries and unconsolidated affiliates, and the estimated sales value of those businesses.

As a result, we have in the past, and may in the future, seek to raise additional capital, refinance or restructure indebtedness, repurchase indebtedness in the market or otherwise, modify our dividend policy, consider the sale of an interest in our subsidiaries, business units, marketable securities or other assets, or take a combination of these or other steps, to increase liquidity, reduce indebtedness and fund future activities, which have in the past and may in the future involve related companies. From time to time, we and our related entities consider restructuring ownership interests among our subsidiaries and related companies. We expect to continue this activity in the future.

We and other entities that may be deemed to be controlled by or affiliated with Ms. Simmons and Ms. Connelly routinely evaluate acquisitions of interests in, or combinations with, companies, including related companies, we perceive to be undervalued in the marketplace. These companies may or may not be engaged in businesses related to our current businesses. In some instances we actively manage the businesses we acquire with a focus on maximizing return-on-investment through cost reductions, capital expenditures, improved operating efficiencies, selective marketing to address market niches, disposition of marginal operations, use of leverage and redeployment of capital to more productive assets. In other instances, we have disposed of our interest in a company prior to gaining control. We intend to consider such activities in the future and may, in connection with such activities, consider issuing additional equity securities and increasing our indebtedness.

Website and Available Information—Our fiscal year ends December 31. We furnish our stockholders with annual reports containing audited financial statements. In addition, we file annual, quarterly and current reports, proxy and information statements and other information with the SEC. Certain of our consolidated subsidiaries (Kronos, NL and CompX) also file annual, quarterly and current reports, proxy and information statements and other information with the SEC. We also make our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and amendments thereto, available free of charge through our website at www.valhi.net as soon as reasonably practical after they have been filed with the SEC. We also provide to anyone, without charge, copies of such documents upon written request. Requests should be directed to the attention of the Corporate Secretary at our address on the cover page of this Form 10-K.

Additional information, including our Audit Committee charter, our Code of Business Conduct and Ethics and our Corporate Governance Guidelines, can also be found on our website. Information contained on our website is not part of this Annual Report.

The general public may read and copy any materials we file with the SEC at the SEC's Public Reference Room at 100 F Street, NE, Washington, DC 20549. The public may obtain information on the operation of the Public Reference Room by calling the SEC at 1-800-SEC-0330. We are an electronic filer. The SEC maintains an Internet website at www.sec.gov that contains reports, proxy and information statements and other information regarding issuers, such as us, that file electronically with the SEC.

ITEM 1A. RISK FACTORS

Listed below are certain risk factors associated with us and our businesses. See also certain risk factors discussed in Item 7 — “*Management’s Discussion and Analysis of Financial Condition and Results of Operations* — Critical Accounting Policies and Estimates.” In addition to the potential effect of these risk factors, any risk factor which could result in reduced earnings or increased operating losses, or reduced liquidity, could in turn adversely affect our ability to service our liabilities or pay dividends on our common stock or adversely affect the quoted market prices for our securities.

Our assets consist primarily of investments in our operating subsidiaries, and we are dependent upon distributions from our subsidiaries to service our liabilities.

The majority of our operating cash flows are generated by our operating subsidiaries, and our ability to service liabilities and to pay dividends on our common stock depends to a large extent upon the cash dividends or other distributions we receive from our subsidiaries. Our subsidiaries are separate and distinct legal entities and they have no obligation, contingent or otherwise, to pay such cash dividends or other distributions to us. In addition, the payment of dividends or other distributions from our subsidiaries could be subject to restrictions under applicable law, monetary transfer restrictions, currency exchange regulations in jurisdictions in which our subsidiaries operate or any other restrictions imposed by current or future agreements to which our subsidiaries may be a party, including debt instruments. Events beyond our control, including changes in general business and economic conditions, could adversely impact the ability of our subsidiaries to pay dividends or make other distributions to us. If our subsidiaries were to become unable to make sufficient cash dividends or other distributions to us, our ability to service our liabilities and to pay dividends on our common stock could be adversely affected.

In addition, a significant portion of our assets consist of ownership interests in our subsidiaries. If we were required to liquidate any of such securities in order to generate funds to satisfy our liabilities, we may be required to sell such securities at a time or times at which we would not be able to realize what we believe to be the long-term value of such assets.

Demand for, and prices of, certain of our products are influenced by changing market conditions for our products, which may result in reduced earnings or operating losses.

Our Chemicals Segment’s sales and profitability is largely dependent on the TiO₂ industry. In 2017, 94% of our Chemicals Segment’s sales were attributable to sales of TiO₂. TiO₂ is used in many “quality of life” products for which demand historically has been linked to global, regional and local gross domestic product and discretionary spending, which can be negatively impacted by regional and world events or economic conditions. Such events are likely to cause a decrease in demand for our products and, as a result, may have an adverse effect on our results of operations and financial condition.

Pricing within the global TiO₂ industry over the long term is cyclical and changes in economic conditions, especially in Western industrialized nations, can significantly impact our earnings and operating cash flows. Historically, the markets for many of our products have experienced alternating periods of increasing and decreasing demand. Relative changes in the selling prices for our products are one of the main factors that affect the level of our profitability. In periods of increasing demand, our selling prices and profit margins generally will tend to increase, while in periods of decreasing demand our selling prices and profit margins generally tend to decrease. In addition, pricing may affect customer inventory levels as customers may from time to time accelerate purchases of TiO₂ in advance of anticipated price increases or defer purchases of TiO₂ in advance of anticipated price decreases. Our ability to further increase capacity without additional investment in greenfield or brownfield capacity increases may be limited and as a result, our profitability may become even more dependent upon the selling prices of our products.

The TiO₂ industry is concentrated and highly competitive and we face price pressures in the markets in which we operate, which may result in reduced earnings or operating losses.

The global market in which we operate our Chemicals business is concentrated with the top six TiO₂ producers accounting for approximately two-thirds of the world’s production capacity and is highly competitive. Competition is based on a number of factors, such as price, product quality and service. Some of our competitors may be able to drive down prices for our products if their costs are lower than our costs. In addition, some of our competitors’ financial, technological and other resources may be greater than our resources and such competitors may be better able to withstand changes in market conditions. Our competitors may be able to respond more quickly than we can to new or emerging technologies and changes in customer requirements. Further, consolidation of our competitors or customers may result in reduced demand for our products or make it more difficult for us to compete with our competitors. The occurrence of any of these events could result in reduced earnings or operating losses.

Higher costs or limited availability of our raw materials may reduce our earnings and decrease our liquidity. In addition, many of our raw material contracts contain fixed quantities we are required to purchase.

The number of sources for and availability of certain raw materials used in our Chemicals Segment is specific to the particular geographical region in which a facility is located. For example, titanium-containing feedstocks suitable for use in our TiO₂ facilities are available from a limited number of suppliers around the world. Political and economic instability in the countries from

which we purchase our raw material supplies could adversely affect their availability. If our worldwide vendors were unable to meet their contractual obligations and we were unable to obtain necessary raw materials, we could incur higher costs for raw materials or may be required to reduce production levels. We experienced significantly higher ore costs in 2012 which carried over into 2013. We have seen moderation in the purchase cost of third-party feedstock ore since 2013 through the first half of 2017; however, the cost of third-party feedstock ore we procured in the last half of 2017 is slightly higher as compared to the first half of 2017. We may also experience higher operating costs such as energy costs, which could affect our profitability. We may not always be able to increase our selling prices to offset the impact of any higher costs or reduced production levels, which could reduce our earnings and decrease our liquidity.

We have long-term supply contracts that provide for our TiO₂ feedstock requirements that currently expire through 2019. While we believe we will be able to renew these contracts, there can be no assurance we will be successful in renewing them or in obtaining long-term extensions to them prior to expiration. Our current agreements (including those entered into through January 2018) require us to purchase certain minimum quantities of feedstock with minimum purchase commitments aggregating approximately \$383 million in years subsequent to December 31, 2017. In addition, we have other long-term supply and service contracts that provide for various raw materials and services. These agreements require us to purchase certain minimum quantities or services with minimum purchase commitments aggregating approximately \$128 million at December 31, 2017. Our commitments under these contracts could adversely affect our Chemicals Segment's operating income.

Certain raw materials used in our Component Products Segment's products are commodities that are subject to significant fluctuations in price in response to world-wide supply and demand as well as speculative investor activity. Zinc and brass are the principal raw materials used in the manufacture of security products. Stainless steel tubing is the major raw material used in the manufacture of marine exhaust systems. These raw materials are purchased from several suppliers and are generally readily available from numerous sources. We occasionally enter into short-term raw material supply arrangements to mitigate the impact of future increases in commodity-related raw material costs. Materials purchased outside of these arrangements are sometimes subject to unanticipated and sudden price increases. Should our vendors not be able to meet their contractual obligations or should we be otherwise unable to obtain necessary raw materials, we may incur higher costs for raw materials or may be required to reduce production levels, either of which may decrease our liquidity or negatively impact our financial condition or results of operations as we may be unable to offset the higher costs with increases in our selling prices or reductions in other operating costs.

We could incur significant costs related to legal and environmental remediation matters.

NL formerly manufactured lead pigments for use in paint. NL and others have been named as defendants in various legal proceedings seeking damages for personal injury, property damage and governmental expenditures allegedly caused by the use of lead-based paints. These lawsuits seek recovery under a variety of theories, including public and private nuisance, negligent product design, negligent failure to warn, strict liability, breach of warranty, conspiracy/concert of action, aiding and abetting, enterprise liability, market share or risk contribution liability, intentional tort, fraud and misrepresentation, violations of state consumer protection statutes, supplier negligence and similar claims. The plaintiffs in these actions generally seek to impose on the defendants responsibility for lead paint abatement and health concerns associated with the use of lead-based paints, including damages for personal injury, contribution and/or indemnification for medical expenses, medical monitoring expenses and costs for educational programs. As with all legal proceedings, the outcome is uncertain. Any liability we might incur in the future could be material. See also Item 3 - "Legal Proceedings - Lead pigment litigation."

Certain properties and facilities used in our former operations are the subject of litigation, administrative proceedings or investigations arising under various environmental laws. These proceedings seek cleanup costs, personal injury or property damages and/or damages for injury to natural resources. Some of these proceedings involve claims for substantial amounts. Environmental obligations are difficult to assess and estimate for numerous reasons, and we may incur costs for environmental remediation in the future in excess of amounts currently estimated. Any liability we might incur in the future could be material. See also Item 3 - "Legal Proceedings - Environmental matters and litigation."

Many of the markets in which our Component Products Segment operates are mature and highly competitive resulting in pricing pressure and the need to continuously reduce costs.

Many of the markets our Component Products Segment serves are highly competitive, with a number of competitors offering similar products. We focus our efforts on the middle and high-end segment of the market where we feel that we can compete due to the importance of product design, quality and durability to the customer. However, our ability to effectively compete is impacted by a number of factors. The occurrence of any of these factors could result in reduced earnings or operating losses.

- Competitors may be able to drive down prices for our products beyond our ability to adjust costs because their costs are lower than ours, especially products sourced from Asia.
- Competitors' financial, technological and other resources may be greater than our resources, which may enable them to more effectively withstand changes in market conditions.

- Competitors may be able to respond more quickly than we can to new or emerging technologies and changes in customer requirements.
- Consolidation of our competitors or customers in any of the markets in which we compete may result in reduced demand for our products.
- A reduction of our market share with one or more of our key customers, or a reduction in one or more of our key customers' market share for their end-use products, may reduce demand for our products.
- New competitors could emerge by modifying their existing production facilities to manufacture products that compete with our products.
- We may not be able to sustain a cost structure that enables us to be competitive.
- Customers may no longer value our product design, quality or durability over the lower cost products of our competitors.

Our development of innovative features for current products is critical to sustaining and growing our Component Product Segment's sales.

Historically, our Component Products Segment's ability to provide value-added custom engineered products that address requirements of technology and space utilization has been a key element of our success. We spend a significant amount of time and effort to refine, improve and adapt our existing products for new customers and applications. Since expenditures for these types of activities are not considered research and development expense under accounting principles generally accepted in the United States of America ("GAAP"), the amount of our research and development expenditures, which is not significant, is not indicative of the overall effort involved in the development of new product features. The introduction of new product features requires the coordination of the design, manufacturing and marketing of the new product features with current and potential customers. The ability to coordinate these activities with current and potential customers may be affected by factors beyond our control. While we will continue to emphasize the introduction of innovative new product features that target customer-specific opportunities, we do not know if any new product features we introduce will achieve the same degree of success that we have achieved with our existing products. Introduction of new product features typically requires us to increase production volume on a timely basis while maintaining product quality. Manufacturers often encounter difficulties in increasing production volumes, including delays, quality control problems and shortages of qualified personnel or raw materials. As we attempt to introduce new product features in the future, we do not know if we will be able to increase production volume without encountering these or other problems, which might negatively impact our financial condition or results of operations.

If our intellectual property were to be declared invalid, or copied by or become known to by competitors, or if our competitors were to develop similar or superior intellectual property or technology, our ability to compete could be adversely impacted.

Protection of our intellectual property rights, including patents, trade secrets, confidential information, trademarks and tradenames, is important to our businesses and our competitive positions. We endeavor to protect our intellectual property rights in key jurisdictions in which our products are produced or used and in jurisdictions into which our products are imported. However, we may be unable to obtain protection for our intellectual property in key jurisdictions. Although we own and have applied for numerous patents and trademarks throughout the world, we may have to rely on judicial enforcement of our patents and other proprietary rights. Our patents and other intellectual property rights may be challenged, invalidated, circumvented, and rendered unenforceable or otherwise compromised. A failure to protect, defend or enforce our intellectual property could have an adverse effect on our financial condition and results of operations. Similarly, third parties may assert claims against us and our customers and distributors alleging our products infringe upon third-party intellectual property rights.

It is the practice of our Chemicals Segment to enter into confidentiality agreements with its employees and third parties to protect our proprietary expertise and other trade secrets; however these agreements may not provide sufficient protection for our trade secrets or proprietary know-how, or adequate remedies for breaches of such agreements may not be available in the event of an unauthorized use or disclosure of such trade secrets and know-how. We also may not be able to readily detect breaches of such agreements. The failure of our patents or confidentiality agreements to protect our proprietary technology, know-how or trade secrets could result in a material loss of our competitive position, which could lead to significantly lower revenues, reduced profit margins or loss of market share.

Our Component Products Segment relies on patent, trademark and trade secret laws in the United States and similar laws in other countries to establish and maintain our intellectual property rights in our technology and designs. Despite these measures, any of our intellectual property rights could be challenged, invalidated, circumvented or misappropriated. Others may independently discover our trade secrets and proprietary information, and in such cases we could not assert any trade secret rights against such parties. Further, we do not know if any of our pending trademark or patent applications will be approved. Costly and time-consuming litigation could be necessary to enforce and determine the scope of our intellectual property rights. In addition, the laws of certain

countries do not protect intellectual property rights to the same extent as the laws of the United States. Therefore, in certain jurisdictions, we may be unable to protect our technology and designs adequately against unauthorized third party use, which could adversely affect our competitive position.

Third parties may claim that we or our customers are infringing upon their intellectual property rights. Even if we believe that such claims are without merit, they can be time-consuming and costly to defend and distract our management's and technical staff's attention and resources. Claims of intellectual property infringement also might require us to redesign affected technology, enter into costly settlement or license agreements or pay costly damage awards, or face a temporary or permanent injunction prohibiting us from marketing or selling certain of our technology. If we cannot or do not license the infringed technology on reasonable pricing terms or at all, or substitute similar technology from another source, our business could be adversely impacted.

If we must take legal action to protect, defend or enforce our intellectual property rights, any suits or proceedings could result in significant costs and diversion of resources and management's attention, and we may not prevail in any such suits or proceedings. A failure to protect, defend or enforce our intellectual property rights could have an adverse effect on our financial condition and results of operations.

Our Real Estate Management and Development Segment owns a significant amount of real property in Henderson, Nevada. A prolonged downturn in the local real estate market in Nevada could negatively impact our ability to successfully complete the development of such real property.

A substantial portion of the revenues and assets associated with our Real Estate Management and Development Segment relate to certain real estate under development in Henderson, Nevada, including approximately 2,100 acres zoned for residential/planned community purposes and approximately 400 acres zoned for commercial and light industrial use. A prolonged downturn in the local real estate market in Nevada or other events could negatively impact our ability to successfully complete the development of such real property, either by requiring us to incur future development costs in excess of our current estimates, or by resulting in selling prices for future retail land sales lower than what we currently expect. If any of these events were to occur, revenue and profits in our Real Estate Management and Development segment may be significantly and negatively affected.

Our leverage may impair our financial condition or limit our ability to operate our businesses.

We have a significant amount of debt, primarily related to Kronos' Senior Notes, our loan from Contran Corporation, our loans from Snake River Sugar Company and the BMI bank note. As of December 31, 2017, our total consolidated debt for continuing operations was approximately \$1,043.1 million. Our level of debt could have important consequences to our stockholders and creditors, including:

- making it more difficult for us to satisfy our obligations with respect to our liabilities;
- increasing our vulnerability to adverse general economic and industry conditions;
- requiring that a portion of our cash flows from operations be used for the payment of interest on our debt, which reduces our ability to use our cash flow to fund working capital, capital expenditures, dividends on our common stock, acquisitions or general corporate requirements;
- limiting the ability of our subsidiaries to pay dividends to us;
- limiting our ability to obtain additional financing to fund future working capital, capital expenditures, acquisitions or general corporate requirements;
- limiting our flexibility in planning for, or reacting to, changes in our business and the industry in which we operate; and
- placing us at a competitive disadvantage relative to other less leveraged competitors.

In addition to our indebtedness, we are party to various lease and other agreements (including feedstock ore purchase contracts as previously described) pursuant to which, along with our indebtedness, we are committed to pay approximately \$496.4 million in 2018. Our ability to make payments on and refinance our debt and to fund planned capital expenditures depends on our future ability to generate cash flow. To some extent, this is subject to general economic, financial, competitive, legislative, regulatory and other factors that are beyond our control. In addition, our ability to borrow funds under certain of our revolving credit facilities in the future will, in some instances, depend in part on these subsidiaries' ability to maintain specified financial ratios and satisfy certain financial covenants contained in the applicable credit agreement.

Our businesses may not generate cash flows from operating activities sufficient to enable us to pay our debts when they become due and to fund our other liquidity needs. As a result, we may need to refinance all or a portion of our debt before maturity. We may not be able to refinance any of our debt in a timely manner on favorable terms, if at all, in the current credit markets. Any

inability to generate sufficient cash flows or to refinance our debt on favorable terms could have a material adverse effect on our financial condition.

As a global business, we are subject to risks associated with doing business outside the United States.

We have global operations and derive a large portion of our sales from customers outside the United States. Accordingly, our international operations or those of our international customers could be substantially affected by a number of risks arising with operating an international business, including trade barriers, tariffs, exchange controls, economic and political conditions, compliance with a variety of non-United States laws and regulations (including income tax laws and regulations) or compliance with United States law and regulations in respect to doing business internationally, limitations or restrictions on the repatriation of non-United States earnings to the United States, and difficulty in enforcing agreements or other legal rights. Our operations are also subject to the effects of global competition. These risks, individually or in the aggregate, could have an adverse effect on our results of operations and financial condition.

Changes in exchange rates and interest rates can adversely affect our net sales, profits and cash flows.

We operate our businesses in several different countries and sell our products worldwide. For example, during 2017, approximately one-half of our Chemicals Segment's sales volumes were sold into European markets. The majority (but not all) of our sales from our operations outside the United States are denominated in currencies other than the United States dollar, primarily the euro, other major European currencies and the Canadian dollar. Therefore, we are exposed to risks related to the need to convert currencies we receive from the sale of our products into the currencies required to pay for certain of our operating costs and expenses and other liabilities (including indebtedness), all of which could result in future losses depending on fluctuations in currency exchange rates and affect the comparability of our results of operations between periods.

Global climate change legislation could negatively impact our financial results or limit our ability to operate our businesses.

We operate production facilities in several countries. In many of the countries in which we operate, legislation has been passed, or proposed legislation is being considered, to limit greenhouse gases through various means, including emissions permits and/or energy taxes. In several of our production facilities, we consume large amounts of energy, primarily electricity and natural gas. To date, the permit system in effect in the various countries in which we operate has not had a material adverse effect on our financial results. However, if further greenhouse gas legislation were to be enacted in one or more countries, it could negatively impact our future results from operations through increased costs of production, particularly as it relates to our energy requirements or our need to obtain emissions permits. If such increased costs of production were to materialize, we may be unable to pass price increases onto our customers to compensate for increased production costs, which may decrease our liquidity, operating income and results of operations.

Technology failures or cyber security breaches could have a material adverse effect on our operations.

We rely on information technology systems to manage, process and analyze data, as well as to facilitate the manufacture and distribution of our products to and from our plants. We receive, process and ship orders, manage the billing of and collections from our customers, and manage the accounting for and payment to our vendors. In this regard, in January 2017 Kronos implemented a new enterprise resource planning system covering certain finance processes (principally general ledger, accounts receivable and accounts payable), and in January 2018 Kronos implemented the remaining portion of such enterprise resource planning system covering sales, procurement, manufacturing and plant maintenance. Although we have systems and procedures in place to protect our information technology systems, there can be no assurance that such systems and procedures would be sufficiently effective. Therefore, any of our information technology systems may be susceptible to outages, disruptions or destruction as well as cyber security breaches or attacks, resulting in a disruption of our business operations, injury to people, harm to the environment or our assets, and/or the inability to access our information technology systems. If any of these events were to occur, our results of operations and financial condition could be adversely affected.

ITEM 1B. UNRESOLVED STAFF COMMENTS

None.

ITEM 2. PROPERTIES

We along with our subsidiaries, Kronos, CompX and NL lease office space through Contran for our principal executive offices in Dallas, Texas. Our BMI and LandWell subsidiaries' principal offices are in an owned building in Henderson, Nevada. A list of operating facilities for each of our subsidiaries is described in the applicable business sections of Item 1—"Business." We believe our facilities are generally adequate and suitable for their respective uses.

ITEM 3. LEGAL PROCEEDINGS

We are involved in various legal proceedings. In addition to information included below, certain information called for by this Item is included in Note 18 to our Consolidated Financial Statements, which is incorporated herein by reference.

Lead Pigment Litigation—NL

NL's former operations included the manufacture of lead pigments for use in paint and lead-based paint. NL, other former manufacturers of lead pigments for use in paint and lead-based paint (together, the "former pigment manufacturers"), and the Lead Industries Association (LIA), which discontinued business operations in 2002, have been named as defendants in various legal proceedings seeking damages for personal injury, property damage and governmental expenditures allegedly caused by the use of lead-based paints. Certain of these actions have been filed by or on behalf of states, counties, cities or their public housing authorities and school districts, and certain others have been asserted as class actions. These lawsuits seek recovery under a variety of theories, including public and private nuisance, negligent product design, negligent failure to warn, strict liability, breach of warranty, conspiracy/concert of action, aiding and abetting, enterprise liability, market share or risk contribution liability, intentional tort, fraud and misrepresentation, violations of state consumer protection statutes, supplier negligence and similar claims.

The plaintiffs in these actions generally seek to impose on the defendants responsibility for lead paint abatement and health concerns associated with the use of lead-based paints, including damages for personal injury, contribution and/or indemnification for medical expenses, medical monitoring expenses and costs for educational programs. To the extent the plaintiffs seek compensatory or punitive damages in these actions, such damages are generally unspecified. In some cases, the damages are unspecified pursuant to the requirements of applicable state law. A number of cases are inactive or have been dismissed or withdrawn. Most of the remaining cases are in various pre-trial stages. Some are on appeal following dismissal or summary judgment rulings or a trial verdict in favor of either the defendants or the plaintiffs.

We believe that these actions are without merit, and we intend to continue to deny all allegations of wrongdoing and liability and to defend against all actions vigorously. Other than with respect to the Santa Clara case discussed below, we do not believe it is probable that we have incurred any liability with respect to all of the lead pigment litigation cases to which we are a party, and with respect to all such lead pigment litigation cases to which we are a party, including the Santa Clara case, we believe liability to us that may result, if any, in this regard cannot be reasonably estimated, because:

- NL has never settled any of the market share, intentional tort, fraud, nuisance, supplier negligence, breach of warranty, conspiracy, misrepresentation, aiding and abetting, enterprise liability, or statutory cases,
- no final, non-appealable adverse verdicts have ever been entered against NL (subject to the final outcome of the Santa Clara case discussed below), and
- NL has never ultimately been found liable with respect to any such litigation matters, including over 100 cases over a twenty-year period for which we were previously a party and for which we have been dismissed without any finding of liability (subject to the final outcome of the Santa Clara case discussed below).

Accordingly, we have not accrued any amounts for any of the pending lead pigment and lead-based paint litigation cases filed by or on behalf of states, counties, cities or their public housing authorities and school districts, or those asserted as class actions. In addition, we have determined that liability to us which may result, if any, cannot be reasonably estimated at this time because there is no prior history of a loss of this nature on which an estimate could be made and there is no substantive information available upon which an estimate could be based.

In one of these lead pigment cases, in April 2000 NL was served with a complaint in *County of Santa Clara v. Atlantic Richfield Company, et al*, (Superior Court of the State of California, County of Santa Clara, Case No. 1-00-CV-788657) brought by a number of California government entities against the former pigment manufacturers, the LIA and certain paint manufacturers. The County of Santa Clara sought to recover compensatory damages for funds the plaintiffs had expended or would in the future expend for medical treatment, educational expenses, abatement or other costs due to exposure to, or potential exposure to, lead paint, disgorgement of profit, and punitive damages. In July 2003, the trial judge granted defendants' motion to dismiss all remaining claims. Plaintiffs appealed and the intermediate appellate court reinstated public nuisance, negligence, strict liability, and fraud claims in March 2006. A fourth amended complaint was filed in March 2011 on behalf of The People of California by the County Attorneys of Alameda, Ventura, Solano, San Mateo, Los Angeles and Santa Clara, and the City Attorneys of San Francisco, San Diego and Oakland. That complaint alleged that the presence of lead paint created a public nuisance in each of the prosecuting jurisdictions and sought its abatement. In July and August 2013, the case was tried. In January 2014, the trial court judge issued a judgment finding NL, The Sherwin Williams Company and ConAgra Grocery Products Company jointly and severally liable for the abatement of lead paint in pre-1980 homes, and ordered the defendants to pay an aggregate \$1.15 billion to the people of the State of California to fund such abatement. The trial court's judgment also found that to the extent any abatement funds remained unspent after four years, such

funds were to be returned to the defendants. In February 2014, NL filed a motion for a new trial, and in March 2014 the trial court denied the motion. Subsequently in March 2014, NL filed a notice of appeal with the Sixth District Court of Appeal for the State of California. On November 14, 2017, the Sixth District Court of Appeal issued its opinion, upholding the trial court's judgment, except that it reversed the portion of the judgment requiring abatement of homes built between 1951 and 1980 which significantly reduced the number of homes subject to the abatement order. In addition, the appellate court ordered the case be remanded to the trial court to recalculate the amount of the abatement fund, to limit it to the amount necessary to cover the cost of investigating and remediating pre-1951 homes, and to hold an evidentiary hearing to appoint a suitable receiver. In addition, the appellate court found that NL and the other defendants had the right to seek recovery from liable parties that contributed to a hazardous condition at a particular property. Subsequently, NL and the other defendants filed a Petition with the California Supreme Court seeking its review of a number of issues. On February 14, 2018, the California Supreme Court denied such petition. NL and the other defendants have indicated they intend to file an appeal with the U.S. Supreme Court, seeking its review of two federal issues in the trial court's original judgment. Review by the U.S. Supreme Court is discretionary, and there can be no assurance that the U.S. Supreme Court would agree to hear any such appeal that NL and the other defendants would file, or if they would agree to hear any such appeal, that the U.S. Supreme Court would rule in favor of NL and the other defendants. NL and the other defendants intend to seek a stay of the case in the trial court, pending its appeal to the U.S. Supreme Court. Granting of such a stay by the appellate court is discretionary. If no such stay is issued, the remand to the trial court would proceed, and under such remand the trial court would, among other things, (i) assign a new judge to the case (the original judge has retired), (ii) recalculate the amount of the abatement fund, excluding remediation of homes built between 1951 and 1980, (iii) hold an evidentiary hearing to appoint a suitable receiver for the abatement fund and (iv) enter an order setting forth its rulings on these issues. NL believes any party will have a right to appeal any of these new decisions made by the trial court from the remand of the case.

The Santa Clara case is unusual in that this is the second time that an adverse verdict in the lead pigment litigation has been entered against NL (the first adverse verdict against NL was ultimately overturned on appeal). Given the appellate court's November 2017 ruling, and the denial of an appeal by the California Supreme Court, we have concluded that the likelihood of a loss in this case has reached a standard of "probable" as contemplated by ASC 450. However, we have also concluded that the amount of such loss cannot be reasonably estimated at this time (nor can a range of loss be reasonably estimated) because, among other things:

- The appellate court has remanded the case back to the trial court to recalculate the total amount of the abatement, limiting the abatement to pre-1951 homes. Until the trial court has completed such recalculation, NL and the other defendants have no basis to estimate a liability;
- The appellate court upheld NL's and the other defendants' right to seek contribution from other liable parties (e.g. property owners who have violated the applicable housing code) on a house-by-house basis. The method by which the trial court would undertake to determine such house-by-house responsibility, and the outcome of such a house-by-house determination, is not presently known;
- Participation in any abatement program by each homeowner is voluntary, and each homeowner would need to consent to allowing someone to come into the home to undertake any inspection and abatement, as well as consent to the nature, timing and extent of any abatement. The original trial court's judgment unrealistically assumed 100% participation by the affected homeowners. Actual participation rates are likely to be less than 100% (the ultimate extent of participation is not presently known);
- The remedy ordered by the trial court is an abatement fund. The trial court ordered that any funds unspent after four years are to be returned to the defendants (this provision of the trial court's original judgment was not overturned by the appellate court). As noted above, the actual number of homes which would participate in any abatement, and the nature, timing and extent of any such abatement, is not presently known; and
- NL and the other two defendants are jointly and severally liable for the abatement, and NL does not believe any individual defendant would be 100% responsible for the cost of any abatement.

Accordingly, the total ultimate amount of any abatement fund, and NL's share of any abatement is not presently known. For all of the reasons noted above, NL has concluded that the amount of loss for this matter cannot be reasonably estimated at this time (nor can any reasonable range of loss be estimated). However, as with any legal proceeding, there is no assurance that any appeal would be successful, and it is reasonably possible, based on the outcome of the appeals process and the remand proceedings in the trial court, that NL may in the future incur some liability resulting in the recognition of a loss contingency accrual that could have a material adverse impact on our results of operations, financial position and liquidity.

In June 2000, a complaint was filed in Illinois state court, *Lewis, et al. v. Lead Industries Association, et al* (Circuit Court of Cook County, Illinois, County Department, Chancery Division, Case No. 00CH09800.) Plaintiffs seek to represent two classes, one consisting of minors between the ages of six months and six years who resided in housing in Illinois built before 1978, and another consisting of individuals between the ages of six and twenty years who lived in Illinois housing built before 1978 when they were between the ages of six months and six years and who had blood lead levels of 10 micrograms/deciliter or more. The complaint seeks damages jointly and severally from the former pigment manufacturers and the LIA to establish a medical screening fund for the first class to determine blood lead levels, a medical monitoring fund for the second class to detect the onset of latent diseases and a fund for

a public education campaign. In April 2008, the trial court judge certified a class of children whose blood lead levels were screened venously between August 1995 and February 2008 and who had incurred expenses associated with such screening. In March 2012, the trial court judge decertified the class. In June 2012, the trial court judge granted plaintiffs the right to appeal his decertification order, and in August 2012 the appellate court granted plaintiffs permission to appeal. In March 2013, the appellate court agreed with the trial court's rationale regarding legislative requirements to screen children's blood lead levels and remanded the case for further proceedings in the trial court. In July 2013, plaintiffs moved to vacate the decertification. In October 2013, the judge denied plaintiffs' motion to vacate the decertification of the class. In March 2014, plaintiffs filed a new class certification motion. In April 2015, a class was certified consisting of parents or legal guardians of children who lived in certain "high risk" areas in Illinois between August 18, 1995 and February 19, 2008, and incurred an expense or liability for having their children's blood lead levels tested.

In addition to the foregoing litigation, various legislation and administrative regulations have, from time to time, been proposed that seek to (a) impose various obligations on present and former manufacturers of lead pigment and lead-based paint with respect to asserted health concerns associated with the use of such products and (b) effectively overturn court decisions in which we and other pigment manufacturers have been successful. Examples of such proposed legislation include bills which would permit civil liability for damages on the basis of market share, rather than requiring plaintiffs to prove that the defendant's product caused the alleged damage, and bills which would revive actions barred by the statute of limitations. While no legislation or regulations have been enacted to date that are expected to have a material adverse effect on our consolidated financial position, results of operations or liquidity, the imposition of market share liability or other legislation could have such an effect.

New cases may continue to be filed against NL. We cannot assure you that we will not incur liability in the future in respect of any of the pending or possible litigation in view of the inherent uncertainties involved in court and jury rulings. In the future, if new information regarding such matters becomes available to us (such as a final, non-appealable adverse verdict against us or otherwise ultimately being found liable with respect to such matters), at that time we would consider such information in evaluating any remaining cases then-pending against us as to whether it might then have become probable we have incurred liability with respect to these matters, and whether such liability, if any, could have become reasonably estimable. The resolution of any of these cases could result in the recognition of a loss contingency accrual that could have a material adverse impact on our net income for the interim or annual period during which such liability is recognized and a material adverse impact on our consolidated financial condition and liquidity.

Environmental matters and litigation

Our operations are governed by various environmental laws and regulations. Certain of our businesses are and have been engaged in the handling, manufacture or use of substances or compounds that may be considered toxic or hazardous within the meaning of applicable environmental laws and regulations. As with other companies engaged in similar businesses, certain of our past and current operations and products have the potential to cause environmental or other damage. We have implemented and continue to implement various policies and programs in an effort to minimize these risks. Our policy is to maintain compliance with applicable environmental laws and regulations at all of our plants and to strive to improve environmental performance. From time to time, we may be subject to environmental regulatory enforcement under U.S. and non-U.S. statutes, the resolution of which typically involves the establishment of compliance programs. It is possible that future developments, such as stricter requirements of environmental laws and enforcement policies, could adversely affect our production, handling, use, storage, transportation, sale or disposal of such substances. We believe that all of our facilities are in substantial compliance with applicable environmental laws.

Certain properties and facilities used in our former operations, including divested primary and secondary lead smelters and former mining locations, are the subject of civil litigation, administrative proceedings or investigations arising under federal and state environmental laws and common law. Additionally, in connection with past operating practices, we are currently involved as a defendant, potentially responsible party (PRP) or both, pursuant to the Comprehensive Environmental Response, Compensation and Liability Act, as amended by the Superfund Amendments and Reauthorization Act (CERCLA), and similar state laws in various governmental and private actions associated with waste disposal sites, mining locations, and facilities that we or our predecessors, our subsidiaries or their predecessors currently or previously owned, operated or used, certain of which are on the United States Environmental Protection Agency's (EPA) Superfund National Priorities List or similar state lists. These proceedings seek cleanup costs, damages for personal injury or property damage and/or damages for injury to natural resources. Certain of these proceedings involve claims for substantial amounts. Although we may be jointly and severally liable for these costs, in most cases we are only one of a number of PRPs who may also be jointly and severally liable, and among whom costs may be shared or allocated. In addition, we are also a party to a number of personal injury lawsuits filed in various jurisdictions alleging claims related to environmental conditions alleged to have resulted from our operations.

Obligations associated with environmental remediation and related matters are difficult to assess and estimate for numerous reasons including the:

- complexity and differing interpretations of governmental regulations,
- number of PRPs and their ability or willingness to fund such allocation of costs,
- financial capabilities of the PRPs and the allocation of costs among them,
- solvency of other PRPs,
- multiplicity of possible solutions,
- number of years of investigatory, remedial and monitoring activity required,
- uncertainty over the extent, if any, to which our former operations might have contributed to the conditions allegedly giving rise to such personal injury, property damage, natural resource and related claims, and
- number of years between former operations and notice of claims and lack of information and documents about the former operations.

In addition, the imposition of more stringent standards or requirements under environmental laws or regulations, new developments or changes regarding site cleanup costs or the allocation of costs among PRPs, solvency of other PRPs, the results of future testing and analysis undertaken with respect to certain sites or a determination that we are potentially responsible for the release of hazardous substances at other sites, could cause our expenditures to exceed our current estimates. We cannot assure you that actual costs will not exceed accrued amounts or the upper end of the range for sites for which estimates have been made, and we cannot assure you that costs will not be incurred for sites where no estimates presently can be made. Further, additional environmental and related matters may arise in the future. If we were to incur any future liability, this could have a material adverse effect on our consolidated financial statements, results of operations and liquidity.

We record liabilities related to environmental remediation and related matters (including costs associated with damages for personal injury or property damage and/or damages for injury to natural resources) when estimated future expenditures are probable and reasonably estimable. We adjust such accruals as further information becomes available to us or as circumstances change. Unless the amounts and timing of such estimated future expenditures are fixed and reasonably determinable, we generally do not discount estimated future expenditures to their present value due to the uncertainty of the timing of the payout. We recognize recoveries of costs from other parties, if any, as assets when their receipt is deemed probable. At December 31, 2016 and 2017, we have not recognized any material receivables for recoveries.

We do not know and cannot estimate the exact time frame over which we will make payments for our accrued environmental and related costs. The timing of payments depends upon a number of factors, including but not limited to the timing of the actual remediation process; which in turn depends on factors outside of our control. At each balance sheet date, we estimate the amount of our accrued environmental and related costs which we expect to pay within the next twelve months, and we classify this estimate as a current liability. We classify the remaining accrued environmental costs as a noncurrent liability.

On a quarterly basis, we evaluate the potential range of our liability for environmental remediation and related costs at sites where we have been named as a PRP or defendant, including sites for which our wholly-owned environmental management subsidiary, NL Environmental Management Services, Inc., (EMS), has contractually assumed our obligations. At December 31, 2017, NL had accrued approximately \$112 million related to approximately 39 sites associated with remediation and related matters that we believe are at the present time and/or in their current phase reasonably estimable. The upper end of the range of reasonably possible costs to us for remediation and related matters for which we believe it is possible to estimate costs is approximately \$154 million, including the amount currently accrued.

We believe that it is not reasonably possible to estimate the range of costs for certain sites. At December 31, 2017, there were approximately 5 sites for which NL is not currently able to reasonably estimate a range of costs. For these sites, generally the investigation is in the early stages, and NL is unable to determine whether or not we actually had any association with the site, the nature of our responsibility, if any, for the contamination at the site and the extent of contamination at and cost to remediate the site. The timing and availability of information on these sites is dependent on events outside of our control, such as when the party alleging liability provides information to us. At certain of these previously inactive sites, we have received general and special notices of liability from the EPA and/or state agencies alleging that we, sometimes with other PRPs, are liable for past and future costs of remediating environmental contamination allegedly caused by former operations. These notifications may assert that we, along with any other alleged PRPs, are liable for past and/or future clean-up costs. As further information becomes available to us for any of these sites, which would allow us to estimate a range of costs, we would at that time adjust our accruals. Any such adjustment could result in the recognition of an accrual that would have a material effect on our consolidated financial statements, results of operations and liquidity.

In June 2006, NL and several other PRPs received a Unilateral Administrative Order (UAO) from the EPA regarding a formerly-owned mine and milling facility located in Park Hills, Missouri. The Doe Run Company is the current owner of the site, which was purchased by a predecessor of Doe Run from us in approximately 1936. Doe Run is also named in the Order. In April

2008, the parties signed a definitive cost sharing agreement for sharing of the costs anticipated in connection with the order and in May 2008, the parties began work at the site as required by the UAO and in accordance with the cost sharing agreement. In the fourth quarter of 2010, NL reached its capped payment obligation under the cost sharing agreement with Doe Run. In the fourth quarter of 2013, Doe Run completed the remainder of the construction work. A Removal Action Report and Post-Removal Site Control plan were submitted to the EPA by Doe Run in 2016. In March 2017, EPA approved the Removal Action Report and Post-Removal Site Control submitted by Doe Run but requested an amendment, which Doe Run submitted in July 2017, and which completes the remediation obligations under the Order.

In June 2008, NL received a Directive and Notice to Insurers from the New Jersey Department of Environmental Protection (NJDEP) regarding the Margaret's Creek site in Old Bridge Township, New Jersey. NJDEP alleged that a waste hauler transported waste from one of our former facilities for disposal at the site in the early 1970s. NJDEP referred the site to the EPA, and in November 2009, the EPA added the site to the National Priorities List under the name "Raritan Bay Slag Site." In 2012, EPA notified NL of its potential liability at this site. In May 2013, EPA issued its Record of Decision for the site. In June 2013, NL filed a contribution suit under CERCLA and the New Jersey Spill Act titled *NL Industries, Inc. v. Old Bridge Township, et al.* (United States District Court for the District of New Jersey, Civil Action No. 3:13-cv-03493-MAS-TJB) against the current owner, Old Bridge Township, and several federal and state entities NL alleges designed and operated the site and who have significant potential liability as compared to NL which is alleged to have been a potential source of material placed at the site by others. NL's suit also names certain former NL customers of the former NL facility alleged to be the source of some of the materials. In January 2014, EPA issued a UAO to NL for clean-up of the site based on the EPA's preferred remedy set forth in the Record of Decision. NL is in discussions with EPA about NL's performance of a defined amount of the work at the site and is otherwise taking actions necessary to respond to the UAO. If these discussions and actions are unsuccessful, NL will defend vigorously against all claims while continuing to seek contribution from other PRPs. In March 2017, in a parallel lawsuit initiated by NL in State court against the State of New Jersey, which has significant potential liability as compared to NL, the New Jersey Supreme Court ruled that the State of New Jersey had not waived its immunity under the Spill Act for its pre-1977 conduct. In August 2017, NL filed an amended complaint in the State court alleging post-1977 conduct by the State that led to contamination. In September 2017, the State filed its answer and counterclaims. NL has denied liability on the State's counterclaims and intends to continue to seek contribution from the State.

In September 2008, NL received a Special Notice letter from the EPA for liability associated with the Tar Creek Superfund site in Ottawa County, Oklahoma (Tar Creek) and a demand for related past and future costs. NL responded with a good-faith offer to pay certain of the EPA's past costs and to complete limited work in the areas in which we operated. In October 2008, NL received a claim from the State of Oklahoma for past, future and relocation costs in connection with the site. In November 2015, the United States Department of Justice lodged with the federal court a fully-executed consent decree between the United States, the State of Oklahoma and NL that resolves the claims of the United States and the State of Oklahoma for past and future cleanup costs at Tar Creek. In September 2017, the federal court approved the cash out consent decree.

In August 2009, NL was served with a complaint in *Raritan Baykeeper, Inc. d/b/a NY/NJ Baykeeper et al. v. NL Industries, Inc. et al.* (United States District Court, District of New Jersey, Case No. 3:09-cv-04117). This is a citizen's suit filed by two local environmental groups pursuant to the Resource Conservation and Recovery Act and the Clean Water Act against NL, current owners, developers and state and local government entities. The complaint alleges that hazardous substances were and continue to be discharged from our former Sayreville, New Jersey property into the sediments of the adjacent Raritan River. The former Sayreville site is currently being remediated by owner/developer parties under the oversight of the NJDEP. The plaintiffs seek a declaratory judgment, injunctive relief, imposition of civil penalties and an award of costs. NL has denied liability and will defend vigorously against all claims.

In June 2011, NL was served in *ASARCO LLC v. NL Industries, Inc., et al.* (United States District Court, Western District of Missouri, Case No. 4:11-cv-00138-DGK). The plaintiff brought this CERCLA contribution action against several defendants to recover a portion of the amount it paid in settlement with the U.S. Government during its Chapter 11 bankruptcy in relation to the Tar Creek site, the Cherokee County Superfund Site in southeast Kansas, the Oronogo-Duenweg Lead Mining Belt Superfund Site in Jasper County, Missouri and the Newton County Mine Tailing Site in Newton County, Missouri. NL has denied liability and will defend vigorously against all of the claims. In the second quarter of 2012, NL filed a motion to stay the case. In the first quarter of 2013, NL's motion was granted and the court entered an indefinite stay. In the first quarter of 2015, Asarco was granted permission to seek an interlocutory appeal of that stay order. In March 2015, the Eighth Circuit Court of Appeals denied Asarco's request for an interlocutory appeal of the stay order and the trial court's indefinite stay remains in place.

In September 2011, NL was served in *ASARCO LLC v. NL Industries, Inc., et al.* (United States District Court, Eastern District of Missouri, Case No. 4:11-cv-00864). The plaintiff brought this CERCLA contribution action against several defendants to recover a portion of the amount it paid in settlement with the U.S. Government during its Chapter 11 bankruptcy in relation to the Southeast Missouri Mining District. In May 2015, the trial court on its own motion entered an indefinite stay of the litigation. In June 2015, Asarco filed an appeal of the stay in the Eighth Circuit Court of Appeals. NL has moved to dismiss that appeal as improperly

filed. In October 2015, the Eighth Circuit Court of Appeals granted NL's motion to dismiss Asarco's appeal and the trial court's indefinite stay remains in place.

In July 2012, NL was served in *EPEC Polymers, Inc., v. NL Industries, Inc.*, (United States District Court for the District of New Jersey, Case 3:12-cv-03842-PGS-TJB). The plaintiff, a landowner of property located across the Raritan River from our former Sayreville, New Jersey operation, claims that contaminants from NL's former Sayreville operation came to be located on its land. The complaint seeks compensatory and punitive damages and alleges, among other things, trespass, private nuisance, negligence, strict liability, and claims under CERCLA and the New Jersey Spill Act. In April 2016, the case was stayed and administratively terminated pending court-ordered mediation. In October 2017, the parties informed the court that further mediation would not be fruitful. The case was reopened in December 2017. NL will continue to deny liability and defend vigorously against all of the claims.

In March 2013, NL received Special Notice from EPA for Operable Unit 1, residential area, at the Big River Mine Tailings Superfund Site in St. Francois County, Missouri. The site encompasses approximately eight former mine and mill areas, only one of which is associated with former NL operations, as well as adjacent residential areas. NL initiated a dialog with EPA regarding a potential settlement for this operable unit.

In September 2013, EPA issued to NL and 34 other PRPs general notice of potential liability and a demand for payment of past costs and performance of a Remedial Design for the Gowanus Canal Superfund Site in Brooklyn, New York. In March 2014, EPA issued a UAO to NL and approximately 27 other PRPs for performance of the Remedial Design at the site. EPA contends that NL is liable as the alleged successor to the Doehler Die Casting Company, and therefore responsible for any potential contamination at the Site resulting from Doehler's ownership/operation of a warehouse and a die casting plant it owned 90 years ago. NL believes that it has no liability at the Site. NL is currently in discussions with EPA regarding a *de minimis* settlement and is otherwise taking actions necessary to respond to the UAO. If these discussions are unsuccessful, NL will continue to deny liability and will defend vigorously against all of the claims.

In June 2016, NL and one other party received special notice from EPA for Operable Unit 2 of the Madison County Mines Superfund Site near Fredericktown, Missouri. The Site includes several mining properties in Madison County, Missouri. Operable Unit 2 is a former cobalt mine and refinery that is now owned by another mining company. In the special notice, EPA requested that NL and the other mining company agree to perform a Remedial Investigation/Feasibility Study for Operable Unit 2. NL initiated a dialog with EPA regarding the special notice.

In February 2017, the United States lodged a consent decree in *United States v. NL Industries, Inc.* (United States District Court, Western District of New York, Case No. 17-cv-124). The consent decree between NL and EPA is one of several consent decrees that will together resolve all private and government claims related to the NL Industries, Inc. Superfund Site in Depew, New York ("Depew Site"). In 2007, NL completed the remediation of one area of the Depew Site under an Administrative Order on Consent. EPA later cleaned up another part of the site. In 2010, NL filed a lawsuit, captioned *NL Industries, Inc. v. ACF Industries, Inc.* (United States District Court, Western District of New York, No. 10-cv-1989), seeking contribution from other responsible parties that contributed to the contamination at the site. In 2016, with all cleanups complete, NL, EPA, and the defendant responsible parties negotiated a global settlement. The consent decrees for this global settlement resolve all government and private party claims relating to the site, including those set forth in our lawsuit. In July 2017, the District Court entered the Consent Decree and NL paid the settlement amount to the United States. NL's obligation at the Site are now complete.

In August 2017, NL was served in *Refined Metals Corporation v. NL Industries, Inc.*, (United States District Court for the Southern District of Indiana, Case 1:17-cv-2565). This is a CERCLA and state law contribution action brought by the current owner of a former secondary lead smelting facility located in Beech Grove, Indiana. NL intends to deny liability and will defend vigorously against all claims.

Other Litigation

In addition to the matters described above, we and our affiliates are also involved in various other environmental, contractual, product liability, patent (or intellectual property), employment and other claims and disputes incidental to present and former businesses. In certain cases, we have insurance coverage for these items, although we do not expect additional material insurance coverage for environmental claims. We currently believe that the disposition of all of these various other claims and disputes (including asbestos related claims), individually or in the aggregate, should not have a material adverse effect on our consolidated financial position, results of operations or liquidity beyond the accruals already provided.

Insurance Coverage Claims

NL is involved in certain legal proceedings with a number of its former insurance carriers regarding the nature and extent of the carriers' obligations to NL under insurance policies with respect to certain lead pigment and asbestos lawsuits. The issue of

whether insurance coverage for defense costs or indemnity or both will be found to exist for our lead pigment and asbestos litigation depends upon a variety of factors and we cannot assure you that such insurance coverage will be available.

NL has agreements with four former insurance carriers pursuant to which the carriers reimburse it for a portion of our future lead pigment litigation defense costs, and one such carrier reimburses us for a portion of its future asbestos litigation defense costs. We are not able to determine how much we will ultimately recover from these carriers for defense costs incurred by us because of certain issues that arise regarding which defense costs qualify for reimbursement. While NL continues to seek additional insurance recoveries, we do not know if it will be successful in obtaining reimbursement for either defense costs or indemnity. Accordingly, we recognize insurance recoveries in income only when receipt of the recovery is probable and we are able to reasonably estimate the amount of the recovery. See Note 18 to our Consolidated Financial Statements.

NL has settled insurance coverage claims concerning environmental claims with certain of its principal former carriers. We do not expect further material settlements relating to environmental remediation coverage.

ITEM 4. MINE SAFETY DISCLOSURES

Not applicable.

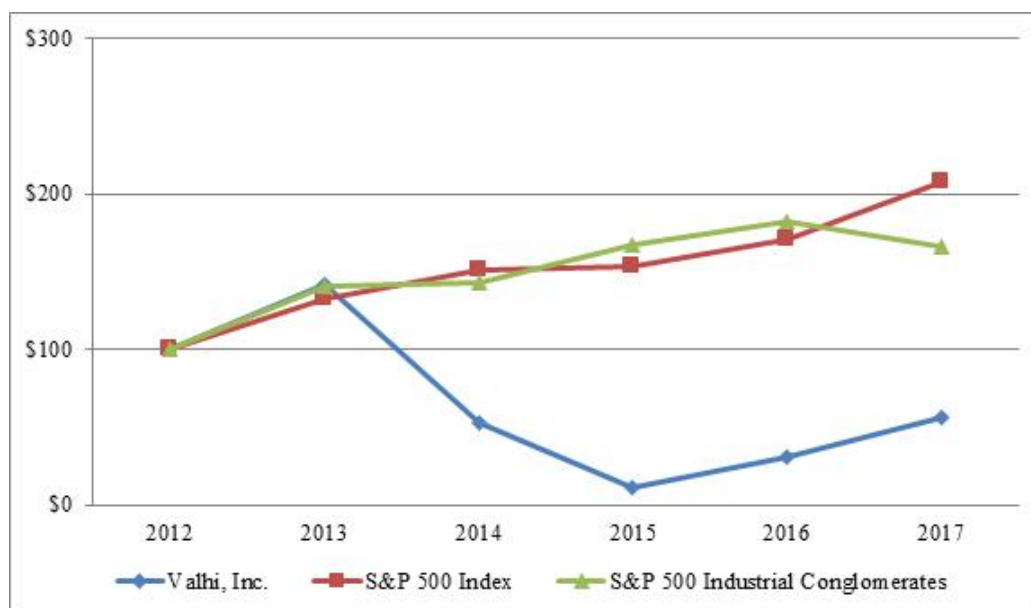
ITEM 5. MARKET FOR REGISTRANT'S COMMON EQUITY, RELATED STOCKHOLDER MATTERS AND ISSUER PURCHASES OR EQUITY SECURITIES

Common Stock and Dividends—Our common stock is listed and traded on the New York Stock Exchange (symbol: VHI). As of March 6, 2018, there were approximately 1800 holders of record of our common stock. The following table sets forth the high and low closing per share sales prices for our common stock and dividends for the periods indicated. On March 6, 2018 the closing price of our common stock was \$6.47.

	High	Low	Cash dividends paid
<i>Year ended December 31, 2016</i>			
First Quarter	\$ 1.71	\$.93	\$.02
Second Quarter	2.40	1.14	.02
Third Quarter	2.80	1.39	.02
Fourth Quarter	3.72	1.86	.02
<i>Year ended December 31, 2017</i>			
First Quarter	\$ 4.03	\$ 3.01	\$.02
Second Quarter	3.65	2.98	.02
Third Quarter	3.30	2.17	.02
Fourth Quarter	7.21	2.55	.02
<i>First Quarter 2018 through March 6</i>	\$ 6.47	\$ 5.29	\$ —

We paid regular quarterly cash dividends of \$.02 per share during 2016 and 2017. In March 2018, our board of directors declared a first quarter 2018 dividend of \$.02 per share to be paid on March 22, 2018 to stockholders of record as of March 12, 2018. However, declaration and payment of future dividends, and the amount thereof, is discretionary and is dependent upon our results of operations, financial condition, cash requirements for our businesses, contractual or other requirements and restrictions and other factors deemed relevant by our Board of Directors. The amount and timing of past dividends is not necessarily indicative of the amount or timing of any future dividends which we might pay.

Performance Graph—Set forth below is a line graph comparing the yearly change in our cumulative total stockholder return on our common stock against the cumulative total return of the S&P 500 Composite Stock Price Index and the S&P 500 Industrial Conglomerates Index for the period from December 31, 2012 through December 31, 2017. The graph shows the value at December 31 of each year assuming an original investment of 100 at December 31, 2012, and assumes the reinvestment of our regular quarterly dividends in shares of our stock.



	December 31,					
	2012	2013	2014	2015	2016	2017
Valhi common stock	\$ 100	\$ 142	\$ 53	\$ 11	\$ 31	\$ 56
S&P 500 Composite Stock Price Index	100	132	151	153	171	208
S&P 500 Industrial Conglomerates Index	100	141	143	167	182	166

The information contained in the performance graph shall not be deemed “soliciting material” or “filed” with the SEC, or subject to the liabilities of Section 18 of the Securities Exchange Act, as amended, except to the extent we specifically request that the material be treated as soliciting material or specifically incorporate this performance graph by reference into a document filed under the Securities Act or the Securities Exchange Act.

Equity Compensation Plan Information—We have an equity compensation plan, which was approved by our stockholders, pursuant to which an aggregate of 200,000 shares of our common stock can be awarded to members of our board of directors. At December 31, 2017, an aggregate of 138,500 shares were available for future award under this plan. See Note 16 to our Consolidated Financial Statements.

Treasury Stock Purchases—In March 2005, our board of directors authorized the repurchase of up to 5.0 million shares of our common stock in open market transactions, including block purchases, or in privately negotiated transactions, which may include transactions with our affiliates. In November 2006, our board of directors authorized the repurchase of an additional 5.0 million shares. We may purchase the stock from time to time as market conditions permit. The stock repurchase program does not include specific price targets or timetables and may be suspended at any time. Depending on market conditions, we could terminate the program prior to completion. We will use our cash on hand to acquire the shares. Repurchased shares will be retired and cancelled or may be added to our treasury stock and used for employee benefit plans, future acquisitions or other corporate purposes. See Note 16 to our Consolidated Financial Statements.

ITEM 6. SELECTED FINANCIAL DATA

The following selected financial data has been derived from our audited Consolidated Financial Statements. The following selected financial data should be read in conjunction with our Consolidated Financial Statements and related Notes and Item 7—"Management's Discussion and Analysis of Financial Condition and Results of Operations."

	Years ended December 31,				
	2013	2014(1)	2015(1)	2016(1)	2017(1)
(In millions, except per share data)					
STATEMENTS OF OPERATIONS DATA:					
Net sales:					
Chemicals	\$ 1,732.4	\$ 1,651.9	\$ 1,348.8	\$ 1,364.3	\$ 1,729.0
Component products	92.0	103.9	109.0	108.9	112.0
Real estate management and development(1)	—	40.3	30.1	46.2	38.4
Total net sales	<u>\$ 1,824.4</u>	<u>\$ 1,796.1</u>	<u>\$ 1,487.9</u>	<u>\$ 1,519.4</u>	<u>\$ 1,879.4</u>
Operating income (loss):					
Chemicals	\$ (125.4)	\$ 156.8	\$ 7.1	\$ 91.0	\$ 341.1
Component products	9.3	13.6	14.0	15.6	15.2
Real estate management and development(1)	—	2.0	—	.8	6.6
Total operating income (loss)	<u>\$ (116.1)</u>	<u>\$ 172.4</u>	<u>\$ 21.1</u>	<u>\$ 107.4</u>	<u>\$ 362.9</u>
Net income (loss)	<u>\$ 99.7</u>	<u>\$ 85.6</u>	<u>\$ (171.1)</u>	<u>\$ (3.0)</u>	<u>\$ 302.6</u>
Amounts attributable to Valhi stockholders:					
Income (loss) from continuing operations	\$ (70.8)	\$ 59.9	\$ (111.9)	\$ 8.1	\$ 316.7
Loss from discontinued operations(2)	(27.2)	(6.1)	(21.7)	(24.0)	(109.2)
Net income (loss)	<u>\$ (98.0)</u>	<u>\$ 53.8</u>	<u>\$ (133.6)</u>	<u>\$ (15.9)</u>	<u>\$ 207.5</u>
DILUTED EARNINGS PER SHARE DATA:					
Net income (loss) attributable to Valhi stockholders:					
Income (loss) from continuing operations	\$ (.21)	\$.18	\$ (.33)	\$.02	\$.93
Loss from discontinued operations(2)	(.08)	(.02)	(.06)	(.07)	(.32)
Net income (loss)	<u>\$ (.29)</u>	<u>\$.16</u>	<u>\$ (.39)</u>	<u>\$ (.05)</u>	<u>\$.61</u>
Cash dividends	\$.20	\$.11	\$.08	\$.08	\$.08
Weighted average common shares outstanding	342.0	342.0	342.0	342.0	342.0
STATEMENTS OF CASH FLOW DATA:					
Cash provided by (used in):					
Operating activities	\$ 117.1	\$ 67.3	\$ 22.1	\$ 79.8	\$ 259.3
Investing activities	(40.8)	(73.7)	(54.1)	(61.6)	(74.4)
Financing activities	(286.2)	110.2	(10.6)	(45.5)	93.6
BALANCE SHEET DATA (at year end):					
Total assets	\$ 2,951.7	\$ 2,945.2	\$ 2,537.4	\$ 2,443.2	\$ 2,907.5
Long-term debt (3)	669.4	843.2	879.7	889.3	1,041.5
Valhi stockholders' equity	601.3	477.6	268.7	200.9	424.4
Total equity	992.8	813.9	526.9	444.4	766.7

(1) In December 2013 we acquired a controlling interest in BMI, Inc. and The LandWell Company and they are included in our Consolidated Statement of Operations beginning January 1, 2014.

(2) In January 2018 we completed the sale of our Waste Management Segment. The results of operations of our Waste Management Segment have been reclassified as discontinued operations in our Consolidated Statements of Operations for all periods presented. See Note 3 to our Consolidated Financial Statements.

Excludes any indebtedness of our Waste Management Segment. The assets and liabilities of our Waste Management Segment have been reclassified as discontinued operations in our Consolidated Balance Sheet for all periods presented. See Note 3 to our Consolidated Financial Statements.

RESULTS OF OPERATIONS

Business Overview

We are primarily a holding company. We operate through our wholly-owned and majority-owned subsidiaries, including NL Industries, Inc., Kronos Worldwide, Inc., CompX International, Inc., Tremont LLC, Basic Management, Inc. (“BMI”) and the LandWell Company (“LandWell”). Kronos (NYSE: KRO), NL (NYSE: NL) and CompX (NYSE MKT: CIX) each file periodic reports with the SEC.

On January 26, 2018 we completed the sale of our Waste Management Segment to JFL-WCS Partners, LLC (“JFL Partners”), an entity sponsored by certain investment affiliates of J.F. Lehman & Company, for consideration consisting of the assumption of all of WCS’ third-party indebtedness and other liabilities, accordingly the results of operations of our Waste Management Segment is reflected as discontinued operations in our Consolidated Statements of Operations for all periods presented. We expect to recognize a pre-tax gain of approximately \$57 million on the transaction in the first quarter of 2018 because the carrying value of the liabilities of the business assumed by the purchaser exceeded the carrying value of the assets sold at the time of sale in large part due to a long-lived asset impairment of \$170.6 million recognized with respect to the Waste Management Segment in the second quarter of 2017. Such pre-tax gain will be classified as part of discontinued operations. Our Waste Management Segment, which operated in the low-level radioactive, hazardous, toxic and other waste disposal industry historically struggled to generate sufficient recurring disposal volumes to generate positive operating results or cash flows. We believe the sale will enable us to focus more effort on continuing to develop our remaining segments which we believe have greater opportunity for higher returns.

We have three consolidated reportable operating segments:

- *Chemicals*—Our chemicals segment is operated through our majority control of Kronos. Kronos is a leading global producer and marketer of value-added titanium dioxide pigments (“TiO₂”). TiO₂ is used to impart whiteness, brightness, opacity and durability to a wide variety of products, including paints, plastics, paper, fibers and ceramics. Additionally, TiO₂ is a critical component of everyday applications, such as coatings, plastics and paper, as well as many specialty products such as inks, foods and cosmetics.
- *Component Products*—We operate in the component products industry through our majority control of CompX. CompX is a leading manufacturer of security products used in the recreational transportation, postal, office and institutional furniture, cabinetry, tool storage, healthcare and a variety of other industries. CompX is also a leading manufacturer of stainless steel exhaust systems, gauges, throttle controls and trim tabs for the recreational marine industry.
- *Real Estate Management and Development*—We operate in real estate management and development through our majority control of BMI and LandWell. BMI provides utility services to certain industrial and municipal customers and owns real property in Henderson, Nevada. LandWell is engaged in efforts to develop certain land holdings for commercial, industrial and residential purposes in Henderson, Nevada.

Income (Loss) from Continuing Operations Overview

Year Ended December 31, 2016 Compared to Year Ended December 31, 2017—

We reported net income from continuing operations attributable to Valhi stockholders of \$316.7 million or \$.93 per diluted share in 2017 compared to \$8.1 million or \$.02 per diluted share in 2016.

Our net income from continuing operations attributable to Valhi stockholders increased from 2016 to 2017 primarily due to the net effects of:

- higher operating income from our Chemicals and Real Estate Management and Development Segments in 2017 compared to 2016;
- the recognition of an aggregate \$186.7 million non-cash deferred income tax benefit as a result of the reversal of our deferred income tax asset valuation allowances associated with our German and Belgian operations, mostly recognized in the second quarter;
- the fourth quarter recognition of an \$18.7 million non-cash deferred income tax benefit as a result of the reversal of our deferred income tax asset valuation allowance related to certain U.S. deferred income tax assets of one of our non-U.S. subsidiaries (which subsidiary is treated as a dual resident for U.S. income tax purposes);

- the recognition of an \$11.8 million aggregate income tax benefit related to the execution and finalization of an Advance Pricing Agreement between Canada and Germany, mostly recognized in the third quarter (which includes an \$8.6 million non-cash income tax benefit as a result of a net decrease in our reserve for uncertain tax positions);
- the fourth quarter recognition of a \$76.2 million provisional current income tax expense as a result of the 2017 Tax Act for the one-time repatriation tax imposed on the post-1986 undistributed earnings of our non-U.S. subsidiaries;
- the fourth quarter recognition of a \$77.1 million non-cash deferred income tax benefit related to the revaluation of our net deferred income tax liability resulting from the reduction in the U.S. federal corporate income tax rate enacted as part of the 2017 Tax Act;
- the fourth quarter recognition of a \$5.3 million provisional non-cash deferred income tax expense related to a change in our conclusions regarding our permanent reinvestment assertion with respect to the post-1986 undistributed earnings of our European subsidiaries; and
- an aggregate charge of \$7.1 million recognized in the third quarter of 2017 related to the loss on prepayment of debt;
- lower general and administrative expenses in 2017.

Our net diluted income from continuing operations per share in 2017 includes:

- a \$.32 per diluted share non-cash deferred income tax benefit as a result of the reversal of our deferred income tax asset valuation allowances associated with our German and Belgian operations, mostly recognized in the second quarter;
- a \$.03 per diluted share non-cash deferred income tax benefit as a result of the reversal of our deferred income tax asset valuation allowance related to certain U.S. deferred income tax assets of one of our non-U.S. subsidiaries (which subsidiary is treated as a dual resident for U.S. income tax purposes) recognized in the fourth quarter;
- a \$.02 per diluted share income tax benefit related to the execution and finalization of an Advance Pricing Agreement between Canada and Germany, mostly recognized in the third quarter;
- a \$.13 per diluted share provisional current income tax expense as a result of the 2017 Tax Act for the one-time repatriation tax imposed on the post-1986 undistributed earnings of our non-U.S. subsidiaries recognized in the fourth quarter;
- a \$.22 per diluted share non-cash deferred income tax benefit related to the revaluation of our net deferred income tax liability resulting from the reduction in the U.S. federal corporate income tax rate enacted as part of the 2017 Tax Act;
- a \$.01 per diluted share provisional non-cash deferred income tax expense related to a change in our conclusions regarding our permanent reinvestment assertion with respect to the post-1986 undistributed earnings of our European subsidiaries recognized in the fourth quarter; and
- an aggregate charge of \$.01 per diluted share recognized in the third quarter related to the loss on prepayment of debt.

Our diluted income from continuing operations per share attributable to Valhi stockholders in 2016 includes:

- a recognition of a net \$.01 per diluted share current income tax benefit related to the execution and finalization of an Advanced Pricing Agreement associated with our Chemicals Segment;
- income of \$.01 per diluted share related to business interruption insurance proceeds in our Chemicals Segment.
- a charge of \$.01 per diluted share related to the contract related intangible asset impairment; and
- an aggregate non-cash income tax expense of \$.02 (mostly in the fourth quarter) related to a net increase in our reserve for uncertain tax positions

We discuss these amounts more fully below.

We reported net income from continuing operations attributable to Valhi stockholders of \$8.1 million or \$.02 per diluted share in 2016 compared to a net loss from continuing operations attributable to Valhi stockholders of \$111.9 million or \$.33 per diluted share in 2015.

Our net income from continuing operations attributable to Valhi stockholders increased from 2015 to 2016 primarily due to the net effects of:

- the recognition of an aggregate \$159.0 million non-cash deferred income tax asset valuation allowance related to our Chemicals Segment's German and Belgian operations primarily in the second quarter of 2015;
- higher operating income from our Chemicals Segment in 2016 compared to 2015, in part due to a charge associated with the implementation of certain workforce reductions primarily in the second quarter of 2015; and
- higher insurance recoveries in 2015.

Our diluted income from continuing operations per share attributable to Valhi stockholders in 2016 includes:

- a recognition of a net \$.01 per diluted share current income tax benefit related to the execution and finalization of an Advanced Pricing Agreement associated with our Chemicals Segment;
- income of \$.01 per diluted share related to business interruption insurance proceeds in our Chemicals Segment.
- a charge of \$.01 per diluted share related to the contract related intangible asset impairment; and
- an aggregate non-cash income tax expense of \$.02 (mostly in the fourth quarter) related to a net increase in our reserve for uncertain tax positions

Our diluted loss from continuing operations per share attributable to Valhi stockholders in 2015 includes:

- the recognition of the non-cash deferred income tax asset valuation allowance related to our Chemicals Segment's German and Belgian operations aggregating a charge of \$.27;
- a charge of \$.03 related to our Chemicals Segment's accrued workforce reduction costs; and
- income of \$.01 related to income from insurance recoveries.

We discuss these amounts more fully below.

Current Forecast for 2018—

We currently expect to report higher consolidated operating income for 2018 as compared to 2017 primarily due to the net effects of:

- higher operating income from our Chemicals Segment in 2018, principally as a result of expected higher average selling prices in 2018 as compared to 2017; and
- higher operating income from our Real Estate Management and Development Segment in 2018 as we anticipate increased land development activities.

However, we currently expect to report lower net income from continuing operations attributable to Valhi stockholders for 2018 as compared to 2017, primarily because the favorable impact of higher expected operating income in 2018 would be more than offset by the favorable impact of the aggregate net income tax benefit we recognized in 2017.

Critical accounting policies and estimates

We have based the accompanying "Management's Discussion and Analysis of Financial Condition and Results of Operations" upon our Consolidated Financial Statements. We prepare our Consolidated Financial Statements in accordance with accounting principles generally accepted in the United States of America ("GAAP"). In many cases the accounting treatment of a particular transaction does not require us to make estimates and judgments. However, in other cases we are required to make estimates and judgments that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements, and the reported amounts of revenues and expenses during the reported period. On an on-going basis, we evaluate our estimates, including those related to impairments of investments in marketable securities and investments accounted for by the equity method, the recoverability of other long-lived assets (including goodwill and other intangible assets), pension and other

postretirement benefit obligations and the underlying actuarial assumptions related thereto, the realization of deferred income and other tax assets and accruals for environmental remediation, litigation, income tax contingencies. We base our estimates on historical experience and on various other assumptions we believe are reasonable under the circumstances, the results of which form the basis for making judgments about the reported amounts of assets, liabilities, revenues and expenses. Actual results might differ significantly from previously-estimated amounts under different assumptions or conditions.

Our “critical accounting policies” relate to amounts having a material impact on our financial position and results of continuing operations, and that require our most subjective or complex judgments. See Note 1 to our Consolidated Financial Statements for a detailed discussion of our significant accounting policies.

- *Marketable securities*—We own investments in certain companies that we account for as marketable securities carried at fair value or that we account for under the equity method. For these investments, we evaluate the fair value at each balance sheet date. We use quoted market prices, Level 1 inputs as defined in Accounting Standards Codification (“ASC”) 820-10-35, *Fair Value Measurements and Disclosures*, to determine fair value for certain of our common stock, marketable debt securities and publicly traded investees. For other of our marketable debt securities, the fair value is generally determined using Level 2 inputs as defined in the ASC because although these securities are traded in many cases the market is not active and the year-end valuation is based on the last trade of the year which may be several days prior to December 31. We use Level 3 inputs to determine fair value of our investment in Amalgamated Sugar Company LLC. See Note 6 to our Consolidated Financial Statements. We record an impairment charge when we believe an investment has experienced an other than temporary decline in fair value below its cost basis (for marketable securities) or below its carrying value (for equity method investees). Further adverse changes in market conditions or poor operating results of underlying investments could result in losses or our inability to recover the carrying value of the investments that may not be reflected in an investment’s current carrying value, thereby possibly requiring us to recognize an impairment charge in the future.

At December 31, 2017, the carrying value (which equals their fair value) of substantially all of our marketable securities approximated the cost basis of each investment. Our investment in The Amalgamated Sugar Company LLC represents approximately 97% of the aggregate carrying value of all of our marketable securities at December 31, 2017 and its \$250 million carrying value is equal to its cost basis.

- *Goodwill*—Our net goodwill totaled \$379.7 million at December 31, 2017 resulting primarily from our various step acquisitions of Kronos and NL (which occurred before the implementation of the current accounting standards related to noncontrolling interest) and to a lesser extent CompX’s purchase of various businesses. In accordance with the applicable accounting standards for goodwill, we do not amortize goodwill.

We perform a goodwill impairment test annually in the third quarter of each year. Goodwill is also evaluated for impairment at other times whenever an event occurs or circumstances change that would more likely than not reduce the fair value of a reporting unit below its carrying value. A reporting unit can be a segment or an operating division based on the operations of the segment. For example, our Chemicals Segment produces a globally coordinated homogeneous product whereas our Component Products Segment operates as two distinct business units. If the fair value of the reporting unit is less than its book value, the goodwill is written down to estimated fair value.

For our Chemicals Segment, we use Level 1 inputs of publicly traded market prices to compare the book value to assess impairment. We also consider control premiums when assessing fair value. Substantially all of the goodwill for our Component Products Segment relates to our security products reporting unit. In 2017, we used the qualitative assessment of ASC 350-20-35 for our annual impairment test and determined it was not necessary to perform the quantitative goodwill impairment test, as we concluded it is more-likely-than-not that the fair value of the Security Products reporting unit exceeded its carrying amount.

We performed our annual goodwill impairment test in the third quarter of 2017 for each of our reporting units and concluded there was no impairment of the goodwill for those reporting units. The impairment test as it relates to our security products reporting unit was based on our quantitative test. No goodwill impairment was deemed to exist as a result of such 2017 annual impairment review, as the estimated fair value of our security products reporting unit was in excess of its net carrying amount. Considerable management judgment is necessary to evaluate the qualitative impact of events and circumstances on the fair value of a reporting unit. Events and circumstances considered in our impairment evaluations, such as historical profits and stability of the markets served, are consistent with factors utilized with our internal projections and operating plan. However, future events and circumstances could result in materially different findings which could result in the recognition of a material goodwill impairment.

When we performed our annual goodwill impairment test in the third quarter of 2017 for our Chemicals Segment goodwill we concluded there was no impairment of such goodwill. However, future events and circumstances could change (i.e. a significant decline in quoted market prices) and result in a materially different finding which could result in the recognition of a material impairment with respect to such goodwill.

- *Long-lived assets* – We recognize an impairment charge associated with our long-lived assets, including property and equipment, whenever we determine that recovery of such long-lived asset is not probable. Such determination is made in accordance with the applicable GAAP requirements of Accounting Standard Codification, or ASC, Topic 360-10-35 *Property, Plant and Equipment* and is based upon, among other things, estimates of the amount of future net cash flows to be generated by the long-lived asset and estimates of the current fair value of the asset. Significant judgment is required in estimating such cash flows. Adverse changes in such estimates of future net cash flows or estimates of fair value could result in an inability to recover the carrying value of the long-lived asset, thereby possibly requiring an impairment charge to be recognized in the future. We do not assess our property and equipment for impairment unless certain impairment indicators specified in ASC Topic 360-10-35 are present. We did not evaluate any long-lived assets attributable to continuing operations for impairment during 2017 because no such impairment indicators were present.
- *Percentage completion revenue recognition*—Certain real estate land sales by our Real Estate Management and Development segment (generally land sales associated with our residential/planned community) require us to complete property development and improvements after title passes to the buyer and we have received all or a substantial portion of the selling price. To date, all of the land sales associated with the residential/planned community have been recognized under the percentage-of-completion method of accounting in accordance with ASC 970-605-30. Under such method, revenues and profits are recognized in the same proportion of our progress towards completion of our contractual obligations, with our progress measured by costs incurred as a percentage of total costs estimated to be incurred. Such costs incurred and total estimated costs include amounts specifically identifiable with the parcels sold as well as certain development costs for the entire residential/planned community which are allocated to the parcels sold under applicable GAAP. Estimates of total costs expected to be incurred require significant management judgment, and the amount of revenue and profits that have been recognized to date are subject to revisions throughout the development period. The impact on the amount of revenue recognized resulting from any future change in the estimate of total costs estimated to be incurred would be accounted for prospectively in accordance with GAAP.
- *Benefit plans*—We provide a range of benefits including various defined benefit pension and other postretirement benefits (“OPEB”) for our employees. We record annual amounts related to these plans based upon calculations required by GAAP, which make use of various actuarial assumptions, such as: discount rates, expected rates of returns on plan assets, compensation increases, employee turnover rates, expected mortality rates and expected health care trend rates. We review our actuarial assumptions annually and make modifications to the assumptions based on current rates and trends when we believe appropriate. As required by GAAP, modifications to the assumptions are generally recorded and amortized over future periods. Different assumptions could result in the recognition of materially different expense amounts over different periods of times and materially different asset and liability amounts in our Consolidated Financial Statements. These assumptions are more fully described below under “—Assumptions on Defined Benefit Pension Plans and OPEB Plans.”
- *Income taxes*— We recognize deferred taxes for future tax effects of temporary differences between financial and income tax reporting. Deferred income tax assets and liabilities for each tax-paying jurisdiction in which we operate are netted and presented as either a noncurrent deferred income tax asset or liability, as applicable. We record a valuation allowance to reduce our deferred income tax assets to the amount that is believed to be realized under the more-likely-than-not recognition criteria. While we have considered future taxable income and ongoing prudent and feasible tax planning strategies in assessing the need for a valuation allowance, it is possible that we may change our estimate of the amount of the deferred income tax assets that would more-likely-than-not be realized in the future, resulting in an adjustment to the deferred income tax asset valuation allowance that would either increase or decrease, as applicable, reported net income in the period such change in estimate was made. For example, at December 31, 2017 our Chemicals Segment has substantial net operating loss (NOL) carryforwards in Germany (the equivalent of \$652 million for German corporate purposes and \$.5 million for German trade tax purposes) and in Belgium (the equivalent of \$50 million for Belgian corporate tax purposes), all of which have an indefinite carryforward period. As a result, we have net deferred income tax assets with respect to these two jurisdictions, primarily related to these NOL carryforwards. The German corporate tax is similar to the U.S. federal income tax, and the German trade tax is similar to the U.S. state income tax. As more fully described below under “General Corporate Items, Interest Expense, Provision for Income Taxes (Benefit), Noncontrolling Interest and Related Party Transactions – Provision for Income Taxes (Benefit)” we had a deferred income tax asset valuation allowance recognized with respect to such net deferred income tax assets of our Belgian and German operations beginning June 30, 2015. At June 30, 2017 we concluded we had sufficient positive evidence under the more-likely-than-not recognition criteria to support reversal of the entire valuation allowance related to our German and Belgian operations.

In addition, at the end of each reporting period we evaluate whether or not some or all of the undistributed earnings of our non-U.S. subsidiaries are permanently reinvested (as that term is defined in GAAP). While we may have concluded in the past that some of such undistributed earnings are permanently reinvested, facts and circumstances

can change in the future and it is possible that a change in facts and circumstances, such as a change in the expectation regarding the capital needs of our non-U.S. subsidiaries or a change in tax law, could result in a conclusion that some or all of such undistributed earnings are no longer permanently reinvested. Prior to enactment of the new tax legislation in December 2017 referred to below, the undistributed earnings of our European subsidiaries were deemed to be permanently reinvested (we had not made a similar determination with respect to the undistributed earnings of our Chemicals post-1986 Segment's Canadian subsidiary). On December 22, 2017, H.R.1, formally known as the "Tax Cuts and Jobs Act" (2017 Tax Act) was enacted into law. Among other things, this new tax legislation, as discussed more fully below under "General Corporate Items, Interest Expense, Provision for Income Taxes (Benefit), Noncontrolling Interest and Related Party Transactions – Provision for Income Taxes (Benefit)", implements a territorial tax system and imposes a one-time repatriation tax on the deemed repatriation of the post-1986 undistributed earnings of non-U.S. subsidiaries accumulated up through December 31, 2017, regardless of whether such earnings are repatriated, and eliminates any U.S. federal income tax on future non-U.S. earnings after such date (subject to certain exceptions). Our provision for income taxes in the fourth quarter of 2017 includes a provisional current income tax expense for the one-time repatriation tax imposed under the new tax law. In addition, and as a result of this significant change in tax law, effective December 31, 2017 we have now determined that all of the post-1986 undistributed earnings of our European subsidiaries are not permanently reinvested (we had previously concluded that all of the undistributed earnings of our Canadian subsidiary are not permanently reinvested), and accordingly our provision for income taxes in the fourth quarter of 2017 also includes a provisional deferred income tax expense for the estimated incremental U.S. state income tax, non-U.S. income tax and withholding tax liability attributable to all of such previously-considered permanently reinvested undistributed earnings.

We record a reserve for uncertain tax positions where we believe it is more-likely-than-not our tax positions will not prevail with the applicable tax authorities. It is possible that in the future we may change our assessment regarding the probability that our tax positions will prevail that would require an adjustment to the amount of our reserve for uncertain tax positions that could either increase or decrease, as applicable, reported net income in the period the change in assessment was made.

- *Litigation and environmental liabilities*—We are involved in numerous legal and environmental actions in part due to NL's former involvement in the manufacture of lead-based products. In accordance with applicable GAAP for accounting for contingencies, we record accruals for these liabilities when estimated future expenditures associated with such contingencies become probable, and we can reasonably estimate the amounts of such future expenditures. However, new information may become available to us, or circumstances (such as applicable laws and regulations) may change, thereby resulting in an increase or decrease in the amount we are required to accrue for such matters (and therefore a decrease or increase in our reported net income in the period of such change). At December 31, 2017 we have recorded total accrued environmental liabilities of \$117.5 million.

Operating income (loss) for each of our three operating segments is impacted by certain of these significant judgments and estimates, as summarized below:

- Chemicals—allowance for doubtful accounts, reserves for obsolete or unmarketable inventories, impairment of equity method investments, goodwill and other long-lived assets, benefit plans; and loss accruals.
- Component Products—impairment of goodwill and long-lived assets and loss accruals.
- Real Estate Management and Development—impairment of long-lived assets and revenue recognition under the percentage-of-completion method of accounting.

In addition, general corporate and other items are impacted by the significant judgments and estimates for impairment of marketable securities and equity method investees, defined benefit pension and OPEB plans, loss accruals, and income taxes.

Segment Operating Results—2016 Compared to 2017 and 2015 Compared to 2016

Chemicals—

We consider TiO₂ to be a "quality of life" product, with demand affected by gross domestic product, or GDP, and overall economic conditions in our markets located in various regions of the world. Over the long-term, we expect demand for TiO₂ will grow by 2% to 3% per year, consistent with our expectations for the long-term growth in GDP. However, even if we and our competitors maintain consistent shares of the worldwide market, demand for TiO₂ in any interim or annual period may not change in the same proportion as the change in GDP, in part due to relative changes in the TiO₂ inventory levels of our customers. We believe that our customers' inventory levels are influenced in part by their expectation for future changes in market TiO₂ selling prices as well as their expectation for future availability of product. Although certain of our TiO₂ grades are considered specialty pigments, the

majority of our grades and substantially all of our production are considered commodity pigment products with price and availability being the most significant competitive factors along with quality and customer service.

The factors having the most impact on our reported operating results are:

- TiO₂ selling prices,
- Our TiO₂ sales and production volumes,
- Manufacturing costs, particularly raw materials such as third-party feedstock ore, maintenance and energy-related expenses, and
- Currency exchange rates (particularly the exchange rate for the U.S. dollar relative to the euro, the Norwegian krone and the Canadian dollar).

Our key performance indicators are our TiO₂ average selling prices, our level of TiO₂ sales and production volumes and the cost of our third-party feedstock ore. TiO₂ selling prices generally follow industry trends and the selling prices will increase or decrease generally as a result of competitive market pressures.

	Years ended December 31,			% Change	
	2015	2016	2017	2015-16	2016-17
	(Dollars in millions)				
Net sales	\$ 1,348.8	\$ 1,364.3	\$ 1,729.0	1%	27%
Cost of sales	1,158.5	1,109.2	1,172.1	(4)%	6%
Gross margin	\$ 190.3	\$ 255.1	\$ 556.9	34%	118%
Operating income	\$ 7.1	\$ 91.0	\$ 341.1	1,185%	275%
Percent of net sales:					
Cost of sales	86%	81%	68%		
Gross margin	14%	19%	32%		
Operating income	1%	7%	20%		
TiO ₂ operating statistics:					
Sales volumes*	525	559	586	7%	5%
Production volumes*	528	546	576	3%	5%
Production rate as percent of capacity	95%	98%	100%		
Percent change in TiO ₂ net sales:					
TiO ₂ product pricing				(3)%	22%
TiO ₂ sales volumes				7	5
TiO ₂ product mix				(2)	(1)
Changes in currency exchange rates				(1)	1
Total				1%	27%

* Thousands of metric tons

Industry conditions and 2017 overview – Due to the successful implementation of previously-announced price increases, average TiO₂ selling prices began to rise in the second quarter of 2016 and have continued to rise through the full year of 2017. We started 2017 with average TiO₂ selling prices 11% higher than the beginning of 2016. Our average TiO₂ selling prices at the end of 2017 were 27% higher than at the end of 2016, with higher prices in all major markets. We experienced higher sales volumes in 2017 due to strength in the North American and European markets as compared to 2016.

The following table shows our capacity utilization rates during 2016 and 2017.

	2016	2017
First Quarter	97%	100%
Second Quarter	95%	100%
Third Quarter	100%	100%
Fourth Quarter	100%	100%
Overall	98%	100%

Throughout 2016, we experienced moderation in the cost of TiO₂ feedstock ore procured from third parties. Our cost of sales per metric ton of TiO₂ sold declined throughout 2016 and into the first six months of 2017 primarily due to the moderation in the cost of TiO₂ feedstock ore in 2016 and the first half of 2017. However, the cost of third-party feedstock ore we procured in 2017 was comparable to slightly higher as compared to 2016, and such higher cost feedstock began to be reflected in our results of operations in

the third quarter of 2017 and continued through the fourth quarter of 2017. Overall, the cost of third-party feedstock ore we procured in the full year of 2017 was slightly higher as compared to 2016. Consequently, the cost of sales per metric ton of TiO₂ sold in 2017 was slightly higher than our cost of sales per metric ton of TiO₂ sold in 2016 (excluding the effect of changes in currency exchange rates).

Net sales – Our Chemicals Segment’s net sales increased 27% or \$364.7 million in 2017 compared to 2016, primarily due to the favorable effects of a 22% increase in average TiO₂ selling prices (which increased net sales by approximately \$300 million) and a 5% increase in sales volumes (which increased net sales by approximately \$68 million). TiO₂ selling prices will increase or decrease generally as a result of competitive market pressures, changes in the relative level of supply and demand as well as changes in raw material and other manufacturing costs.

Our Chemicals Segment’s sales volumes increased in 2017 primarily due to strength in the North American and European markets as compared to 2016. Our Chemicals Segment’s sales volumes in 2017 set a new overall record for a full-year period. We estimate that changes in currency exchange rates increased our net sales by approximately \$16 million, or 1%, as compared to 2016.

Our Chemicals Segment’s net sales increased 1% or \$15.5 million in 2016 compared to 2015, primarily due to the net effect of a 7% increase in sales volumes (which increased net sales by approximately \$94 million) and a 3% decrease in average TiO₂ selling prices (which decreased net sales by approximately \$40 million). TiO₂ selling prices will increase or decrease generally as a result of competitive market pressures, changes in the relative level of supply and demand as well as changes in raw material and other manufacturing costs.

Our Chemicals Segment’s sales volumes increased primarily due to higher sales in North American, European and export markets partially offset by lower sales in the Latin American market. Our sales volumes in 2016 set a new overall record for a full-year period. We estimate that changes in currency exchange rates decreased our net sales by approximately \$9 million, or 1%, as compared to 2015.

Cost of Sales and Gross Margin—Our Chemicals Segment’s cost of sales increased 6% in 2017 compared to 2016 due to the net impact of a 5% increase in sales volumes, efficiencies related to a 5% increase in TiO₂ production volumes, higher raw materials and other production costs of approximately \$13 million and currency fluctuations (primarily the euro). Our Chemicals Segment’s production volumes in 2017 set a new overall record for a full-year period.

Our Chemicals Segment’s cost of sales as a percentage of net sales decreased to 68% in 2017 compared to 81% in 2016 as the favorable effects of higher average selling prices and efficiencies related to higher production volumes more than offset the higher raw materials and other production costs, as discussed above.

Gross margin as a percentage of net sales increased to 32% in 2017 compared to 19% in 2016. As discussed and quantified above, our gross margin increased primarily due to the net effect of higher average selling prices, higher sales and production volumes and higher raw materials and other production costs.

Our Chemicals Segment’s cost of sales decreased \$49.3 million or 4% in 2016 compared to 2015 due to the net impact of lower raw materials and other production costs of approximately \$76 million (primarily caused by the lower third-party feedstock ore costs, as discussed above), approximately \$4.6 million in savings resulting from workforce reductions implemented in 2015, a 3% increase in TiO₂ production volumes and currency fluctuations (primarily the euro). In addition, cost of sales in 2015 includes approximately \$10.8 million of severance costs related to the workforce reduction plan discussed above.

Our Chemicals Segment’s cost of sales as a percentage of net sales decreased to 81% in 2016 compared to 86% in 2015, as the favorable effects of lower raw materials and other production costs, efficiencies related to higher production volumes, and the impact of the \$10.8 million workforce reduction charge classified in cost of sales in 2015 and associated cost savings from such workforce reduction realized in 2016 more than offset the unfavorable impact of lower average selling prices, as discussed above.

Our Chemicals Segment’s gross margin increased in 2016 primarily due to the net effect of lower selling prices, lower raw material and other production costs (including 2015 workforce reduction charges of \$10.8 million classified as cost of sales and the associated \$4.6 million of cost savings from such workforce reduction realized in 2016), higher sales volumes and higher production volumes.

Operating Income—Our Chemicals Segment’s operating income increased 275% in 2017 compared to 2016 and operating income as a percentage of net sales increased to 20% in 2017 from 7% in 2016. Operating income increased in 2017 in part due to the net effects of higher selling prices, higher shipping and handling costs of \$11 million, higher general and administrative costs related to the implementation of a new accounting and manufacturing software system of \$8 million, higher research, development and

certain sales technical support costs of \$7 million and currency fluctuations (primarily the euro). Operating income in 2016 includes income aggregating \$4.3 million related to insurance settlement gains from two separate business interruption claims.

Our Chemicals Segment's operating income as a percentage of net sales increased to 7% in 2016 from 1% in 2015. This increase was driven by the increase in gross margin, which increased to 19% in 2016 compared to 14% in 2015, as well as the impact of the \$10.9 million 2015 workforce reduction charge classified in selling, general and administrative expense and the associated cost savings from such workforce reductions realized in 2016 of \$5.6 million, and the income aggregating \$4.3 million related to insurance settlement gains from two separate business interruption claims. We estimate that changes in currency exchange rates increased income from operations by approximately \$14 million in 2016 as compared to 2015.

Our Chemicals Segment's operating income (loss) is net of amortization of purchase accounting adjustments made in conjunction with our acquisitions of interests in NL and Kronos. As a result, we recognize additional depreciation expense above the amounts Kronos reports separately, substantially all of which is included within cost of sales. We recognized additional depreciation expense of \$2.2 million in 2015, \$2.1 million in 2016 and \$2.2 million in 2017, which reduced our reported Chemicals Segment's operating income (loss) as compared to amounts reported by Kronos.

Currency Exchange Rates— Our Chemicals Segment has substantial operations and assets located outside the United States (primarily in Germany, Belgium, Norway and Canada). The majority of our Chemicals Segment's sales from non-U.S. operations are denominated in currencies other than the U.S. dollar, principally the euro, other major European currencies and the Canadian dollar. A portion of our sales generated from our non-U.S. operations is denominated in the U.S. dollar (and consequently our non-U.S. operations will generally hold U.S. dollars from time to time). Certain raw materials used worldwide, primarily titanium-containing feedstocks, are purchased primarily in U.S. dollars, while labor and other production costs are purchased primarily in local currencies. Consequently, the translated U.S. dollar value of our non-U.S. sales and operating results are subject to currency exchange rate fluctuations which may favorably or unfavorably impact reported earnings and may affect the comparability of period-to-period operating results. In addition to the impact of the translation of sales and expenses over time, our non-U.S. operations also generate currency transaction gains and losses which primarily relate to (i) the difference between the currency exchange rates in effect when non-local currency sales or operating costs (primarily U.S. dollar denominated) are initially accrued and when such amounts are settled with the non-local currency, (ii) changes in currency exchange rates during time periods when our non-U.S. operations are holding non-local currency (primarily U.S. dollars), and (iii) relative changes in the aggregate fair value of currency forward contracts held from time to time. As discussed in Note 19 to our Consolidated Financial Statements, we periodically use currency forward contracts to manage a portion of our currency exchange risk, and relative changes in the aggregate fair value of any currency forward contracts we hold from time to time serves in part to mitigate the currency transaction gains or losses we would otherwise recognize from the first two items described above.

Overall, we estimate that fluctuations in currency exchange rates had the following effects on our Chemicals Segment's sales and income from operations for the periods indicated.

Impact of changes in currency exchange rates - 2017 vs. 2016								
Impact on:	Transaction gains/(losses) recognized					Translation gain/loss- impact of rate changes	Total currency impact 2017 vs. 2016	
	2016		2017		Change			
	(In millions)							
Net sales	\$	—	\$	—	\$	—	\$	16
Income from operations		6		(8)		(14)		(4)
								(18)

The \$16 million increase in net sales (translation gain) was caused primarily by a weakening of the U.S. dollar relative to the euro (mostly in the fourth quarter), as our euro-denominated sales were translated into more U.S. dollars in 2017 as compared to 2016. The weakening of the U.S. dollar relative to the Canadian dollar and the Norwegian krone in 2017 did not have a significant effect on the reported amount of our net sales, as a substantial portion of the sales generated by our Canadian and Norwegian operations are denominated in the U.S. dollar.

The \$18 million decrease in operating income was comprised of the following:

- Approximately \$14 million from net currency transaction losses caused by relative changes in currency exchange rates at each applicable balance sheet date between the U.S. dollar and the euro, Canadian dollar and the Norwegian krone, which causes increases or decreases, as applicable, in U.S. dollar-denominated receivables and payables and U.S. dollar currency held by our non-U.S. operations, and

- Approximately \$4 million from net currency translation losses primarily caused by a weakening of the U.S. dollar relative to the Canadian dollar, as its local currency-denominated operating costs were translated into more U.S. dollars in 2017 as compared to 2016, and such translation, as it related to the U.S. dollar relative to the euro, had a nominal effect on income from operations in 2017 as compared to 2016.

Impact of changes in currency exchange rates - 2016 vs. 2015

Impact of changes in currency exchange rates 2016 vs. 2015					
	Transaction gains/(losses) recognized			Translation gain/loss-impact of rate changes	Total currency impact 2016 vs. 2015
	2015	2016	Change		
	(In millions)				
Impact on:					
Net sales	\$ —	\$ —	\$ —	\$ (9)	\$ (9)
Income from operations	—	6	6	8	14

The \$9 million reduction in net sales (translation loss) was caused primarily by a strengthening of the U.S. dollar relative to the euro, as our euro-denominated sales were translated into fewer U.S. dollars in 2016 as compared to 2015. The strengthening of the U.S. dollar relative to the Canadian dollar and the Norwegian krone in 2016 did not have a significant effect on the reported amount of our net sales, as a substantial portion of the sales generated by our Canadian and Norwegian operations are denominated in the U.S. dollar.

The \$14 million increase in operating income was comprised of the following:

- Approximately \$6 million from net currency transaction gains caused primarily by a strengthening of the U.S. dollar relative to the euro, Norwegian krone and Canadian dollar, as U.S. dollar-denominated receivables and U.S. dollar currency held by our non-U.S. operations became equivalent to a greater amount of local currency in 2016 as compared to 2015, and
- Approximately \$8 million from net currency translation gains caused primarily by a strengthening of the U.S. dollar relative to the Canadian dollar and the Norwegian krone, as their local currency-denominated operating costs were translated into fewer U.S. dollars in 2016 as compared to 2015, (and such translation, as it related to the U.S. dollar relative to the euro, had a negative effect on income from operations in 2016 as compared to 2015, as the negative impact of the stronger U.S. dollar on euro-denominated sales more than offset the favorable effect of euro-denominated operating costs being translated into fewer U.S. dollars in 2016 compared to 2015).

Outlook— During 2017 our Chemicals Segment operated its production facilities at full practical capacity compared to 98% of practical capacity in 2016. We expect our TiO₂ production volumes in 2018 to be slightly lower as compared to the record 2017 production volumes. Assuming current global economic conditions continue, and based on anticipated production levels, we expect our 2018 Chemicals Segment sales volumes to be slightly lower as compared to record 2017 sales volumes. We will continue to monitor current and anticipated near-term customer demand levels and align our production and inventories accordingly.

The cost of third-party feedstock ore we purchased in 2017 was slightly higher as compared to 2016, and such higher cost feedstock ore began to be reflected in our Chemicals Segment's operating income in the third quarter of 2017 and continued through the fourth quarter of 2017. Consequently, our cost of sales per metric ton of TiO₂ sold in 2017 was slightly higher as compared to our cost of sales per metric ton of TiO₂ sold in 2016 (excluding the effect of changes in currency exchange rates). We expect our cost of sales per metric ton of TiO₂ sold in 2018 will be higher than our per-metric ton cost in 2017 primarily due to higher feedstock costs.

We started 2017 with average TiO₂ selling prices 11% higher than the beginning of 2016, and average selling prices increased by an additional 27% during the full year of 2017. Industry data indicates that overall TiO₂ inventory held by producers declined significantly during 2016 and remained at low levels throughout 2017. With the strong sales volumes experienced in 2017, we continue to see evidence of strong demand for our TiO₂ products across nearly all segments.

Overall, we expect our TiO₂ sales will be higher compared to 2017, principally as a result of expected higher average selling prices, and we expect operating income in 2018 will be higher as compared to 2017, principally as a result of expected higher average selling prices in 2018 as compared to 2017, partially offset by higher raw material costs (principally feedstock ore).

Due to the constraints of high capital costs and extended lead time associated with adding significant new TiO₂ production capacity, especially for premium grades of TiO₂ products produced from the chloride process, we believe increased and sustained profit margins will be necessary to financially justify major expansions of TiO₂ production capacity required to meet expected future growth in demand. Any major expansion of TiO₂ production capacity, if announced, would take several years before such production would become available to meet future growth in demand.

Our expectations for our future operating results are based upon a number of factors beyond our control, including worldwide growth of gross domestic product, competition in the marketplace, continued operation of competitors, unexpected or earlier-than-expected capacity additions or reductions and technological advances. If actual developments differ from our expectations, our results of operations could be unfavorably affected.

Component Products—

Our Component Products Segment's product offerings consist of a large number of products that have a wide variation in selling price and manufacturing cost, which results in certain practical limitations on our ability to quantify the impact of changes in individual product sales quantities and selling prices on our net sales, cost of goods sold and gross margin. In addition, small variations in period-to-period net sales, cost of goods sold and gross margin can result from changes in the relative mix of our products sold. The key performance indicator for our Component Products Segment is operating income margins.

	Years ended December 31,			% Change	
	2015	2016	2017	2015-16	2016-17
	(Dollars in millions)				
Net sales	\$ 109.0	\$ 108.9	\$ 112.0	— %	3%
Cost of sales	75.6	73.8	77.2	(2)%	5%
Gross margin	\$ 33.4	\$ 35.1	\$ 34.8	5%	(1)%
Operating income	\$ 14.0	\$ 15.6	\$ 15.2	11%	(2)%
Percent of net sales:					
Cost of sales	69%	68%	69%		
Gross margin	31%	32%	31%		
Operating income	13%	14%	14%		

Net Sales—Our Component Products Segment's net sales increased approximately \$3.1 million in 2017 compared to 2016 primarily due to higher security products sales volumes to government security, electronic lock and other markets, partially offset by a decrease in sales of security products to an original equipment manufacturer of recreational transportation products. Marine components also contributed with higher sales, primarily to the waterski/wakeboard boat market. Relative changes in selling prices did not have a material impact on net sales comparisons.

Our Component Products Segment's net sales for 2016 were comparable to 2015 because our security products reporting unit was able to substantially replace revenue for a government security end-user project which did not recur in 2016 with a new project with the same customer. Security product sales for 2015 included approximately \$6.3 million for a government security end-user project which did not recur in 2016. During the second half of 2016, we were awarded a substantial new project for the same customer which began to ship in August and was completed in December, totaling \$5.8 million in net sales. Marine Components also contributed with higher sales to the waterski/wakeboard boat market, including the continuing introduction of new product lines to that market. Relative changes in selling prices did not have a material impact on net sales comparisons.

Costs Sales and Gross Margin—Our Component Products Segment's cost of sales increased from 2016 to 2017 primarily due to increased sales volumes for both security products and marine components, and to a lesser extent higher raw material prices (mostly zinc and brass) and increased employee medical costs. Our Component Products Segment's cost of sales dollars in 2017 were comparable to 2016. As a percentage of sales, gross margin for 2017 decreased compared to 2016 due primarily to unfavorable relative changes in customer and product mix, higher raw material prices and increased employee medical costs in the security products reporting unit, as well as higher manufacturing costs for the marine components reporting unit.

Our Component Products Segment's cost of sales for 2016 was down from 2015 on comparable sales, resulting in an increase in gross margin. As a percentage of sales, gross margin for 2016 was favorable to 2015 due primarily to higher variable margins resulting from favorable customer and product mix for both security products and marine components.

Operating Income—Our Component Products Segment operating income declined slightly in 2017 compared to primarily due to the slight decline in gross margin noted above. Operating costs and expenses consists primarily of sales and administrative-related personnel costs, sales commissions and advertising expenses directly related to product sales and administrative costs relating to business unit and corporate management activities, as well as gains and losses on disposal of plant, property and equipment. Operating costs and expenses in 2017 was comparable to 2016 on an absolute basis and as a percentage of sales.

Our Component Products Segment operating income improved in 2016 compared to 2015 and also in 2015 compared to 2014. Operating costs and expenses consists primarily of sales and administrative-related personnel costs, sales commissions and advertising expenses directly related to product sales and administrative costs relating to business unit and corporate management

activities, as well as gains and losses on disposal of plant, property and equipment. Operating costs and expenses in 2016 was comparable to 2015 on an absolute basis and as a percentage of sales.

General—Our Component Products Segment’s profitability primarily depends on its ability to utilize its production capacity effectively, which is affected by, among other things, the demand for its products and its ability to control its manufacturing costs, primarily comprised of labor costs and materials. The materials used in our Component Products Segment’s products consist of purchased components and raw materials some of which are subject to fluctuations in the commodity markets such as zinc, brass and stainless steel. Total material costs represented approximately 44% of our Component Products Segment’s cost of sales in 2017, with commodity-related raw materials accounting for approximately 11% of our Component Products Segment’s cost of sales. During 2016 and 2017, markets for the primary commodity-related raw materials used in the manufacture of our locking mechanisms, primarily zinc and brass, generally strengthened, resulting in price increases that exceeded general inflation rates. In the case of zinc, our purchases late in 2017 bore unit costs over 50% higher than those acquired two years earlier. The rapid rise in prices for zinc and brass increased our 2017 aggregate purchase cost for these materials by approximately \$0.5 million. Over that same period, the market for stainless steel, the primary raw material used for the manufacture of marine exhaust headers and pipes, remained relatively stable. While we expect the markets for our primary commodity-related raw materials to stabilize during 2018, we recognize that anticipated strengthening economic conditions may exert upward price pressure on these and other manufacturing materials.

We occasionally enter into short-term commodity-related raw material supply arrangements to mitigate the impact of future increases in commodity related raw material costs. See Item 1 - “Business Component Products Segment – CompX International, Inc. - Raw Materials.”

Outlook— The strong demand for our Component Products Segment’s products in 2017, like the previous two years, was supported by continued high demand from existing customers for government security applications, as well as continued growth in electronic lock sales. In 2017, the impact of strong demand for these products was somewhat offset by lower sales to the transportation market, where a significant customer of the segment experienced weakened sales in 2017, which is expected to continue into 2018. We also continue to benefit from innovation and diversification in our product offerings to the recreational boat markets served by our Marine Components segment. In 2018, we will seek to capitalize on positive momentum in each of our Component Products Segment’s business units and on generally improving economic conditions to grow sales and profitability. We will continue to monitor economic conditions and sales order rates and respond to fluctuations in customer demand through continuous evaluation of staffing levels and consistent execution of our lean manufacturing and cost improvement initiatives. Additionally, we continue to seek opportunities to gain market share in markets we currently serve, to expand into new markets and to develop new product features in order to mitigate the impact of changes in demand as well as broaden our sales base.

Real Estate Management and Development—

	Years ended December 31,		
	2015	2016	2017
	(In millions)		
Net sales	\$ 30.1	\$ 46.2	\$ 38.4
Cost of sales	25.4	36.2	28.1
Gross margin	\$ 4.7	\$ 10.0	\$ 10.3
Operating income	\$ —	\$.8	\$ 6.6

General—Our Real Estate Management and Development Segment consists of BMI and LandWell. BMI provides utility services, among other things, to an industrial park located in Henderson, Nevada, and is responsible for the delivery of water to the city of Henderson and various other users through a water distribution system owned by BMI. LandWell is actively engaged in efforts to develop certain real estate in Henderson, Nevada including approximately 2,100 acres zoned for residential/planned community purposes and approximately 400 acres zoned for commercial and light industrial use.

In December 2013 and through the end 2017, LandWell has closed or entered into escrow on approximately 480 acres of the residential/planned community and approximately 65 acres zoned for commercial and light industrial use. Contracts for land sales are negotiated on an individual basis and sales terms and prices will vary based on such factors as location (including location within a planned community), expected development work, and individual buyer needs. Although land may be under contract, we do not recognize revenue until we have satisfied the criteria for revenue recognition set forth in ASC Topic 976. In some instances, we will receive cash proceeds at the time the contract closes and record deferred revenue for some or all of the cash amount received, with such deferred revenue being recognized in subsequent periods. Because land held for development was initially recognized at estimated fair value at the acquisition date as required by ASC Topic 805, we do not expect to recognize significant operating income on land sales for the land currently under contract. We expect the development work to continue for 10 to 15 years on the rest of the land held for development, especially the remainder of the residential/planned community.

Net Sales and Operating Income— A substantial portion of the net sales from our Real Estate Management and Development segment in 2017 consisted of revenues from land sales. We recognized \$29.9 million in revenues on land sales during 2017 compared to \$37.8 million in 2016. As noted above we recognize revenue in our residential/planned community under percentage completion accounting and a large majority of the revenue we recognized in 2016 and 2017 was under this method of revenue recognition. We also have commercial property not included in the planned community for which revenue is generally recognized in full at closing, as we generally have no further obligations after the closing date of the sale for these properties. Land sale revenue for such commercial property not included in the planned community was \$3.0 million in 2017 and \$5.6 million in 2016. The contracts on these sales (both within the planned community and otherwise) include approximately 470 acres of the residential planned community and certain other acreage which closed in December 2015 and through the end of 2017. Cost of sales related to land sales revenues was \$22.2 million in 2017 and \$30.3 million in 2016.

We recognized \$37.8 million in revenues on land sales during 2016 compared to \$21.5 million in 2015. As noted above we recognize revenue in our residential/planned community under percentage completion accounting and a large majority of the revenue we recognized in 2015 and 2016 was under this method of revenue recognition. We also have commercial property not included in the planned community for which revenue is generally recognized in full at closing, as we generally have no further obligations after the closing date of the sale for these properties. Land sale revenue for such commercial property not included in the planned community was \$5.6 million in 2016 and \$9.0 million in 2015. The contracts on these sales (both within the planned community and otherwise) include approximately 400 acres of the residential planned community and certain other acreage which closed in December 2014 and through the end of 2016. Cost of sales related to land sales revenues was \$30.3 million in 2016 and \$19.9 million in 2015.

The remainder of net sales and cost of sales related to this segment primarily relates to water delivery fees and expenses. We deliver water to several customers under long-term contracts. In this regard in January 2016 we amended our water delivery contract with the City of Henderson, Nevada. As a result we recognized a contract related intangible asset impairment of \$5.1 million in the first quarter of 2016 (\$2.1 million, or \$.01 per diluted share, net of income tax benefit and noncontrolling interest). See Note 7 to our Consolidated Financial Statements. Based on the contract amendment as expected annual water sales in 2016 and 2017 were approximately \$1 million lower than 2015 levels but cost of sales related to water delivery remained relatively consistent from period to period. As noted above, because land held for development was initially recognized at estimated fair value at the acquisition date as required by ASC Topic 805, we did not recognize significant operating income in either 2015, 2016 or 2017 (excluding the impact of the contract related intangible asset impairment charge in 2016).

Outlook—We are actively pursuing opportunities to maximize cash proceeds from the sale of our land held for development. In the near term, we are focused on developing and selling land we manage, primarily to residential builders, for the approximately 2,100 acres zoned for residential/planned community in Henderson, Nevada. We expect the development work for the residential/planned community to continue over the next several years, including those parcels currently under contract for which the development work is expected to be completed in 2018. We do not expect to recognize significant amounts of operating income related to these sales for the parcels currently under contract because our basis in the land value is the December 2013 acquisition date fair value; however, we do expect to generate cash proceeds from these sales in excess of our acquisition costs, which proceeds are expected to be used, in part, to fund ongoing development work for the remainder of these properties.

General Corporate Items, Interest Expense, Provision for Income Taxes (Benefit), Noncontrolling Interest and Related Party Transactions

Securities Earnings—A significant portion of our interest and dividend income in 2015, 2016 and 2017 relates to the distributions we received from The Amalgamated Sugar Company LLC. We recognized dividend income from the LLC of \$25.4 million in each of 2015, 2016 and 2017. See Note 6 to our Consolidated Financial Statements.

Insurance Recoveries—Insurance recoveries relate to amounts NL received from certain of its former insurance carriers, and relate principally to the recovery of prior lead pigment and asbestos litigation defense costs incurred by NL. We have agreements with four former insurance carriers pursuant to which the carriers reimburse us for a portion of our future lead pigment litigation defense costs, and one such carrier reimburses us for a portion of our future asbestos litigation defense costs. We are not able to determine how much we will ultimately recover from these carriers for defense costs incurred by us because of certain issues that arise regarding which defense costs qualify for reimbursement. Substantially all of the \$3.7 million we recognized in 2015 relate to settlements NL reached with two of its insurance carriers in which the carriers agreed to reimburse NL for a portion of its past litigation defense costs. While we continue to seek additional insurance recoveries for lead pigment and asbestos litigation matters, we do not know the extent to which we will be successful in obtaining additional reimbursement for either defense costs or indemnity. Any additional insurance recoveries would be recognized when the receipt is probable and the amount is determinable. Substantially all of the insurance recoveries recognized in 2016 and 2017 relate to reimbursement of ongoing litigation defense costs. See Note 18 to our Consolidated Financial Statements.

Other General Corporate Items— Corporate expenses were 6% lower at \$35.0 million in 2017 compared to \$37.3 million in 2016. Corporate expenses decreased due to lower administrative related expenses and environmental remediation and related costs in 2017. Included in corporate expense are:

- litigation and related costs at NL of \$3.8 million in 2017 compared to \$3.5 million in 2016; and
- environmental remediation and related costs of \$4.1 million in 2017 compared to \$5.9 million in 2016.

Corporate expenses were 6% lower at \$37.3 million in 2016 compared to \$39.5 million in 2015. Corporate expenses decreased primarily due to lower administrative related expenses and lower litigation and related costs in 2016. Included in corporate expense are:

- litigation and related costs at NL of \$3.5 million in 2016 compared to \$4.8 million in 2015; and
- environmental remediation and related costs of \$5.9 million in 2016 compared to \$5.7 million in 2015.

Overall, we currently expect that our net general corporate expenses in 2018 will be higher than in 2017 primarily due to higher expected litigation remediation and related costs and higher administrative expenses.

The level of our litigation and related expenses varies from period to period depending upon, among other things, the number of cases in which we are currently involved, the nature of such cases and the current stage of such cases (e.g. discovery, pre-trial motions, trial or appeal, if applicable). See Note 18 to our Consolidated Financial Statements. If our current expectations regarding the number of cases in which we expect to be involved during 2018, or the nature of such cases, were to change our corporate expenses could be higher than we currently estimate.

Obligations for environmental remediation and related costs are difficult to assess and estimate, and it is possible that actual costs for environmental remediation and related costs will exceed accrued amounts or that costs will be incurred in the future for sites in which we cannot currently estimate the liability. If these events occur in 2018, our corporate expense could be higher than we currently estimate. In addition, we adjust our accruals for environmental remediation and related costs as further information becomes available to us or as circumstances change. Such further information or changed circumstances could result in an increase or reduction in our accrued environmental remediation and related costs. See Note 18 to our Consolidated Financial Statements.

Loss on Prepayment of Debt – We recognized a loss on prepayment of debt in the third quarter of 2017 aggregating \$7.1 million, associated with the prepayment and termination of our Chemicals Segment’s term loan indebtedness. See Note 9 to our Consolidated Financial Statements.

Interest Expense— Interest expense increased to \$58.9 million in 2017 from \$58.1 million in 2016 primarily due to the net effects of higher 2017 average debt levels and higher average interest rates somewhat offset by higher capitalized interest in 2017 primarily.

Interest expense increased to \$58.1 million in 2016 from \$53.6 million in 2015 primarily due to the net effects of higher 2016 average debt levels and higher average interest rates (primarily due to the interest rate swap contract Kronos entered into in September 2015).

We expect interest expense will be higher in 2018 as compared to 2017 due to higher average balances of outstanding borrowings at Valhi. See Note 19 to our Consolidated Financial Statements.

Provision for Income Taxes (Benefit)—We recognized an income tax benefit of \$120.0 million in 2017 compared to income tax expense of \$18.6 million in 2016. We recognized income tax expense of \$18.6 million in 2016 compared to \$107.5 million in 2015. The difference is primarily due to the effects of our deferred income tax asset valuation allowance associated with our Chemicals Segment's German and Belgian operations in 2015 and 2017 and the impact of the 2017 Tax Act, as discussed below.

Our income tax benefit in 2017 includes the following:

- a \$186.7 million non-cash deferred income tax benefit as a result of the reversal of our deferred income tax asset valuation allowances associated with our Chemicals Segment's German and Belgian operations mostly recognized in the second quarter,
- an \$18.7 million non-cash deferred income tax benefit as a result of the reversal of our deferred income tax asset valuation allowance related to certain U.S. deferred income tax assets of one of our Chemicals Segment's non-U.S. subsidiaries (which subsidiary is treated as a dual resident for U.S. income tax purposes),
- a \$76.2 million provisional current income tax expense as a result of the 2017 Tax Act for the one-time repatriation tax imposed on the post-1986 undistributed earnings of our Chemicals Segment's non-U.S. subsidiaries,
- a \$77.1 million non-cash deferred income tax benefit related to the revaluation of our net deferred income tax liability resulting from the reduction in the U.S. federal corporate income tax rate enacted as part of the 2017 Tax Act;
- an \$11.8 million aggregate income tax benefit related to the execution and finalization of an Advance Pricing Agreement between Canada and Germany, mostly recognized in the third quarter (which includes an \$8.6 million non-cash income tax benefit as a result of a net decrease in our reserve for uncertain tax positions); and
- a \$5.3 million provisional non-cash deferred income tax expense related to a change in our conclusions regarding our permanent reinvestment assertion with respect to the post-1986 undistributed earnings of our Chemicals Segment's European subsidiaries.

Our income tax expense in 2016 includes a \$3.4 million current income tax benefit related to the execution and finalization of an Advance Pricing Agreement related to our Chemicals Segment between the U.S. and Canada, an aggregate \$2.2 million non-cash tax benefit as the result of a net decrease in our deferred income tax valuation allowance and a \$7.2 million increase to our reserve for uncertain tax positions.

Our earnings are subject to income tax in various U.S. and non-U.S. jurisdictions, and the income tax rates applicable to our pre-tax earnings (losses) of our non-U.S. operations are generally lower than the income tax rates applicable to our U.S. operations. Excluding the effect of any increase or decrease in our deferred income tax asset valuation allowance or changes in our reserve for uncertain tax positions, we would generally expect our overall effective tax rate to be lower than the U.S. federal statutory tax rate of 35% primarily because of our non-U.S. operations. Our effective income tax rate in 2016, excluding the impact of the reduction in our deferred income tax asset valuation allowances we recognized and the change to our reserve for uncertain tax positions, was lower than the U.S. federal statutory rate of 35% primarily due to the change to prior year tax discussed above. Our effective income tax rate in 2017, excluding the impact of the reversal of the deferred income tax asset valuation allowances, the one-time repatriation tax, the impact of the change in our permanent reinvestment assertion with respect to the post-1986 undistributed earnings of our European subsidiaries and the change to our reserve for uncertain tax positions, was lower than the U.S. federal statutory rate of 35% primarily due to the impact of the earnings of our non-U.S. subsidiaries. See Note 14 to our Consolidated Financial Statements for a tabular reconciliation of our statutory income tax provision to our actual tax provision.

Our Chemicals Segment has substantial net operating loss (NOL) carryforwards in Germany (the equivalent of \$652 million for German corporate purposes and \$.5 million for German trade tax purposes at December 31, 2017) and in Belgium (the equivalent

of \$50 million for Belgian corporate tax purposes at December 31, 2017), all of which have an indefinite carryforward period. As a result, we have net deferred income tax assets with respect to these two jurisdictions, primarily related to these NOL carryforwards. The German corporate tax is similar to the U.S. federal income tax, and the German trade tax is similar to the U.S. state income tax. Prior to June 30, 2015, and using all available evidence, we had concluded no deferred income tax asset valuation allowance was required to be recognized with respect to these net deferred income tax assets under the more-likely-than-not recognition criteria, primarily because (i) the carryforwards have an indefinite carryforward period, (ii) we utilized a portion of such carryforwards during the most recent three-year period, and (iii) we expected to utilize the remainder of the carryforwards over the long term. We had also previously indicated that facts and circumstances could change, which might in the future result in the recognition of a valuation allowance against some or all of such deferred income tax assets. However, as of June 30, 2015, and given our Chemicals Segment's operating results during the second quarter of 2015 and our expectations at that time for our operating results for the remainder of 2015, which had been driven in large part by the trend in our average TiO₂ selling prices over such periods as well as the \$21.1 million pre-tax charge recognized in the second quarter of 2015 in connection with the implementation of certain workforce reductions, we did not have sufficient positive evidence to overcome the significant negative evidence of having cumulative losses in the most recent twelve consecutive quarters in both our German and Belgian jurisdictions at June 30, 2015 (even considering that the carryforward period of our German and Belgian NOL carryforwards is indefinite, one piece of positive evidence). Accordingly, at June 30, 2015, we concluded that we were required to recognize a non-cash deferred income tax asset valuation allowance under the more-likely-than-not recognition criteria with respect to our German and Belgian net deferred income tax assets at such date. We recognized an additional non-cash deferred income tax asset valuation allowance during the second half of 2015 due to losses recognized by our German and Belgian operations during such period. Such valuation allowance aggregated \$168.9 million at December 31, 2015. During 2016, we recognized an aggregate \$2.2 million non-cash tax benefit as the result of a net decrease in such deferred income tax asset valuation allowance, as the impact of utilizing a portion of our German NOLs during such period more than offset the impact of additional losses recognized by our Belgian operations during such period. Such valuation allowance aggregated approximately \$173 million at December 31, 2016 (\$153 million with respect to Germany and \$20 million with respect to Belgium). During the first six months of 2017, we recognized an aggregate non-cash income tax benefit of \$12.7 million as a result of a net decrease in such deferred income tax asset valuation allowance, due to the utilization of a portion of both the German and Belgian NOLs during such period. We continue to believe we will ultimately realize the full benefit of these German and Belgian NOL carryforwards, in part because of their indefinite carryforward period. As previously disclosed, our ability to reverse all or a portion of either the German or Belgian valuation allowance is dependent on the presence of sufficient positive evidence, such as the existence of cumulative profits in the most recent twelve consecutive quarters or profitability in recent quarters during which such profitability was trending upward throughout such period, and the ability to demonstrate future profitability for a sustainable period. As noted below, we determined such conditions were satisfied at June 30, 2017.

Although our Chemicals Segment's Belgian operations were profitable in the first quarter of 2017 and we utilized a portion of the Belgian NOLs during such period, our Chemicals Segment's Belgian operations continued to have cumulative losses in the most recent twelve quarters at March 31, 2017. Although the results of our Chemicals Segment's German operations had improved during 2016 and the first quarter of 2017, indicating a change in the negative trend in earnings that existed at December 31, 2015, and we utilized a portion of our German NOLs during 2016 and the first quarter of 2017, and we had cumulative income with respect to our German operations for the most recent twelve consecutive quarters at March 31, 2017, the sustainability of such positive trend in earnings had not yet been demonstrated at such date. As previously disclosed, while neither our business as a whole nor any of our principal product groups is seasonal to any significant extent, TiO₂ sales are generally higher in the second and third quarters of the year, due in part to the increase in paint production in the spring to meet demand during the spring and summer painting seasons. While we have some insight into the overall demand expected to be generated by a particular year's paint season and TiO₂ pricing at the end of the first quarter (the start of the paint season), we have much greater insight and certainty regarding overall demand and TiO₂ pricing for a particular year's paint season by the end of the second quarter of the year, in part because some factors, such as weather, can have an impact on both overall demand and pricing each year. Accordingly, at March 31, 2017 we did not have sufficient positive evidence to support a sustainable profit trend and consequently, we did not have sufficient positive evidence under the more-likely-than-not recognition criteria to support reversal of the entire valuation allowance related to our German or Belgian operations at such date. During the second quarter of 2017, our Chemicals Segment's German and Belgian operations continued to be profitable, and both reported levels of profitability higher as compared to the first quarter of 2017. As previously disclosed, our consolidated results of operations in general, and our German and Belgian operations in particular, were favorably impacted during the second quarter of 2017 by, among other things, continued higher average TiO₂ selling prices and higher sales volumes. Our Chemicals Segment's German operations had cumulative income for the most recent twelve consecutive quarters at June 30, 2017. While our Belgian operations had cumulative losses in the most recent twelve consecutive quarters at June 30, 2017, such operations generated income in both the first and second quarters of 2017, with higher income in the second quarter as compared to the first quarter, the amount of cumulative losses of our Belgian operations for the most recent twelve consecutive quarters was lower as of June 30, 2017 as compared to both March 31, 2017 and December 31, 2016 and we expected to have cumulative profits in the third and fourth quarters. Our Chemicals Segment's production facilities had been operating at near practical capacity utilization rates in the first six months of 2017. In addition, consistent with our previously-disclosed expectation regarding our consolidated results of operations for the second half of 2017, we believed it was likely our Chemicals Segment's German and Belgian operations would continue to report improved operating results in 2017 as compared to 2016. Accordingly, at June 30, 2017 we concluded we had

sufficient positive evidence under the more-likely-than-not recognition criteria to support reversal of the entire valuation allowance related to our Chemicals Segment's German and Belgian operations. Such sufficient positive evidence included, among other things, the existence of cumulative profits in the most recent twelve consecutive quarters (Germany) or profitability in recent quarters during which such profitability was trending upward throughout such period (Belgium), the ability to demonstrate future profitability in Germany and Belgium for a sustainable period (as supported by, among other things, recent trends in profitability, driven in large part by increases in TiO₂ selling prices, and continued strong demand indicating that such profitability trends will continue in the future), and the indefinite carryforward period for the German and Belgian NOLs. As discussed below regarding accounting for income taxes at interim dates, a large portion (\$149.9 million) of the remaining valuation allowance as of June 30, 2017 was reversed in the second quarter, with the remainder reversed during the second half of 2017.

In accordance with the ASC 740-270 guidance regarding accounting for income taxes at interim dates, the amount of the valuation allowance reversed at June 30, 2017 (\$149.9 million, of which \$141.9 million related to Germany and \$8.0 million related to Belgium) relates to our change in judgment at that date regarding the realizability of the related deferred income tax asset as it relates to future years (i.e. 2018 and after). A change in judgment regarding the realizability of deferred tax assets as it relates to the current year is considered in determining the estimated annual effective tax rate for the year and is recognized throughout the year, including interim periods subsequent to the date of the change in judgment. Accordingly, our income tax benefit in 2017 includes an aggregate non-cash income tax benefit of \$186.7 million related to the reversal of the German and Belgian valuation allowance, comprised of \$12.7 million recognized in the first half of 2017 related to the utilization of a portion of both the German and Belgian NOLs during such period, \$149.9 million related to the portion of the valuation allowance reversed as of June 30, 2017 and \$24.1 million recognized in the second half of 2017 related to the utilization of a portion of both the German and Belgian NOLs during such period. In addition, our deferred income tax asset valuation allowance increased \$13.7 million in 2017 as a result of changes in currency exchange rates, which increase was recognized as part of other comprehensive income (loss).

On December 22, 2017, the 2017 Tax Act was enacted into law. This new tax legislation, among other changes, (i) reduces the U.S. Federal corporate income tax rate from 35% to 21% effective January 1, 2018; (ii) implements a territorial tax system and imposes a one-time repatriation tax (Transition Tax) on the deemed repatriation of the post-1986 undistributed earnings of non-U.S. subsidiaries accumulated up through December 31, 2017, regardless of whether such earnings are repatriated; (iii) eliminates U.S. tax on future non-U.S. earnings (subject to certain exceptions); (iv) eliminates the domestic production activities deduction beginning in 2018; (v) eliminates the net operating loss carryback and provides for an indefinite carryforward period subject to an 80% annual usage limitation; (vi) allows for the expensing of certain capital expenditures; (vii) imposes a tax on global intangible low-tax income; and (viii) imposes a base erosion anti-abuse tax. Following the enactment of the 2017 Tax Act, the Securities and Exchange Commission issued Staff Accounting Bulletin (SAB) 118 to provide guidance on the accounting and reporting impacts of the 2017 Tax Act. SAB 118 states that companies should account for changes related to the 2017 Tax Act in the period of enactment if all information is available and the accounting can be completed. In situations where companies do not have enough information to complete the accounting in the period of enactment, a company must either 1) record an estimated provisional amount if the impact of the change can be reasonably estimated; or 2) continue to apply the accounting guidance that was in effect immediately prior to the 2017 Tax Act if the impact of the change cannot be reasonably estimated. If estimated provisional amounts are recorded, SAB 118 provides a measurement period of no longer than one year during which companies should adjust those amounts as additional information becomes available.

Under GAAP, we are required to revalue our net deferred tax asset associated with our U.S. net deductible temporary differences in the period in which the new tax legislation is enacted based on deferred tax balances as of the enactment date, to reflect the effect of such reduction in the corporate income tax rate. Our temporary differences as of December 31, 2017 are not materially different from our temporary differences as of the enactment date, accordingly revaluation of our net deductible temporary differences is based on our net deferred tax assets as of December 31, 2017. Such revaluation resulted in a non-cash deferred income tax benefit of \$77.1 million recognized in continuing operations, reducing our net deferred income tax liability. The amounts recorded as of December 31, 2017 as a result of the 2017 Tax Act represent estimates based on information currently available and, in accordance with the guidance in SAB 118, these amounts are provisional and subject to adjustment as we obtain additional information and complete our analysis in 2018. If the underlying guidance or tax laws change and such change impacts the income tax effects of the new legislation recognized at December 31, 2017, we will recognize an adjustment in the reporting period within the measurement period in which such adjustment is determined. Such measurement period ends December 22, 2018 pursuant to the guidance under SAB 118.

Prior to the enactment of the 2017 Tax Act, the undistributed earnings of our Chemicals Segment's European subsidiaries were deemed to be permanently reinvested (we had not made a similar determination with respect to the undistributed earnings of our Chemicals Segment's Canadian subsidiary). Pursuant to the Transition Tax provisions imposing a one-time repatriation tax on post-1986 undistributed earnings, we recognized a provisional current income tax expense of \$76.2 million in the fourth quarter of 2017. We will elect to pay such tax over an eight year period beginning in 2018, including approximately \$6.1 million which will be paid in 2018 and is netted with our current receivables from affiliates (income taxes receivable from Valhi) classified as a current asset in our Consolidated Balance Sheet, and the remaining \$70.1 million is recorded as a noncurrent payable to affiliate (income taxes payable to

Contran) classified as a noncurrent liability in our Consolidated Balance Sheet and will be paid in increments over the remainder of the eight year period. The amounts recorded as of December 31, 2017 as a result of the 2017 Tax Act represent estimates based on information currently available and, in accordance with the guidance in SAB 118, these amounts are provisional and subject to adjustment as we obtain additional information and complete our analysis in 2018. If the underlying guidance or tax laws change and such change impacts the income tax effects of the new legislation recognized at December 31, 2017 or we determine we have additional tax liabilities under other provisions of the 2017 Tax Act, including the tax on global intangible low-tax income and the base erosion anti-abuse tax, we will recognize an adjustment in the reporting period within the measurement period in which such adjustment is determined. Such measurement period ends December 22, 2018 pursuant to the guidance under SAB 118.

Prior to the enactment of the 2017 Tax Act, the undistributed earnings of our European subsidiaries were deemed to be permanently reinvested (we had not made a similar determination with respect to the undistributed earnings of our Canadian subsidiary). As a result of the implementation of a territorial tax system under the 2017 Tax Act, effective January 1, 2018 and the Transition Tax which in effect taxes the post-1986 undistributed earnings of our non-U.S. subsidiaries accumulated up through December 31, 2017, we have now determined that all of the post-1986 undistributed earnings of our European subsidiaries are not permanently reinvested (we had previously concluded that all of the undistributed earnings of our Canadian subsidiary are not permanently reinvested). Accordingly, in the fourth quarter of 2017 we have recognized an aggregate provisional non-cash deferred income tax expense of \$5.3 million for the estimated U.S. state and non-U.S. income tax and withholding tax liability attributable to all of such previously-considered permanently reinvested undistributed earnings. We are currently reviewing certain other provisions under the 2017 Tax Act that would impact our determination of the aggregate temporary differences attributable to our investments in our non-U.S. subsidiaries. We continue to assert indefinite reinvestment as it relates to our outside basis differences attributable to our investments in our non-U.S. subsidiaries, other than post-1986 undistributed earnings of our European subsidiaries and all undistributed earnings of our Canadian subsidiary. It is possible that a change in facts and circumstances, such as a change in the expectation regarding future dispositions or acquisitions or a change in tax law, could result in a conclusion that some or all of such investments are no longer permanently reinvested. It is currently not practical for us to determine the amount of the unrecognized deferred income tax liability related to our investments in our non-U.S. subsidiaries due to the complexities associated with our organizational structure, changes in the 2017 Tax Act and the U.S. taxation of such investments in the states in which we operate.

Certain U.S. deferred tax attributes of one of our Chemicals Segment's non-U.S. subsidiaries, which subsidiary is treated as a dual resident for U.S. income tax purposes, were subject to various limitations. As a result, we had previously concluded that a deferred income tax asset valuation allowance was required to be recognized with respect to such subsidiary's U.S. net deferred income tax asset because such assets did not meet the more-likely-than-not recognition criteria primarily due to (i) the various limitations regarding use of such attributes due to the dual residency; (ii) the dual resident subsidiary had a history of losses and absent distributions from our non-U.S. subsidiaries, which were previously not determinable, such subsidiary was expected to continue to generate losses; and (iii) a limited NOL carryforward period for U.S. tax purposes. Because we had concluded the likelihood of realization of such subsidiary's net deferred income tax asset was remote, we had not previously disclosed such valuation allowance or the associated amount of the subsidiary's net deferred income tax assets (exclusive of such valuation allowance). Primarily due to changes enacted under the 2017 Tax Act, we have concluded we now have sufficient positive evidence under the more-likely-than-not recognition criteria to support reversal of the entire valuation allowance related to such subsidiary's net deferred income tax asset, which evidence included, among other things, (i) the inclusion under Transition Tax provisions of significant earnings for U.S. income tax purposes which significantly and positively impacts the ability of such deferred tax attributes to be utilized by us; (ii) the indefinite carryforward period for U.S. net operating losses incurred after December 31, 2017; (iii) an expectation of continued future profitability for our U.S. operations; and (iv) a positive taxable income basket for U.S. tax purposes in excess of the U.S. deferred tax asset related to the U.S. attributes of such subsidiary. Accordingly, in the fourth quarter we recognized an \$18.7 million non-cash deferred income tax benefit as a result of the reversal of such valuation allowance.

We recognize deferred income taxes with respect to the excess of the financial reporting carrying amount over the income tax basis of our direct investment in Kronos common stock because the exemption under GAAP to avoid such recognition of deferred income taxes is not available to us. There is a maximum amount (or cap) of such deferred income taxes we are required to recognize with respect to our direct investment in Kronos, and we previously reached such maximum amount in the fourth quarter of 2010. Since that time and through March 31, 2015, we were not required to recognize any additional deferred income taxes with respect to our direct investment in Kronos because the deferred income taxes associated with the excess of the financial reporting carrying amount over the income tax basis of our direct investment in Kronos common stock continued to be above such cap. However, at June 30, 2015, the deferred income taxes associated with the excess of the financial reporting carrying amount over the income tax basis of our direct investment in Kronos common stock was, for the first time since the fourth quarter of 2010, below such cap, in large part due to the net loss reported by Kronos in the second quarter of 2015. During the second, third and fourth quarters of 2015, we recognized an aggregate \$29.3 million non-cash income tax benefit for the reduction in the deferred income taxes required to be recognized with respect to the excess of the financial reporting carrying amount over the income tax basis of our direct investment in Kronos common stock, to the extent such reduction related to our equity in Kronos' net loss in 2015. We recognized a non-cash income tax expense of \$6.5 million in 2016 for the increase in the deferred income taxes required to be recognized with respect to the excess of the financial reporting carrying amount over the income tax basis of our direct investment in Kronos common stock, to the

extent such increase related to our equity in Kronos' net income (loss) in such periods. Our provision for income taxes in 2017 includes a provisional non-cash income tax expense of \$22.1 million for the increase in the deferred income taxes required to be recognized with respect to the excess of the financial reporting carrying amount over the income tax basis of our direct investment in Kronos common stock, to the extent such increase related to our equity in Kronos' net income in such period. Such amount is included in the table of our income tax rate reconciliation for incremental net tax on earnings and losses on non-U.S. and non-tax group companies above (in addition to the other items included in such line item in the rate reconciliation). A portion of such increase (decrease) with respect to the excess of the financial reporting carrying amount over the income tax basis of our direct investment in Kronos common stock during 2015, 2016 and 2017 related to our equity in Kronos' other comprehensive income (loss) items, and the amounts shown for income tax expense (benefit) allocated to other comprehensive income (loss) includes amounts related to our equity in Kronos' other comprehensive income (loss) items. While at the third quarter of 2017 we had reached the maximum amount of deferred income taxes we are required to recognize with respect to our direct investment in Kronos, recognition of the effects of the 2017 Tax Act, among other things, resulted in a provisional increase in the income tax basis of our direct investment in Kronos, putting us below such maximum amount at December 31, 2017.

Due to the uncertainties and complexities of the new legislation, we are still evaluating the impact of the one-time deemed repatriation of the post-1986 undistributed earnings of our non-U.S. subsidiaries up through December 31, 2017 as it relates to the income tax basis of our direct investment in Kronos. At December 31, 2017, we have recognized a deferred income tax liability with respect to our direct investment in Kronos of \$157.6 million. The maximum amount of such deferred income tax liability we would be required to have recognized (the cap) is \$173.0 million. Our deferred income tax liability with respect to our direct investment in Kronos represents an estimate and, in accordance with the guidance in SAB 118, this amount is provisional and subject to adjustment as we obtain additional information and complete our analysis of the impact of the new legislation. If such estimates change, we will recognize an adjustment in the reporting period within the measurement period in which such adjustment is determined. Such measurement period ends December 22, 2018 pursuant to the guidance under SAB 118.

Our consolidated effective income tax rate in 2018 is expected to be higher than the U.S. federal statutory rate of 21% because the income tax rates applicable to our earnings (losses) of our non-U.S. operations will be higher than the income tax rates applicable to our U.S. operations.

See Note 14 to our Consolidated Financial Statements for a tabular reconciliation of our statutory tax expense to our actual tax expense. Some of the more significant items impacting this reconciliation are summarized below.

Discontinued Operations—On January 26, 2018, we completed the sale of the Waste Management Segment to JFL-WCS Partners, LLC, an entity sponsored by certain investment affiliates of J.F. Lehman & Company, for consideration consisting of the assumption of all of the Waste Management Segment's third-party indebtedness and other liabilities. We expect to recognize a pre-tax gain of approximately \$57 million on the transaction in the first quarter of 2018 because the carrying value of the liabilities of the business assumed by the purchaser exceeded the carrying value of the assets sold in large part due to the long-lived asset impairment of \$170.6 million recognized in the second quarter of 2017 with respect to our Waste Management Segment. Such pre-tax gain will be classified as part of discontinued operations. See Note 3 to our Consolidated Financial Statements for additional information.

Noncontrolling Interest in Net Income (Loss) of Subsidiaries—Noncontrolling interest in operations of subsidiaries increased from 2017 to 2016 and from 2016 to 2015 primarily due to increased operating income at Kronos.

Related Party Transactions—We are a party to certain transactions with related parties. See Note 17 to our Consolidated Financial Statements.

Assumptions on Defined Benefit Pension Plans and OPEB Plans.

Defined Benefit Pension Plans—We maintain various defined benefit pension plans in the U.S., Europe and Canada. See Note 11 to our Consolidated Financial Statements.

Under defined benefit pension plan accounting, we recognize defined benefit pension plan expense and prepaid and accrued pension costs based on certain actuarial assumptions, principally the assumed discount rate, the assumed long-term rate of return on plan assets and the assumed increase in future compensation levels. We recognize the full funded status of our defined benefit pension plans as either an asset (for overfunded plans) or a liability (for underfunded plans) in our Consolidated Balance Sheet.

We recognized consolidated defined benefit pension plan expense of \$23.7 million in 2015, \$22.9 million in 2016, and \$29.9 million in 2017. Certain non-U.S. employees are covered by plans in their respective countries, principally in Germany, Canada and Norway. Participation in the defined benefit pension plan in Germany was closed to new participants effective in 2005. German employees hired beginning in 2005 participate in a new plan in which the retirement benefit is based upon the amount of employee

and employer contributions to the plan, but for which in accordance with German law the employer guarantees a minimum rate of return on invested assets and a guaranteed indexed lifetime benefit payment after retirement based on the participant's account balance at the time of retirement. In accordance with GAAP, the new pension plan is accounted for as a defined benefit plan, principally because of such guaranteed minimum rate of return and guaranteed lifetime benefit payment. Participation in the defined benefit plan in Canada with respect to hourly and salaried workers was closed to new participants in December 2013 and 2014, respectively, and existing hourly and salaried plan participants will no longer accrue additional defined pension benefits after December 2013 and 2014, respectively. Our U.S. plan for both NL and Kronos was closed to new participants in 1996, and existing participants no longer accrued any additional benefits after that date. The amount of funding requirements for these defined benefit pension plans is generally based upon applicable regulations (such as ERISA in the U.S.) and will generally differ from pension expense for financial reporting purposes. The amount of funding requirements for these defined benefit pension plans is generally based upon applicable regulations (such as ERISA in the U.S.), and will generally differ from pension expense recognized under GAAP for financial reporting purposes. We made contributions to all of our defined benefit pension plans of \$18.0 million in 2015, \$15.4 million in 2016, and \$17.1 million in 2017.

The discount rates we use for determining defined benefit pension expense and the related pension obligations are based on current interest rates earned on long-term bonds that receive one of the two highest ratings given by recognized rating agencies in the applicable country where the defined benefit pension benefits are being paid. In addition, we receive third-party advice about appropriate discount rates and these advisors may in some cases use their own market indices. We adjust these discount rates as of each December 31 valuation date to reflect then-current interest rates on such long-term bonds. We use these discount rates to determine the actuarial present value of the pension obligations as of December 31 of that year. We also use these discount rates to determine the interest component of defined benefit pension expense for the following year.

At December 31, 2017, approximately 65%, 15%, 7% and 8% of the projected benefit obligations related to our plans in Germany, Canada, Norway and the U.S., respectively. We use several different discount rate assumptions in determining our consolidated defined benefit pension plan obligation and expense. This is because we maintain defined benefit pension plans in several different countries in Europe and North America and the interest rate environment differs from country to country.

We used the following discount rates for our defined benefit pension plans:

	Discount rates used for:		
	Obligations at December 31, 2015 and expense in 2016	Obligations at December 31, 2016 and expense in 2017	Obligations at December 31, 2017 and expense in 2018
Kronos and NL Plans:			
Germany	2.3%	1.8%	1.8%
Canada	3.9%	3.7%	3.3%
Norway	2.8%	2.5%	2.5%
U.S.	4.1%	3.9%	3.5%

The assumed long-term rate of return on plan assets represents the estimated average rate of earnings expected to be earned on the funds invested or to be invested in the plans' assets provided to fund the benefit payments inherent in the projected benefit obligations. Unlike the discount rate, which is adjusted each year based on changes in current long-term interest rates, the assumed long-term rate of return on plan assets will not necessarily change based upon the actual short-term performance of the plan assets in any given year. Defined benefit pension expense each year is based upon the assumed long-term rate of return on plan assets for each plan, the actual fair value of the plan assets as of the beginning of the year and an estimate of the amount of contributions to and distributions from the plan during the year. Differences between the expected return on plan assets for a given year and the actual return are deferred and amortized over future periods based either upon the expected average remaining service life of the active plan participants (for plans for which benefits are still being earned by active employees) or the average remaining life expectancy of the inactive participants (for plans for which benefits are not still being earned by active employees).

At December 31, 2017, the fair value of plan assets for all defined benefit plans comprised \$46.5 million related to U.S. plans and \$445.2 million related to foreign plans. Substantially all of plan assets attributable to foreign plans related to plans maintained by Kronos, and approximately 70% and 30% of the plan assets attributable to U.S. plans related to plans maintained by NL and Kronos, respectively. At December 31, 2017, approximately 52%, 22%, 11% and 9% of the plan assets related to our plans in Germany, Canada, Norway and the U.S, respectively. We use several different long-term rates of return on plan asset assumptions in determining our consolidated defined benefit pension plan expense. This is because the plan assets in different countries are invested in a different mix of investments and the long-term rates of return for different investments differ from country to country.

In determining the expected long-term rate of return on plan asset assumptions, we consider the long-term asset mix (e.g. equity vs. fixed income) for the assets for each of our plans and the expected long-term rates of return for such asset components. In addition, we receive third-party advice about appropriate long-term rates of return. Substantially all of the assets of our U.S. plan are invested in the Combined Master Retirement Trust ("CMRT"), a collective investment trust sponsored by Contran to permit the collective investment by certain master trusts which fund certain employee benefits sponsored by Contran and certain of its affiliates, including us. Such assumed asset mixes are discussed in Note 11 to our Consolidated Financial Statements.

Our pension plan weighted average asset allocations by asset category were as follows:

	December 31, 2017			
	Germany	Canada	Norway	CMRT
Equity securities and limited partnerships	20%	23%	12%	62%
Fixed income securities	69	77	51	31
Real estate	9	—	9	—
Other	2	—	28	7
Total	100%	100%	100%	100%

	December 31, 2016			
	Germany	Canada	Norway	CMRT
Equity securities and limited partnerships	20%	37%	12%	59%
Fixed income securities	71	63	59	36
Real estate	8	—	9	—
Other	1	—	20	5
Total	100%	100%	100%	100%

We regularly review our actual asset allocation for each non-US plan and will periodically rebalance the investments in each plan to more accurately reflect the targeted allocation when considered appropriate. The CMRT trustee and investment committee do not maintain a specific target asset allocation in order to achieve their objectives, but instead they periodically change the asset mix of the CMRT based upon, among other things, advice they receive from third-party advisors and their expectations regarding potential returns for various investment alternatives and what asset mix will generate the greatest overall return while maintaining an acceptable level of risk.

The assumed long-term rates of return on plan assets used for purposes of determining net period pension cost for 2015, 2016 and 2017 were as follows:

	2015	2016	2017
Kronos and NL plans:			
Germany	4.3%	3.5%	1.3%
Canada	5.8%	5.2%	4.3%
Norway	3.8%	3.3%	3.5%
U.S.	7.5%	7.5%	7.5%

We currently expect to use the same long-term rate of return on plan asset assumptions in 2018 as we used in 2017 for purposes of determining the 2018 defined benefit pension plan expense.

To the extent that a plan's particular pension benefit formula calculates the pension benefit in whole or in part based upon future compensation levels, the projected benefit obligations and the pension expense will be based in part upon expected increases in future compensation levels. For all of our plans for which the benefit formula is so calculated, we generally base the assumed expected increase in future compensation levels upon average long-term inflation rates for the applicable country.

In addition to the actuarial assumptions discussed above, the amount of recognized defined benefit pension expense and the amount of net pension asset and net pension liability will vary based upon relative changes in currency exchange rates.

A reduction in the assumed discount rate generally results in an actuarial loss, as the actuarially-determined present value of estimated future benefit payments will increase. Conversely, an increase in the assumed discount rate generally results in an actuarial gain. In addition, an actual return on plan assets for a given year that is greater than the assumed return on plan assets results in an actuarial gain, while an actual return on plan assets that is less than the assumed return results in an actuarial loss. Other actual outcomes that differ from previous assumptions, such as individuals living longer or shorter than assumed in mortality tables, which are also used to determine the actuarially-determined present value of estimated future benefit payments, changes in such mortality

table themselves or plan amendments, will also result in actuarial losses or gains. These amounts are recognized in other comprehensive income. In addition, any actuarial gains generated in future periods would reduce the negative amortization effect of any cumulative unrecognized actuarial losses, while any actuarial losses generated in future periods would reduce the favorable amortization effect of any cumulative unrecognized actuarial gains.

During 2017, our defined benefit pension plans generated a combined net actuarial gain of \$4.0 million. This actuarial gain resulted primarily from an actual return on plan assets during 2017 greater than the expected return, partially offset by the decrease in discount rates from December 31, 2016 to December 31, 2017.

Based on the actuarial assumptions described above and our current expectations for what actual average currency exchange rates will be during 2018, we currently expect our aggregate defined benefit pension expense will approximate \$27 million in 2018. In comparison, we currently expect to be required to make approximately \$19 million of aggregate contributions to such plans during 2018.

As noted above, defined benefit pension expense and the amounts recognized as prepaid and accrued pension costs are based upon the actuarial assumptions discussed above. We believe all of the actuarial assumptions used are reasonable and appropriate. If we had lowered the assumed discount rates by 25 basis points for all of our plans as of December 31, 2017, our aggregate projected benefit obligations would have increased by approximately \$31 million at that date, and our aggregate defined benefit pension expense would be expected to increase by approximately \$2 million during 2018. Similarly, if we lowered the assumed long-term rates of return on plan assets by 25 basis points for all of our plans, our defined benefit pension expense would be expected to increase by approximately \$1 million during 2018.

OPEB Plans—We provide certain health care and life insurance benefits for certain of our eligible retired employees. See Note 11 to our Consolidated Financial Statements. At December 31, 2017, approximately 66%, 18% and 16% of our aggregate accrued OPEB costs relate to Kronos, NL and Tremont, respectively. Kronos provides such OPEB benefits to eligible retirees in the U.S. and Canada, and NL and Tremont provide such OPEB benefits to eligible retirees in the U.S. Under accounting for other postretirement employee benefits, OPEB expense and accrued OPEB costs are based on certain actuarial assumptions, principally the assumed discount rate and the assumed rate of increases in future health care costs. We recognize the full unfunded status of our OPEB plans as a liability.

Based on such actuarial assumptions and our current expectation for what actual average currency exchange rates will be during 2018, we expect our consolidated OPEB benefit will approximate \$1.0 million in 2018 and because our OPEB plans have no plan assets we will be required to contribute the entire benefit payment to such plans during 2018.

We believe that all of the actuarial assumptions used are reasonable and appropriate. However, if we had lowered the assumed discount rate by 25 basis points for all plans as of December 31, 2017, our aggregate projected benefit obligations at that date and our OPEB cost during 2018 would not be materially impacted. Similarly, a one percent assumed change in health care trend rates for all plans would not materially impact our OPEB costs.

Foreign Operations

We have substantial operations located outside the United States, principally our Chemicals Segment's operations in Europe and Canada. The functional currency of these operations is the local currency. As a result, the reported amount of our assets and liabilities related to these foreign operations will fluctuate based upon changes in currency exchange rates. At December 31, 2017, we had substantial net assets denominated in the euro, Canadian dollar and Norwegian krone.

LIQUIDITY AND CAPITAL RESOURCES

Consolidated Cash Flows

Operating Activities—

Trends in cash flows as a result of our operating income (excluding the impact of significant asset dispositions and relative changes in assets and liabilities) are generally similar to trends in our earnings. In addition to the impact of the operating, investing and financing cash flows discussed below, changes in the amount of cash, cash equivalents and restricted cash we report from year to year can be impacted by changes in currency exchange rates, since a portion of our cash, cash equivalents and restricted cash is held by our Chemicals Segment's non-U.S. subsidiaries. For example, during 2017, relative changes in currency exchange rates resulted in a \$14.4 million increase in the reported amount of our cash, cash equivalents and restricted cash compared to a \$5.3 million decrease in 2016 and an \$8.5 million decrease in 2015.

Cash flows from operating activities increased to \$259.3 million in 2017 from \$79.8 million in 2016. This \$179.5 million increase in cash provided by operations was primarily due to the net effect of the following items:

- consolidated operating income of \$362.9 million in 2017, an improvement of \$255.5 million compared to an operating income of \$107.4 million in 2016;
- higher net cash paid for income taxes in 2017 of \$42.0 million resulting from our increased profitability;
- higher net contributions to our TiO₂ manufacturing joint venture in 2017 of \$9.6 million, primarily due to the timing of the joint venture's working capital needs; and
- changes in receivables, inventories, payables and accrued liabilities in 2017 provided \$29.9 million in net cash compared to \$23.3 million in 2016, an increase in the amount of cash provided of \$6.6 million compared to 2016, primarily due to the relative changes in our inventories, receivables, prepaids, land held for development, payables and accruals.

Cash flows from operating activities increased to \$79.8 million in 2016 from \$22.1 million in 2015. This \$57.7 million increase in cash provided by operations was primarily due to the net effect of the following items:

- consolidated operating income of \$107.4 million in 2016, an improvement of \$86.3 million compared to an operating loss of \$21.1 million in 2015;
- higher net cash paid for income taxes in 2016 of \$10.1 million resulting from our increased profitability;
- lower net distributions received from our TiO₂ joint venture in 2016 of \$2.9 million, primarily due to the timing of the joint venture's working capital needs; and
- changes in receivables, inventories, payables and accrued liabilities in 2016 provided \$23.3 million in net cash compared to \$21.3 million in 2015, an increase in the amount of cash provided of \$2.0 million compared to 2015, primarily due to the relative changes in our inventories, receivables, prepaids, land held for development, payables and accruals.

Changes in working capital were affected by accounts receivable and inventory changes. As shown below:

- Kronos' average days sales outstanding ("DSO") was slightly lower from December 31, 2016 to December 31, 2017 primarily as a result of relative changes in the timing of collections.
- Kronos' average days sales in inventory ("DSI") decreased from December 31, 2016 to December 31, 2017 primarily due to lower inventory volumes.
- CompX's average DSO increased from December 31, 2016 to December 31, 2017 primarily as a result of the timing of sales and collections in the last month of 2017 as compared to 2016.
- CompX's average DSI was comparable from December 31, 2016 to December 31, 2017.

For comparative purposes, we have also provided comparable prior year numbers below.

	December 31, 2015	December 31, 2016	December 31, 2017
Kronos:			
Days sales outstanding	66 days	65 days	63 days
Days sales in inventory	80 days	71 days	62 days
CompX:			
Days sales outstanding	31 days	36 days	38 days
Days sales in inventory	76 days	79 days	79 days

We do not have complete access to the cash flows of our majority-owned subsidiaries, due in part to limitations contained in certain credit agreements of our subsidiaries and because we do not own 100% of these subsidiaries. A detail of our consolidated cash flows from operating activities is presented in the table below. Intercompany dividends have been eliminated.

	Years ended December 31,		
	2015	2016	2017
	(In millions)		
Cash provided by (used in) operating activities:			
Kronos	\$ 52.0	\$ 89.6	\$ 276.1
Valhi exclusive of subsidiaries	12.3	10.7	2.8
CompX	13.5	13.9	12.5
NL exclusive of subsidiaries	15.6	14.8	7.1
Waste Control Specialists	(12.2)	(10.7)	18.0
Tremont	(.6)	9.2	(3.4)
BMI	(1.7)	2.8	9.1
LandWell	4.8	30.9	10.9
Eliminations	(61.2)	(81.4)	(73.8)
Total	\$ 22.5	\$ 79.8	\$ 259.3

Investing Activities—

We disclose capital expenditures by our business segments in Note 2 to our Consolidated Financial Statements. All of our capitalized permit costs relate to our Waste Management Segment.

During 2017 we had net purchases of \$.7 million of marketable securities.

During 2016 we had net purchases of \$.7 million of marketable securities.

During 2015 we had net proceeds of \$1.4 million from the disposal of marketable securities.

Financing Activities –

During 2017, we:

- borrowed a net \$5.4 million on Valhi's credit facility with Contran;
- Kronos issued €400 million (\$477.6 million) aggregate principal amount of 3.75% Senior Secured Notes on September 13, 2017;
- Kronos repaid the remaining balance of \$340.4 million on its term loan;
- Kronos borrowed \$253.9 million under its North American revolving credit facility and subsequently repaid \$253.9 million; and
- repaid \$1.5 million under Tremont's promissory note payable.

During 2016, we:

- borrowed a net \$15.1 million on Valhi's credit facility with Contran;
- repaid \$3.5 million under Kronos' term loan; and

- repaid \$2.6 million under Tremont's promissory note payable.

During 2015, we:

- borrowed a net \$40.1 million on Valhi's credit facility with Contran;
- repaid \$3.5 million under Kronos' term loan; and
- repaid \$3.3 million under Tremont's promissory note payable.

We paid aggregate cash dividends on our common stock of \$27.1 million in each of 2015 and 2016 and \$27.2 million in 2017 (\$.02 per share each quarter). Distributions to noncontrolling interest in 2015, 2016 and 2017 are primarily comprised of: CompX dividends paid to shareholders other than NL; Kronos cash dividends paid to shareholders other than us and NL, and BMI and LandWell dividends paid to shareholders other than us.

Other cash flows from financing activities in 2015, 2016 and 2017 relate principally to shares of common stock issued by us and our subsidiaries upon the exercise of stock options or the issuance of shares to directors.

Outstanding Debt Obligations

At December 31, 2017, our consolidated indebtedness attributable to continuing operations was comprised of:

- Valhi's \$250 million loan from Snake River Sugar Company due in 2027;
- Valhi's \$284.3 million outstanding on its \$360 million credit facility with Contran which is due no earlier than December 31, 2018;
- €400 million aggregate outstanding on our new KII 3.75% Senior Secured Notes (\$471.1 million carrying amount, net of unamortized debt issuance costs) due in September 2025;
- Tremont's promissory note payable (\$13.1 million outstanding) due in December 2023;
- \$19.7 million on BMI's bank loan (\$18.8 million carrying amount, net of debt issuance costs), due through June 2032;
- \$2.5 million on LandWell's note payable to the City of Henderson due in October 2020; and
- approximately \$3.3 million of other indebtedness, primarily capital lease obligations.

Certain of our credit facilities require the respective borrowers to maintain a number of covenants and restrictions which, among other things, restrict our ability to incur additional debt, incur liens, pay dividends or merge or consolidate with, or sell or transfer substantially all of our assets to, another entity, and contain other provisions and restrictive covenants customary in lending transactions of this type. Certain of our credit agreements contain provisions which could result in the acceleration of indebtedness prior to their stated maturity for reasons other than defaults for failure to comply with typical financial or payment covenants. For example, certain credit agreements allow the lender to accelerate the maturity of the indebtedness upon a change of control (as defined in the agreement) of the borrower. In addition, certain credit agreements could result in the acceleration of all or a portion of the indebtedness following a sale of assets outside the ordinary course of business. Kronos' North American and European revolvers contain a number of covenants and restrictions which, among other things, restrict its ability to incur additional debt, incur liens, pay dividends or merge or consolidate with, or sell or transfer substantially all of its assets to, another entity, and contains other provisions and restrictive covenants customary in lending transactions of this type. Kronos' European revolving credit facility also requires the maintenance of certain financial ratios, and one of such requirements is based on the ratio of net debt to the last twelve months EBITDA of the borrowers. The terms of all of our debt instruments (including revolving lines of credit for which we have no outstanding borrowings at December 31, 2017) are discussed in Note 9 to our Consolidated Financial Statements. We are in compliance with all of our debt covenants at December 31, 2017. We believe that we will be able to continue to comply with the financial covenants contained in our credit facilities through their maturity; however, if future operating results differ materially from our expectations we may be unable to maintain compliance.

Future Cash Requirements

Liquidity—

Our primary source of liquidity on an ongoing basis is our cash flows from operating activities and borrowings under various lines of credit and notes. We generally use these amounts to (i) fund capital expenditures, (ii) repay short-term indebtedness incurred primarily for working capital purposes and (iii) provide for the payment of dividends (including dividends paid to us by our subsidiaries) or treasury stock purchases. From time-to-time we will incur indebtedness, generally to (i) fund short-term working capital needs, (ii) refinance existing indebtedness, (iii) make investments in marketable and other securities (including the acquisition of securities issued by our subsidiaries and affiliates) or (iv) fund major capital expenditures or the acquisition of other assets outside the ordinary course of business. Occasionally we sell assets outside the ordinary course of business, and we generally use the proceeds to (i) repay existing indebtedness (including indebtedness which may have been collateralized by the assets sold), (ii) make investments in marketable and other securities, (iii) fund major capital expenditures or the acquisition of other assets outside the ordinary course of business or (iv) pay dividends.

We routinely compare our liquidity requirements and alternative uses of capital against the estimated future cash flows we expect to receive from our subsidiaries, and the estimated sales value of those units. As a result of this process, we have in the past sought, and may in the future seek, to raise additional capital, refinance or restructure indebtedness, repurchase indebtedness in the market or otherwise, modify our dividend policies, consider the sale of our interests in our subsidiaries, affiliates, business units, marketable securities or other assets, or take a combination of these and other steps, to increase liquidity, reduce indebtedness and fund future activities. Such activities have in the past and may in the future involve related companies. From time to time we and our subsidiaries may enter into intercompany loans as a cash management tool. Such notes are structured as revolving demand notes and pay and receive interest on terms we believe are more favorable than current debt and investment market rates. The companies that borrow under these notes have sufficient borrowing capacity to repay the notes at any time upon demand. All of these notes and related interest expense and income are eliminated in our Consolidated Financial Statements.

We periodically evaluate acquisitions of interests in or combinations with companies (including our affiliates) that may or may not be engaged in businesses related to our current businesses. We intend to consider such acquisition activities in the future and, in connection with this activity, may consider issuing additional equity securities and increasing indebtedness. From time to time, we also evaluate the restructuring of ownership interests among our respective subsidiaries and related companies.

We believe we will be able to comply with the financial covenants contained in our credit facilities through their maturities; however, if future operating results differ materially from our expectations we may be unable to maintain compliance. Based upon our expectations of our operating performance, and the anticipated demands on our cash resources, we expect to have sufficient liquidity to meet our short-term (defined as the twelve-month period ending December 31, 2018) and long-term obligations (defined as the five-year period ending December 31, 2022). In this regard, see the discussion above in “*Outstanding Debt Obligations*.” If actual developments differ from our expectations, our liquidity could be adversely affected.

At December 31, 2017, we had credit available under existing facilities of \$281.6 million, which was comprised of:

- \$107.7 ⁽¹⁾ million under Kronos’ European revolving credit facility;
- \$98.2 million under Kronos’ North American revolving credit facility; and
- \$75.7 ⁽²⁾ million under Valhi’s Contran credit facility.

(1) Based on Kronos’ EBITDA over the last twelve months ending December 31, 2017, the full €90.0 million amount is available for borrowing at December 31, 2017

(2) Amounts available under this facility are at the sole discretion of Contran.

At December 31, 2017, we had an aggregate of \$470.4 million of restricted and unrestricted cash, cash equivalents and marketable securities attributable to continuing operations. A detail by entity is presented in the table below.

	Total amount	Held outside U.S.
	(In millions)	
Kronos	\$ 323.8	\$ 168.7
CompX	29.7	—
NL exclusive of its subsidiaries	73.3	.2
BMI	19.6	—
Tremont exclusive of its subsidiaries	9.0	—
LandWell	15.0	—
Total cash and cash equivalents, restricted cash and marketable securities	\$ 470.4	\$ 168.9

Following the implementation of a territorial tax system under the 2017 Tax Act, repatriation of any cash and cash equivalents held by our non-U.S. subsidiaries would not be expected to result in any material income tax liability as a result of such repatriation.

Capital Expenditures and other investments—

We currently expect our aggregate capital expenditures for 2018 will be approximately \$79 million as follows:

- \$67 million by our Chemicals Segment, including approximately \$26 million in the area of environmental compliance, protection and improvement;
- \$4 million by our Component Products Segment; and
- \$8 million by our Real Estate Management and Development Segment.

Our Waste Management Segment spent approximately \$.6 million in capitalized expenditures in 2018 prior to the sale in January. In addition LandWell expects to spend approximately \$15 million on land development costs during 2018 (which are included in the determination of cash provided by operating activities).

Capital spending for 2018 is expected to be funded primarily through cash generated from operations and borrowing under existing credit facilities. Planned capital expenditures in 2018 at Kronos and CompX will primarily be to maintain and improve the cost-effectiveness of our facilities. In addition, Kronos' capital expenditures in the area of environmental compliance, protection and improvement include expenditures which are primarily focused on increased operating efficiency but also result in improved environmental protection, such as lower emissions from our manufacturing plants.

Repurchases of our Common Stock and Common Stock of Our Subsidiaries—

We have in the past, and may in the future, make repurchases of our common stock in market or privately-negotiated transactions. At December 31, 2017 we had approximately 4.0 million shares available for repurchase of our common stock under the authorizations described in Note 16 to our Consolidated Financial Statements.

Prior to 2015, Kronos' board of directors authorized the repurchase of up to 2.0 million shares of its common stock in open market transactions, including block purchases, or in privately-negotiated transactions at unspecified prices and over an unspecified period of time. Kronos may repurchase its common stock from time to time as market conditions permit. The stock repurchase program does not include specific price targets or timetables and may be suspended at any time. Depending on market conditions, Kronos may terminate the program prior to its completion. Kronos will use cash on hand to acquire the shares. Repurchased shares will be added to Kronos' treasury and cancelled. Kronos did not make any repurchases under the plan during 2015, 2016 and 2017, and at December 31, 2017 approximately 1.95 million shares are available for repurchase.

Prior to 2015, CompX's board of directors authorized various repurchases of its Class A common stock in open market transactions, including block purchases, or in privately-negotiated transactions at unspecified prices and over an unspecified period of time. CompX may repurchase its common stock from time to time as market conditions permit. The stock repurchase program does not include specific price targets or timetables and may be suspended at any time. Depending on market conditions, CompX may terminate the program prior to its completion. CompX will generally use cash on hand to acquire the shares. Repurchased shares will be added to CompX's treasury and cancelled. CompX did not make any repurchases under the plan during 2015, 2016 and 2017, and at December 31, 2017 approximately 678,000 shares were available for purchase under these authorizations.

Dividends—

Because our operations are conducted primarily through subsidiaries and affiliates, our long-term ability to meet parent company level corporate obligations is largely dependent on the receipt of dividends or other distributions from our subsidiaries and affiliates. Kronos paid a regular dividend of \$.15 per share in each quarter of 2017 for which we received \$34.8 million. In the first quarter of 2018 Kronos announced it was increasing its regular dividend to \$.17 per share. If Kronos were to pay its \$.17 per share in each quarter of 2018 based on the 58.0 million shares we held of Kronos common stock at December 31, 2017, we would receive aggregate annual regular dividends from Kronos of \$39.4 million. NL has not paid a dividend since prior to 2015 and we do not know if we will receive any cash dividends from NL during 2018. BMI and LandWell do pay cash dividends from time to time, but the timing and amount of such dividends are uncertain. In this regard, we received aggregate dividends from BMI and LandWell of \$1.4 million in 2015, \$12.4 million in 2016 and \$5.8 million in 2017. We do not know if we will receive additional distributions from BMI and LandWell during 2018. All of our ownership interest in CompX is held through our ownership in NL, as such we do not receive any dividends from CompX. Instead any dividend paid by CompX is paid to NL.

Our subsidiaries have various credit agreements with unrelated third-party lenders which contain customary limitations on the payment of dividends, typically a percentage of net income or cash flow; however, these restrictions in the past have not significantly impacted their ability to pay dividends.

Investment in our Subsidiaries and Affiliates and Other Acquisitions—

We have in the past, and may in the future, purchase the securities of our subsidiaries and affiliates or third parties in market or privately-negotiated transactions. We base our purchase decision on a variety of factors, including an analysis of the optimal use of our capital, taking into account the market value of the securities and the relative value of expected returns on alternative investments. In connection with these activities, we may consider issuing additional equity securities or increasing our indebtedness. We may also evaluate the restructuring of ownership interests of our businesses among our subsidiaries and related companies.

We generally do not guarantee any indebtedness or other obligations of our subsidiaries or affiliates. For information on our guarantee of certain financial assurances related to WCS prior to the sale in January 2018 see Note 17 to our Consolidated Financial Statements. Our subsidiaries are not required to pay us dividends. If one or more of our subsidiaries were unable to maintain its current level of dividends, either due to restrictions contained in a credit agreement or to satisfy its liabilities or otherwise, our ability to service our liabilities or to pay dividends on our common stock could be adversely impacted. If this were to occur, we might consider reducing or eliminating our dividends or selling interests in subsidiaries or other assets. If we were required to liquidate assets to generate funds to satisfy our liabilities, we might be required to sell at what we believe would be less than what we believe is the long-term value of such assets.

WCS' primary source of liquidity consisted of intercompany borrowings from one of our wholly-owned subsidiaries under the terms of a revolving credit facility. We eliminate these intercompany borrowings in our Consolidated Financial Statements. WCS has borrowed substantial amounts from us over the years. Prior to 2015, we contributed these amounts to WCS' capital. WCS borrowed an aggregate \$19.0 million in 2015 and \$22.7 million in 2016 from our subsidiary. WCS made net repayments on the facility of \$5.2 million during 2017. In addition there was an additional \$.8 million repaid in January 2018 prior to the termination of the note which occurred concurrent with the sale when the outstanding balance of \$35.7 million was contributed to equity.

On November 14, 2016 we entered into a \$50 million revolving credit facility with a subsidiary of NL secured with approximately 35.2 million shares of the common stock of Kronos Worldwide, Inc. held by NL's subsidiary as collateral. Outstanding borrowings under the credit facility bear interest at the prime rate plus 1.875% per annum, payable quarterly, with all amounts due on December 31, 2023. The maximum principal amount which may be outstanding from time-to-time under the credit facility is limited to 50% of the amount of the most recent closing price of the Kronos stock. The credit facility contains a number of covenants and restrictions which, among other things, restrict NL's subsidiary's ability to incur additional debt, incur liens, and merge or consolidated with, or sell or transfer substantially all of NL's subsidiary's assets to, another entity, and require NL's subsidiary to maintain a minimum specified level of consolidated net worth. Upon an event of default (as defined in the credit facility), Valhi will be entitled to terminate its commitment to make further loans to NL's subsidiary, declare the outstanding loans (with interest) immediately due and payable, and exercise its rights with respect to the collateral under the Loan Documents. Such collateral rights

include, upon certain insolvency events with respect to NL's subsidiary or NL, the right to purchase all of the Kronos common stock at a purchase price equal to the aggregate market value, less amounts owing to Valhi under the Loan Documents, and up to 50% of such purchase price may be paid by Valhi in the form of an unsecured promissory note bearing interest at the prime rate plus 2.75% per annum, payable quarterly, with all amounts due no later than five years from the date of purchase, with the remainder of such purchase price payable in cash at the date of purchase. We also eliminate any such intercompany borrowings in our Consolidated Financial Statements. During 2016 NL's subsidiary borrowed \$0.5 million under this facility, no additional amounts have been borrowed, and \$0.5 million is outstanding under this facility at December 31, 2017.

We have an unsecured revolving demand promissory note with Kronos which, as amended in August 2016, provides for borrowings from Kronos of up to \$60 million. We also eliminate any such intercompany borrowings in our Consolidated Financial Statements. We had no borrowings from Kronos prior to 2017 under this facility, which as amended is due on demand, but in any event no earlier than December 31, 2019. We had gross borrowings of \$18.2 million and gross repayments of \$4.6 million from Kronos during 2017, for a total outstanding balance of \$13.6 million at December 31, 2017. We could borrow an additional \$46.4 million under our current intercompany facility with Kronos at December 31, 2017. Kronos' obligation to loan us money under this note is at Kronos' discretion.

On August 3, 2016 we entered into an unsecured revolving demand promissory note with CompX which, as amended, provides for borrowings from CompX of up to \$40 million. We eliminate these intercompany borrowings in our Condensed Consolidated Financial Statements. The facility, as amended, is due on demand, but in any event no earlier than December 31, 2019. We had gross borrowings of \$36.6 million and gross repayments of \$9.2 million from CompX for a total outstanding balance of \$27.4 million at December 31, 2016. We had gross borrowings of \$52.1 million and gross repayments of \$41.3 million from CompX for a total outstanding balance of \$38.2 million at December 31, 2017. We could borrow an additional \$1.8 million under our current intercompany facility with CompX at December 31, 2017. CompX's obligation to loan us money under this note is at CompX's discretion.

Investment in The Amalgamated Sugar Company LLC—

The terms of The Amalgamated Sugar Company LLC Company Agreement provide for an annual "base level" of cash dividend distributions (sometimes referred to as distributable cash) by the LLC of \$26.7 million, from which we are entitled to a 95% preferential share. Distributions from the LLC are dependent, in part, upon the operations of the LLC. We record dividend distributions from the LLC as income when they are declared by the LLC, which is generally the same month in which we receive the distributions, although distributions may in certain cases be paid on the first business day of the following month. To the extent the LLC's distributable cash is below this base level in any given year, we are entitled to an additional 95% preferential share of any future annual LLC distributable cash in excess of the base level until such shortfall is recovered. Based on the LLC's current projections for 2018, we expect distributions received from the LLC in 2018 will exceed our debt service requirements under our \$250 million loans from Snake River Sugar Company by approximately \$1.8 million.

We may, at our option, require the LLC to redeem our interest in the LLC, and the LLC has the right to redeem our interest in the LLC beginning in 2027. The redemption price is generally \$250 million plus the amount of certain undistributed income allocable to us, if any. In the event we require the LLC to redeem our interest in the LLC, Snake River has the right to accelerate the maturity of and call our \$250 aggregate million loans from Snake River. Redemption of our interest in the LLC would result in us reporting income related to the disposition of our LLC interest for income tax purposes, although we would not be expected to report a gain in earnings for financial reporting purposes at the time our LLC interest is redeemed. However, because of Snake River's ability to call our \$250 million loans from Snake River upon redemption of our interest in the LLC, the net cash proceeds (after repayment of the debt) generated by the redemption of our interest in the LLC could be less than the income taxes that we would be required to pay as a result of the disposition.

Off-balance Sheet Financing

We do not have any off-balance sheet financing agreements other than the operating leases discussed in Note 18 to our Consolidated Financial Statements.

Commitments and Contingencies

We are subject to certain commitments and contingencies, as more fully described in the Notes to our Consolidated Financial Statements and in this Management's Discussion and Analysis of Financial Condition and Results of Operations, including:

- certain income contingencies in various U.S. and non-U.S. jurisdictions;
- certain environmental remediation matters involving NL and BMI;

- certain litigation related to NL's former involvement in the manufacture of lead pigment and lead-based paint; and
- certain other litigation to which we are a party.

In addition to those legal proceedings described in Note 18 to our Consolidated Financial Statements, various legislation and administrative regulations have, from time to time, been proposed that seek to (i) impose various obligations on present and former manufacturers of lead pigment and lead-based paint (including NL) with respect to asserted health concerns associated with the use of such products and (ii) effectively overturn court decisions in which NL and other pigment manufacturers have been successful. Examples of such proposed legislation include bills which would permit civil liability for damages on the basis of market share, rather than requiring plaintiffs to prove that the defendant's product caused the alleged damage, and bills which would revive actions barred by the statute of limitations. While no legislation or regulations have been enacted to date that are expected to have a material adverse effect on our consolidated financial position, results of operations or liquidity, enactment of such legislation could have such an effect.

As more fully described in the Notes 9 and 18 to our Consolidated Financial Statements, we are a party to various debt, lease and other agreements which contractually and unconditionally commit us to pay certain amounts in the future. Our obligations related to the long-term supply contracts for the purchase of TiO₂ feedstock are more fully described in Note 18 to our Consolidated Financial Statements and above in "Business—Chemicals Segment—Kronos Worldwide, Inc.—Manufacturing, Operations and Properties." The following table summarizes our contractual commitments as of December 31, 2017 by the type and date of payment.

Contractual commitment	Payment due date				
	2018	2019/ 2020	2021/ 2022	2023 and after	Total
(In millions)					
Indebtedness (1):					
Principal	\$ 1.6	\$ 290.1	\$ 3.5	\$ 756.7	\$1,051.9
Interest payments	58.5	101.3	85.4	146.6	391.8
Operating leases (2)	8.3	13.2	8.4	24.9	54.8
Kronos' long-term supply contracts to purchase TiO ₂ feedstock (3)	308.2	75.2	—	—	383.4
Kronos' long-term service and other supply contracts (4)	57.0	59.0	11.7	.2	127.9
CompX's raw material and other purchase commitments (5)	9.2	8.9	.2	—	18.3
Fixed asset acquisitions (2)	16.9	—	—	—	16.9
BMI and LandWell purchase commitments (6)	11.6	—	—	—	11.6
Deferred payment obligation (7)	—	—	—	11.1	11.1
Estimated income tax obligations (8)	25.1	12.2	12.2	45.7	95.2
Total	<u>\$ 496.4</u>	<u>\$ 559.9</u>	<u>\$ 121.4</u>	<u>\$ 985.2</u>	<u>\$2,162.9</u>

- (1) The amount shown for indebtedness involving revolving credit facilities is based upon the actual amount outstanding at December 31, 2017, and the amount shown for interest for any outstanding variable-rate indebtedness is based upon the December 31, 2017 interest rate, and assumes that such variable-rate indebtedness remains outstanding until the maturity of the facility. The timing and amount shown for principal payments on indebtedness is based on the mandatory contractual principal repayments schedule of such indebtedness, and assumes no voluntary principal prepayments. See Item 7A— "Quantitative and Qualitative Disclosures About Market Risk" and Note 9 to our Consolidated Financial Statements.
- (2) The timing and amount shown for our operating leases and fixed asset acquisitions are based upon the contractual payment amount and the contractual payment date for such commitments.
- (3) Our contracts for the purchase of TiO₂ feedstock contain fixed quantities that we are required to purchase, or specify a range of quantities within which we are required to purchase based on our feedstock requirements. The pricing under these agreements is generally negotiated quarterly or semi-annually. The timing and amount shown for our commitments related to the supply contracts for TiO₂ feedstock are based upon our current estimate of the quantity of material that will be purchased in each time period shown, the payment that would be due based upon such estimated purchased quantity and an estimate of the prices for the various suppliers which is primarily based on first half 2018 pricing. The actual amount of material purchased and the actual amount that would be payable by us, may vary from such estimated amounts. Our obligation for the purchase of TiO₂ feedstock is more fully described in Note 18 to our Consolidated Financial Statements and above in "Business – Chemicals Segment – Kronos Worldwide, Inc. raw materials." The amounts shown in the table above include the feedstock ore requirements from contracts we entered into through January 2018.
- (4) The amounts shown for the long-term service and other supply contracts primarily pertain to agreements we have entered into with various providers of products or services which help to run our plant facilities (electricity, natural gas, etc.), utilizing December 31, 2017 exchange rates. See Note 18 to our Consolidated Financial Statements.
- (5) CompX's purchase obligations consist of all open purchase orders and contractual obligations (primarily commitments to purchase raw materials) and are based on the contractual payment amount and the contractual payment date for those commitments.

- (6) BMI and LandWell's purchase obligations consist of contractual obligations (primarily commitments for land development and improvement costs) and are based on the contractual payment amount and the contractual payment date for those commitments.
- (7) The deferred payment obligation is described in Note 10 to our Consolidated Financial Statements.
- (8) The amount shown for estimated tax obligations in 2018 is the consolidated amount of income taxes payable at December 31, 2017, which is assumed to be paid during 2018 and includes taxes payable, if any, to Contran as a result of our being a member of the Contran Tax Group. The amounts shown for estimated tax obligations in 2019 and thereafter relate to the Transition Tax which will be paid in the years indicated above. See Notes 1 and 14 to our Consolidated Financial Statements.

The table above does not include:

- Our obligations under the Louisiana Pigment Company, L.P. joint venture, as the timing and amount of such purchases are unknown and dependent on, among other things, the amount of TiO₂ produced by the joint venture in the future, and the joint venture's future cost of producing such TiO₂. However, the table of contractual commitments does include amounts related to our share of the joint venture's ore requirements necessary for it to produce TiO₂ for us. See Notes 7 and 17 to our Consolidated Financial Statements and "Business—Chemicals—Kronos Worldwide, Inc."
- Amounts we might pay to fund our defined benefit pension plans and OPEB plans, as the timing and amount of any such future fundings are unknown and dependent on, among other things, the future performance of defined benefit pension plan assets, interest rate assumptions and actual future retiree medical costs. Our defined benefit pension plans and OPEB plans are discussed in greater detail in Note 11 to our Consolidated Financial Statements. We currently expect we will be required to contribute an aggregate of \$20.0 million to our defined benefit pension and OPEB plans during 2018.
- Any amounts that we might pay to settle any of our uncertain tax positions classified as a noncurrent liability, as the timing and amount of any such future settlements are unknown and dependent on, among other things, the timing of tax audits. See Note 14 to our Consolidated Financial Statements.
- Any amounts due relating to our former Waste Management operations which were sold in January 2018, See Note 3 to our Consolidated Financial Statements.

We occasionally enter into raw material supply arrangements to mitigate the short-term impact of future increases in raw material costs. While these arrangements do not necessarily commit us to a minimum volume of purchase, they generally provide for stated unit prices based upon achievement of specified volume purchase levels. This allows us to stabilize raw material purchase prices to a certain extent, provided the specified minimum monthly purchase quantities are met.

Recent Accounting Pronouncements

See Note 20 to our Consolidated Financial Statements.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

General—We are exposed to market risk from changes in interest rates, currency exchange rates, raw materials and equity security prices.

Interest Rates—We are exposed to market risk from changes in interest rates, primarily related to our indebtedness.

At December 31, 2017 our aggregate indebtedness was split between 73% of fixed-rate instruments and 27% of variable-rate borrowings (in 2016 the percentages were 35% of fixed-rate instruments and 65% of variable rate borrowings). The fixed-rate debt instruments minimizes earnings volatility that would result from changes in interest rates. The following table presents principal amounts and weighted average interest rates for our aggregate outstanding indebtedness at December 31, 2017.

	<u>Indebtedness* Amount</u>		<u>Year end interest rate</u>	<u>Maturity date</u>
	<u>Carrying value</u>	<u>Fair value</u>		
	(In millions)			
Fixed-rate indebtedness:				
Valhi loans from Snake River	\$ 250.0	\$ 250.0	9.40%	2027
Kronos fixed-rate Senior Notes	471.1	495.1	3.75	2025
Tremont promissory note payable	13.1	13.1	3.00	2023
BMI bank note payable	18.8	19.7	5.34	2032
Note payable to the City of Henderson	2.5	2.5	3.00	2020
Total fixed-rate indebtedness	<u>\$ 755.5</u>	<u>\$ 780.4</u>	5.65%	
Variable-rate indebtedness:				
Valhi Contran credit facility	\$ 284.3	\$ 284.3	5.50%	2019

* Excludes capital lease obligations.

Currency Exchange Rates — We are exposed to market risk arising from changes in currency exchange rates as a result of manufacturing and selling our products worldwide. Earnings are primarily affected by fluctuations in the value of the U.S. dollar relative to the euro, the Canadian dollar, the Norwegian krone and the United Kingdom pound sterling.

The majority of our sales from non-U.S. operations are denominated in currencies other than the U.S. dollar, principally the euro, other major European currencies and the Canadian dollar. A portion of our sales generated from our non-U.S. operations is denominated in the U.S. dollar (and consequently our non-U.S. operations will generally hold U.S. dollars from time to time). Certain raw materials used worldwide, primarily titanium-containing feedstocks, are purchased primarily in U.S. dollars, while labor and other production costs are purchased primarily in local currencies. Consequently, the translated U.S. dollar value of our non-U.S. sales and operating results are subject to currency exchange rate fluctuations which may favorably or unfavorably impact reported earnings. In addition to the impact of the translation of sales and expenses over time, our non-U.S. operations also generate currency transaction gains and losses which primarily relate to (i) the difference between the currency exchange rates in effect when non-local currency sales or operating costs (primarily U.S. dollar denominated) are initially accrued and when such amounts are settled with the non-local currency, (ii) changes in currency exchange rates during time periods when our non-U.S. operations are holding non-local currency (primarily U.S. dollars), and (iii) relative changes in the aggregate fair value of currency forward contracts held from time to time.

We periodically use currency forward contracts to manage a very nominal portion of currency exchange rate risk associated with trade receivables denominated in a currency other than the holder's functional currency or similar exchange rate risk associated with future sales. We have not entered into these contracts for trading or speculative purposes in the past, nor do we currently anticipate entering into such contracts for trading or speculative purposes in the future. We are not party to any currency forward contracts at December 31, 2017.

Also, we are subject to currency exchange rate risk associated with Kronos' new Senior Notes, as such indebtedness is denominated in the euro. At December 31, 2017, we had the equivalent of \$478.6 million outstanding under Kronos' euro-denominated Senior Notes (exclusive of unamortized debt issuance costs.) The potential increase in the U.S. dollar equivalent of such indebtedness resulting from a hypothetical 10% adverse change in exchange rates at such date would be approximately \$48 million.

See Notes 1 and 19 to our Consolidated Financial Statements for a discussion of the assumptions we used to estimate the fair value of the financial instruments to which we are a party at December 31, 2016 and 2017.

Raw Materials — Our Chemicals Segment is exposed to market risk from changes in commodity prices relating to our raw materials. As discussed in Item 1 we generally enter into long-term supply agreements for certain of our raw material requirements. Many of our raw material contracts contain fixed quantities we are required to purchase, or specify a range of quantities within which

we are required to purchase. Raw material pricing under these agreements is generally negotiated quarterly or semi-annually depending upon the suppliers. For certain raw material requirements we do not have long-term supply agreements either because we have assessed the risk of the unavailability of those raw materials and/or the risk of a significant change in the cost of those raw materials to be low, or because long-term supply agreements for those raw materials are generally not available.

Our Component Products Segment will occasionally enter into short term commodity-related raw material supply arrangements to mitigate the impact of future increases in commodity-related raw material costs. We do not have long-term supply agreements for our raw material requirements because either we believe the risk of unavailability of those raw materials is low and we believe the downside risk of price volatility to be too great or because long-term supply agreements for those materials are generally not available. We do not engage in commodity raw material hedging programs.

Marketable Equity and Debt Security Prices — We are exposed to market risk due to changes in prices of the marketable securities we own. The fair value of such debt and equity securities (determined using Level 1, Level 2 and Level 3 inputs) at December 31, 2016 and 2017 was \$257.9 million and \$258.7 million, respectively. The potential change in the aggregate fair value of these investments, assuming a hypothetical 10% change in prices, would be approximately \$25.8 and \$25.9 million at December 31, 2016 and 2017, respectively.

Other — We believe there may be a certain amount of incompleteness in the sensitivity analyses presented above. For example, the hypothetical effect of changes in interest rates discussed above ignores the potential effect on other variables that affect our results of operations and cash flows, such as demand for our products, sales volumes and selling prices and operating expenses. Contrary to the above assumptions, changes in interest rates rarely result in simultaneous comparable shifts along the yield curve. Also, our investment in The Amalgamated Sugar Company LLC represents a significant portion of our total portfolio of marketable securities. That investment serves as collateral for our loans from Snake River Sugar Company, and a decrease in the fair value of that investment would likely be mitigated by a decrease in the fair value of the related indebtedness. Accordingly, the amounts we present above are not necessarily an accurate reflection of the potential losses we would incur assuming the hypothetical changes in market prices were actually to occur.

The above discussion and estimated sensitivity analysis amounts include forward-looking statements of market risk which assume hypothetical changes in market prices. Actual future market conditions will likely differ materially from such assumptions. Accordingly, such forward-looking statements should not be considered to be projections by us of future events, gains or losses.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

The information called for by this Item is contained in a separate section of this Annual Report. See “Index of Financial Statements” (page F-1).

ITEM 9. CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE

None.

ITEM 9A. CONTROLS AND PROCEDURES

Evaluation of Disclosure Controls and Procedures—

We maintain disclosure controls and procedures which, as defined in Exchange Act Rule 13a-15(e), means controls and other procedures that are designed to ensure that information required to be disclosed in the reports we file or submit to the SEC under the Securities Exchange Act of 1934, as amended (the “Act”), is recorded, processed, summarized and reported, within the time periods specified in the SEC’s rules and forms. Disclosure controls and procedures include, without limitation, controls and procedures designed to ensure that information we are required to disclose in the reports we file or submit to the SEC under the Act is accumulated and communicated to our management, including our principal executive officer and our principal financial officer, or persons performing similar functions, as appropriate to allow timely decisions to be made regarding required disclosure. Each of and Robert D. Graham, our Vice Chairman of the Board, President and Chief Executive Officer, and Gregory M. Swalwell, our Executive Vice President, Chief Financial Officer and Chief Accounting Officer, have evaluated the design and effectiveness of our disclosure controls and procedures as of December 31, 2017. Based upon their evaluation, these executive officers have concluded that our disclosure controls and procedures were effective as of the date of such evaluation.

Management’s report on internal control over financial reporting—

Our management is responsible for establishing and maintaining adequate internal control over financial reporting which, as defined by Exchange Act Rule 13a-15(f) means a process designed by, or under the supervision of, our principal executive and

principal financial officers, or persons performing similar functions, and effected by the board of directors, management and other personnel, 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, and includes those policies and procedures that:

- Pertain to the maintenance of records that in reasonable detail accurately and fairly reflect the transactions and dispositions of our assets,
- Provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with GAAP, and that receipts and expenditures are being made only in accordance with authorizations of management and directors and
- Provide reasonable assurance regarding prevention or timely detection of an unauthorized acquisition, use or disposition of assets that could have a material effect on our Consolidated Financial Statements.

Our evaluation of the effectiveness of internal control over financial reporting is based upon the criteria established in *Internal Control – Integrated Framework* issued by the Committee of Sponsoring Organizations of the Treadway Commission in 2013 (commonly referred to as the “2013 COSO” framework). Based on our evaluation under that framework, we have concluded that our internal control over financial reporting was effective as of December 31, 2017.

This annual report does not include an attestation report of our registered public accounting firm regarding internal control over financial reporting. Management’s report was not subject to attestation by our registered public accounting firm pursuant to rules of the SEC that permit us to provide only management’s report in this annual report.

Other—

As permitted by the SEC, our assessment of internal control over financial reporting excludes (i) internal control over financial reporting of equity method investees and (ii) internal control over the preparation of any financial statement schedules which would be required by Article 12 of Regulation S-X. However, our assessment of internal control over financial reporting with respect to equity method investees did include controls over the recording of amounts related to our investment that are recorded in the consolidated financial statements, including controls over the selection of accounting methods for our investments, the recognition of equity method earnings and losses and the determination, valuation and recording of our investment account balances.

Changes in internal control over financial reporting—

There has been no change to our internal control over financial reporting during the quarter ended December 31, 2017 that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

Certifications—

Our chief executive officer is required to annually file a certification with the New York Stock Exchange, or NYSE, certifying our compliance with the corporate governance listing standards of the NYSE. During 2017, our chief executive officer filed such annual certification with the NYSE. The 2017 certification was unqualified.

Our chief executive officer and chief financial officer are also required to, among other things, file quarterly certifications with the SEC regarding the quality of our public disclosures, as required by Section 302 of the Sarbanes-Oxley Act of 2002. The certifications for the quarter ended December 31, 2017 have been filed as Exhibits 31.1 and 31.2 to this Annual Report on Form 10-K.

ITEM 9B. OTHER INFORMATION

Not applicable.

PART III

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

The information required by this Item is incorporated by reference to our 2018 definitive proxy statement we will file with the SEC pursuant to Regulation 14A within 120 days after the end of the fiscal year covered by this report (the “Valhi Proxy Statement”).

ITEM 11. EXECUTIVE COMPENSATION

The information required by this Item is incorporated by reference to our 2018 proxy statement.

ITEM 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS

The information required by this Item is incorporated by reference to our 2018 proxy statement.

ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS AND DIRECTORS INDEPENDENCE

The information required by this Item is incorporated by reference to our 2018 proxy statement. See also Note 17 to our Consolidated Financial Statements.

ITEM 14. PRINCIPAL ACCOUNTING FEES AND SERVICES

The information required by this Item is incorporated by reference to our 2018 proxy statement.

PART IV

ITEM 15. EXHIBITS

(a) and (c) Financial Statements

The Registrant

Our Consolidated Financial Statements listed on the accompanying Index of Financial Statements (see page F-1) are filed as part of this Annual Report.

50%-or-less owned persons

We are not required to provide any consolidated financial statements pursuant to Rule 3-09 of Regulation S-X.

(b) Exhibits

Included as exhibits are the items listed in the Exhibit Index. We have retained a signed original of any of these exhibits that contain signatures, and we will provide such exhibit to the Commission or its staff upon request. We will furnish a copy of any of the exhibits listed below upon request and payment of \$4.00 per exhibit to cover our costs of furnishing the exhibits. Such requests should be directed to the attention of our Corporate Secretary at our corporate offices located at 5430 LBJ Freeway, Suite 1700, Dallas, Texas 75240. Pursuant to Item 601(b)(4)(iii) of Regulation S-K, we will furnish to the Commission upon request any instrument defining the rights of holders of long-term debt issues and other agreements related to indebtedness which do not exceed 10% of our consolidated total assets as of December 31, 2017.

Item No.	Exhibit Index
2.1	<u>Purchase Agreement by and between JFL-WCS Partners, LLC, as Purchaser, and Andrews County Holdings, Inc., as Seller, dated as of December 19, 2017 – incorporated by reference to Exhibit 2.1 to our Current Report on Form 8-K (File No. 1-5467) dated January 26, 2018 and filed on January 26, 2018.</u>
2.2	<u>Amendment to Purchase Agreement by and between JFL-WCS Partners, LLC, as Purchaser, and Andrews County Holdings, Inc., as Seller, dated as of January 19, 2018 – incorporated by reference to Exhibit 2.2 to our Current Report on Form 8-K (File No. 1-5467) dated January 26, 2018 and filed on January 26, 2018.</u>
3.1	<u>Restated Certificate of Incorporation of Valhi, Inc. – incorporated by reference to Exhibit 3.1 to our Current Report on Form 8-K (File no. 1-5467) dated May 10, 2013 and filed on May 10, 2012.</u>
3.2	<u>Consent Agreement dated as of March 29, 2007 between Valhi, Inc. and Contran Corporation regarding the Amended and Restated Certificate of Designations, Rights and Preferences of 6% Series A Preferred Stock of Valhi, Inc.—incorporated by reference to Exhibit 10.2 to our Current Report on Form 8-K/A (File No. 1-5467) dated March 26, 2007 and filed by us on March 30, 2007.</u>
3.3	<u>By-Laws of Valhi, Inc. as amended—incorporated by reference to Exhibit 3.1 of our Current Report on Form 8-K (File No. 1-5467) dated November 6, 2007.</u>
10.1	<u>Intercompany Services Agreement between Valhi, Inc. and Contran Corporation effective as of January 1, 2004—incorporated by reference to Exhibit 10.1 to our Quarterly Report on Form 10-Q for the quarter ended March 31, 2004.</u>
10.2	<u>Intercompany Services Agreement between Contran Corporation and NL Industries, Inc. effective as of January 1, 2004—incorporated by reference to Exhibit 10.1 to NL’s Quarterly Report on Form 10-Q (File No. 1-640) for the quarter ended March 31, 2004.</u>
10.3	<u>Intercompany Services Agreement between Contran Corporation and CompX International Inc. effective January 1, 2004—incorporated by reference to Exhibit 10.2 to CompX’s Annual Report on Form 10-K (File No. 1-13905) for the year ended December 31, 2003.</u>
10.4	<u>Intercompany Services Agreement between Contran Corporation and Kronos Worldwide, Inc. effective January 1, 2004—incorporated by reference to Exhibit No. 10.1 to Kronos’ Quarterly Report on Form 10-Q (File No. 1-31763) for the quarter ended March 31, 2004.</u>
10.5	<u>Tax Agreement between Valhi, Inc. and Contran Corporation dated June 3, 2015 —incorporated by reference to Exhibit 10.5 to our Annual Report on Form 10-K (File No. 1-5467) for the year ended December 31, 2015.</u>
10.6*	<u>Valhi, Inc. 2012 Director Stock Plan—incorporated by reference to Exhibit 4.5 of the Registration statement on Form S-8 of the Registrant (File No. 333-48391). Filed on May 31, 2012.</u>
10.7*	<u>Kronos Worldwide, Inc. 2012 Director Stock Plan—incorporated by reference to Exhibit 4.4 of the Registration statement on Form S-8 of the Registrant (File No. 333-113425). Filed on May 31, 2012.</u>
10.8*	<u>CompX International Inc. 2012 Director Stock Plan—incorporated by reference to Exhibit 4.4 of the Registration statement on Form S-8 of the Registrant (File No. 333-47539). Filed on May 31, 2012.</u>
10.9*	<u>NL Industries, Inc. 2012 Director Stock Plan—incorporated by reference to Exhibit 4.4 of the Registrant’s statement on Form S-8 (File No. 001-00640) Filed on May 31, 2012.</u>
10.10	<u>First Amended and Restated Agreement Regarding Shared Insurance among CompX International Inc., Contran Corporation, Keystone Consolidated Industries, Inc., Kronos Worldwide, Inc., NL Industries, Inc. and Valhi, Inc. dated October 15, 2015 incorporated by reference to Exhibit 10.24 to the Annual Report on Form 10-K of Kronos Worldwide, Inc. (File No. 001-31763) for the year ended December 31, 2015.</u>
10.11	Formation Agreement of The Amalgamated Sugar Company LLC dated January 3, 1997 (to be effective December 31, 1996) between Snake River Sugar Company and The Amalgamated Sugar Company—incorporated by reference to Exhibit 10.19 to Valhi, Inc.’s Annual Report on Form 10-K (File No. 1-5467) for the year ended December 31, 1996. (P)
10.12	<u>Master Agreement Regarding Amendments to The Amalgamated Sugar Company Documents dated October 19, 2000—incorporated by reference to Exhibit 10.1 to Valhi, Inc.’s Quarterly Report on Form 10-Q (File No. 1-5467) for the quarter ended September 30, 2000.</u>

Item No.	Exhibit Index
10.13	Reserved.
10.14	<u>Amended and Restated Company Agreement of The Amalgamated Sugar Company LLC dated June 3, 2016 (to be effective as of January 1, 2016) among The Amalgamated Sugar Company LLC, Snake River Sugar Company and The Amalgamated Collateral Trust—incorporated by reference to Exhibit No. 10.1 to Valhi, Inc.’s Current Report on Form 8-K (File No. 1-5467) dated June 3, 2016.</u>
10.15	Subordinated Promissory Note in the principal amount of \$37.5 million between Valhi, Inc. and Snake River Sugar Company, and the related Pledge Agreement, both dated January 3, 1997— incorporated by reference to Exhibit 10.21 to Valhi, Inc.’s Annual Report on Form 10-K (File No. 1-5467) for the year ended December 31, 1996. (P)
10.16	Limited Recourse Promissory Note in the principal amount of \$212.5 million between Valhi, Inc. and Snake River Sugar Company, and the related Limited Recourse Pledge Agreement, both dated January 3, 1997—incorporated by reference to Exhibit 10.22 to Valhi, Inc.’s Annual Report on Form 10-K (File No. 1-5467) for the year ended December 31, 1996. (P)
10.17	Deposit Trust Agreement related to the Amalgamated Collateral Trust among ASC Holdings, Inc. and Wilmington Trust Company dated May 14, 1997—incorporated by reference to Exhibit 10.2 to Valhi, Inc.’s Quarterly Report on Form 10-Q (File No. 1-5467) for the quarter ended June 30, 1997. (P)
10.18	First Amendment to Deposit Trust Agreement dated October 14, 2005 among ASC Holdings, Inc. and Wilmington Trust Company—incorporated by reference to Exhibit No. 10.2 to Valhi, Inc.’s Amendment No. 1 to its Current Report on Form 8-K (File No. 1-5467) dated October 18, 2005. (P)
10.19	Pledge Agreement between The Amalgamated Collateral Trust and Snake River Sugar Company dated May 14, 1997—incorporated by reference to Exhibit 10.3 to Valhi, Inc.’s Quarterly Report on Form 10-Q (File No. 1-5467) for the quarter ended June 30, 1997. (P)
10.20	Second Pledge Amendment (SPT) dated October 14, 2005 among The Amalgamated Collateral Trust and Snake River Sugar Company —incorporated by reference to Exhibit No. 10.4 to Valhi, Inc.’s Amendment No. 1 to its Current Report on Form 8-K (File No. 1-5467) dated October 18, 2005. (P)
10.21	Guarantee by The Amalgamated Collateral Trust in favor of Snake River Sugar Company dated May 14, 1997—incorporated by reference to Exhibit 10.4 to Valhi, Inc.’s Quarterly Report on Form 10-Q (File No. 1-5467) for the quarter ended June 30, 1997. (P)
10.22	Second SPT Guaranty Amendment dated October 14, 2005 among The Amalgamated Collateral Trust and Snake River Sugar Company —incorporated by reference to Exhibit No. 10.5 to Valhi, Inc.’s Amendment No. 1 to its Current Report on Form 8-K (File No. 1-5467) dated October 18, 2005. (P)
10.23	Voting Rights and Collateral Deposit Agreement among Snake River Sugar Company, Valhi, Inc., and First Security Bank, National Association dated May 14, 1997—incorporated by reference to Exhibit 10.8 to Valhi, Inc.’s Quarterly Report on Form 10-Q (File No. 1-5467) for the quarter ended June 30, 1997. (P)
10.24	Option Agreement dated October 14, 2005 among Valhi, Inc., Snake River Sugar Company, Northwest Farm Credit Services, FLCA and U.S. Bank National Association—incorporated by reference to Exhibit No. 10.6 to Valhi, Inc.’s Amendment No. 1 to its Current Report on Form 8-K (File No. 1-5467) dated October 18, 2005. (P)
10.25	First Amendment to Option Agreements among Snake River Sugar Company, Valhi Inc., and the holders of Snake River’s 10.9% Senior Notes Due 2009 dated October 19, 2000—incorporated by reference to Exhibit 10.8 to the Valhi, Inc.’s Quarterly Report on Form 10-Q (File No. 1-5467) for the quarter ended September 30, 2000. (P)
10.26	Formation Agreement dated as of October 18, 1993 among Tioxide Americas Inc., Kronos Louisiana, Inc. and Louisiana Pigment Company, L.P.—incorporated by reference to Exhibit 10.2 of NL’s Quarterly Report on Form 10-Q (File No. 1-640) for the quarter ended September 30, 1993. (P)
10.27	Joint Venture Agreement dated as of October 18, 1993 between Tioxide Americas Inc. and Kronos Louisiana, Inc.—incorporated by reference to Exhibit 10.3 of NL’s Quarterly Report on Form 10-Q (File No. 1-640) for the quarter ended September 30, 1993. (P)
10.28	Kronos Offtake Agreement dated as of October 18, 1993 by and between Kronos Louisiana, Inc. and Louisiana Pigment Company, L.P. —incorporated by reference to Exhibit 10.4 of NL’s Quarterly Report on Form 10-Q (File No. 1-640) for the quarter ended September 30, 1993. (P)

Item No.	Exhibit Index
10.29	Amendment No. 1 to Kronos Offtake Agreement dated as of December 20, 1995 between Kronos Louisiana, Inc. and Louisiana Pigment Company, L.P.—incorporated by reference to Exhibit 10.22 of NL's Annual Report on Form 10-K (File No. 1-640) for the year ended December 31 1995. (P)
10.30	Allocation Agreement dated as of October 18, 1993 between Tioxide Americas Inc., ICI American Holdings, Inc., Kronos Worldwide, Inc. (f/k/a Kronos, Inc.) and Kronos Louisiana, Inc.—incorporated by reference to Exhibit 10.10 to NL's Quarterly Report on Form 10-Q (File No. 1-640) for the quarter ended September 30, 1993. (P)
10.31	Lease Contract dated June 21, 1952, between Farbenfabriken Bayer Aktiengesellschaft and Titangesellschaft mit beschränkter Haftung (German language version and English translation thereof)—incorporated by reference to Exhibit 10.14 of NL's Annual Report on Form 10-K (File No. 1-640) for the year ended December 31, 1985. (P)
10.32	<u>Restated and Amended Agreement by and between Richards Bay Titanium (Proprietary) Limited (acting through its sales agent Rio Tinto Iron & Titanium Limited) and Kronos (US), Inc. effective January 1, 2016 – incorporated by reference to Exhibit 10.26 to the Annual Report on Form 10-K of Kronos Worldwide, Inc. (File No. 001-31763) for the year ended December 31, 2015.</u>
10.33	<u>Credit Agreement, dated February 18, 2014, by and among Kronos Worldwide, Inc. and Deutsche Bank AG New York Branch - incorporated by reference to Exhibit 10.1 of the Current Report on Form 8-K and filed by Kronos Worldwide, Inc. (File No. 001-31763) dated February 18, 2014 and filed by the registrant on February 18, 2014.</u>
10.34	<u>First Amendment to Credit Agreement dated May 21, 2015 among Kronos Worldwide, Inc., Deutsche Bank AG New York Branch, as Administrative Agent, and the lenders a party thereto - incorporated by reference to Exhibit 10.1 to the current report on Form 8-K and filed by Kronos Worldwide, Inc. (File No. 001-31763) dated May 21, 2015 and filed by the registrant on May 21, 2015.</u>
10.35	<u>Guaranty and Security Agreement, dated February 18, 2014, among Kronos Worldwide, Inc., Kronos Louisiana, Inc., Kronos (US), Inc., Kronos International, Inc. and Deutsche Bank AG New York Branch - incorporated by reference to Exhibit 10.2 to the Current Report on Form 8-K (File No. 001-31763) dated February 18, 2014 and filed by and filed by Kronos Worldwide, Inc. on February 18, 2014.</u>
10.36	<u>Intercreditor Agreement dated as of February 18, 2014, by and between Wells Fargo Capital Finance and Deutsche Bank AG New York Branch, and acknowledged by Kronos Worldwide, Inc., Kronos Louisiana, Inc. and Kronos (US), Inc. - incorporated by reference to Exhibit 10.3 to the Current Report on Form 8-K (File No. 001-31763) dated February 18, 2014 and filed by and filed by Kronos Worldwide, Inc. on February 18, 2014.</u>
10.37	<u>Indenture, dated as of September 13, 2017, among Kronos International, Inc. the guarantors named therein, and Deutche Bank Trust Company Americas, as trustee, collateral agent, paying agent, transfer agent and registrar – incorporated by reference to Exhibit 4.1 to the Current Report on Form 8-K (File No. 001-31763) dated September 13, 2017 and filed by Kronos Worldwide, Inc. on September 13, 2017.</u>
10.38	<u>Pledge Agreement, dated as of September 13, 2017, among Kronos International, Inc. the guarantors named therein and Deutche Bank Trust Company Americas, as collateral agent – incorporate by reference to Exhibit 4.2 to the Current Report on Form 8-K (File No. 001-31763) dated September 13, 2017 and filed by Kronos Worldwide, Inc. on September 13, 2017.</u>
10.39**	<u>Eleventh Amended and Restated Unsecured Revolving Demand Promissory Note dated December 31, 2017 in the principal amount of \$360.0 million executed by Valhi, Inc. and payable to the order of Contran Corporation.</u>
21.1**	<u>Subsidiaries of Valhi, Inc.</u>
23.1**	<u>Consent of PricewaterhouseCoopers LLP with respect to Valhi's Consolidated Financial Statements</u>
31.1**	<u>Certification</u>
31.2**	<u>Certification</u>
32.1**	<u>Certification</u>
101.INS **	XBRL Instance Document
101.SCH **	XBRL Taxonomy Extension Schema
101.CAL **	XBRL Taxonomy Extension Calculation Linkbase
101.DEF **	XBRL Taxonomy Extension Definition Linkbase
101.LAB **	XBRL Taxonomy Extension Label Linkbase

101.PRE ** XBRL Taxonomy Extension Presentation Linkbase

* Management contract, compensatory plan or agreement.

** Filed herewith.

+ Exhibit 3.1 is restated for the purposes of the disclosure requirements of Item 601 of Regulation S-K promulgated by the U.S. Securities and Exchange Commission and does not represent a restated certificate of incorporation that has been filed with the Delaware Secretary of State.

(P) Paper exhibits.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the Registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

VALHI, INC.
(Registrant)

By: /s/ Robert D. Graham
Robert D. Graham, March 15, 2018
(Vice Chairman of the Board, President and Chief Executive Officer)

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the Registrant and in the capacities and on the dates indicated:

<u>/s/ Loretta J. Feehan</u> Loretta J. Feehan, March 15, 2018 (Chair of the Board (non-executive))	<u>/s/ Robert D. Graham</u> Robert D. Graham, March 15, 2018 (Vice Chairman of the Board, President and Chief Executive Officer)
<u>/s/ Thomas E. Barry</u> Thomas E. Barry, March 15, 2018 (Director)	<u>/s/ Gregory M. Swalwell</u> Gregory M. Swalwell, March 15, 2018 (Executive Vice President, Chief Financial Officer and Chief Accounting Officer)
<u>/s/ Elisabeth C. Fisher</u> Elisabeth C. Fisher, March 15, 2018 (Director)	<u>/s/ Amy Allbach Samford</u> Amy Allbach Samford, March 15, 2018 (Vice President and Controller)
<u>/s/ W. Hayden McIlroy</u> W. Hayden McIlroy, March 15, 2018 (Director)	
<u>/s/ Mary A. Tidlund</u> Mary A. Tidlund, March 15, 2018 (Director)	

Annual Report on Form 10-K

Items 8, 15(a) and 15(c)

Index of Financial Statements

Financial Statements

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We have omitted all financial statement schedules because they are not applicable or the required amounts are either not material or are presented in the Notes to the Consolidated Financial Statements.

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Stockholders and Board of Directors of Valhi, Inc.

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of Valhi, Inc. and its subsidiaries as of December 31, 2017 and 2016, and the related consolidated statements of operations, comprehensive income (loss), stockholders' equity and cash flows for each of the three years in the period ended December 31, 2017, including the related notes (collectively referred to as the "consolidated financial statements"). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2017 and 2016, and the results of their operations and their cash flows for each of the three years in the period ended December 31, 2017 in conformity with accounting principles generally accepted in the United States of America.

Basis for Opinion

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

We conducted our audits of these consolidated financial statements in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud. The Company is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. As part of our audits we are required to obtain an understanding of internal control over financial reporting but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control over financial reporting. Accordingly, we express no such opinion.

Our audits 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. We believe that our audits provide a reasonable basis for our opinion.

/s/ PricewaterhouseCoopers LLP
Dallas, Texas
March 15, 2018

We have served as the Company's auditor since 1987.

VALHI, INC. AND SUBSIDIARIES
CONSOLIDATED BALANCE SHEETS
(In millions)

	December 31,	
	2016	2017
ASSETS		
Current assets:		
Cash and cash equivalents	\$ 159.7	\$ 435.7
Restricted cash equivalents	12.5	16.1
Marketable securities	4.4	3.0
Accounts and other receivables, net	254.3	332.7
Refundable income taxes	1.0	.5
Receivable from affiliates	3.2	32.6
Land held for development	10.9	16.5
Inventories, net	359.2	398.4
Other current assets	15.0	15.5
Current assets of discontinued operations	17.2	11.2
Total current assets	<u>837.4</u>	<u>1,262.2</u>
Other assets:		
Marketable securities	253.5	255.7
Investment in TiO ₂ manufacturing joint venture	78.9	86.5
Goodwill	379.7	379.7
Deferred income taxes	—	119.8
Pension asset	1.6	4.2
Other assets	164.7	169.9
Noncurrent assets of discontinued operations	211.4	40.8
Total other assets	<u>1,089.8</u>	<u>1,056.6</u>
Property and equipment:		
Land	42.8	47.0
Buildings	237.5	261.6
Equipment	1,008.5	1,150.8
Mining properties	35.1	35.0
Construction in progress	41.8	58.3
	<u>1,365.7</u>	<u>1,552.7</u>
Less accumulated depreciation	849.7	964.0
Net property and equipment	<u>516.0</u>	<u>588.7</u>
Total assets	<u>\$ 2,443.2</u>	<u>\$ 2,907.5</u>

VALHI, INC. AND SUBSIDIARIES
CONSOLIDATED BALANCE SHEETS (CONTINUED)
(In millions, except share data)

	December 31,	
	2016	2017
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Current maturities of long-term debt	\$ 4.5	\$ 1.6
Accounts payable	92.8	116.1
Accrued liabilities	125.4	124.8
Payable to affiliates	20.2	16.2
Income taxes	5.1	25.1
Current liabilities of discontinued operations	46.1	47.3
Total current liabilities	294.1	331.1
Noncurrent liabilities:		
Long-term debt	889.3	1,041.5
Deferred income taxes	278.1	183.2
Payable to affiliates	—	70.1
Accrued pension costs	240.2	266.4
Accrued environmental remediation and related costs	107.3	110.7
Accrued postretirement benefits costs	11.1	11.3
Other liabilities	84.5	73.6
Noncurrent liabilities of discontinued operations	94.2	52.9
Total noncurrent liabilities	1,704.7	1,809.7
Equity:		
Valhi stockholders' equity:		
Preferred stock, \$.01 par value; 5,000 shares authorized; 5,000 shares issued	667.3	667.3
Common stock, \$.01 par value; 500.0 million shares authorized; 355.3 million shares issued and outstanding	3.6	3.6
Additional paid-in capital	—	—
Retained deficit	(198.5)	(17.9)
Accumulated other comprehensive loss	(221.9)	(179.0)
Treasury stock, at cost—13.2 million shares	(49.6)	(49.6)
Total Valhi stockholders' equity	200.9	424.4
Noncontrolling interest in subsidiaries	243.5	342.3
Total equity	444.4	766.7
Total liabilities and equity	\$ 2,443.2	\$ 2,907.5

Commitments and contingencies (Notes 9, 14, 17 and 18)

See accompanying Notes to Consolidated Financial Statements.

VALHI, INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF OPERATIONS
(In millions, except per share data)

	Years ended December 31,		
	2015	2016	2017
Revenues and other income:			
Net sales	\$ 1,487.9	\$ 1,519.4	\$ 1,879.4
Other income, net	31.9	39.0	25.2
Total revenues and other income	1,519.8	1,558.4	1,904.6
Costs and expenses:			
Cost of sales	1,259.5	1,219.2	1,277.4
Selling, general and administrative	248.6	236.4	269.4
Contract related intangible asset impairment	—	5.1	—
Loss on prepayment of debt	—	—	7.1
Interest	53.6	58.1	58.9
Total costs and expenses	1,561.7	1,518.8	1,612.8
Income (loss) from continuing operations before income taxes	(41.9)	39.6	291.8
Income tax expense (benefit)	107.5	18.6	(120.0)
Net income (loss) from continuing operations	(149.4)	21.0	411.8
Loss from discontinued operations, net of tax	(21.7)	(24.0)	(109.2)
Net income (loss)	(171.1)	(3.0)	302.6
Noncontrolling interest in net income (loss) of subsidiaries	(37.5)	12.9	95.1
Net income (loss) attributable to Valhi stockholders	\$ (133.6)	\$ (15.9)	\$ 207.5
Amounts attributable to Valhi stockholders:			
Income (loss) from continuing operations	\$ (111.9)	\$ 8.1	\$ 316.7
Loss from discontinued operations	(21.7)	(24.0)	(109.2)
Net income (loss) attributable to Valhi stockholders	\$ (133.6)	\$ (15.9)	\$ 207.5
Basic and diluted net income (loss) per share:			
Income (loss) from continuing operations	\$ (.33)	\$.02	\$.93
Loss from discontinued operations	(.06)	(.07)	(.32)
Net income (loss) per share	\$ (.39)	\$ (.05)	\$.61
Cash dividends per share	\$.08	\$.08	\$.08
Basic and diluted weighted average shares outstanding	342.0	342.0	342.0

See accompanying Notes to Consolidated Financial Statements.

VALHI, INC. AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME (LOSS)

(In millions)

	Years ended December 31,		
	2015	2016	2017
Net income (loss)	\$ (171.1)	\$ (3.0)	\$ 302.6
Other comprehensive income (loss), net of tax:			
Currency translation	(77.0)	(14.5)	47.9
Interest rate swap	(1.8)	.2	1.5
Marketable securities	(7.5)	4.0	5.0
Defined benefit pension plans	12.6	(19.7)	11.0
Other postretirement benefit plans	(.7)	(.9)	(.8)
Total other comprehensive income (loss), net	(74.4)	(30.9)	64.6
Comprehensive income (loss)	(245.5)	(33.9)	367.2
Comprehensive income (loss) attributable to noncontrolling interest	(63.5)	(6.9)	116.8
Comprehensive income (loss) attributable to Valhi stockholders	\$ (182.0)	\$ (40.8)	\$ 250.4

See accompanying Notes to Consolidated Financial Statements.

VALHI, INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY
Years ended December 31, 2015, 2016 and 2017

(In millions)

	Valhi Stockholders' Equity						Non-controlling interest	Total equity
	Preferred stock	Common stock	Additional paid-in capital	Retained earnings (deficit)	Accumulated other comprehensive income (loss)	Treasury stock		
Balance at December 31, 2014	\$ 667.3	\$ 3.6	—	\$ 4.9	\$ (148.6)	\$ (49.6)	\$ 336.3	\$ 813.9
Net loss	—	—	—	(133.6)	—	—	(37.5)	(171.1)
Cash dividends	—	—	(.2)	(26.9)	—	—	(14.6)	(41.7)
Other comprehensive loss, net	—	—	—	—	(48.4)	—	(26.0)	(74.4)
Equity transactions with noncontrolling interest, net	—	—	.2	—	—	—	—	.2
Balance at December 31, 2015	667.3	3.6	—	(155.6)	(197.0)	(49.6)	258.2	526.9
Net income (loss)	—	—	—	(15.9)	—	—	12.9	(3.0)
Cash dividends	—	—	(.2)	(26.9)	—	—	(21.6)	(48.7)
Other comprehensive loss, net	—	—	—	—	(24.9)	—	(6.0)	(30.9)
Equity transactions with noncontrolling interest, net	—	—	.2	(.1)	—	—	—	.1
Balance at December 31, 2016	667.3	3.6	—	(198.5)	(221.9)	(49.6)	243.5	444.4
Net income	—	—	—	207.5	—	—	95.1	302.6
Cash dividends	—	—	(.3)	(26.9)	—	—	(18.1)	(45.3)
Other comprehensive income, net	—	—	—	—	42.9	—	21.7	64.6
Equity transactions with noncontrolling interest, net	—	—	.3	—	—	—	.1	.4
Balance at December 31, 2017	\$ 667.3	\$ 3.6	\$ —	\$ (17.9)	\$ (179.0)	\$ (49.6)	\$ 342.3	\$ 766.7

See accompanying Notes to Consolidated Financial Statements.

VALHI, INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CASH FLOWS
(In millions)

	Years ended December 31,		
	2015	2016	2017
Cash flows from operating activities:			
Net income (loss)	\$ (171.1)	\$ (3.0)	\$ 302.6
Depreciation and amortization	69.9	67.5	59.0
Net (gain) loss from:			
Securities transactions, net	—	(.5)	(.1)
Disposal of property and equipment, net	.8	.3	.5
Noncash interest expense	2.5	2.6	2.5
Benefit plan expense greater than cash funding	2.9	4.6	10.5
Deferred income taxes	85.7	(39.1)	(293.2)
Loss on prepayment of debt	—	—	7.1
Payment for termination of interest rate swap contract	—	—	(3.3)
Long-lived asset impairment	—	—	170.6
Distributions from (contributions to) TiO ₂ manufacturing joint venture, net	6.5	3.6	(6.0)
Contract related intangible asset impairment	—	5.1	—
Other, net	7.8	1.9	—
Change in assets and liabilities:			
Accounts and other receivables, net	22.2	(47.4)	(47.5)
Land held for development, net	7.1	18.3	6.6
Inventories, net	(8.4)	39.6	(5.5)
Accounts payable and accrued liabilities	(14.3)	(.3)	12.9
Income taxes	(.9)	3.7	19.5
Accounts with affiliates	17.1	13.8	35.2
Other noncurrent assets	(2.5)	.1	(.9)
Other noncurrent liabilities	2.7	(3.8)	3.7
Other, net	(5.9)	12.8	(14.9)
Net cash provided by operating activities	<u>22.1</u>	<u>79.8</u>	<u>259.3</u>

VALHI, INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CASH FLOWS (CONTINUED)
(In millions)

	Years ended December 31,		
	2015	2016	2017
Cash flows from investing activities:			
Capital expenditures	\$ (54.6)	\$ (58.9)	\$ (71.3)
Capitalized permit costs	(1.3)	(1.5)	(2.2)
Purchases of marketable securities	(13.6)	(11.4)	(9.7)
Proceeds from disposal of marketable securities	15.0	10.7	9.0
Other, net	.4	(.5)	(.2)
Net cash used in investing activities	<u>(54.1)</u>	<u>(61.6)</u>	<u>(74.4)</u>
Cash flows from financing activities:			
Indebtedness:			
Borrowings	84.9	312.2	748.1
Principal payments	(53.4)	(309.0)	(600.2)
Deferred financing costs paid	—	—	(9.0)
Valhi cash dividends paid	(27.1)	(27.1)	(27.2)
Distributions to noncontrolling interest in subsidiaries	(15.0)	(21.6)	(18.1)
Net cash provided by (used in) financing activities	<u>(10.6)</u>	<u>(45.5)</u>	<u>93.6</u>
Net increase (decrease)	<u>\$ (42.6)</u>	<u>\$ (27.3)</u>	<u>\$ 278.5</u>
Cash, cash equivalents and restricted cash and cash equivalents – net change from			
Operating, investing and financing activities	\$ (42.6)	\$ (27.3)	\$ 278.5
Effect of exchange rates on cash	(8.5)	(5.3)	14.4
Net change for the year	<u>(51.1)</u>	<u>(32.6)</u>	<u>292.9</u>
Balance at beginning of year	280.2	229.1	196.5
Balance at end of year	<u>\$ 229.1</u>	<u>\$ 196.5</u>	<u>\$ 489.4</u>
Supplemental disclosures:			
Cash paid for:			
Interest, net of amounts capitalized	\$ 56.6	\$ 60.8	\$ 59.3
Income taxes, net	10.2	20.3	62.3
Noncash investing activities:			
Changes in accruals for capital expenditures	6.7	8.0	9.4
Noncash financing activities:			
Borrowings paid directly to lender to settle refinanced indebtedness	—	—	9.3
Principal payments paid directly by lender	—	—	(8.4)
Borrowings paid directly to lender for debt issuance costs	—	—	(.9)

See accompanying Notes to Consolidated Financial Statements.

VALHI, INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
December 31, 2017

Note 1—Summary of significant accounting policies:

Nature of our business. Valhi, Inc. (NYSE: VHI) is primarily a holding company. We operate through our wholly-owned and majority-owned subsidiaries, including NL Industries, Inc., Kronos Worldwide, Inc., CompX International Inc., Tremont LLC, Basic Management, Inc. (“BMI”) and The LandWell Company (“LandWell”). Kronos (NYSE: KRO), NL (NYSE: NL), and CompX (NYSE MKT: CIX) each file periodic reports with the Securities and Exchange Commission (“SEC”). In January 2018, we sold Waste Control Specialists LLC (“WCS”), see Note 3.

Organization. We are majority owned by a wholly-owned subsidiary of Contran Corporation (“Contran”), which owns approximately 93% of our outstanding common stock at December 31, 2017. All of Contran's outstanding voting stock is held by a family trust established for the benefit of Lisa K. Simmons and Serena Simmons Connelly and their children, for which Ms. Simmons and Ms. Connelly are co-trustees, or is held directly by Ms. Simmons and Ms. Connelly or entities related to them. Consequently, Ms. Simmons and Ms. Connelly may be deemed to control Contran and us.

Unless otherwise indicated, references in this report to “we,” “us” or “our” refer to Valhi, Inc. and its subsidiaries, taken as a whole.

Management’s estimates. The preparation of our Consolidated Financial Statements in conformity with accounting principles generally accepted in the United States of America (“GAAP”), requires us to make estimates and assumptions that affect the reported amounts of our assets and liabilities and disclosures of contingent assets and liabilities at each balance sheet date and the reported amounts of our revenues and expenses during each reporting period. Actual results may differ significantly from previously-estimated amounts under different assumptions or conditions.

Principles of consolidation. Our Consolidated Financial Statements include the financial position, results of operations and cash flows of Valhi and our majority-owned and wholly-owned subsidiaries. We eliminate all material intercompany accounts and balances. Changes in ownership are accounted for as equity transactions with no gain or loss recognized on the transaction unless there is a change in control. See Note 3.

Foreign currency translation. The financial statements of our foreign subsidiaries are translated to U.S. dollars. The functional currency of our foreign subsidiaries is generally the local currency of the country. Accordingly, we translate the assets and liabilities at year-end rates of exchange, while we translate their revenues and expenses at average exchange rates prevailing during the year. We accumulate the resulting translation adjustments in stockholders’ equity as part of accumulated other comprehensive income (loss), net of related deferred income taxes and noncontrolling interest. We recognize currency transaction gains and losses in income.

Derivatives and hedging activities. We recognize derivatives as either an asset or liability measured at fair value in accordance with Accounting Standards Codification (“ASC”) Topic 815, *Derivatives and Hedging*. We recognize the effect of changes in the fair value of derivatives either in net income or other comprehensive income (loss), depending on the intended use of the derivative. See Note 19.

Cash and cash equivalents. We classify bank time deposits and government and commercial notes and bills with original maturities of three months or less as cash equivalents.

Restricted cash and cash equivalents. We classify cash and cash equivalents that have been segregated or are otherwise limited in use as restricted. Such restrictions principally include amounts pledged as collateral with respect to performance obligations or letters of credit required by regulatory agencies for various environmental remediation sites, cash held in escrow under various hold-back agreements with third-party homebuilders associated with our Real Estate Management and Development Segment, cash pledged under debt agreement covenants and cash held in trust by our insurance brokerage subsidiary pending transfer to the applicable insurance or reinsurance carrier. To the extent the restricted amount relates to a recognized liability, we classify the restricted amount as current or noncurrent according to the corresponding liability. To the extent the restricted amount does not relate to a recognized liability, we classify restricted cash as a current asset. Restricted cash and cash equivalents classified as a current asset are presented separately on our Consolidated Balance Sheets, and restricted cash and cash equivalents classified as a noncurrent asset are presented as a component of other assets on our Consolidated Balance Sheets, as disclosed in Note 7.

Marketable securities and securities transactions. We carry marketable debt and equity securities at fair value. ASC Topic 820, *Fair Value Measurements and Disclosures*, establishes a consistent framework for measuring fair value and (with certain exceptions) this framework is generally applied to all financial statement items required to be measured at fair value. The standard requires fair value measurements to be classified and disclosed in one of the following three categories:

- *Level 1*—Unadjusted quoted prices in active markets that are accessible at the measurement date for identical, unrestricted assets or liabilities;
- *Level 2*—Quoted prices in markets that are not active, or inputs which are observable, either directly or indirectly, for substantially the full term of the assets or liability; and
- *Level 3*—Prices or valuation techniques that require inputs that are both significant to the fair value measurement and unobservable.

We recognize unrealized and realized gains and losses on trading securities in income. We accumulate unrealized gains and losses on available-for-sale securities as part of accumulated other comprehensive income (loss), net of related deferred income taxes and noncontrolling interest. Realized gains and losses are based on specific identification of the securities sold.

Accounts receivable. We provide an allowance for doubtful accounts for known and estimated potential losses arising from our sales to customers based on a periodic review of these accounts.

Inventories and cost of sales. We state inventories at the lower of cost or net realizable value. We generally base inventory costs for all inventory categories on average cost that approximates the first-in, first-out method. Inventories include the costs for raw materials, the cost to manufacture the raw materials into finished goods and overhead. Depending on the inventory's stage of completion, our manufacturing costs can include the costs of packing and finishing, utilities, maintenance, depreciation, shipping and handling, and salaries and benefits associated with our manufacturing process. We allocate fixed manufacturing overhead costs based on normal production capacity. Unallocated overhead costs resulting from periods with abnormally low production levels are charged to expense as incurred. As inventory is sold to third parties, we recognize the cost of sales in the same period the sale occurs. We periodically review our inventory for estimated obsolescence or instances when inventory is no longer marketable for its intended use, and we record any write-down equal to the difference between the cost of inventory and its estimated net realizable value based on assumptions about alternative uses, market conditions and other factors.

Land held for development. Land held for development relates to BMI and LandWell, for which we gained a controlling interest prior to 2015. The primary asset of LandWell is certain real property in Henderson, Nevada some of which we are developing for residential lots in a master planned community. Land held for development was recorded at the estimated acquisition date fair value based on a value per developable acre at the time of purchase. Development costs, including infrastructure improvements, real estate taxes, capitalized interest and other costs, some of which may be allocated, are capitalized during the period incurred. We allocate costs to each parcel sold on a pro-rata basis associated with the relevant development activity, and the costs allocated to parcels expected to be sold within one year are presented separately in current assets on our Consolidated Balance Sheets. As land parcels are sold, costs of land sales, including land and development costs, are allocated based on specific identification, relative sales value, square footage or a combination of these methods. All sales and marketing activities and general overhead are charged to selling, general and administrative expense as incurred.

Investment in TiO₂ manufacturing joint venture. We account for our investment in a 50%-owned manufacturing joint venture by the equity method. Distributions received from such investee are classified for statement of cash flow purposes using the "nature of distribution" approach under ASC Topic 230. See Note 7.

Goodwill and other intangible assets; amortization expense. Goodwill represents the excess of cost over fair value of individual net assets acquired in business combinations. Goodwill is not subject to periodic amortization. We amortize other intangible assets by the straight-line method over their estimated lives and state them net of accumulated amortization. We evaluate goodwill for impairment, annually, or when events or changes in circumstances indicate the carrying value may not be recoverable. We evaluate other intangible assets for impairment when events or changes in circumstances indicate the carrying value may not be recoverable. See Note 8.

Property and equipment; depreciation expense. We state property and equipment at acquisition cost, including capitalized interest on borrowings during the actual construction period of major capital projects. In 2015, 2016 and 2017 we capitalized \$1.1 million, \$1.0 million and \$2.2 million, respectively, of interest costs. We compute depreciation of property and equipment for financial reporting purposes (including mining equipment) principally by the straight-line method over the estimated useful lives of the assets as follows:

Asset	Useful lives
Buildings and improvements	10 to 40 years
Machinery and equipment	3 to 20 years
Mine development costs	Units-of-production

We use accelerated depreciation methods for income tax purposes, as permitted. Upon the sale or retirement of an asset, we remove the related cost and accumulated depreciation from the accounts and recognize any gain or loss in income currently.

We expense expenditures for maintenance, repairs and minor renewals as incurred that do not improve or extend the life of the assets, including planned major maintenance.

We have a governmental concession with an unlimited term to operate our ilmenite mines in Norway. Mining properties consist of buildings and equipment used in our Norwegian ilmenite mining operations. While we own the land and ilmenite reserves associated with the mining operations, such land and reserves were acquired for nominal value and we have no material asset recognized for the land and reserves related to our mining operations.

We perform impairment tests when events or changes in circumstances indicate the carrying value may not be recoverable. We consider all relevant factors. We perform the impairment test by comparing the estimated future undiscounted cash flows (exclusive of interest expense) associated with the asset or asset group to the asset's net carrying value to determine if a write-down to fair value is required.

Long-term debt. We state long-term debt net of any unamortized original issue premium, discount or deferred financing costs (other than deferred financing costs associated with revolving credit facilities, which are recognized as an asset). We classify amortization of deferred financing costs and any premium or discount associated with the issuance of indebtedness as interest expense, and compute amortization by either the interest method or the straight-line method over the term of the applicable issue.

Employee benefit plans. Accounting and funding policies for our retirement plans are described in Note 11.

Income taxes. We and our qualifying subsidiaries are members of Contran's consolidated U.S. federal income tax group (the "Contran Tax Group"). We and certain of our qualifying subsidiaries also file consolidated income tax returns with Contran in various U.S. state jurisdictions. As a member of the Contran Tax Group, we are jointly and severally liable for the federal income tax liability of Contran and the other companies included in the Contran Tax Group for all periods in which we are included in the Contran Tax Group. See Note 17. As a member of the Contran Tax Group, we are a party to a tax sharing agreement which provides that we compute our tax provision for U.S. income taxes on a separate-company basis using the tax elections made by Contran. Pursuant to the tax sharing agreement, we make payments to or receive payments from Contran in amounts we would have paid to or received from the U.S. Internal Revenue Service or the applicable state tax authority had we not been a member of the Contran Tax Group. We made net cash payments for income taxes to Contran of \$2.5 million in 2015, \$10.7 million in 2016 and \$38.9 million in 2017.

We recognize deferred income tax assets and liabilities for the expected future tax consequences of temporary differences between the income tax and financial reporting carrying amounts of assets and liabilities, including investments in our subsidiaries and affiliates who are not members of the Contran Tax Group and undistributed earnings of non-U.S. subsidiaries which are not deemed to be permanently reinvested. At December 31, 2017, none of the post-1986 undistributed earnings of our European subsidiaries and none of the undistributed earnings of our Canadian Subsidiary, are subject to permanent reinvestment plans. It is currently not practical for us to determine the amount of the unrecognized deferred income tax liability related to our investments in our non-U.S. subsidiaries which are permanently reinvested due to the complexities associated with our organizational structure, changes in the Tax Cuts and Jobs Act (2017 Tax Act) enacted on December 22, 2017, and the U.S. taxation of such investments in the states in which we operate. We are currently reviewing certain other provisions under the 2017 Tax Act that would impact our determination of the aggregate temporary differences attributable to our investments in our non-U.S. subsidiaries. Deferred income tax assets and liabilities for each tax-paying jurisdiction in which we operate are netted and presented as either a noncurrent deferred income tax asset or liability, as applicable. We periodically evaluate our deferred tax assets in the various taxing jurisdictions in which we operate and adjust any related valuation allowance based on the estimate of the amount of such deferred tax assets that we believe does not meet the more-likely-than-not recognition criteria.

We account for the tax effects of a change in tax law as a component of the income tax provision related to continuing operations in the period of enactment, including the tax effects of any deferred income taxes originally established through a financial statement component other than continuing operations (i.e. other comprehensive income). Changes in applicable income tax rates over time as a result of changes in tax law, or times in which a deferred income tax asset valuation allowance is initially recognized in one year and subsequently reversed in a later year, can give rise to “stranded” tax effects in accumulated other comprehensive income in which the net accumulated income tax (benefit) remaining in accumulated other comprehensive income does not correspond to the then-applicable income tax rate applied to the pre-tax amount which resides in accumulated other comprehensive income. As permitted by GAAP, our accounting policy is to remove any such stranded tax effect remaining in accumulated other comprehensive income, by recognizing an offset to our provision for income taxes related to continuing operations, only at the time when there is no remaining pre-tax amount in accumulated other comprehensive income. For accumulated other comprehensive income related to marketable securities, this would occur whenever we would have no available-for-sale marketable securities for which unrealized gains and losses are recognized through other comprehensive income. For accumulated other comprehensive income related to currency translation, this would occur only upon the sale or complete liquidation of one of our non-U.S. subsidiaries. For defined pension benefit plans and OPEB plans, this would occur whenever one of our subsidiaries which previously sponsored a defined benefit pension or OPEB plan had terminated such a plan and had no future obligation or plan asset associated with such a plan.

We record a reserve for uncertain tax positions where we believe it is more-likely-than-not our position will not prevail with the applicable tax authorities. The amount of the benefit associated with our uncertain tax positions that we recognize is limited to the largest amount for which we believe the likelihood of realization is greater than 50%. We accrue penalties and interest on the difference between tax positions taken on our tax returns and the amount of benefit recognized for financial reporting purposes. We classify our reserves for uncertain tax positions in a separate current or noncurrent liability, depending on the nature of the tax position. See Note 14.

Environmental remediation and related costs. We record liabilities related to environmental remediation and related costs when estimated future expenditures are probable and reasonably estimable. We adjust these accruals as further information becomes available to us or as circumstances change. We generally do not discount estimated future expenditures to their present value due to the uncertainty of the timing of the ultimate payout. We recognize any recoveries of remediation costs from other parties when we deem their receipt to be probable. We expense any environmental remediation related legal costs as incurred. At December 31, 2016 and 2017, we had not recognized any material receivables for recoveries. See Note 18.

Net sales. We record sales when products are shipped and title and other risks and rewards of ownership have passed to the customer. We include amounts charged to customers for shipping and handling costs in net sales. We state sales net of price, early payment and distributor discounts and volume rebates. We report any tax assessed by a governmental authority that we collect from our customers that is both imposed on and concurrent with our revenue-producing activities (such as sales, use, value added and excise taxes) on a net basis (meaning we do not recognize these taxes either in our revenues or in our costs and expenses).

Certain retail land sales of our Real Estate Management and Development Segment are recognized under the percentage-of-completion method when we are required to complete property development and improvements after title passes to the buyer and when all of the criteria of ASC 970-605-30 are met. Under such method, revenues and profits are recognized in the same proportion of our progress towards completion of our contractual obligations, with our progress measured by costs incurred as a percentage of total costs estimated to be incurred. Such costs incurred and total estimated costs include amounts specifically identifiable with the parcels sold as well as certain development costs for the entire residential/planned community which are allocated to the parcels sold under applicable GAAP. Other retail land sales are generally recognized by the full accrual method of accounting at closing, in which title passes to the customer and we have no remaining contractual obligations to the buyer.

Selling, general and administrative expenses; shipping and handling costs; advertising costs; research and development costs. Selling, general and administrative expenses include costs related to marketing, sales, distribution, shipping and handling, research and development, legal, environmental remediation and administrative functions such as accounting, treasury and finance, and includes costs for salaries and benefits not associated with our manufacturing process, travel and entertainment, promotional materials and professional fees. Shipping and handling costs of our Chemicals Segment were approximately \$87 million in 2015, \$90 million in 2016 and \$101 million in 2017. Shipping and handling costs of our Component Products and Waste Management Segments are not material. We expense advertising and research, development and certain sales technical support costs as incurred. Advertising costs were approximately \$1 million in each of 2015, 2016 and 2017. Research, development and certain sales technical support costs were approximately \$16 million in 2015, \$13 million in 2016 and \$20 million in 2017.

Note 2—Business and geographic segments:

Business segment	Entity	% controlled at December 31, 2017
Chemicals	Kronos	80%
Component products	CompX	87%
Real estate management and development	BMI and LandWell	63% - 77%

Our control of Kronos includes 50% we hold directly and 30% held directly by NL. We own 83% of NL. Our control of CompX is through NL. We own 63% of BMI. Our control of LandWell includes the 27% we hold directly and 50% held by BMI. See Note 3.

We are organized based upon our operating subsidiaries. Our operating segments are defined as components of our consolidated operations about which separate financial information is available that is regularly evaluated by our chief operating decision maker in determining how to allocate resources and in assessing performance. Each operating segment is separately managed, and each operating segment represents a strategic business unit offering different products.

We have the following three consolidated reportable operating segments.

- *Chemicals*—Our chemicals segment is operated through our majority control of Kronos. Kronos is a leading global producer and marketer of value-added titanium dioxide pigments (“TiO₂”). TiO₂ is used to impart whiteness, brightness, opacity and durability to a wide variety of products, including paints, plastics, paper, fibers and ceramics. Additionally, TiO₂ is a critical component of everyday applications, such as coatings, plastics and paper, as well as many specialty products such as inks, foods and cosmetics. See Note 7.
- *Component Products*—We operate in the component products industry through our majority control of CompX. CompX is a leading manufacturer of security products used in the recreational transportation, postal, office and institutional furniture, cabinetry, tool storage, healthcare and a variety of other industries. CompX is also a leading manufacturer of stainless steel exhaust systems, gauges, throttle controls and trim tabs for the recreational marine industry. All of CompX production facilities are in the United States.
- *Real Estate Management and Development*—We operate in real estate management and development through our majority control of BMI and LandWell. BMI provides utility services to certain industrial and municipal customers and owns real property in Henderson, Nevada. LandWell is engaged in efforts to develop certain land holdings for commercial, industrial and residential purposes in Henderson, Nevada.

We evaluate segment performance based on segment operating income, which we define as income before income taxes and interest expense, exclusive of certain non-recurring items (such as gains or losses on disposition of business units and other long-lived assets outside the ordinary course of business and certain legal settlements) and certain general corporate income and expense items (including securities transactions gains and losses and interest and dividend income), which are not attributable to the operations of the reportable operating segments. The accounting policies of our reportable operating segments are the same as those described in Note 1. Segment results we report may differ from amounts separately reported by our various subsidiaries and affiliates due to purchase accounting adjustments and related amortization or differences in how we define operating income. Intersegment sales are not material.

Interest income included in the calculation of segment operating income is not material in 2015, 2016 or 2017. Capital expenditures include additions to property and equipment but exclude amounts we paid for business units acquired in business combinations. Depreciation and amortization related to each reportable operating segment includes amortization of any intangible assets attributable to the segment. Amortization of deferred financing costs and any premium or discount associated with the issuance of indebtedness is included in interest expense.

Segment assets are comprised of all assets attributable to each reportable operating segment, including goodwill and other intangible assets. Our investment in the TiO₂ manufacturing joint venture (see Note 7) is included in the Chemicals Segment’s assets. Corporate assets are not attributable to any operating segment and consist principally of cash and cash equivalents, restricted cash and restricted cash equivalents and marketable securities. Our Real Estate Management and Development Segment’s operating loss in 2016 includes a first quarter \$5.1 million contract related intangible asset impairment which is included in the determination of its operating income, see Note 7. Our Chemicals Segment’s operating income in 2016 includes \$4.3 million in business interruption insurance proceeds which is included in the determination of its operating income, see Note 12.

Years ended December 31,

	2015	2016	2017
	(In millions)		
Net sales:			
Chemicals	\$ 1,348.8	\$ 1,364.3	\$ 1,729.0
Component products	109.0	108.9	112.0
Real estate management and development	30.1	46.2	38.4
Total net sales	<u>\$ 1,487.9</u>	<u>\$ 1,519.4</u>	<u>\$ 1,879.4</u>
Cost of sales:			
Chemicals	\$ 1,158.5	\$ 1,109.2	\$ 1,172.1
Component products	75.6	73.8	77.2
Real estate management and development	25.4	36.2	28.1
Total cost of sales	<u>\$ 1,259.5</u>	<u>\$ 1,219.2</u>	<u>\$ 1,277.4</u>
Gross margin:			
Chemicals	\$ 190.3	\$ 255.1	\$ 556.9
Component products	33.4	35.1	34.8
Real estate management and development	4.7	10.0	10.3
Total gross margin	<u>\$ 228.4</u>	<u>\$ 300.2</u>	<u>\$ 602.0</u>
Operating income:			
Chemicals	\$ 7.1	\$ 91.0	\$ 341.1
Component products	14.0	15.6	15.2
Real estate management and development	—	.8	6.6
Total operating income	<u>21.1</u>	<u>107.4</u>	<u>362.9</u>
General corporate items:			
Securities earnings	26.4	27.2	29.5
Insurance recoveries	3.7	.4	.4
General expenses, net	(39.5)	(37.3)	(35.0)
Loss on prepayment of debt	—	—	(7.1)
Interest expense	<u>(53.6)</u>	<u>(58.1)</u>	<u>(58.9)</u>
Income (loss) from continuing operations before income taxes	<u>\$ (41.9)</u>	<u>\$ 39.6</u>	<u>\$ 291.8</u>

	Years ended December 31,		
	2015	2016	2017
	(In millions)		
Depreciation and amortization:			
Chemicals	\$ 44.3	\$ 42.6	\$ 43.4
Component products	3.5	3.7	3.7
Waste management (1)	19.3	18.3	8.9
Real estate management and development	2.8	2.9	3.0
Total	<u>\$ 69.9</u>	<u>\$ 67.5</u>	<u>\$ 59.0</u>
Capital expenditures:			
Chemicals	\$ 47.5	\$ 53.0	\$ 64.3
Component products	4.2	3.2	2.8
Waste management(1)	1.7	.7	.9
Real estate management and development	1.2	2.0	3.3
Total	<u>\$ 54.6</u>	<u>\$ 58.9</u>	<u>\$ 71.3</u>
	December 31,		
	2015	2016	2017
	(In millions)		
Total assets:			
Operating segments:			
Chemicals	\$ 1,617.6	\$ 1,548.9	\$ 2,190.5
Component products	88.7	97.9	104.9
Waste management(1)	231.9	228.6	52.0
Real estate management and development	232.9	200.9	206.9
Corporate and eliminations	366.3	366.9	353.2
Total	<u>\$ 2,537.4</u>	<u>\$ 2,443.2</u>	<u>\$ 2,907.5</u>

(1)Denotes discontinued operations

Geographic information. We attribute net sales to the place of manufacture (point-of-origin) and the location of the customer (point-of-destination); we attribute property and equipment to their physical location. At December 31, 2017 the net assets of our non-U.S. subsidiaries included in consolidated net assets approximated \$614 million (in 2016 the total was \$374 million).

	Years ended December 31,		
	2015	2016	2017
	(In millions)		
Net sales—point of origin:			
United States	\$ 796.9	\$ 819.3	\$ 992.3
Germany	690.0	699.8	918.6
Canada	216.9	257.7	309.2
Belgium	198.8	187.4	279.9
Norway	183.5	164.8	216.4
Eliminations	(598.2)	(609.6)	(837.0)
Total	<u>\$ 1,487.9</u>	<u>\$ 1,519.4</u>	<u>\$ 1,879.4</u>
Net sales—point of destination:			
North America	\$ 559.0	\$ 566.8	\$ 668.3
Europe	700.9	698.2	899.2
Asia and other	228.0	254.4	311.9
Total	<u>\$ 1,487.9</u>	<u>\$ 1,519.4</u>	<u>\$ 1,879.4</u>

	December 31,		
	2015	2016	2017
	(In millions)		
Net property and equipment:			
United States	\$ 77.0	\$ 76.2	\$ 80.8
Germany	229.9	223.7	259.2
Canada	55.0	60.5	69.0
Norway	71.9	75.5	81.7
Belgium	81.8	80.1	98.0
Total	<u>\$ 515.6</u>	<u>\$ 516.0</u>	<u>\$ 588.7</u>

Note 3—Business combinations, dispositions and related transactions:

Kronos Worldwide, Inc.

Prior to 2015, Kronos' board of directors authorized the repurchase of up to 2.0 million shares of its common stock in open market transactions, including block purchases, or in privately-negotiated transactions at unspecified prices and over an unspecified period of time. Kronos may repurchase its common stock from time to time as market conditions permit. The stock repurchase program does not include specific price targets or timetables and may be suspended at any time. Depending on market conditions, Kronos may terminate the program prior to its completion. Kronos would use cash on hand to acquire the shares. Repurchased shares will be added to Kronos' treasury and cancelled. Kronos did not make any repurchases under the plan during 2015, 2016 or 2017, and at December 31, 2017 approximately 1.95 million shares are available for repurchase.

CompX International Inc.

Prior to 2015, CompX's board of directors authorized various repurchases of its Class A common stock in open market transactions, including block purchases, or in privately-negotiated transactions at unspecified prices and over an unspecified period of time. CompX may repurchase its common stock from time to time as market conditions permit. The stock repurchase program does not include specific price targets or timetables and may be suspended at any time. Depending on market conditions, CompX may terminate the program prior to its completion. CompX would generally use cash on hand to acquire the shares. Repurchased shares will be added to CompX's treasury and cancelled. CompX did not make any repurchases under the plan during 2015, 2016 or 2017, and at December 31, 2017 approximately 678,000 shares were available for purchase under these authorizations.

Discontinued Operations —Waste Control Specialists LLC

Pursuant to an agreement we entered into in December 2017, on January 26, 2018 we completed the sale of our Waste Management Segment to JFL-WCS Partners, LLC ("JFL Partners"), an entity sponsored by certain investment affiliates of J.F. Lehman & Company, for consideration consisting of the assumption of all of WCS' third-party indebtedness and other liabilities; accordingly the results of operations of our Waste Management Segment is reflected as discontinued operations in our Consolidated Statement of Operations for all periods presented. We expect to recognize a pre-tax gain of approximately \$57 million in the first quarter of 2018 on the transaction because the carrying value of the liabilities of the business assumed by the purchaser exceeded the carrying value of the assets sold at the time of the sale in large part due to the long-lived asset impairment of \$170.6 million recognized in the second quarter of 2017 as discussed below. Our Waste Management Segment, which operated in the low-level radioactive, hazardous, toxic and other waste disposal industry historically struggled to generate sufficient recurring disposal volumes to generate positive operating results or cash flows. We believe the sale will enable us to focus more effort on continuing to develop our remaining segments which we believe have greater opportunity for higher returns.

In accordance with GAAP, the Waste Management Segment has been reclassified as discontinued operations in our Consolidated Balance Sheets and Consolidated Statements of Operations for all periods presented. Also in accordance with GAAP, we have not reclassified our Consolidated Statement of Cash Flows to reflect the Waste Management Segment as discontinued operations.

Selected financial data for the operations of the disposed Waste Management Segment is presented below. Current assets consist principally of trade accounts receivable.

	December 31,	
	2016	2017
	(In millions)	
ASSETS		
Current assets	\$ 17.2	\$ 11.2
Operating permits	42.9	—
Restricted cash	21.6	27.2
Property and equipment, net	138.5	6.0
Other noncurrent assets	8.4	7.6
Total noncurrent assets	211.4	40.8
Total assets	\$ 228.6	\$ 52.0
LIABILITIES		
Current portion of long-term debt	\$ 3.3	\$ 3.0
Payable to Contran	31.4	36.1
Other current liabilities	11.4	8.2
Total current liabilities	46.1	47.3
Long-term debt	67.9	65.0
Deferred income taxes	(3.1)	(43.8)
Accrued noncurrent closure and post closure costs	29.4	31.7
Total noncurrent liabilities	94.2	52.9
Total liabilities	\$ 140.3	\$ 100.2

	Years ended December 31,		
	2015	2016	2017
	(In millions)		
Net sales	\$ 45.0	\$ 47.4	\$ 75.4
Operating loss	\$ (26.5)	\$ (26.2)	\$ (167.1)
Other income (expense), net	.1	(5.3)	(4.4)
Interest expense, net	(5.4)	(5.1)	(4.8)
Loss before taxes	(31.8)	(36.6)	(176.3)
Income tax benefit	(10.1)	(12.6)	(67.1)
Net loss	\$ (21.7)	\$ (24.0)	\$ (109.2)
Net cash provided by (used in) operating activities	(12.2)	(10.7)	18.1
Net cash provided by (used in) investing activities	.8	(2.7)	(3.4)

The Waste Management Segment's operating loss in 2017 includes a \$170.6 million long-lived asset impairment which is included in the determination of its operating income. As previously reported, in November 2015 we entered into an agreement with Rockwell Holdco, Inc. ("Rockwell"), for the sale of WCS to Rockwell. The agreement, as amended, was for \$270 million in cash plus the assumption of all of WCS' third-party indebtedness incurred prior to the date of the agreement. Additionally, Rockwell and its affiliates would have assumed all financial assurance obligations related to the WCS business. Rockwell is the parent company of EnergySolutions, Inc. Completion of the sale was subject to certain customary closing conditions, including the receipt of U.S. anti-trust approval. The U.S. Department of Justice ("DOJ") did not give the parties anti-trust clearance, and on November 16, 2016, the DOJ filed an anti-trust action in the U.S. federal district court for the District of Delaware styled *United States of America vs. Energy Solutions, Inc., et al* (Case No. 1:16-cv-01056-UNA), seeking an injunction to enjoin completion of the sale of WCS. Trial was held in late April and early May 2017. On June 21, 2017, the court issued an order enjoining the sale of WCS. While we disagreed with the court's decision, the parties determined that they would not appeal the decision to the Third Circuit Court of Appeals, and on June 22, 2017, we provided written notice to Rockwell terminating the purchase agreement for the sale of WCS to Rockwell effective June 22, 2017.

The Court's decision and resulting termination of the purchase agreement with Rockwell constituted triggering events under ASC 360-10-35-21, requiring WCS' long-lived assets to be tested for recoverability. Given the challenges facing WCS' disposal operations we concluded that the long-lived assets associated with WCS' operations were impaired at June 30, 2017, concurrent with the termination of the purchase agreement with Rockwell. Accordingly, we recognized an aggregate \$170.6 million impairment charge as of June 30, 2017, to reduce the carrying value of WCS' long-lived assets recognized for financial reporting purposes to their estimated fair value. Such \$170.6 million impairment charge relates to the following long-lived assets of WCS: net property and equipment - \$127.5 million; waste disposal site operating permits, net - \$42.0 million; and other assets - \$1.1 million. With respect to the operating permits, we concluded such long-lived assets were fully impaired, as these permits are specific to WCS' land and facility in Andrews County and have no salvage value as there is no alternative use for permits. Similarly, with respect to the net property and equipment, we concluded such long-lived assets were fully impaired except to the extent certain items of property and equipment had an alternate use outside of WCS' operations; for those items of property and equipment, they were written down to estimated salvage value, primarily using dealer or auction-site quotes (Level 3 inputs) as the basis for salvage value. At June 30, 2017, the time the impairment was recognized, the salvage value for such items of property and equipment aggregated \$5.7 million.

As part of the terms of the fourth amendment to the purchase agreement with Rockwell, in the event of termination of the purchase agreement for any reason (including termination of the purchase agreement if completion of the sale of WCS is enjoined on anti-trust grounds), we would be entitled to receive a termination fee from Rockwell. Such termination fee (net of applicable expenses) aggregated \$4 million, was received in June 2017 and is recognized as part of loss from discontinued operations in 2017 (classified as part of other income (expense), net in the table above). Other income (expense), net in the table above also includes expenses aggregating \$5.8 million in 2016 and \$8.7 million in 2017 related to efforts to sell WCS (principally legal fees).

In connection with the January 2018 sale, JFL Partners did not assume WCS' trade payable owed to Contran, which consisted primarily of intercorporate service fees charged to WCS by Contran for which WCS did not pay to Contran for several years. Immediately prior to the closing of the sale of WCS, Contran transferred its associated receivable from WCS to Valhi, in return for a deemed borrowing by Valhi under its revolving credit facility with Contran. Valhi subsequently contributed such receivable from WCS to WCS's equity, and the trade payable obligation of WCS was deemed paid in full.

Note 4—Accounts and other receivables, net:

	December 31,	
	2016	2017
	(In millions)	
Trade accounts receivable:		
Kronos	\$ 224.8	\$ 301.4
CompX	10.4	10.5
BMI/LandWell	1.3	1.6
VAT and other receivables	18.6	20.7
Allowance for doubtful accounts	(.8)	(1.5)
Total	<u>\$ 254.3</u>	<u>\$ 332.7</u>

Note 5—Inventories, net:

	December 31,	
	2016	2017
	(In millions)	
Raw materials:		
Chemicals	\$ 68.7	\$ 106.9
Component products	2.7	2.7
Total raw materials	71.4	109.6
Work in process:		
Chemicals	22.3	20.8
Component products	9.0	9.8
Total in-process products	31.3	30.6
Finished products:		
Chemicals	196.4	192.2
Component products	3.2	2.8
Total finished products	199.6	195.0
Supplies (chemicals)	56.9	63.2
Total	\$ 359.2	\$ 398.4

Note 6—Marketable securities:

	Market value	Cost basis	Unrealized losses, net
	(In millions)		
December 31, 2016:			
Current assets	\$ 4.4	\$ 4.4	\$ —
Noncurrent assets:			
The Amalgamated Sugar Company LLC	\$ 250.0	\$ 250.0	\$ —
Other	3.5	3.7	(.2)
Total	\$ 253.5	\$ 253.7	\$ (.2)
December 31, 2017:			
Current assets	\$ 3.0	\$ 3.0	\$ —
Noncurrent assets:			
The Amalgamated Sugar Company LLC	\$ 250.0	\$ 250.0	\$ —
Other	5.7	5.9	(.2)
Total	\$ 255.7	\$ 255.9	\$ (.2)

	Fair Value Measurements			
	Total	Quoted Prices in Active Markets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
(In millions)				
December 31, 2016:				
Current assets	\$ 4.4	\$ —	\$ 4.4	\$ —
Noncurrent assets:				
The Amalgamated Sugar Company LLC	\$ 250.0	\$ —	\$ —	\$ 250.0
Fixed income securities	2.9	—	2.9	—
Mutual funds and common stocks	.6	.6	—	—
Total	\$ 253.5	\$.6	\$ 2.9	\$ 250.0
December 31, 2017:				
Current assets	\$ 3.0	\$ —	\$ 3.0	\$ —
Noncurrent assets:				
The Amalgamated Sugar Company LLC	\$ 250.0	\$ —	\$ —	\$ 250.0
Fixed income securities	4.4	—	4.4	—
Common stocks and exchange traded funds	1.3	1.3	—	—
Total	\$ 255.7	\$ 1.3	\$ 4.4	\$ 250.0

Amalgamated Sugar. Prior to 2015, we transferred control of the refined sugar operations previously conducted by our wholly-owned subsidiary, The Amalgamated Sugar Company, to Snake River Sugar Company, an Oregon agricultural cooperative formed by certain sugar beet growers in Amalgamated's areas of operations. Pursuant to the transaction, we contributed substantially all of the net assets of our refined sugar operations to The Amalgamated Sugar Company LLC, a limited liability company controlled by Snake River, on a tax-deferred basis in exchange for a non-voting ownership interest in the LLC. The cost basis of the net assets we transferred to the LLC was approximately \$34 million. When we transferred control of our operations to Snake River in return for our interest in the LLC, we recognized a gain in earnings equal to the difference between \$250 million (the fair value of our investment in the LLC as evidenced by its \$250 million redemption price, as discussed below) and the \$34 million cost basis of the net assets we contributed to the LLC, net of applicable deferred income taxes. Therefore, the cost basis of our investment in the LLC is \$250 million. As part of this transaction, Snake River made certain loans to us aggregating \$250 million. These loans are collateralized by our interest in the LLC. See Notes 9 and 12.

We and Snake River share in distributions from the LLC up to an aggregate of \$26.7 million per year (the "base" level), with a preferential 95% share going to us. To the extent the LLC's distributions are below this base level in any given year, we are entitled to an additional 95% preferential share of any future annual LLC distributions in excess of the base level until the shortfall is recovered. Under certain conditions, we are entitled to receive additional cash distributions from the LLC. At our option, we may require the LLC to redeem our interest in the LLC, and the LLC has the right to redeem, at their option, our interest in the LLC beginning in 2027. The redemption price is generally \$250 million plus the amount of certain undistributed income allocable to us. If we require the LLC to redeem our interest in the LLC, Snake River has the right to accelerate the maturity of and call our \$250 million loans from Snake River.

The LLC Company Agreement contains certain restrictive covenants intended to protect our interest in the LLC, including limitations on capital expenditures and additional indebtedness of the LLC. We also have the ability to temporarily take control of the LLC if our cumulative distributions from the LLC fall below specified levels, subject to satisfaction of certain conditions imposed by Snake River's current third-party senior lenders.

Prior to 2015, Snake River agreed that the annual amount of distributions we receive from the LLC would exceed the annual amount of interest payments we owe to Snake River on our \$250 million in loans from Snake River by at least \$1.8 million. If we receive less than the required minimum amount, certain agreements we previously made with Snake River and the LLC, including a reduction in the amount of cumulative distributions that we must receive from the LLC in order to prevent us from becoming able to temporarily take control of the LLC, would retroactively become null and void and we would be able to temporarily take control of the LLC if we so desired. Through December 31, 2017, Snake River and the LLC maintained the applicable minimum required levels of cash flows to us.

We report the cash distributions received from the LLC as dividend income. We recognize distributions when they are declared by the LLC, which is generally the same month we receive them, although in certain cases distributions may be paid on the first business day of the following month. See Note 12. The amount of such future distributions we will receive from the LLC is dependent upon, among other things, the future performance of the LLC's operations. Because we receive preferential distributions from the LLC and we have the right to require the LLC to redeem our interest for a fixed and determinable amount beginning at a fixed and determinable date, we account for our investment in the LLC as a debt security carried at fair value. The fair value of our investment is determined using Level 3 inputs based on the \$250 million redemption price of our investment in the LLC as well as the amount of our debt owed to Snake River Company that is collateralized by our investment in the LLC. There has been no change to the fair value of our Amalgamated Sugar investment during 2015, 2016 or 2017. We do not expect to report a gain on the redemption at the time our LLC interest is redeemed, as the redemption price of \$250 million is expected to equal the carrying value of our investment in the LLC at the time of redemption.

Other. The fair value of our marketable securities are either determined using Level 1 inputs (because the securities are actively traded) or determined using Level 2 inputs (because although these securities are traded, in many cases the market is not active and the year-end valuation is generally based on the last trade of the year, which may be several days prior to December 31).

Note 7—Investment in TiO₂ manufacturing joint venture and other assets:

	December 31,	
	2016	2017
	(In millions)	
Other assets:		
Land held for development	\$ 138.1	\$ 126.6
Restricted cash equivalents	2.6	9.9
IBNR receivables	7.1	6.8
Other	16.9	26.6
Total	\$ 164.7	\$ 169.9

Investment in TiO₂ manufacturing joint venture. Our Chemicals Segment owns a 50% interest in Louisiana Pigment Company, L.P. (LPC). LPC is a manufacturing joint venture whose other 50%-owner is Huntsman P&A Investments LLC (HPA). HPA is a wholly-owned subsidiary of Tioxide Group, of which Venator Materials PLC owns 100% and is the ultimate parent. LPC owns and operates a chloride-process TiO₂ plant in Lake Charles, Louisiana.

We and HPA are both required to purchase one-half of the TiO₂ produced by LPC, unless we and HPA agree otherwise (such as in 2016, when we purchased approximately 52% of the production from the plant). LPC operates on a break-even basis and, accordingly, we report no equity in earnings of LPC. Each owner's acquisition transfer price for its share of the TiO₂ produced is equal to its share of the joint venture's production costs and interest expense, if any. Our share of net cost is reported as cost of sales as the related TiO₂ acquired from LPC is sold. We report distributions we receive from LPC, which generally relate to excess cash generated by LPC from its non-cash production costs, and contributions we make to LPC, which generally relate to cash required by LPC when it builds working capital, as part of our cash flows from operating activities in our Consolidated Statements of Cash Flows. The components of our net distributions (contributions) from LPC are shown in the table below.

	Years ended December 31,		
	2015	2016	2017
	(In millions)		
Distributions from LPC	\$ 48.2	\$ 35.0	\$ 44.0
Contributions to LPC	(41.7)	(31.4)	(50.0)
Net distributions	\$ 6.5	\$ 3.6	\$ (6.0)

Summary balance sheets of LPC are shown below:

	December 31,	
	2016	2017
	(In millions)	
ASSETS		
Current assets	\$ 94.5	\$ 104.1
Property and equipment, net	111.6	116.1
Total assets	<u>\$ 206.1</u>	<u>\$ 220.2</u>
LIABILITIES AND PARTNERS' EQUITY		
Other liabilities, primarily current	\$ 45.2	\$ 44.4
Partners' equity	160.9	175.8
Total liabilities and partners' equity	<u>\$ 206.1</u>	<u>\$ 220.2</u>

Summary income statements of LPC are shown below:

	Years ended December 31,		
	2015	2016	2017
	(In millions)		
Revenues and other income:			
Kronos	\$ 176.5	\$ 157.5	\$ 157.5
Tioxide	162.5	157.9	158.3
Total	339.0	315.4	315.8
Cost and expenses:			
Cost of sales	338.5	314.9	315.4
General and administrative	.5	.5	.4
Total	339.0	315.4	315.8
Net income	\$ —	\$ —	\$ —

Land held for development. The land held for development relates to BMI and LandWell and is discussed in Note 1.

Other. We have certain related party transactions with LPC, as more fully described in Note 17.

The IBNR receivables relate to certain insurance liabilities, the risk of which we have reinsured with certain third party insurance carriers. We report the insurance liabilities related to these IBNR receivables which have been reinsured as part of noncurrent accrued insurance claims and expenses. Certain of our insurance liabilities are classified as current liabilities and the related IBNR receivables are classified with other current assets. See Notes 10 and 17.

Upon acquiring a controlling interest in our Real Estate Management and Development Segment in December 2013, we recognized an indefinite-lived customer relationship intangible asset of \$5.1 million for long-term contracts related to water delivery services to the City of Henderson, Nevada and various other users through a water system owned by BMI. Aggregate revenues associated with water delivered under the City of Henderson contract have historically represented approximately 70% of the Segment's aggregate water delivery revenues. These contracts generally span many years and feature automatic renewing provisions. The initial City of Henderson water delivery contract extended for a period of 25 years, and contained an automatic renewal provision. In January 2016, the water delivery contract with the City of Henderson was amended. As part of such amendment, required minimum volumes were reduced, pricing was lowered, the automatic renewal provision of the contract was eliminated, and the contract term now runs through June 2040. The amendment to the City of Henderson water delivery contract represents an event or change in circumstance which triggered the need to perform a quantitative impairment analysis with respect to the intangible asset in the first quarter of 2016, in accordance with the guidance in ASC 350-30-35. Accordingly, as a result of a quantitative impairment analysis performed in the first quarter of 2016 we concluded that the \$5.1 million contract related intangible asset primarily related to the City of Henderson water delivery contract was fully impaired as a result of the amended contract (with its reduced minimum volumes and lower pricing), and we recognized an aggregate \$5.1 million contract related intangible impairment loss in 2016.

Note 8—Goodwill:

We have assigned goodwill to each of our reporting units (as that term is defined in ASC Topic 350-20-20, *Goodwill*) which corresponds to our operating segments. All of our goodwill related to our Chemicals Segment is from our various step

acquisitions of NL and Kronos which occurred prior to 2015, as goodwill was determined prior to the adoption of the equity transaction framework provisions of ASC Topic 810. Substantially all of the net goodwill related to the Component Products Segment was generated from CompX's acquisitions of certain business units and the step acquisitions of CompX. The Component Products Segment goodwill is assigned to the security products reporting unit within that operating segment.

	Operating segment		Total
	Chemicals	Component Products	
	(In millions)		
Balance at December 31, 2015, 2016 and 2017	\$ 352.6	\$ 27.1	\$ 379.7

We test for goodwill impairment at the reporting unit level. In determining the estimated fair value of the reporting units, we use appropriate valuation techniques, such as discounted cash flows and, with respect to our Chemicals Segment, we consider quoted market prices, a Level 1 input, while discounted cash flows are a Level 3 input. We also consider control premiums when assessing fair value using quoted market prices. If the carrying amount of the reporting unit's net assets exceeds its fair value, an impairment charge is recorded for the amount by which such carrying amount exceeds the reporting unit's fair value (not to exceed the amount of goodwill recognized). We review goodwill for each of our reporting units for impairment during the third quarter of each year. Goodwill is also evaluated for impairment at other times whenever an event occurs or circumstances change that would more likely than not reduce the fair value of a reporting unit below its carrying value. If the fair value of an evaluated asset is less than its book value, the asset is written down to fair value.

In 2015, 2016 and 2017, no goodwill impairment was indicated as part of our annual impairment review of goodwill. As permitted by GAAP, during 2015 and 2016 we used the qualitative assessment of ASC 350-20-35 for our Component Products security products reporting unit's annual impairment test and determined it was not necessary to perform the two-step quantitative goodwill impairment test. During 2017, we used the qualitative assessment of ASC 350-20-35 for security products reporting unit's 2017 annual impairment test using discounted cash flows to determine the estimated fair value of our security products reporting unit. Such discounted cash flows are a Level 3 input as defined by ASC 820-10-35.

Prior to 2015, we recorded an aggregate \$16.5 million goodwill impairment, mostly with respect to our Component Products Segment. Our consolidated gross goodwill at December 31, 2017 is \$396.2 million.

Note 9—Long-term debt:

	December 31,	
	2016	2017
	(In millions)	
Valhi:		
Snake River Sugar Company	\$ 250.0	\$ 250.0
Contran credit facility	278.9	284.3
Total Valhi debt	528.9	534.3
Subsidiary debt:		
Kronos —		
Senior Notes	—	471.1
Term loan	335.9	—
Tremont —		
Promissory note payable	14.5	13.1
BMI —		
Bank note payable Western Alliance Bank	—	18.8
Bank note payable Meadows Bank	8.4	—
LandWell —		
Note payable to the City of Henderson	2.9	2.5
Other	3.2	3.3
Total subsidiary debt	364.9	508.8
Total debt	893.8	1,043.1
Less current maturities	4.5	1.6
Total long-term debt	\$ 889.3	\$ 1,041.5

Valhi—Snake River Sugar Company—Our \$250 million in loans from Snake River Sugar Company are collateralized by our interest in The Amalgamated Sugar Company LLC. The loans bear interest at a weighted average fixed interest rate of 9.4% and are due in January 2027. At December 31, 2017, \$37.5 million of the loans are recourse to us and the remaining \$212.5 million is nonrecourse to us. Under certain conditions, Snake River has the ability to accelerate the maturity of these loans. See Note 6.

Contran credit facility—We also have an unsecured revolving credit facility with Contran which, as amended, provides for borrowings from Contran of up to \$360 million. The facility, as amended, bears interest at prime plus 1% (5.5% at December 31, 2017), and is due on demand, but in any event no earlier than December 31, 2019. The facility contains no financial covenants or other financial restrictions. Valhi pays an unused commitment fee quarterly to Contran on the available balance (except during periods during which Contran would be a net borrower from Valhi). The average interest rate on the credit facility for the year ended December 31, 2017 was 5.1%. During 2017 we borrowed an additional net \$5.4 million and at December 31, 2017 an additional \$75.7 million was available for borrowings under the amended facility. In January 2018 in conjunction with the sale of our Waste Management Segment discussed in Note 3, we acquired Contran’s \$36.3 million trade receivable from WCS in return for an assumed \$36.3 million borrowing by us under this facility (and we subsequently contributed such receivable to WCS’ equity). At December 31, 2017, we have approximately \$39.4 million available for borrowing under the facility (after considering such January 2018 assumed borrowing).

Kronos—Senior Notes—On September 13, 2017, Kronos International, Inc. (“KII”), Kronos’ wholly-owned subsidiary, issued €400 million aggregate principal amount of its 3.75% Senior Secured Notes due September 15, 2025 (the “Senior Notes”), at par value (\$477.6 million when issued). Kronos used \$338.6 million of the net proceeds of the new Senior Notes to prepay in full the outstanding principal balance of its term loan (along with accrued and unpaid interest through the prepayment date) and \$21.0 million to repay the outstanding balance under its North American revolving credit facility. The remaining net proceeds of the Senior Notes are available for Kronos’ general corporate purposes. The new Senior Notes:

- bear interest at 3.75% per annum, payable semi-annually on March 15 and September 15 of each year, beginning on March 15, 2018;
- have a maturity date of September 15, 2025. Prior to September 15, 2020, Kronos may redeem some or all of the Senior Notes at a price equal to 100% of the principal amount thereof, plus a “make-whole” premium (as defined in the indenture governing the Senior Notes). On or after September 15, 2020, Kronos may redeem the Senior Notes at redemption prices ranging from 102.813% of the principal amount, declining to 100% on or after September 15, 2023. In addition, on or before September 15, 2020, Kronos may redeem up to 40% of the Senior Notes with the net proceeds of certain public or

private equity offerings at 103.75% of the principal amount. If Kronos experiences certain specified change of control events, it would be required to make an offer to purchase the Senior Notes at 101% of the principal amount. Kronos would also be required to make an offer to purchase a specified portion of the Senior Notes at par value in the event that it generates a certain amount of net proceeds from the sale of assets outside the ordinary course of business, and such net proceeds are not otherwise used for specified purposes within a specified time period;

- are fully and unconditionally guaranteed, jointly and severally, on a senior secured basis by Kronos Worldwide, Inc. and each of its direct and indirect domestic, wholly-owned subsidiaries;
- are collateralized by a first priority lien on (i) 100% of the common stock or other ownership interests of each existing and future direct domestic subsidiary of KII and the guarantors, and (ii) 65% of the voting common stock or other ownership interests and 100% of the non-voting common stock or other ownership interests of each foreign subsidiary that is directly owned by KII or any guarantor;
- contain a number of covenants and restrictions which, among other things, restrict Kronos' ability to incur or guarantee additional debt, incur liens, pay dividends or make other restricted payments, or merge or consolidate with, or sell or transfer substantially all of its assets to, another entity, and contain other provisions and restrictive covenants customary in lending transactions of this type (however, there are no ongoing financial maintenance covenants); and
- contain customary default provisions, including a default under any of Kronos' other indebtedness in excess of \$50.0 million.

The carrying value of the Senior Notes at December 31, 2017 is stated net of unamortized debt issuance costs of \$7.5 million.

Term loan – During the first six months of 2017, we made our required quarterly term loan principal payments aggregating \$1.8 million on our prior term loan indebtedness. Concurrent with the issuance of our Senior Notes, in September 2017, we voluntarily prepaid in full the outstanding \$338.6 million principal balance of such term loan (and such term loan facility was terminated). As a result of such prepayment, we recognized a loss on prepayment of debt aggregating \$7.1 million in the third quarter of 2017 consisting principally of the write-off of unamortized debt issuance costs and original issue discount associated with the term loan of \$2.7 million and \$.7 million, respectively, and \$3.3 million in expense related to the early termination of our interest rate swap contract discussed in Note 18. Funds for the aggregate prepayment were provided by the net proceeds from the Senior Notes discussed above. The average interest rate on the term loan borrowings for the year-to-date period ended September 13, 2017 (the pay-off date) was 4.1%. The carrying value of the term loan at December 31, 2016 is stated net of unamortized original issue discount of \$.9 million and debt issuance costs of \$3.6 million.

Revolving North American credit facility—In June 2012, Kronos entered into a \$125 million revolving bank credit facility. As amended in January 2017, the facility matures the earlier of (i) January 30, 2022 or (ii) 90 days prior to the maturity date of our term loan (or the maturity date of any new term loan constituting a permitted refinancing of the existing term loan). The issuance of the Senior Notes is a permitted refinancing of our term loan, and accordingly, the maturity date of the North American revolving credit facility is January 30, 2022. Borrowings under the revolving credit facility are available for Kronos' general corporate purposes. Available borrowings on this facility are based on formula-determined amounts of eligible trade receivables and inventories, as defined in the agreement, of certain of Kronos' North American subsidiaries less any outstanding letters of credit up to \$15 million issued under the facility (with revolving borrowings by Kronos' Canadian subsidiary limited to \$25 million). Any amounts outstanding under the revolving credit facility bear interest, at Kronos' option, at LIBOR plus a margin ranging from 1.5% to 2.0% or at the applicable base rate, as defined in the agreement, plus a margin ranging from .5% to 1.0%. The credit facility is collateralized by, among other things, a first priority lien on the borrowers' trade receivables and inventories. The facility contains a number of covenants and restrictions which, among other things, restricts the borrowers' ability to incur additional debt, incur liens, pay dividends or merge or consolidate with, or sell or transfer all or substantially all of their assets to, another entity, contains other provisions and restrictive covenants customary in lending transactions of this type and under certain conditions requires the maintenance of a specified financial covenant (fixed charge coverage ratio, as defined) to be at least 1.0 to 1.0.

During 2016, we had gross borrowings and repayments of \$266.2 million under this facility, and during 2017 we had gross borrowings and repayments of \$253.9 million. The average interest rate on outstanding borrowings for the year-to-date period ended September 13, 2017 when the outstanding balance was repaid was 4.8%. As discussed above, in September 2017 we used a portion of the net proceeds from the Senior Notes to repay our then-outstanding principal balance of \$21.0 million. At December 31, 2017 there were no outstanding borrowings under this facility, and Kronos had approximately \$98.2 million available for borrowing under this revolving facility.

Revolving European credit facility— Kronos’ operating subsidiaries in Germany, Belgium, Norway and Denmark have a €90 million secured revolving credit facility that, as amended in September 2017, matures in September 2022. Outstanding borrowings bear interest at the Euro Interbank Offered Rate (EURIBOR) plus 1.60% per annum. The facility is collateralized by the accounts receivable and inventories of the borrowers, plus a limited pledge of all of the other assets of the Belgian borrower. The facility contains certain restrictive covenants that, among other things, restrict the ability of the borrowers to incur debt, incur liens, pay dividends or merge or consolidate with, or sell or transfer all or substantially all of the assets to, another entity, and requires the maintenance of certain financial ratios. In addition, the credit facility contains customary cross-default provisions with respect to other debt and obligations of the borrowers, KII and its other subsidiaries.

Kronos had no borrowing or repayments under this facility during 2016 and 2017 and at December 31, 2017, there were no outstanding borrowings under this facility. Kronos’ European credit facility requires the maintenance of certain financial ratios. Kronos’ European revolving credit facility requires the maintenance of certain financial ratios, and one of such requirements is based on the ratio of net debt to last twelve months earnings before income tax, interest, depreciation and amortization expense (EBITDA) of the borrowers. Based upon the borrowers’ last twelve months EBITDA as of December 31, 2017 and the net debt to EBITDA financial test, the full €90 million (\$107.7 million) was available for borrowing at December 31, 2017.

Other. Prior to 2015, and in conjunction with the acquisition of a controlling interest of our Real Estate Management and Development Segment, Tremont issued a \$19.1 million promissory note with the seller, Nevada Environmental Response Trust (“NERT”). The note bears interest at 3% per annum, with interest payable annually and all principal due in December 2023. The promissory note is collateralized by the BMI and LandWell interests acquired as well as the real property acquired from NERT as part of the transaction. The note may be prepaid at any time, without penalty. We must make mandatory prepayments on the note in specified amounts whenever we receive distributions from BMI or LandWell, or in the event we sell any of the real property acquired. We made principal prepayments of \$2.6 million during 2016 and \$1.5 million during 2017, under the terms of the note.

In February 2017, a wholly-owned subsidiary of BMI entered into a \$20.5 million loan agreement with Western Alliance Bank. The proceeds were used to refinance the \$8.5 million outstanding bank note payable to Meadows Bank and to finance improvements to BMI’s water delivery system. The agreement requires semi-annual payments of principal and interest on June 1 and December 1 aggregating \$1.9 million annually beginning on June 1, 2017 through the maturity date in June 2032 (except during 2017 which calls for prorated aggregate principal and interest payments of \$1.6 million). The agreement bears interest at 5.34% and is collateralized by certain real property, including the water delivery system, and revenue streams under the City of Henderson water contract. The carrying value of the loan is stated net of debt issuance costs of \$0.9 million.

Prior to 2015, LandWell entered into a \$3.9 million promissory note payable to the City of Henderson, Nevada. The note requires semi-annual principal payments of \$250,000 payable solely from cash received from certain specified revenue sources with any remaining unpaid balance due in October 2020, see Note 18. The loan bears interest at a 3% fixed rate. Due to the uncertainty in timing of the cash to be received from the specified revenue sources, the outstanding balance of \$2.5 million is deemed to be maturing in 2020.

Aggregate maturities of long-term debt at December 31, 2017

Aggregate maturities of debt at December 31, 2017 are presented in the table below.

<u>Years ending December 31,</u>	<u>Amount</u> <u>(In millions)</u>
Gross amounts due each year:	
2018	\$ 1.6
2019	286.0
2020	4.2
2021	1.8
2022	1.8
2023 and thereafter	756.1
Subtotal	1,051.5
Less amounts representing interest on capital leases, original issue discount and debt issuance costs	8.4
Total long-term debt	<u>\$ 1,043.1</u>

We are in compliance with all of our debt covenants at December 31, 2017.

Note 10—Accounts payable and accrued liabilities:

	December 31,	
	2016	2017
	(In millions)	
Accounts payable:		
Kronos	\$ 84.9	\$ 107.9
CompX	2.6	2.3
BMI/LandWell	2.2	3.7
NL	2.4	1.8
Other	.7	.4
Total	<u>\$ 92.8</u>	<u>\$ 116.1</u>
Current accrued liabilities:		
Employee benefits	\$ 28.0	\$ 36.3
Accrued sales discounts and rebates	22.6	14.3
Deferred income	28.7	28.3
Environmental remediation and related costs	15.3	6.8
Reserve for uncertain tax positions	3.3	—
Accrued workforce reduction costs	1.2	.2
Interest	.2	5.5
Interest rate swap contract	2.8	—
Other	23.3	33.4
Total	<u>\$ 125.4</u>	<u>\$ 124.8</u>
Noncurrent accrued liabilities:		
Reserve for uncertain tax positions	\$ 35.7	\$ 16.5
Asset retirement obligations	1.3	1.6
Deferred income	12.6	15.7
Employee benefits	7.6	8.4
Insurance claims and expenses	9.5	9.1
Deferred payment obligation	9.0	9.3
Accrued development costs	5.0	6.1
Other	3.8	6.9
Total	<u>\$ 84.5</u>	<u>\$ 73.6</u>

The risks associated with certain of our accrued insurance claims and expenses have been reinsured, and the related IBNR receivables are recognized as noncurrent assets to the extent the related liability is classified as a noncurrent liability. See Note 7. Our reserve for uncertain tax positions is discussed in Note 14.

Prior to 2015, and in conjunction with the acquisition of a controlling interest of our Real Estate Management and Development Segment, we issued a face value \$11.1 million deferred payment obligation owed to NERT that bears interest at 3% per annum, commencing in December 2023, and is collateralized by the BMI and LandWell interests acquired. The deferred payment obligation has no specified maturity date. We are required to make repayments on the deferred payment obligation, in specified amounts, whenever we receive distributions from BMI and LandWell, and we may make voluntary repayments on the deferred payment obligation at any time, in each case without any penalty, but in any case only after our promissory note payable to NERT (discussed in Note 9) has been repaid in full. For financial reporting purposes, the obligation was recorded at its acquisition date present value using a 3% discount rate from December 2023 (when it becomes interest bearing at 3%).

Note 11—Employee benefit plans:

Defined contribution plans. Certain of our subsidiaries maintain various defined contribution pension plans for our employees worldwide. Defined contribution plan expense approximated \$5.3 million in 2015, \$5.6 million in 2016 and \$5.5 million in 2017.

Defined benefit plans. Kronos and NL sponsor various defined benefit pension plans worldwide. The benefits under our defined benefit plans are based upon years of service and employee compensation. Our funding policy is to contribute annually the minimum amount required under ERISA (or equivalent foreign) regulations plus additional amounts as we deem appropriate.

We expect to contribute the equivalent of \$18.9 million to all of our defined benefit pension plans during 2018. Benefit payments to plan participants out of plan assets are expected to be the equivalent of:

2018	\$ 25.9 million
2019	26.5 million
2020	27.7 million
2021	27.8 million
2022	29.0 million
Next 5 years	157.3 million

The funded status of our U.S. defined benefit pension plans is presented in the table below.

	Years ended December 31,	
	2016	2017
	(In millions)	
Change in projected benefit obligations ("PBO"):		
Balance at beginning of the year	\$ 66.6	\$ 62.8
Interest cost	2.7	2.5
Actuarial losses (gains)	(2.3)	1.9
Benefits paid	(4.2)	(4.2)
Balance at end of the year	\$ 62.8	\$ 63.0
Change in plan assets:		
Fair value at beginning of the year	\$ 47.6	\$ 45.6
Actual return on plan assets	2.1	4.0
Employer contributions	.1	1.1
Benefits paid	(4.2)	(4.2)
Fair value at end of year	\$ 45.6	\$ 46.5
Funded status	\$ (17.2)	\$ (16.5)
Amounts recognized in the Consolidated Balance Sheets:		
Accrued pension costs:		
Current	\$ (.2)	\$ (.3)
Noncurrent	(17.0)	(16.2)
Total	(17.2)	(16.5)
Accumulated other comprehensive loss—		
Actuarial loss	39.3	37.2
Total	\$ 22.1	\$ 20.7
Accumulated benefit obligations ("ABO")	\$ 62.8	\$ 63.0

The components of our net periodic defined benefit pension benefit cost for U.S. plans are presented in the table below. The amounts shown below for the amortization of unrecognized actuarial losses for 2015, 2016 and 2017 were recognized as components of our accumulated other comprehensive income (loss) at December 31, 2014, 2015 and 2016, respectively, net of deferred income taxes and noncontrolling interest.

	Years ended December 31,		
	2015	2016	2017
	(In millions)		
Net periodic pension benefit cost (credit) for U.S. plans:			
Interest cost	\$ 2.7	\$ 2.7	\$ 2.5
Expected return on plan assets	(3.9)	(3.4)	(3.3)
Amortization of unrecognized net actuarial loss	1.7	1.9	2.0
Total	\$.5	\$ 1.2	\$ 1.2

Information concerning certain of our U.S. defined benefit pension plans (for which the ABO exceeds the fair value of plan assets as of the indicated date) is presented in the table below.

	December 31,	
	2016	2017
	(In millions)	
Plans for which the ABO exceeds plan assets:		
Projected benefit obligations	\$ 62.8	\$ 63.0
Accumulated benefit obligations	62.8	63.0
Fair value of plan assets	45.6	46.5

The discount rate assumptions used in determining the actuarial present value of the benefit obligation for our U.S. defined benefit pension plans as of December 31, 2016 and 2017 are 3.9% and 3.5%, respectively. The impact of assumed increases in future compensation levels does not have an effect on the benefit obligation as the plans are frozen with regards to compensation.

The weighted-average rate assumptions used in determining the net periodic pension cost for our U.S. defined benefit pension plans for 2015, 2016 and 2017 are presented in the table below. The impact of assumed increases in future compensation levels does not have an effect on the periodic pension cost as the plans are frozen with regards to compensation.

Rate	Years ended December 31,		
	2015	2016	2017
Discount rate	3.8%	4.1%	3.9%
Long-term return on plan assets	7.5%	7.5%	7.5%

Variances from actuarially assumed rates will result in increases or decreases in accumulated pension obligations, pension expense and funding requirements in future periods.

The funded status of our foreign defined benefit pension plans is presented in the table below.

	Years ended December 31,	
	2016	2017
	(In millions)	
Change in PBO:		
Balance at beginning of the year	\$ 578.9	\$ 603.4
Service cost	9.9	11.4
Interest cost	15.1	13.4
Participants' contributions	1.5	1.5
Actuarial loss	35.6	9.3
Plan settlement	—	(.3)
Change in currency exchange rates	(16.8)	73.7
Benefits paid	(20.8)	(21.2)
Balance at end of the year	\$ 603.4	\$ 691.2
Change in plan assets:		
Fair value at beginning of the year	\$ 382.5	\$ 381.8
Actual return on plan assets	12.2	24.1
Employer contributions	15.3	16.0
Participants' contributions	1.5	1.5
Change in currency exchange rates	(8.9)	43.0
Benefits paid	(20.8)	(21.2)
Fair value at end of year	\$ 381.8	\$ 445.2
Funded status	\$ (221.6)	\$ (246.0)
Amounts recognized in the Consolidated Balance Sheets:		
Pension asset	\$ 1.6	\$ 4.2
Accrued pension costs:		
Noncurrent	(223.2)	(250.2)
Total	(221.6)	(246.0)
Accumulated other comprehensive loss:		
Actuarial loss	261.2	242.8
Prior service cost	1.7	1.5
Total	262.9	244.3
Total	\$ 41.3	\$ (1.7)
ABO	\$ 578.8	\$ 664.7

The components of our net periodic defined benefit pension benefit cost for our foreign plans are presented in the table below. The amounts shown below for the amortization of unrecognized prior service cost and actuarial losses for 2015, 2016 and 2017 were recognized as components of our accumulated other comprehensive income (loss) at December 31, 2014, 2015 and 2016, respectively, net of deferred income taxes and noncontrolling interest.

	Years ended December 31,		
	2015	2016	2017
	(In millions)		
Net periodic pension cost for foreign plans:			
Service cost	\$ 11.2	\$ 9.9	\$ 11.4
Interest cost	15.1	15.1	13.4
Settlement loss	—	—	.1
Expected return on plan assets	(17.3)	(14.9)	(9.7)
Amortization of unrecognized:			
Prior service cost	.4	.2	.3
Net actuarial loss	13.8	11.4	13.2
Total	\$ 23.2	\$ 21.7	\$ 28.7

Information concerning certain of our non-U.S. defined benefit pension plans (for which the ABO exceeds the fair value of plan assets as of the indicated date) is presented in the table below.

	December 31,	
	2016	2017
	(In millions)	
Plans for which the ABO exceeds plan assets:		
Projected benefit obligations	\$ 541.5	\$ 625.1
Accumulated benefit obligations	521.8	603.8
Fair value of plan assets	319.5	375.0

A summary of our key actuarial assumptions used to determine foreign benefit obligations as of December 31, 2016 and 2017 was:

Rate	December 31,	
	2016	2017
Discount rate	2.1%	2.1%
Increase in future compensation levels	2.6%	2.6%

A summary of our key actuarial assumptions used to determine foreign net periodic benefit cost for 2015, 2016 and 2017 are as follows:

Rate	Years ended December 31,		
	2015	2016	2017
Discount rate	2.5%	2.6%	2.1%
Increase in future compensation levels	2.6%	2.9%	2.6%
Long-term return on plan assets	4.6%	3.9%	2.5%

Variances from actuarially assumed rates will result in increases or decreases in accumulated pension obligations, pension expense and funding requirements in future periods.

The amounts shown for all of our defined benefit plans for unrecognized actuarial losses and prior service cost at December 31, 2016 and 2017 have not been recognized as components of our periodic defined benefit pension cost as of those dates. These amounts will be recognized as components of our periodic defined benefit cost in future years. These amounts, net of deferred income taxes and noncontrolling interest, are recognized in our accumulated other comprehensive income (loss) at December 31, 2016 and 2017. We expect approximately \$15.0 million and \$.2 million of the unrecognized actuarial losses and prior service cost, respectively, will be recognized as components of our periodic defined benefit pension cost in 2018. The table below details the changes in other comprehensive income (loss) during 2015, 2016 and 2017.

	Years ended December 31,		
	2015	2016	2017
	(In millions)		
Changes in plan assets and benefit obligations recognized in other comprehensive income (loss):			
Net actuarial gain (loss)	\$.3	\$ (38.0)	\$ 4.0
Amortization of unrecognized:			
Prior service cost	.4	.3	.3
Net actuarial losses	15.4	13.3	15.2
Total	\$ 16.1	\$ (24.4)	\$ 19.5

At December 31, 2016 and 2017, substantially all of the assets attributable to our U.S. plan were invested in the Combined Master Retirement Trust (CMRT), a collective investment trust sponsored by Contran to permit the collective investment by certain master trusts that fund certain employee benefits plans sponsored by Contran and certain of its affiliates. For 2015, 2016 and 2017, the long-term rate of return assumption for plan assets invested in the CMRT was 7.5%, based on the long-term asset mix of the assets of the CMRT and the expected long-term rates of return for such asset components as well as advice from Contran's actuaries.

The CMRT unit value is determined semi-monthly, and the plans have the ability to redeem all or any portion of their investment in the CMRT at any time based on the most recent semi-monthly valuation. However, the plans do not have the right to individual assets held by the CMRT and the CMRT has the sole discretion in determining how to meet any redemption request. For purposes of our plan asset disclosure, we consider the investment in the CMRT as a Level 2 input because (i) the CMRT value is established semi-monthly and the plans have the right to redeem their investment in the CMRT, in part or in whole, at any time based on the most recent value and (ii) observable inputs from Level 1 or Level 2 (or assets not subject to classification in the fair value hierarchy) were used to value approximately 92% and 93% of the assets of the CMRT at December 31, 2016 and 2017, respectively, as noted below. CMRT assets not subject to classification in the fair value hierarchy consist principally of certain investments measured at net asset value per share in accordance with ASC 820-10. The aggregate fair value of all of the CMRT assets, including funds of Contran and its other affiliates that also invest in the CMRT, and supplemental asset mix details of the CMRT are as follows:

	December 31,	
	2016	2017
	(In millions)	
CMRT asset value	\$ 637.8	\$ 672.4
CMRT assets comprised of:		
Assets not subject to fair value hierarchy	30%	31%
Assets subject to fair value hierarchy:		
Level 1	54	54
Level 2	8	8
Level 3	8	7
	100%	100%
CMRT asset mix:		
Domestic equities, principally publicly traded	31%	33%
International equities, principally publicly traded	22	25
Fixed income securities, principally publicly traded	36	31
Privately managed limited partnerships	5	4
Hedge funds	5	5
Other, primarily cash	1	2
	100%	100%

In determining the expected long-term rate of return on non-U.S. plan asset assumptions, we consider the long-term asset mix (e.g. equity vs. fixed income) for the assets for each of our plans and the expected long-term rates of return for such asset components. In addition, we receive third-party advice about appropriate long-term rates of return. Such assumed asset mixes are summarized below:

- In Germany, the composition of our plan assets is established to satisfy the requirements of the German insurance commissioner. Our German pension plan assets represent an investment in a large collective investment fund established and maintained by Bayer AG in which several pension plans, including our German pension plan and Bayer's pension plans, have invested. Our plan assets represent a very nominal portion of the total collective investment fund maintained by Bayer. These plan assets are a Level 3 input because there is not an active market that approximates the value of our investment in the Bayer investment fund. We determine the fair value of the Bayer plan assets based on periodic reports we receive from the managers of the Bayer plan. These periodic reports are subject to audit by the German pension regulator.
- In Canada, we currently have a plan asset target allocation of 20% to 30% to equity securities and 70% to 80% to fixed income securities. We expect the long-term rate of return for such investments to average approximately 125 basis points above the applicable equity or fixed income index. The Canadian assets are Level 1 inputs because they are traded in active markets.

- In Norway, we currently have a plan asset target allocation of 11% to equity securities, 79% to fixed income securities, 7% to real estate and the remainder primarily to other investments and liquid investments such as money markets. The expected long-term rate of return for such investments is approximately 6%, 3%, 5% and 7%, respectively. The majority of Norwegian plan assets are Level 1 inputs because they are traded in active markets; however approximately 10% of our Norwegian plan assets are invested in real estate and other investments not actively traded and are therefore a Level 3 input.
- We also have plan assets in Belgium and the United Kingdom. The Belgian plan assets are invested in certain individualized fixed income insurance contracts for the benefit of each plan participant as required by the local regulators and are therefore a Level 3 input. The United Kingdom plan assets consist of marketable securities which are Level 1 inputs because they trade in active markets.

We regularly review our actual asset allocation for each plan, and will periodically rebalance the investments in each plan to more accurately reflect the targeted allocation and/or maximize the overall long-term return when considered appropriate.

The composition of our December 31, 2016 and 2017 pension plan assets by asset category and fair value level is shown in the table below. The amounts shown for plan assets invested in the CMRT include a nominal amount of cash held by our U.S. pension plan which is not part of the plan's investment in the CMRT.

	Fair Value Measurements at December 31, 2016			
	Total	Quoted Prices in Active Markets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
	(In millions)			
Germany	\$ 217.0	\$ —	\$ —	\$ 217.0
Canada:				
Local currency equities	14.8	14.8	—	—
Foreign currency equities	19.7	19.7	—	—
Local currency fixed income	59.5	59.5	—	—
Cash and other	.4	.4	—	—
Norway:				
Local currency equities	1.6	1.6	—	—
Foreign currency equities	4.1	4.1	—	—
Local currency fixed income	23.2	23.2	—	—
Foreign currency fixed income	5.4	5.4	—	—
Real estate	4.2	—	—	4.2
Cash and other	9.9	8.8	—	1.1
US — CMRT	45.6	—	45.6	—
Other	22.0	13.8	—	8.2
Total	<u>\$ 427.4</u>	<u>\$ 151.3</u>	<u>\$ 45.6</u>	<u>\$ 230.5</u>

Fair Value Measurements at December 31, 2017				
	Total	Quoted Prices in Active Markets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
	(In millions)			
Germany	\$ 257.9	\$ —	\$ —	\$ 257.9
Canada:				
Local currency equities	8.4	8.4	—	—
Foreign currency equities	16.4	16.4	—	—
Local currency fixed income	81.8	81.8	—	—
Cash and other	.3	.3	—	—
Norway:				
Local currency equities	1.8	1.8	—	—
Foreign currency equities	4.6	4.6	—	—
Local currency fixed income	21.0	21.0	—	—
Foreign currency fixed income	6.8	6.8	—	—
Real estate	4.7	—	—	4.7
Cash and other	15.4	14.5	—	.9
US — CMRT	46.5	—	46.5	—
Other	26.1	16.0	—	10.1
Total	<u>\$ 491.7</u>	<u>\$ 171.6</u>	<u>\$ 46.5</u>	<u>\$ 273.6</u>

A rollforward of the change in fair value of Level 3 assets follows.

	Years ended December 31,	
	2016	2017
	(In millions)	
Fair value at beginning of year	\$ 236.2	\$ 230.5
Gain on assets held at end of year	4.1	11.0
Gain on assets sold during the year	—	.2
Assets purchased	13.1	13.4
Assets sold	(13.4)	(13.8)
Currency exchange rate fluctuations	(9.5)	32.3
Fair value at end of year	<u>\$ 230.5</u>	<u>\$ 273.6</u>

Postretirement benefits other than pensions (“OPEB”). NL, Kronos and Tremont provide certain health care and life insurance benefits for their eligible Canadian and U.S. retired employees. Certain of our Canadian employees may become eligible for such postretirement health care and life insurance benefits if they reach retirement age while working for us. In the U.S., employees who retired after 1998 are not entitled to any such benefits. The majority of all retirees are required to contribute a portion of the cost of their benefits and certain current and future retirees are eligible for reduced health care benefits at age 65. We have no OPEB plan assets, rather, we fund medical claims as they are paid. At December 31, 2017, we expect to contribute the equivalent of approximately \$1.0 million to all of our OPEB plans during 2018. Benefit payments to OPEB plan participants are expected to be the equivalent of:

2018	\$ 1.0 million
2019	.9 million
2020	.9 million
2021	.8 million
2022	.8 million
Next 5 years	3.4 million

The funded status of our OPEB plans is presented in the table below.

	Years ended December 31,	
	2016	2017
	(In millions)	
Actuarial present value of accumulated OPEB obligations:		
Obligations at beginning of the year	\$ 12.9	\$ 12.2
Service cost	.1	.1
Interest cost	.5	.4
Actuarial gain	(.5)	—
Change in currency exchange rates	.2	.5
Benefits paid from employer contributions	(1.0)	(.9)
Obligations at end of the year	12.2	\$ 12.3
Fair value of plan assets	—	—
Funded status	\$ (12.2)	\$ (12.3)
Accrued OPEB costs recognized in the Consolidated Balance Sheets:		
Current	\$ (1.1)	\$ (1.0)
Noncurrent	(11.1)	(11.3)
Total	(12.2)	(12.3)
Accumulated other comprehensive (income) loss:		
Net actuarial losses	1.9	2.2
Prior service credit	(6.8)	(5.7)
Total	(4.9)	(3.5)
Total	\$ (17.1)	\$ (15.8)

The amounts shown in the table above for net actuarial losses and prior service credit at December 31, 2016 and 2017 have not yet been recognized as components of our periodic OPEB cost as of those dates. These amounts will be recognized as components of our periodic OPEB cost in future years and are recognized, net of deferred income taxes, in our accumulated other comprehensive income (loss). We expect to recognize approximately \$.2 million of unrecognized actuarial gains and \$1.1 million of prior service credit as components of our periodic OPEB cost in 2018.

The components of our periodic OPEB costs are presented in the table below. The amounts shown below for amortization of prior service credit and recognized actuarial gains for 2015, 2016 and 2017 were recognized as components of our accumulated other comprehensive income (loss) at December 31, 2014, 2015 and 2016, respectively, net of deferred income taxes and noncontrolling interest.

	Years ended December 31,		
	2015	2016	2017
	(In millions)		
Net periodic OPEB cost (credit):			
Service cost	\$.1	\$.1	\$.1
Interest cost	.5	.5	.4
Amortization of prior service credit	(1.9)	(1.8)	(1.1)
Recognized net actuarial gain	—	(.1)	(.2)
Total	\$ (1.3)	\$ (1.3)	\$ (.8)

The table below details the changes in other comprehensive income (loss) during 2015, 2016 and 2017.

	Years ended December 31,		
	2015	2016	2017
	(In millions)		
Changes in benefit obligations recognized in other comprehensive income (loss):			
Net actuarial losses (gains) arising during the year	\$.8	\$.5	\$ (.2)
Plan amendments/curtailment	—	(.1)	—
Amortization of unrecognized prior service credit	(1.9)	(1.8)	(1.1)
Total	<u>\$ (1.1)</u>	<u>\$ (1.4)</u>	<u>\$ (1.3)</u>

A summary of our key actuarial assumptions used to determine the net benefit obligations as of December 31, 2016 and 2017 follows:

	December 31,	
	2016	2017
Healthcare inflation:		
Initial rate	7.0%	6.25 – 6.5%
Ultimate rate	5.0%	5.0%
Year of ultimate rate achievement	2021	2021
Discount rate	3.4%	3.1%

Assumed health care cost trend rates affect the amounts we report for health care plans. A one percent change in assumed health care trend rates would not have a material effect on the net periodic OPEB cost for 2017 or on the accumulated OPEB obligations at December 31, 2017.

The weighted average discount rate used in determining the net periodic OPEB cost for 2017 was 3.35% (the rate was 3.6% in 2016 and 3.4% in 2015). The weighted average rate was determined using the projected benefit obligations as of the beginning of each year. The impact of assumed increases in future compensation levels does not have a material effect on the net periodic OPEB cost as substantially all of such benefits relate solely to eligible retirees, for which compensation is not applicable. The impact of the assumed rate of return on plan assets also does not have a material effect on the net periodic OPEB cost as there were no plan assets as of December 31, 2016 or 2017.

Variances from actuarially-assumed rates will result in additional increases or decreases in accumulated OPEB obligations, net periodic OPEB cost and funding requirements in future periods.

Note 12—Other income, net:

	Years ended December 31,		
	2015	2016	2017
	(In millions)		
Securities earnings:			
Dividends and interest	\$ 26.4	\$ 26.7	\$ 29.4
Securities transactions, net	—	.5	.1
Total	<u>26.4</u>	<u>27.2</u>	<u>29.5</u>
Insurance recoveries	3.7	.4	.4
Currency transactions, net	(.1)	5.5	(7.5)
Disposal of property and equipment, net	(.8)	(.3)	(.5)
Business interruption insurance proceeds	—	4.3	—
Infrastructure reimbursement	.2	.6	1.0
Other, net	2.5	1.3	2.3
Total	<u>\$ 31.9</u>	<u>\$ 39.0</u>	<u>\$ 25.2</u>

Dividends and interest income includes distributions from The Amalgamated Sugar Company LLC of \$25.4 million in each of 2015, 2016 and 2017 (see Note 6). Infrastructure reimbursements are discussed in Note 18.

Insurance recoveries relate primarily to amounts NL received from certain of its former insurance carriers, and relate principally to the recovery of prior lead pigment and asbestos litigation defense costs incurred by us. We have agreements with four former insurance carriers pursuant to which the carriers reimburse us for a portion of our future lead pigment litigation defense costs, and one such carrier reimburses us for a portion of our future asbestos litigation defense costs. We are not able to determine how much we will ultimately recover from these carriers for defense costs incurred by us because of certain issues that arise regarding which defense costs qualify for reimbursement. While we continue to seek additional insurance recoveries for lead pigment and asbestos litigation matters, we do not know the extent to which we will be successful in obtaining additional reimbursement for either defense costs or indemnity. Substantially all of \$3.7 million in the insurance recoveries we recognized in 2015 relate to a settlement NL reached with one of its insurance carriers in September 2014 in which it agreed to reimburse NL for a portion of its past litigation defense costs. Any additional insurance recoveries would be recognized when the receipt is probable and the amount is determinable. See Note 18.

During 2016, we recognized \$3.4 million in income related to cash Kronos received from settlement of a business interruption insurance claim arising in 2014, and income of \$.9 million recognized in the fourth quarter related to cash Kronos received from settlement of another business interruption insurance claim arising in 2015. No additional material amounts are expected to be received with respect to such insurance claims.

Note 13 - Restructuring Costs

In the second quarter of 2015, our Chemicals Segment initiated a restructuring plan designed to improve its long-term cost structure. A portion of such expected cost savings is planned to occur through workforce reductions. During the second, third and fourth quarters of 2015 Kronos implemented certain voluntary and involuntary workforce reductions at certain of our facilities impacting approximately 160 individuals. A substantial portion of such workforce reductions were accomplished through voluntary programs, for which eligible workforce reduction costs are recognized at the time both the employee and employer are irrevocably committed to the terms of the separation. For involuntary programs, eligible costs are recognized when management approves the separation program, the affected employees are properly notified and the costs are estimable. To the extent there is a statutorily-mandated notice period and the affected employee is not required to provide services to us during such notice period, severance and all wages during such notice period are accrued at the time of separation. To the extent the affected employee is required to provide services to us during all or a portion of such notice period, the severance (and if applicable notice period wages for any period beyond the time the affected employee is required to provide future services to us) is accrued ratably over the period in which services will be provided. As of December 31, 2015 we recognized an aggregate \$21.7 million charge for such workforce reductions we had implemented through that date (substantially all of which was recognized in the second quarter of 2015), \$10.8 million of which is classified in cost of sales and \$10.9 million of which is classified in selling, general and administrative expense. Of the aggregate \$21.7 million charge recognized in 2015, \$15.9 million was paid in 2015, \$4.1 million was paid in 2016 and substantially all of the remainder was paid in 2017.

Note 14—Income taxes:

	Years ended December 31,		
	2015	2016	2017
	(In millions)		
Pre-tax income (loss):			
United States	\$ (3.5)	\$ (8.2)	\$ 26.7
Non-U.S. subsidiaries	(38.4)	47.8	265.1
Total	<u>\$ (41.9)</u>	<u>\$ 39.6</u>	<u>\$ 291.8</u>
Expected tax expense (benefit) at U.S. federal statutory income tax rate of 35%	\$ (14.7)	\$ 13.8	\$ 102.1
Non-U.S. tax rates	.6	(4.3)	(13.1)
Incremental net tax expense (benefit) on earnings and losses of non-U.S. and non-tax group companies	(37.6)	8.2	14.8
Valuation allowance	159.0	(2.2)	(205.4)
Transition tax	—	—	76.2
Change in federal tax rate	—	—	(77.1)
U.S. state income taxes, net	(1.1)	1.7	3.5
Adjustment to the reserve for uncertain tax positions, net	.8	7.2	(18.2)
Nondeductible expenses	2.5	1.9	2.2
U.S. – Canada APA	—	(3.4)	—
Domestic production activities deduction	(1.3)	(3.8)	(3.8)
Other, net	(.7)	(.5)	(1.2)
Provision for income taxes (benefit)	<u>\$ 107.5</u>	<u>\$ 18.6</u>	<u>\$ (120.0)</u>
Components of income tax expense (benefit):			
Currently payable (refundable):			
U.S. federal and state	\$ 15.1	\$ 35.5	\$ 87.3
Non-U.S.	3.3	9.5	38.5
Total	<u>18.4</u>	<u>45.0</u>	<u>125.8</u>
Deferred income taxes (benefit):			
U.S. federal and state	(55.8)	(29.1)	(96.9)
Non-U.S.	144.9	2.7	(148.9)
Total	<u>89.1</u>	<u>(26.4)</u>	<u>(245.8)</u>
Provision for income taxes (benefit)	<u>\$ 107.5</u>	<u>\$ 18.6</u>	<u>\$ (120.0)</u>
Comprehensive provision for income taxes (benefit) allocable to:			
Income (loss) from continuing operations	\$ 107.5	\$ 18.6	\$ (120.0)
Discontinued operations	(10.1)	(12.6)	(67.1)
Other comprehensive income (loss):			
Marketable securities	(4.1)	2.1	2.8
Currency translation	(17.3)	(3.4)	31.1
Pension plans	4.1	(5.0)	8.6
OPEB plans	(.4)	(.5)	(.6)
Interest rate swap	(1.7)	.2	1.6
Total	<u>\$ 78.0</u>	<u>\$ (.6)</u>	<u>\$ (143.6)</u>

The amount shown in the above table of our income tax rate reconciliation for non-U.S. tax rates represents the result determined by multiplying the pre-tax earnings or losses of each of our non-U.S. subsidiaries by the difference between the applicable statutory income tax rate for each non-U.S. jurisdiction and the U.S. federal statutory tax rate of 35%. The amount shown on such table for incremental net tax (benefit) on earnings and losses on non-U.S. and non-tax group companies includes, as applicable, (i) current income taxes (including withholding taxes, if applicable), if any, associated with any current-year earnings of our Chemicals Segments non-U.S. subsidiaries to the extent such current-year earnings were distributed to us in the current year, (ii) deferred income taxes (or deferred income tax benefits) associated with the current-year change in the aggregate amount of undistributed earnings of our Chemicals Segment's non-U.S. subsidiaries, which earnings are not subject to a permanent reinvestment plan, including the impact of any change in such permanent reinvestment plan, in an amount representing the current-year change in the aggregate current income tax that would be generated (including withholding taxes, if applicable) when such aggregate undistributed earnings are distributed to us, (iii) current U.S. income taxes (or current income tax benefit), including U.S. personal holding company tax, as

applicable, attributable to current-year income (losses) of one of Kronos' non-U.S. subsidiaries, which subsidiary is treated as a dual resident for U.S. income tax purposes, to the extent the current-year income (losses) of such subsidiary is subject to U.S. income tax under the U.S. dual-resident provisions of the Internal Revenue Code, (iv) deferred income taxes associated with our direct investment in Kronos (beginning in 2015) and (v) current and deferred income taxes associated with distributions and earnings from our investment in LandWell and BMI.

The components of the net deferred tax liability at December 31, 2016 and 2017 are summarized below.

	December 31,			
	2016		2017	
	Assets	Liabilities	Assets	Liabilities
	(In millions)			
Tax effect of temporary differences related to:				
Inventories	\$ 4.2	\$ (4.0)	\$ 3.3	\$ (.8)
Marketable securities	—	(59.9)	—	(25.4)
Property and equipment	—	(77.5)	.1	(71.8)
Accrued OPEB costs	3.7	—	3.0	—
Accrued pension costs	52.6	—	70.9	—
Currency revaluation on intercompany debt	24.0	—	—	—
Accrued environmental liabilities	41.1	—	28.8	—
Other deductible differences	25.5	—	11.7	—
Other taxable differences	—	(18.9)	—	(14.0)
Investments in subsidiaries and affiliates	—	(235.3)	2.7	(175.8)
Tax on unremitted earnings of non-U.S. subsidiaries	—	(2.8)	—	(9.5)
Tax loss and tax credit carryforwards	142.6	—	116.2	—
Valuation allowance	(173.4)	—	(2.8)	—
Adjusted gross deferred tax assets (liabilities)	120.3	(398.4)	233.9	(297.3)
Netting of items by tax jurisdiction	(120.3)	(120.3)	(114.1)	(114.1)
Net noncurrent deferred tax asset (liability)	\$ —	\$ (278.1)	\$ 119.8	\$ (183.2)

Tax authorities may in the future examine certain of our U.S. and non-U.S. tax returns and have or may propose tax deficiencies, including penalties and interest. Because of the inherent uncertainties involved in settlement initiatives and court and tax proceedings, we cannot guarantee that these tax matters will be resolved in our favor, and therefore our potential exposure, if any, is also uncertain.

Our Chemicals Segment has substantial net operating loss (NOL) carryforwards in Germany (the equivalent of \$652 million for German corporate purposes and \$.5 million for German trade tax purposes at December 31, 2017) and in Belgium (the equivalent of \$50 million for Belgian corporate tax purposes at December 31, 2017), all of which have an indefinite carryforward period. As a result, we have net deferred income tax assets with respect to these two jurisdictions, primarily related to these NOL carryforwards. The German corporate tax is similar to the U.S. federal income tax, and the German trade tax is similar to the U.S. state income tax. Prior to June 30, 2015, and using all available evidence, we had concluded no deferred income tax asset valuation allowance was required to be recognized with respect to these net deferred income tax assets under the more-likely-than-not recognition criteria, primarily because (i) the carryforwards have an indefinite carryforward period, (ii) we utilized a portion of such carryforwards during the most recent three-year period, and (iii) we expected to utilize the remainder of the carryforwards over the long term. We had also previously indicated that facts and circumstances could change, which might in the future result in the recognition of a valuation allowance against some or all of such deferred income tax assets. However, as of June 30, 2015, and given our operating results during the second quarter of 2015 and our expectations at that time for our operating results for the remainder of 2015, we did not have sufficient positive evidence to overcome the significant negative evidence of having cumulative losses in the most recent twelve consecutive quarters in both our German and Belgian jurisdictions at June 30, 2015 (even considering that the carryforward period of our German and Belgian NOL carryforwards is indefinite, one piece of positive evidence). Accordingly, at June 30, 2015, we concluded that we were required to recognize a non-cash deferred income tax asset valuation allowance under the more-likely-than-not recognition criteria with respect to our Chemicals Segment's German and Belgian net deferred income tax assets at such date. Such valuation allowance aggregated \$150.3 million at June 30, 2015. We recognized an additional \$8.7 million non-cash deferred income tax asset valuation allowance under the more-likely-than-not recognition criteria during the third and fourth quarters of 2015. During 2016, we recognized an aggregate \$2.2 million non-cash tax benefit as the result of a net decrease in such deferred income tax asset valuation allowance, as the impact of utilizing a portion of our Chemicals Segment's German NOLs during such period more

than offset the impact of additional losses recognized by our Chemicals Segment's Belgian operations during such period. Such valuation allowance aggregated approximately \$173 million at December 31, 2016 (\$153 million with respect to Germany and \$20 million with respect to Belgium). During the first six months of 2017, we recognized an aggregate non-cash income tax benefit of \$12.7 million as a result of a net decrease in such deferred income tax asset valuation allowance, due to the utilization of a portion of both the German and Belgian NOLs during such period. At June 30, 2017, we concluded we had sufficient positive evidence under the more-likely-than-not recognition criteria to support reversal of the entire valuation allowance related to our Chemicals Segment's German and Belgian operations. Such sufficient positive evidence at June 30, 2017 included, among other things, the existence of cumulative profits in the most recent twelve consecutive quarters (Germany) or profitability in recent quarters during which such profitability was trending upward throughout such period (Belgium), the ability to demonstrate future profitability in Germany and Belgium for a sustainable period, and the indefinite carryforward period for the German and Belgian NOLs. As discussed below regarding accounting for income taxes at interim dates, a large portion (\$149.9 million) of the remaining valuation allowance as of June 30, 2017 was reversed in the second quarter with the remainder reversed during the second half of 2017.

In accordance with the ASC 740-270 guidance regarding accounting for income taxes at interim dates, the amount of the valuation allowance reversed at June 30, 2017 (\$149.9 million, of which \$141.9 million related to Germany and \$8.0 million related to Belgium) relates to our change in judgment at that date regarding the realizability of the related deferred income tax asset as it relates to future years (i.e. 2018 and after). A change in judgment regarding the realizability of deferred tax assets as it relates to the current year is considered in determining the estimated annual effective tax rate for the year and is recognized throughout the year, including interim periods subsequent to the date of the change in judgment. Accordingly, our income tax benefit in 2017 includes an aggregate non-cash deferred income tax benefit of \$186.7 million related to the reversal of the German and Belgian valuation allowance, comprised of \$12.7 million recognized in the first half of 2017 related to the utilization of a portion of both the German and Belgian NOLs during such period, \$149.9 million related to the portion of the valuation allowance reversed as of June 30, 2017 and \$24.1 million recognized in the second half of 2017 related to the utilization of a portion of both the German and Belgian NOLs during such period. In addition, our deferred income tax asset valuation allowance increased \$13.7 million in 2017 as a result of changes in currency exchange rates, which increase was recognized as part of other comprehensive income (loss).

On December 22, 2017, the 2017 Tax Act was enacted into law. This new tax legislation, among other changes, (i) reduces the U.S. Federal corporate income tax rate from 35% to 21% effective January 1, 2018; (ii) implements a territorial tax system and imposes a one-time repatriation tax (Transition Tax) on the deemed repatriation of the post-1986 undistributed earnings of non-U.S. subsidiaries accumulated up through December 31, 2017, regardless of whether such earnings are repatriated; (iii) eliminates U.S. tax on future non-U.S. earnings (subject to certain exceptions); (iv) eliminates the domestic production activities deduction beginning in 2018; (v) eliminates the net operating loss carryback and provides for an indefinite carryforward period subject to an 80% annual usage limitation; (vi) allows for the expensing of certain capital expenditures; (vii) imposes a tax on global intangible low-tax income; and (viii) imposes a base erosion anti-abuse tax. Following the enactment of the 2017 Tax Act, the Securities and Exchange Commission issued Staff Accounting Bulletin (SAB) 118 to provide guidance on the accounting and reporting impacts of the 2017 Tax Act. SAB 118 states that companies should account for changes related to the 2017 Tax Act in the period of enactment if all information is available and the accounting can be completed. In situations where companies do not have enough information to complete the accounting in the period of enactment, a company must either 1) record an estimated provisional amount if the impact of the change can be reasonably estimated; or 2) continue to apply the accounting guidance that was in effect immediately prior to the 2017 Tax Act if the impact of the change cannot be reasonably estimated. If estimated provisional amounts are recorded, SAB 118 provides a measurement period of no longer than one year during which companies should adjust those amounts as additional information becomes available.

Under GAAP, we are required to revalue our net deferred tax asset associated with our U.S. net deductible temporary differences in the period in which the new tax legislation is enacted based on deferred tax balances as of the enactment date, to reflect the effect of such reduction in the corporate income tax rate. Our temporary differences as of December 31, 2017 are not materially different from our temporary differences as of the enactment date, accordingly revaluation of our net deductible temporary differences is based on our net deferred tax assets as of December 31, 2017. Such revaluation resulted in a non-cash deferred income tax benefit of \$77.1 million recognized in continuing operations, reducing our net deferred income tax liability. The amounts recorded as of December 31, 2017 as a result of the 2017 Tax Act represent estimates based on information currently available and, in accordance with the guidance in SAB 118, these amounts are provisional and subject to adjustment as we obtain additional information and complete our analysis in 2018. If the underlying guidance or tax laws change and such change impacts the income tax effects of the new legislation recognized at December 31, 2017, we will recognize an adjustment in the reporting period within the measurement period in which such adjustment is determined. Such measurement period ends December 22, 2018 pursuant to the guidance under SAB 118.

Prior to the enactment of the 2017 Tax Act, the undistributed earnings of our European subsidiaries were deemed to be permanently reinvested (we had not made a similar determination with respect to the undistributed earnings of our Canadian subsidiary). Pursuant to the Transition Tax provisions imposing a one-time repatriation tax on post-1986 undistributed earnings, we

recognized a provisional current income tax expense of \$76.2 million in the fourth quarter of 2017. We will elect to pay such tax over an eight year period beginning in 2018, including approximately \$6.1 million which will be paid in 2018 and is netted with our current receivables from affiliates (income taxes receivable from Contran) classified as a current asset in our Consolidated Balance Sheet, and the remaining \$70.1 million is recorded as a noncurrent payable to affiliate (income taxes payable to Contran) classified as a noncurrent liability in our Consolidated Balance Sheet and will be paid in increments over the remainder of the eight year period. The amounts recorded as of December 31, 2017 as a result of the 2017 Tax Act represent estimates based on information currently available and, in accordance with the guidance in SAB 118, these amounts are provisional and subject to adjustment as we obtain additional information and complete our analysis in 2018. If the underlying guidance or tax laws change and such change impacts the income tax effects of the new legislation recognized at December 31, 2017 or we determine we have additional tax liabilities under other provisions of the 2017 Tax Act, including the tax on global intangible low-taxed income and the base erosion anti-abuse tax, we will recognize an adjustment in the reporting period within the measurement period in which such adjustment is determined. Such measurement period ends December 22, 2018 pursuant to the guidance under SAB 118.

Prior to the enactment of the 2017 Tax Act the undistributed earnings of our European subsidiaries were deemed to be permanently reinvested (we had not made a similar determination with respect to the undistributed earnings of our Canadian subsidiary). As a result of the implementation of a territorial tax system under the 2017 Tax Act, effective January 1, 2018, and the Transition Tax which in effect taxes the post-1986 undistributed earnings of our non-U.S. subsidiaries accumulated up through December 31, 2017, we have now determined that all of the post-1986 undistributed earnings of our European subsidiaries are not permanently reinvested. Accordingly, in the fourth quarter of 2017 we have recognized an aggregate provisional non-cash deferred income tax expense of \$5.3 million for the estimated U.S. state and non-U.S. income tax and withholding tax liability attributable to all of such previously-considered permanently reinvested undistributed earnings. We are currently reviewing certain other provisions under the 2017 Tax Act that would impact our determination of the aggregate temporary differences attributable to our investments in our non-U.S. subsidiaries. We continue to assert indefinite reinvestment as it relates to our outside basis differences attributable to our investments in our non-U.S. subsidiaries other than post-1986 undistributed earnings of our European Subsidiaries and all undistributed earnings of our Canadian Subsidiary. It is possible that a change in facts and circumstances, such as a change in the expectation regarding future dispositions or acquisitions or a change in tax law, could result in a conclusion that some or all of such investments are no longer permanently reinvested. It is currently not practical for us to determine the amount of the unrecognized deferred income tax liability related to our investments in our non-U.S. subsidiaries due to the complexities associated with our organizational structure, changes in the 2017 Tax Act and the U.S. taxation of such investments in the states in which we operate.

Certain U.S. deferred tax attributes of one of our non-U.S. subsidiaries, which subsidiary is treated as a dual resident for U.S. income tax purposes, were subject to various limitations. As a result, we had previously concluded that a deferred income tax asset valuation allowance was required to be recognized with respect to such subsidiary's U.S. net deferred income tax asset because such assets did not meet the more-likely-than-not recognition criteria primarily due to (i) the various limitations regarding use of such attributes due to the dual residency; (ii) the dual resident subsidiary had a history of losses and absent distributions from our non-U.S. subsidiaries, which were previously not determinable, such subsidiary was expected to continue to generate losses; and (iii) a limited NOL carryforward period for U.S. tax purposes. Because we had concluded the likelihood of realization of such subsidiary's net deferred income tax asset was remote, we had not previously disclosed such valuation allowance or the associated amount of the subsidiary's net deferred income tax assets (exclusive of such valuation allowance). Primarily due to changes enacted under the 2017 Tax Act, we have concluded we now have sufficient positive evidence under the more-likely-than-not recognition criteria to support reversal of the entire valuation allowance related to such subsidiary's net deferred income tax asset, which evidence included, among other things, (i) the inclusion under Transition Tax provisions of significant earnings for U.S. income tax purposes which significantly and positively impacts the ability of such deferred tax attributes to be utilized by us; (ii) the indefinite carryforward period for U.S. net operating losses incurred after December 31, 2017; (iii) an expectation of continued future profitability for our U.S. operations; and (iv) a positive taxable income basket for U.S. tax purposes in excess of the U.S. deferred tax asset related to the U.S. attributes of such subsidiary. Accordingly, in the fourth quarter we recognized an \$18.7 million non-cash deferred income tax benefit as a result of the reversal of such valuation allowance.

None of our U.S. and non-U.S. tax returns are currently under examination. As a result of prior audits in certain jurisdictions, which are now settled, in 2008 we filed Advance Pricing Agreement Requests with the tax authorities in the U.S., Canada and Germany. These requests have been under review with the respective tax authorities since 2008 and prior to 2016, it was uncertain whether an agreement would be reached between the tax authorities and whether we would agree to execute and finalize such agreements.

- During 2016, Contran, as the ultimate parent of our U.S. Consolidated income tax group, executed and finalized an Advance Pricing Agreement with the U.S. Internal Revenue Service and our Canadian subsidiary executed and finalized an Advance Pricing Agreement with the Competent Authority for Canada (collectively, the "U.S.-Canada APA") effective for tax years 2005 - 2015. Pursuant to the terms of the U.S.-Canada APA, the U.S. and Canadian tax

authorities agreed to certain prior year changes to taxable income of our U.S. and Canadian subsidiaries. As a result of such agreed-upon changes, we recognized a \$3.4 million current U.S. income tax benefit in 2016. In addition, our Canadian subsidiary incurred a cash income tax payment of approximately CAD \$3 million (USD \$2.3 million) related to the U.S.-Canada APA, but such payment was fully offset by previously provided accruals, and such income tax was paid in the third quarter of 2017.

- During the third quarter of 2017, our Canadian subsidiary executed and finalized an Advance Pricing Agreement with the Competent Authority for Canada (the “Canada-Germany APA”) effective for tax years 2005 - 2017. Pursuant to the terms of the Canada-Germany APA, the Canadian and German tax authorities agreed to certain prior year changes to taxable income of our Canadian and German subsidiaries. As a result of such agreed-upon changes, we reversed a significant portion of our reserve for uncertain tax positions and recognized a non-cash income tax benefit of \$8.6 million related to such reversal (\$8.1 million recognized in the third quarter of 2017). In addition, we recognized a \$2.6 million non-cash income tax benefit related to an increase in our German NOLs and a \$.6 million German cash tax refund related to the Canada-Germany APA in the third quarter of 2017.

We recognize deferred income taxes with respect to the excess of the financial reporting carrying amount over the income tax basis of our direct investment in Kronos common stock because the exemption under GAAP to avoid such recognition of deferred income taxes is not available to us. There is a maximum amount (or cap) of such deferred income taxes we are required to recognize with respect to our direct investment in Kronos, and we previously reached such maximum amount in the fourth quarter of 2010. Since that time and through March 31, 2015, we were not required to recognize any additional deferred income taxes with respect to our direct investment in Kronos because the deferred income taxes associated with the excess of the financial reporting carrying amount over the income tax basis of our direct investment in Kronos common stock continued to be above such cap. However, at June 30, 2015, the deferred income taxes associated with the excess of the financial reporting carrying amount over the income tax basis of our direct investment in Kronos common stock was, for the first time since the fourth quarter of 2010, below such cap, in large part due to the net loss reported by Kronos in the second quarter of 2015. During the second, third and fourth quarters of 2015, we recognized an aggregate \$29.3 million non-cash income tax benefit for the reduction in the deferred income taxes required to be recognized with respect to the excess of the financial reporting carrying amount over the income tax basis of our direct investment in Kronos common stock, to the extent such reduction related to our equity in Kronos' net loss in 2015. We recognized a non-cash income tax expense of \$6.5 million in 2016 for the increase in the deferred income taxes required to be recognized with respect to the excess of the financial reporting carrying amount over the income tax basis of our direct investment in Kronos common stock, to the extent such increase related to our equity in Kronos' net income (loss) in such periods. Our provision for income taxes in 2017 includes a provisional non-cash income tax expense of \$22.1 million for the increase in the deferred income taxes required to be recognized with respect to the excess of the financial reporting carrying amount over the income tax basis of our direct investment in Kronos common stock, to the extent such increase related to our equity in Kronos' net income in such period. Such amount is included in the table of our income tax rate reconciliation for incremental net tax on earnings and losses on non-U.S. and non-tax group companies above (in addition to the other items included in such line item in the rate reconciliation, as indicated above). A portion of such increase (decrease) with respect to the excess of the financial reporting carrying amount over the income tax basis of our direct investment in Kronos common stock during 2015, 2016 and 2017 related to our equity in Kronos' other comprehensive income (loss) items, and the amounts shown in the table above for income tax expense (benefit) allocated to other comprehensive income (loss) includes amounts related to our equity in Kronos' other comprehensive income (loss) items. While at the third quarter of 2017 we had reached the maximum amount of deferred income taxes we are required to recognize with respect to our direct investment in Kronos, recognition of the effects of the 2017 Tax Act, among other things, resulted in a provisional increase in the income tax basis of our direct investment in Kronos, putting us below such maximum amount at December 31, 2017.

Due to uncertainties and complexities of the new legislation, we are still evaluating the impact of the one-time deemed repatriation of the post-1986 undistributed earnings of our non-U.S. subsidiaries up through December 31, 2017 as it relates to the income tax basis of our direct investment in Kronos. At December 31, 2017, we have recognized a deferred income tax liability with respect to our direct investment in Kronos of \$157.6 million. The maximum amount of such deferred income tax liability we would be required to have recognized (the cap) is \$173.0 million. Our deferred income tax liability with respect to our direct investment in Kronos represents an estimate and, in accordance with the guidance in SAB 118, this amount is provisional and subject to adjustment as we obtain additional information and complete our analysis of the impact of the new legislation. If such estimates change, we will recognize an adjustment in the reporting period within the measurement period in which such adjustment is determined. Such measurement period ends December 22, 2018 pursuant to the guidance under SAB 118.

We believe we have adequate accruals for additional taxes and related interest expense which could ultimately result from tax examinations. We believe the ultimate disposition of tax examinations should not have a material adverse effect on our consolidated financial position, results of operations or liquidity.

The following table shows the changes in the amount of our uncertain tax positions (exclusive of the effect of interest and penalties) during 2015, 2016 and 2017:

	Years ended December 31,		
	2015	2016	2017
	(In millions)		
Unrecognized tax benefits:			
Amount beginning of year	\$ 30.1	\$ 28.8	\$ 35.6
Net increase (decrease):			
Tax positions taken in prior periods	(.4)	(.6)	(13.3)
Tax positions taken in current period	6.4	11.0	4.5
Lapse due to applicable statute of limitations	(6.0)	(1.6)	(8.1)
Settlement with taxing authorities	—	(2.3)	(2.3)
Changes in currency exchange rates	(1.3)	.3	.7
Amount at end of year	<u>\$ 28.8</u>	<u>\$ 35.6</u>	<u>\$ 17.1</u>

If our uncertain tax positions were recognized, a benefit of \$13.1 million at December 31, 2017, would affect our effective income tax rate. We currently estimate that our unrecognized tax benefits will decrease by approximately \$1.8 million, excluding interest, during the next twelve months related to the expiration of certain statutes of limitations.

We and Contran file income tax returns in U.S. federal and various state and local jurisdictions. We also file income tax returns in various foreign jurisdictions, principally in Germany, Canada, Belgium and Norway. Our U.S. income tax returns prior to 2014 are generally considered closed to examination by applicable tax authorities. Our foreign income tax returns are generally considered closed to examination for years prior to: 2008 for Norway; 2012 for Canada; 2013 for Germany; and 2014 for Belgium.

We accrue interest and penalties on our uncertain tax positions as a component of our provision for income taxes. We accrued interest and penalties of \$1.3 million during 2015 and \$1.6 million during 2016 and \$2.1 million during 2017, and at December 31, 2016 and 2017 we had \$5.2 million and \$1.5 million, respectively, accrued for interest and an immaterial amount accrued for penalties for our uncertain tax positions.

Note 15—Noncontrolling interest in subsidiaries:

	December 31,	
	2016	2017
	(In millions)	
Noncontrolling interest in net assets:		
Kronos Worldwide	\$ 134.5	\$ 204.9
NL Industries	44.3	71.1
CompX International	16.4	17.8
BMI	24.6	26.0
LandWell	23.7	22.5
Total	\$ 243.5	\$ 342.3

	Years ended December 31,		
	2015	2016	2017
	(In millions)		
Noncontrolling interest in net income (loss) of subsidiaries:			
Kronos Worldwide	\$ (34.3)	\$ 8.3	\$ 69.3
NL Industries	(4.0)	2.6	19.7
CompX International	1.2	1.4	1.7
BMI	.1	(.4)	3.2
LandWell	(.5)	1.0	1.2
Total	\$ (37.5)	\$ 12.9	\$ 95.1

Note 16—Valhi stockholders' equity:

	Shares of common stock		
	Issued	Treasury	Outstanding
	(In millions)		
Balance at December 31, 2015, 2016 and 2017	355.3	(13.2)	342.0

Valhi common stock. We issued a nominal number of shares of Valhi common stock during 2015, 2016 and 2017, associated with annual stock awards to members of our board of directors.

Valhi share repurchases and cancellations. Prior to 2015, our board of directors authorized the repurchase of up to 10.0 million shares of our common stock in open market transactions, including block purchases, or in privately negotiated transactions, which may include transactions with our affiliates or subsidiaries. We may purchase the stock from time to time as market conditions permit. The stock repurchase program does not include specific price targets or timetables and may be suspended at any time. Depending on market conditions, we may terminate the program prior to completion. We will use cash on hand to acquire the shares. Repurchased shares could be retired and cancelled or may be added to our treasury stock and used for employee benefit plans, future acquisitions or other corporate purposes. We did not make any such purchases under the plan in 2015, 2016 or 2017.

Treasury stock. The treasury stock we reported for financial reporting purposes at December 31, 2015, 2016 and 2017 represents our proportional interest in the shares of our common stock held by NL and Kronos. NL held approximately 14.4 million shares of our common stock at December 31, 2016 and 2017. At December 31, 2016 and 2017 Kronos held an aggregate of 1.7 million shares of our common stock. Under Delaware Corporation Law, 100% (and not the proportionate interest) of a parent company's shares held by a majority-owned subsidiary of the parent is considered to be treasury stock for voting purposes. As a result, our common shares outstanding for financial reporting purposes differ from those outstanding for legal purposes.

Preferred stock. Our outstanding preferred stock consists of 5,000 shares of our Series A Preferred Stock having a liquidation preference of \$133,466.75 per share, or an aggregate liquidation preference of \$667.3 million. The outstanding shares of Series A Preferred Stock are held by Contran and represent all of the shares of Series A Preferred Stock we are authorized to issue. The preferred stock has a par value of \$.01 per share and pays a non-cumulative cash dividend at an annual rate of 6% of the aggregate liquidation preference only when authorized and declared by our board of directors. The shares of Series A Preferred Stock are non-convertible, and the shares do not carry any redemption or call features (either at our option or the option of the holder). A holder of the Series A shares does not have any voting rights, except in limited circumstances, and is not entitled to a preferential dividend right that is senior to our shares of common stock. Upon the liquidation, dissolution or winding up of our affairs, a holder of the Series A shares is entitled to be paid a liquidation preference of \$133,466.75 per share, plus an amount (if any) equal to any declared but unpaid dividends, before any distribution of assets is made to holders of our common stock. Through December 31, 2017, we have not declared any dividends on the Series A Preferred Stock since its issuance prior to 2015.

Valhi long-term incentive compensation plan. Prior to 2015, our board of directors adopted a plan that provides for the award of stock to our board of directors, and up to a maximum of 200,000 shares could be awarded. Under the plan, we awarded 10,500 shares in 2015, 16,000 shares in 2016 and 12,000 shares in 2017, and at December 31, 2017 138,500 shares are available for future award under this new plan.

Stock plans of subsidiaries. Kronos, NL and CompX each maintain plans which provide for the award of their common stock to their board of directors. At December 31, 2017, Kronos, NL and CompX had 155,500, 154,000 and 166,000 shares of their respective common stock available for future award under respective plans.

Accumulated other comprehensive income (loss). Accumulated other comprehensive income (loss) attributable to Valhi stockholders comprises changes in equity as presented in the table below.

	Years ended December 31,		
	2015	2016	2017
	(In millions)		
Accumulated other comprehensive income (loss) (net of tax and noncontrolling interest):			
Marketable securities:			
Balance at beginning of year	\$ 1.6	\$ 1.6	\$ 1.7
Other comprehensive income (loss):			
Unrealized gain arising during the year	—	.1	—
Balance at end of year	<u>\$ 1.6</u>	<u>\$ 1.7</u>	<u>\$ 1.7</u>
Interest rate swap:			
Balance at beginning of year	\$ —	\$ (1.3)	\$ (1.2)
Other comprehensive loss:			
Unrealized losses during the year	(1.7)	(1.2)	(1.2)
Less reclassification adjustments for amounts included in interest expense	.4	1.3	2.4
Balance at end of year	<u>\$ (1.3)</u>	<u>\$ (1.2)</u>	<u>\$ —</u>
Currency translation:			
Balance at beginning of year	\$ (22.6)	\$ (78.1)	\$ (88.5)
Other comprehensive gain (loss) arising during the year	(55.5)	(10.4)	34.4
Balance at end of year	<u>\$ (78.1)</u>	<u>\$ (88.5)</u>	<u>\$ (54.1)</u>
Defined benefit pension plans:			
Balance at beginning of year	\$ (132.0)	\$ (123.0)	\$ (137.0)
Other comprehensive income (loss):			
Amortization of prior service cost and net (gains) losses included in net periodic pension cost	6.7	5.7	6.4
Net actuarial gain (loss) arising during the year	2.3	(19.7)	1.6
Balance at end of year	<u>\$ (123.0)</u>	<u>\$ (137.0)</u>	<u>\$ (129.0)</u>
OPEB plans:			
Balance at beginning of year	\$ 4.4	\$ 3.8	\$ 3.1
Other comprehensive loss:			
Amortization of prior service credit and net losses included in net periodic OPEB cost	(1.0)	(1.0)	(.8)
Net actuarial gain arising during the year	.4	.3	.1
Balance at end of year	<u>\$ 3.8</u>	<u>\$ 3.1</u>	<u>\$ 2.4</u>
Total accumulated other comprehensive income (loss):			
Balance at beginning of year	\$ (148.6)	\$ (197.0)	\$ (221.9)
Other comprehensive income (loss)	(48.4)	(24.9)	42.9
Balance at end of year	<u>\$ (197.0)</u>	<u>\$ (221.9)</u>	<u>\$ (179.0)</u>

See Note 11 for amounts related to our defined benefit pension plans and OPEB plans and Note 19 for a discussion of our interest rate swap contract.

Note 17—Related party transactions:

We may be deemed to be controlled by Ms. Simmons and Ms. Connelly. See Note 1. Corporations that may be deemed to be controlled by or affiliated with such individuals sometimes engage in (a) intercorporate transactions such as guarantees, management and expense sharing arrangements, shared fee arrangements, joint ventures, partnerships, loans, options, advances of funds on open account, and sales, leases and exchanges of assets, including securities issued by both related and unrelated parties and (b) common investment and acquisition strategies, business combinations, reorganizations, recapitalizations, securities repurchases,

and purchases and sales (and other acquisitions and dispositions) of subsidiaries, divisions or other business units, which transactions have involved both related and unrelated parties and have included transactions which resulted in the acquisition by one related party of a publicly-held noncontrolling interest in another related party. While no transactions of the type described above are planned or proposed with respect to us other than as set forth in these financial statements, we continuously consider, review and evaluate, and understand that Contran and related entities consider, review and evaluate such transactions. Depending upon the business, tax and other objectives then relevant, it is possible that we might be a party to one or more such transactions in the future.

From time to time, we may have loans and advances outstanding between us and various related parties, including Contran, pursuant to term and demand notes. We generally enter into these loans and advances for cash management purposes. When we loan funds to related parties, we are generally able to earn a higher rate of return on the loan than we would earn if we invested the funds in other instruments. While certain of these loans may be of a lesser credit quality than cash equivalent instruments otherwise available to us, we believe we have evaluated the credit risks involved and appropriately reflect those credit risks in the terms of the applicable loans. When we borrow from related parties, we are generally able to pay a lower rate of interest than we would pay if we borrowed from unrelated parties. See Note 9 for more information on the Valhi and Kronos credit facilities with Contran. We paid Contran \$10.3 million, \$12.9 million and \$14.4 million in interest on borrowings under credit facilities in 2015, 2016 and 2017, respectively.

A subsidiary of Contran has guaranteed(i) Tremont's obligation under its \$13.1 million promissory note payable to NERT discussed in Note 9 and (ii) Tremont's \$9.3 million (\$11.1 million face value) deferred payment obligation discussed in Note 10. The guaranty obligation would only arise upon our failure to make any required repayments. Prior to our sale of our Waste Management Segment, a subsidiary of Contran guaranteed certain third-party indebtedness of WCS. The purchaser of WCS assumed such indebtedness, and such guarantee was released.

Under the terms of various intercorporate services agreements ("ISAs") we enter into with Contran, employees of Contran provide us certain management, tax planning, financial and administrative services on a fee basis. Such charges are based upon estimates of the time devoted by the Contran employees to our affairs, and the compensation and other expenses associated with those persons. Because of the large number of companies affiliated with Contran, we believe we benefit from cost savings and economies of scale gained by not having certain management, financial and administrative staffs duplicated at all of our subsidiaries, thus allowing certain Contran employees to provide services to multiple companies but only be compensated by Contran. The net ISA fees charged to us by Contran aggregated \$35.8 million in 2015, \$36.5 million in 2016 and \$40.0 million in 2017.

We had an aggregate 30.2 million shares at December 31, 2016 and 2017 of our Kronos common stock pledged as collateral for certain debt obligations of Contran. We receive a fee from Contran for pledging these Kronos shares, determined by a formula based on the market value of the shares pledged. We received \$.8 million in 2015, \$1.2 million in 2016 and \$2.8 million in 2017 from Contran for this pledge.

Our subsidiaries Tall Pines Insurance Company and EWI RE, Inc. provide for or broker certain insurance or reinsurance policies for Contran and certain of its subsidiaries and affiliates, including us. Tall Pines purchases reinsurance for substantially all of the risks it underwrites from third party insurance carriers with an A.M. Best Company rating of generally at least A- (Excellent). Consistent with insurance industry practices, Tall Pines and EWI receive commissions from insurance and reinsurance underwriters and/or assess fees for the policies that they provide or broker to us. We received cash payments for insurance premiums from Contran and certain other affiliates not members of our consolidated financial reporting group of \$5.4 million in 2015 and \$5.3 million 2016 and \$5.9 million in 2017. These amounts also include payments to insurers or reinsurers through EWI for the reimbursement of claims within our applicable deductible or retention ranges that such insurers or reinsurers paid to third parties on our behalf, as well as amounts for claims and risk management services and various other third-party fees and expenses incurred by the program. We expect these relationships with Tall Pines and EWI will continue in 2018.

With respect to certain of such jointly-owned policies, it is possible that unusually large losses incurred by one or more insureds during a given policy period could leave the other participating companies without adequate coverage under that policy for the balance of the policy period. As a result, and in the event that the available coverage under a particular policy would become exhausted by one or more claims, Contran and certain of its subsidiaries and affiliates, including us, have entered into a loss sharing agreement under which any uninsured loss arising because the available coverage had been exhausted by one or more claims will be shared ratably amongst those entities that had submitted claims under the relevant policy. We believe the benefits in the form of reduced premiums and broader coverage associated with the group coverage for such policies justify the risk associated with the potential for any uninsured loss.

Contran and certain of its subsidiaries, including us, participate in a combined information technology data recovery program that Contran provides from a data recovery center that it established. Pursuant to the program, Contran and certain of its

subsidiaries, including us, as a group share information technology data recovery services. The program apportions its costs among the participating companies. We paid Contran \$298,000 in 2015, \$253,000 in 2016 and \$258,000 in 2017 for such services. We expect that this relationship with Contran will continue in 2018.

Prior to our sale of our Waste Management Segment in January 2018, WCS was required to provide certain financial assurances to the Texas government agencies with respect to certain decommissioning obligations related to our facility in West Texas. See Note 18. Such financial assurances may be provided by various means. We and certain of our affiliates provided or assisted WCS with providing such financial assurance, as specified below. After completing the sale of WCS discussed in Note 3, we and our affiliates are no longer required to provide or assist with such financial assurance.

- During 2015, 2016 and 2017, a subsidiary of Contran guaranteed certain of WCS' specified decommissioning obligations as it relates to its LLRW treatment and storage facility and RCRA permits, currently estimated at \$3.9 million. Such Contran subsidiary was eligible to provide this guarantee because it met certain specified financial tests. The obligations would arise only upon a closure of our West Texas facility and our failure to perform the required decommissioning activities.
- During 2015, 2016 and 2017, Contran issued a letter of credit ("LOC") under its bank credit facility to the state of Texas related to specified decommissioning obligations associated with our byproduct facility. At December 31, 2017, the amount of such LOC was \$6.3 million. The LOC would only be drawn down upon the closure of our byproduct facility and our failure to perform the required decommissioning activities. We reimbursed Contran for costs related to the LOC of \$.1 million in each of 2015, 2016 and 2017.

Receivables from and payables to affiliates are summarized in the table below.

	December 31,	
	2016	2017
	(In millions)	
Current receivables from affiliates:		
Contran:		
Trade items	\$.4	\$ 1.0
Income taxes	—	19.4
Louisiana Pigment Company, L.P.	—	8.9
Other	2.8	3.3
Total	<u>\$ 3.2</u>	<u>\$ 32.6</u>
Current payables to affiliates:		
Louisiana Pigment Company, L.P.	\$ 14.7	\$ 16.2
Contran income taxes	5.5	—
Total	<u>\$ 20.2</u>	<u>\$ 16.2</u>
Noncurrent payable to affiliates:		
Contran – income taxes	<u>\$ —</u>	<u>\$ 70.1</u>
Payables to affiliate included in long-term debt:		
Valhi—Contran credit facility	<u>\$ 278.9</u>	<u>\$ 284.3</u>

Amounts payable to LPC are generally for the purchase of TiO₂, while amounts receivable from LPC are generally from the sale of TiO₂ feedstock. See Note 7. Purchases of TiO₂ from LPC were \$176.5 million in 2015 and \$157.5 million in each of 2016 and 2017. Sales of feedstock to LPC were \$80.6 million in 2015, \$68.8 million in 2016 and \$79.4 million in 2017. The noncurrent payable to Contran for income taxes is discussed in Note 14.

Note 18—Commitments and contingencies:

Lead pigment litigation—NL

NL's former operations included the manufacture of lead pigments for use in paint and lead-based paint. NL, other former manufacturers of lead pigments for use in paint and lead-based paint (together, the "former pigment manufacturers"), and the Lead Industries Association ("LIA"), which discontinued business operations in 2002, have been named as defendants in various legal proceedings seeking damages for personal injury, property damage and governmental expenditures allegedly caused by the use of lead-based paints. Certain of these actions have been filed by or on behalf of states, counties, cities or their public housing authorities and school districts, and certain others have been asserted as class actions. These lawsuits seek recovery under a variety of theories, including public and private nuisance, negligent product design, negligent failure to warn, strict liability, breach of warranty, conspiracy/concert of action, aiding and abetting, enterprise liability, market share or risk contribution liability, intentional tort, fraud and misrepresentation, violations of state consumer protection statutes, supplier negligence and similar claims.

The plaintiffs in these actions generally seek to impose on the defendants responsibility for lead paint abatement and health concerns associated with the use of lead-based paints, including damages for personal injury, contribution and/or indemnification for medical expenses, medical monitoring expenses and costs for educational programs. To the extent the plaintiffs seek compensatory or punitive damages in these actions, such damages are generally unspecified. In some cases, the damages are unspecified pursuant to the requirements of applicable state law. A number of cases are inactive or have been dismissed or withdrawn. Most of the remaining cases are in various pre-trial stages. Some are on appeal following dismissal or summary judgment rulings or a trial verdict in favor of either the defendants or the plaintiffs.

We believe that these actions are without merit, and we intend to continue to deny all allegations of wrongdoing and liability and to defend against all actions vigorously. Other than with respect to the Santa Clara case discussed below, we do not believe it is probable that we have incurred any liability with respect to all of the lead pigment litigation cases to which we are a party, and with respect to all such lead pigment litigation cases to which we are a party, including the Santa Clara case, we believe liability to us that may result, if any, in this regard cannot be reasonably estimated, because:

- we have never settled any of the market share, intentional tort, fraud, nuisance, supplier negligence, breach of warranty, conspiracy, misrepresentation, aiding and abetting, enterprise liability, or statutory cases,
- no final, non-appealable adverse verdicts have ever been entered against us (subject to the final outcome of the Santa Clara case discussed below), and
- NL has never ultimately been found liable with respect to any such litigation matters, including over 100 cases over a twenty-year period for which NL was previously a party and for which NL has been dismissed without any finding of liability (subject to the final outcome of the Santa Clara case discussed below).

Accordingly, neither we nor NL have accrued any amounts for any of the pending lead pigment and lead-based paint litigation cases filed by or on behalf of states, counties, cities or their public housing authorities and school districts, or those asserted as class actions. In addition, we have determined that liability to us which may result, if any, cannot be reasonably estimated because there is no prior history of a loss of this nature on which an estimate could be made and there is no substantive information available upon which an estimate could be based.

In one of these lead pigment cases, in April 2000 NL was served with a complaint in *County of Santa Clara v. Atlantic Richfield Company, et al.* (Superior Court of the State of California, County of Santa Clara, Case No. 1-00-CV-788657) brought by a number of California government entities against the former pigment manufacturers, the LIA and certain paint manufacturers. The County of Santa Clara sought to recover compensatory damages for funds the plaintiffs have expended or would in the future expend for medical treatment, educational expenses, abatement or other costs due to exposure to, or potential exposure to, lead paint, disgorgement of profit, and punitive damages. In July 2003, the trial judge granted defendants' motion to dismiss all remaining claims. Plaintiffs appealed and the intermediate appellate court reinstated public nuisance, negligence, strict liability, and fraud claims in March 2006. A fourth amended complaint was filed in March 2011 on behalf of The People of California by the County Attorneys of Alameda, Ventura, Solano, San Mateo, Los Angeles and Santa Clara, and the City Attorneys of San Francisco, San Diego and Oakland. That complaint alleged that the presence of lead paint created a public nuisance in each of the prosecuting attorney jurisdictions and sought its abatement. In July and August 2013, the case was tried. In January 2014, the trial court judge issued a judgment finding us, The Sherwin Williams Company and ConAgra Grocery Products Company jointly and severally liable for the abatement of lead paint in pre-1980 homes, and ordered the defendants to pay an aggregate \$1.15 billion to the people of the State of California to fund such abatement. The trial court's judgment also found that to the extent any abatement funds remained unspent after four years, such funds were to be return to the defendants. In February 2014, NL filed a motion for a new trial, and in March 2014 the trial court denied the motion. Subsequently in March 2014, we filed a notice of appeal with the Sixth District Court of Appeal for the State of California. On November 14, 2017, the Sixth District Court of Appeal issued its opinion, upholding the trial

court's judgment, except that it reversed the portion of the judgment requiring abatement of homes built between 1951 and 1980 which significantly reduced the number of homes subject to the abatement order. In addition, the appellate court ordered the case be remanded to the trial court to recalculate the amount of the abatement fund, to limit it to the amount necessary to cover the cost of investigating and remediating pre-1951 homes, and to hold an evidentiary hearing to appoint a suitable receiver. In addition, the appellate court found that NL and the other defendants had the right to seek recovery from liable parties that contributed to a hazardous condition at a particular property. Subsequently, NL and the other defendants filed a Petition with the California Supreme Court seeking its review of a number of issues. On February 14, 2018, the California Supreme Court denied such petition. NL and the other defendants have indicated they intend to file an appeal with the U.S. Supreme Court, seeking its review of two federal issues in the trial court's original judgment. Review by the U.S. Supreme Court is discretionary, and there can be no assurance that the U.S. Supreme Court would agree to hear any such appeal that NL and the other defendants would file, or if they would agree to hear any such appeal, that the U.S. Supreme Court would rule in favor of NL and the other defendants. NL and the other defendants intend to seek a stay of the case to the trial court, pending its appeal to the U.S. Supreme Court. Granting of such a stay by the appellate court is discretionary. If no such stay is issued, the remand to the trial court would proceed, and under such remand the trial court would, among other things, (i) assign a new judge to the case (the original judge has retired), (ii) recalculate the amount of the abatement fund, excluding remediation of homes built between 1951 and 1980, (iii) hold an evidentiary hearing to appoint a suitable receiver for the abatement fund, and (iv) enter an order setting forth its rulings on these issues. NL believes any party will have a right to appeal any of these new decisions made by the trial court from the remand of the case.

The Santa Clara case is unusual in that this is the second time that an adverse verdict in the lead pigment litigation has been entered against NL (the first adverse verdict against NL was ultimately overturned on appeal). Given the appellate court's November 2017 ruling, and the denial of an appeal by the California Supreme Court, we have concluded that the likelihood of a loss in this case has reached a standard of "probable" as contemplated by ASC 450. However, we have also concluded that the amount of such loss cannot be reasonably at this time estimated (nor can a range of loss be reasonably estimated) because, among other things:

- The appellate court has remanded the case back to the trial court to recalculate the total amount of the abatement, limiting the abatement to pre-1951 homes. Until the trial court has completed such recalculation, NL and the other defendants have no basis to estimate a liability;
- The appellate court upheld NL's and the other defendants' right to seek contribution from other liable parties (e.g. property owners who have violated the applicable housing code) on a house-by-house basis. The method by which the trial court would undertake to determine such house-by-house responsibility, and the outcome of such a house-by-house determination, is not presently known;
- Participation in any abatement program by each homeowner is voluntary, and each homeowner would need to consent to allowing someone to come into the home to undertake any inspection and abatement, as well as consent to the nature, timing and extent of any abatement. The original trial court's judgment unrealistically assumed 100% participation by the affected homeowners. Actual participation rates are likely to be less than 100% (the ultimate extent of participation is not presently known);
- The remedy ordered by the trial court is an abatement fund. The trial court ordered that any funds unspent after four years are to be returned to the defendants (this provision of the trial court's original judgment was not overturned by the appellate court). As noted above, the actual number of homes which would participate in any abatement, and the nature, timing and extent of any such abatement, is not presently known; and
- NL and the other two defendants are jointly and severally liable for the abatement, and NL does not believe any individual defendant would be 100% responsible for the cost of any abatement.

Accordingly, the total ultimate amount of any abatement fund, and NL's share of any abatement is not presently known. For all of the reasons noted above, NL has concluded that the amount of loss for this matter cannot be reasonably estimated at this time (nor can any reasonable range of loss be estimated). However, as with any legal proceeding, there is no assurance that any appeal would be successful, and it is reasonably possible, based on the outcome of the appeals process and the remand proceedings in the trial court, that NL may in the future incur some liability resulting in the recognition of a loss contingency accrual that could have a material adverse impact on our results of operations, financial position and liquidity.

The Santa Clara case is unusual in that this is the second time that an adverse verdict in the lead pigment litigation has been entered against NL (the first adverse verdict against NL was ultimately overturned on appeal). We have concluded that the likelihood of a loss in this case has not reached a standard of "probable" as contemplated by ASC 450, given (i) the substantive, substantial and meritorious grounds on which the adverse verdict in the Santa Clara case will be appealed, (ii) the uniqueness of the Santa Clara verdict (i.e. no final, non-appealable verdicts have ever been rendered against NL, or any of the other former lead pigment manufacturers, based on the public nuisance theory of liability or otherwise), and (iii) the rejection of the public nuisance theory of liability as it relates to lead pigment matters in many other jurisdictions (no jurisdiction in which a plaintiff has asserted a public nuisance theory of liability has ever successfully been upheld). In addition, liability that may result, if any, cannot be reasonably estimated, as NL continues to have no basis on which an estimate of liability could be made, as discussed above. However, as with

any legal proceeding, there is no assurance that any appeal would be successful, and it is reasonably possible, based on the outcome of the appeals process, that NL may in the future incur some liability resulting in the recognition of a loss contingency accrual that could have a material adverse impact on our results of operations, financial position and liquidity.

New cases may continue to be filed against NL. We cannot assure you that we will not incur liability in the future in respect of any of the pending or possible litigation in view of the inherent uncertainties involved in court and jury rulings. In the future, if new information regarding such matters becomes available to us (such as a final, non-appealable adverse verdict against us or otherwise ultimately being found liable with respect to such matters), at that time we would consider such information in evaluating any remaining cases then-pending against us as to whether it might then have become probable we have incurred liability with respect to these matters, and whether such liability, if any, could have become reasonably estimable. The resolution of any of these cases could result in the recognition of a loss contingency accrual that could have a material adverse impact on our net income for the interim or annual period during which such liability is recognized and a material adverse impact on our consolidated financial condition and liquidity.

Environmental matters and litigation

Our operations are governed by various environmental laws and regulations. Certain of our businesses are and have been engaged in the handling, manufacture or use of substances or compounds that may be considered toxic or hazardous within the meaning of applicable environmental laws and regulations. As with other companies engaged in similar businesses, certain of our past and current operations and products have the potential to cause environmental or other damage. We have implemented and continue to implement various policies and programs in an effort to minimize these risks. Our policy is to maintain compliance with applicable environmental laws and regulations at all of our plants and to strive to improve environmental performance. From time to time, we may be subject to environmental regulatory enforcement under U.S. and non-U.S. statutes, the resolution of which typically involves the establishment of compliance programs. It is possible that future developments, such as stricter requirements of environmental laws and enforcement policies, could adversely affect our production, handling, use, storage, transportation, sale or disposal of such substances. We believe that all of our facilities are in substantial compliance with applicable environmental laws.

Certain properties and facilities used in NL's former operations, including divested primary and secondary lead smelters and former mining locations, are the subject of civil litigation, administrative proceedings or investigations arising under federal and state environmental laws and common law. Additionally, in connection with past operating practices, we are currently involved as a defendant, potentially responsible party ("PRP") or both, pursuant to the Comprehensive Environmental Response, Compensation and Liability Act, as amended by the Superfund Amendments and Reauthorization Act ("CERCLA"), and similar state laws in various governmental and private actions associated with waste disposal sites, mining locations, and facilities that we or our predecessors, our subsidiaries or their predecessors currently or previously owned, operated or used, certain of which are on the United States Environmental Protection Agency's ("EPA") Superfund National Priorities List or similar state lists. These proceedings seek cleanup costs, damages for personal injury or property damage and/or damages for injury to natural resources. Certain of these proceedings involve claims for substantial amounts. Although we may be jointly and severally liable for these costs, in most cases we are only one of a number of PRPs who may also be jointly and severally liable, and among whom costs may be shared or allocated. In addition, we are occasionally named as a party in a number of personal injury lawsuits filed in various jurisdictions alleging claims related to environmental conditions alleged to have resulted from our operations.

Obligations associated with environmental remediation and related matters are difficult to assess and estimate for numerous reasons including the:

- complexity and differing interpretations of governmental regulations,
- number of PRPs and their ability or willingness to fund such allocation of costs,
- financial capabilities of the PRPs and the allocation of costs among them,
- solvency of other PRPs,
- multiplicity of possible solutions,
- number of years of investigatory, remedial and monitoring activity required,
- uncertainty over the extent, if any, to which our former operations might have contributed to the conditions allegedly giving rise to such personal injury, property damage, natural resource and related claims, and
- number of years between former operations and notice of claims and lack of information and documents about the former operations.

In addition, the imposition of more stringent standards or requirements under environmental laws or regulations, new developments or changes regarding site cleanup costs or the allocation of costs among PRPs, solvency of other PRPs, the results of future testing and analysis undertaken with respect to certain sites or a determination that we are potentially responsible for the release of hazardous substances at other sites, could cause our expenditures to exceed our current estimates. We cannot assure you that actual costs will not exceed accrued amounts or the upper end of the range for sites for which estimates have been made, and we cannot assure you that costs will not be incurred for sites where no estimates presently can be made. Further, additional environmental and related matters may arise in the future. If we were to incur any future liability, this could have a material adverse effect on our consolidated financial statements, results of operations and liquidity.

We record liabilities related to environmental remediation and related matters (including costs associated with damages for personal injury or property damage and/or damages for injury to natural resources) when estimated future expenditures are probable and reasonably estimable. We adjust such accruals as further information becomes available to us or as circumstances change. Unless the amounts and timing of such estimated future expenditures are fixed and reasonably determinable, we generally do not discount estimated future expenditures to their present value due to the uncertainty of the timing of the payout. We recognize recoveries of costs from other parties, if any, as assets when their receipt is deemed probable. At December 31, 2016 and 2017, receivables for recoveries were not significant.

We do not know and cannot estimate the exact time frame over which we will make payments for our accrued environmental and related costs. The timing of payments depends upon a number of factors, including but not limited to the timing of the actual remediation process; which in turn depends on factors outside of our control. At each balance sheet date, we estimate the amount of our accrued environmental and related costs which we expect to pay within the next twelve months, and we classify this estimate as a current liability. We classify the remaining accrued environmental costs as a noncurrent liability.

The table below presents a summary of the activity in our accrued environmental costs during 2015, 2016, and 2017 are presented below.

	Years ended December 31,		
	2015	2016	2017
	(In millions)		
Balance at the beginning of the year	\$ 118.5	\$ 120.4	\$ 122.6
Additions charged to expense, net	5.7	5.9	4.1
Payments, net	(3.5)	(3.7)	(9.1)
Changes in currency exchange rates and other	(.3)	—	(.1)
Balance at the end of the year	<u>\$ 120.4</u>	<u>\$ 122.6</u>	<u>\$ 117.5</u>
Amounts recognized in our Consolidated Balance Sheet at the end of the year:			
Current liabilities	\$ 11.7	\$ 15.3	\$ 6.8
Noncurrent liabilities	108.7	107.3	110.7
Total	<u>\$ 120.4</u>	<u>\$ 122.6</u>	<u>\$ 117.5</u>

NL—On a quarterly basis, NL evaluates the potential range of its liability for environmental remediation and related costs at sites where it has been named as a PRP or defendant. At December 31, 2017, NL had accrued approximately \$112 million related to approximately 39 sites associated with remediation and related matters that it believes are at the present time and/or in their current phase reasonably estimable. The upper end of the range of reasonably possible costs to NL for remediation and related matters for which we believe it is possible to estimate costs is approximately \$154 million, including the amount currently accrued.

NL believes that it is not reasonably possible to estimate the range of costs for certain sites. At December 31, 2017, there were approximately 5 sites for which NL is not currently able to estimate a range of costs. For these sites, generally the investigation is in the early stages, and NL is unable to determine whether or not NL actually had any association with the site, the nature of its responsibility, if any, for the contamination at the site and the extent of contamination at and cost to remediate the site. The timing and availability of information on these sites is dependent on events outside of our control, such as when the party alleging liability provides information to us. At certain of these previously inactive sites, NL has received general and special notices of liability from the EPA and/or state agencies alleging that NL, sometimes with other PRPs, are liable for past and future costs of remediating environmental contamination allegedly caused by former operations. These notifications may assert that NL, along with any other alleged PRPs, are liable for past and/or future clean-up costs. As further information becomes available to us for any of these sites which would allow us to estimate a range of costs, we would at that time adjust our accruals. Any such adjustment could result in the recognition of an accrual that would have a material effect on our consolidated financial statements, results of operations and liquidity.

Other—We have also accrued approximately \$5.5 million at December 31, 2017 for other environmental cleanup matters. This accrual is near the upper end of the range of our estimate of reasonably possible costs for such matters.

Insurance coverage claims

We are involved in certain legal proceedings with a number of our former insurance carriers regarding the nature and extent of the carriers' obligations to us under insurance policies with respect to certain lead pigment and asbestos lawsuits. The issue of whether insurance coverage for defense costs or indemnity or both will be found to exist for our lead pigment and asbestos litigation depends upon a variety of factors and we cannot assure you that such insurance coverage will be available.

We have agreements with three former insurance carriers pursuant to which the carriers reimburse us for a portion of our future lead pigment litigation defense costs, and one such carrier reimburses us for a portion of our future asbestos litigation defense costs. We are not able to determine how much we will ultimately recover from these carriers for defense costs incurred by us because of certain issues that arise regarding which defense costs qualify for reimbursement. While we continue to seek additional insurance recoveries, we do not know if we will be successful in obtaining reimbursement for either defense costs or indemnity. Accordingly, we recognize insurance recoveries in income only when receipt of the recovery is probable and we are able to reasonably estimate the amount of the recovery.

In January 2014, we were served with a complaint in *Certain Underwriters at Lloyds, London, et al v. NL Industries, Inc.* (Supreme Court of the State of New York, County of New York, Index No. 14/650103). The plaintiff, a former insurance carrier of ours, is seeking a declaratory judgment of its obligations to us under insurance policies issued to us by the plaintiff with respect to certain lead pigment lawsuits. The case is now proceeding in the trial court. We believe the action is without merit and intend to defend NL's rights in this action vigorously.

In February 2014, we were served with a complaint in *Zurich American Insurance Company, as successor-in-interest to Zurich Insurance Company, U.S. Branch vs. NL Industries, Inc., and The People of the State of California, acting by and through county Counsels of Santa Clara, Alameda, Los Angeles, Monterey, San Mateo, Solano and Ventura Counties and the city Attorneys of Oakland, San Diego, and San Francisco, et al* (Superior Court of California, County of Santa Clara, Case No.: 1-14-CV-259924). In January 2015, an Order of Deposit Under CCP § 572 was entered by the trial court.

Other litigation

NL—NL has been named as a defendant in various lawsuits in several jurisdictions, alleging personal injuries as a result of occupational exposure primarily to products manufactured by our former operations containing asbestos, silica and/or mixed dust. In addition, some plaintiffs allege exposure to asbestos from working in various facilities previously owned and/or operated by NL. There are 101 of these types of cases pending, involving a total of approximately 574 plaintiffs. In addition, the claims of approximately 8,676 plaintiffs have been administratively dismissed or placed on the inactive docket in Ohio courts. We do not expect these claims will be re-opened unless the plaintiffs meet the courts' medical criteria for asbestos-related claims. We have not accrued any amounts for this litigation because of the uncertainty of liability and inability to reasonably estimate the liability, if any. To date, we have not been adjudicated liable in any of these matters. Based on information available to us, including:

- facts concerning historical operations,
- the rate of new claims,
- the number of claims from which we have been dismissed, and
- our prior experience in the defense of these matters,

We believe that the range of reasonably possible outcomes of these matters will be consistent with our historical costs (which are not material). Furthermore, we do not expect any reasonably possible outcome would involve amounts material to our consolidated financial position, results of operations or liquidity. We have sought and will continue to vigorously seek, dismissal and/or a finding of no liability from each claim. In addition, from time to time, we have received notices regarding asbestos or silica claims purporting to be brought against former subsidiaries, including notices provided to insurers with which we have entered into settlements extinguishing certain insurance policies. These insurers may seek indemnification from us.

Kronos— In March 2013, Kronos was served with the complaint, *Los Gatos Mercantile, Inc. d/b/a Los Gatos Ace Hardware, et al v. E.I. Du Pont de Nemours and Company, et al.* (United States District Court, for the Northern District of California, Case No. 3:13-cv-01180-SI). The defendants include us, E.I. Du Pont de Nemours & Company, Huntsman International LLC and Millennium Inorganic Chemicals, Inc. As amended by plaintiffs’ third amended complaint (Harrison, Jan, et al v. E.I. Du Pont de Nemours and Company, et al), plaintiffs seek to represent a class consisting of indirect purchasers of titanium dioxide in the states of Arizona, Arkansas, California, the District of Columbia, Florida, Iowa, Kansas, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Nebraska, New Hampshire, New Mexico, New York, North Carolina, Oregon and Tennessee that indirectly purchased titanium dioxide from one or more of the defendants on or after March 1, 2002. The complaint alleges that the defendants conspired and combined to fix, raise, maintain, and stabilize the price at which titanium dioxide was sold in the United States and engaged in other anticompetitive conduct. In December 2017, the Court preliminarily approved a settlement agreement with the class plaintiffs. Without admitting any fault or wrongdoing, Kronos agreed to pay an immaterial amount in full settlement of this matter. We expect final approval of the settlement in 2018.

In September 2016, Kronos was served with the complaint, *Home Depot U.S.A., Inc. v. E.I. Dupont Nemours and Company, et al.* (United States District Court, for the Northern District of California, Case No. 3:16-cv-04865). The defendants include us, E.I. Du Pont de Nemours & Company, Huntsman International LLC and Millennium Inorganic Chemicals, Inc. The plaintiff alleges that it indirectly purchased titanium dioxide from one or more of the defendants on or after March 1, 2002. The complaint alleges that the defendants conspired and combined to fix, raise, maintain, and stabilize the price at which titanium dioxide was sold in the United States and engaged in other anticompetitive conduct. The case is now proceeding in the trial court. We believe the action is without merit, will deny all allegations of wrongdoing and liability and intend to defend against the action vigorously. Based on our quarterly status evaluation of this case, we have determined that it is not reasonably possible that a loss has been incurred in this case.

Other—In addition to the litigation described above, we and our affiliates are involved in various other environmental, contractual, product liability, patent (or intellectual property), employment and other claims and disputes incidental to our present and former businesses. In certain cases, we have insurance coverage for these items, although we do not expect any additional material insurance coverage for our environmental claims. We currently believe that the disposition of all of these various other claims and disputes (including asbestos-related claims), individually or in the aggregate, should not have a material adverse effect on our consolidated financial position, results of operations or liquidity beyond the accruals already provided.

Other matters

Concentrations of credit risk—Sales of TiO₂ accounted for approximately 92% of our Chemicals Segment’s sales in 2015, 93% in 2016 and 94% in 2017. The remaining sales result from the mining and sale of ilmenite ore (a raw material used in the sulfate pigment production process), and the manufacture and sale of iron-based water treatment chemicals and certain titanium chemical products (derived from co-products of the TiO₂ production processes). TiO₂ is generally sold to the paint, plastics and paper industries. Such markets are generally considered “quality-of-life” markets whose demand for TiO₂ is influenced by the relative economic well-being of the various geographic regions. Our Chemicals Segment sells TiO₂ to over 4,000 customers, with the top ten customers approximating 34% of our Chemicals Segment’s net sales in 2015, 33% in 2016 and 34% in 2017. In each of 2015 and 2016 one customer, Behr Process Corporation, accounted for approximately 10% of our Chemicals Segment’s net sales. The table below shows the approximate percentage of our TiO₂ sales by volume for our significant markets, Europe and North America, for the last three years.

	2015	2016	2017
Europe	52%	51%	50%
North America	29%	29%	31%

Our Component Products Segment’s products are sold primarily in North America to original equipment manufacturers. The ten largest customers related to our Component Product’s Segment accounted for approximately 48% of our Component Products Segment’s sales in 2015, 46% in 2016, and 44% in 2017. United States Postal Service, a customer of the security products reporting

unit, accounted for approximately 13% of the Component Products Segment’s total sales in 2015, 14% in 2016 and 16% in 2017. Harley Davidson, also a customer of the security products reporting unit, accounted for approximately 12% in 2015 and 11% in 2016.

Our Real Estate Management and Development Segment’s revenues are land sales income and water and electric delivery fees. During 2015 we had sales to four customers that each exceeded 10% of our Real Estate Management and Development Segment’s net sales: Richmond Homes of Nevada (27%), LV East Gibson, LLC (17%), and Prologis, L.P. (11%) are all relate to land sales; the City of Henderson (15%) relates to our water delivery services. During 2016 we had sales to three customers that each exceeded 10% of our Real Estate Management and Development Segment’s net sales: Grey Stone Nevada LLC (34%), Richmond Homes of Nevada (15%) and Henderson Interchange Centers LLC (12%). During 2017 we had sales to three customers that each exceeded 10% of our Real Estate Management and Development Segment’s net sales: Richmond Homes of Nevada (37%), Grey Stone Nevada LLC (22%) both related to land sales, and the City of Henderson (11%) related to water delivery sales.

Long-term contracts—Our Chemicals Segment has long-term supply contracts that provide for certain of our TiO₂ feedstock requirements through 2019. The agreements require Kronos to purchase certain minimum quantities of feedstock with minimum purchase commitments aggregating approximately \$383 million over the life of the contracts in years subsequent to December 31, 2017. In addition, our Chemicals Segment has other long-term supply and service contracts that provide for various raw materials and services. These agreements require Kronos to purchase certain minimum quantities or services with minimum purchase commitments aggregating approximately \$128 million at December 31, 2017.

Operating leases—Our Chemicals Segment’s principal German operating subsidiary leases the land under its Leverkusen TiO₂ production facility pursuant to a lease with Bayer AG that expires in 2050. The Leverkusen facility itself, which our Chemicals Segment owns and which represents approximately one-third of its current TiO₂ production capacity, is located within Bayer’s extensive manufacturing complex. Kronos periodically establishes the amount of rent for the land lease associated with the Leverkusen facility by agreement with Bayer for periods of at least two years at a time. The lease agreement provides for no formula, index or other mechanism to determine changes in the rent for such land lease; rather, any change in the rent is subject solely to periodic negotiation between Bayer and Kronos. We recognize any change in the rent based on such negotiations as part of lease expense starting from the time such change is agreed upon by both parties, as any such change in the rent is deemed “contingent rentals” under GAAP. Under the terms of various supply and services agreements majority-owned subsidiaries of Bayer provides raw materials, including chlorine, auxiliary and operating materials, utilities and services necessary to operate the Leverkusen facility. These agreements, as amended, expire in 2018 through 2021. We expect to renew these agreements prior to expiration at similar terms and conditions.

We also lease various other manufacturing facilities and equipment. Some of the leases contain purchase and/or various term renewal options at fair market and fair rental values, respectively. In most cases we expect that, in the normal course of business, such leases will be renewed or replaced by other leases. Net rent expense approximated \$14.7 million in 2015 and \$14.3 million in 2016 and \$16.3 million in 2017. At December 31, 2017, future minimum payments under non-cancellable operating leases having an initial or remaining term of more than one year were as follows:

Years ending December 31,	Amount (In millions)
2018	\$ 8.3
2019	7.1
2020	6.1
2021	5.2
2022	3.1
2023 and thereafter	24.9
Total (1)	\$ 54.7

- (1) Approximately \$17 million of the \$54.7 million aggregate future minimum rental commitments at December 31, 2017 relates to Kronos’ Leverkusen facility lease discussed above. The minimum commitment amounts for such lease included in the table above for each year through the 2050 expiration of the lease are based upon the current annual rental rate as of December 31, 2017. As discussed above, any change in the rent is based solely on negotiations between Bayer and Kronos, and any such change in the rent is deemed “contingent rentals” under GAAP which is excluded from the future minimum lease payments disclosed above.

Income taxes—Prior to 2015, NL made certain pro-rata distributions to its stockholders in the form of shares of Kronos common stock. All of NL’s distributions of Kronos common stock were taxable to NL and NL recognized a taxable gain equal to the difference between the fair market value of the Kronos shares distributed on the various dates of distribution and NL’s adjusted tax basis in the shares at the dates of distribution. NL transferred shares of Kronos common stock to us in satisfaction of the tax liability

related to NL's gain on the transfer or distribution of these shares of Kronos common stock and the tax liability generated from the use of Kronos shares to settle the tax liability. To date, we have not paid the liability to Contran because Contran has not paid the liability to the applicable tax authority. The income tax liability will become payable to Contran, and by Contran to the applicable tax authority, when the shares of Kronos transferred or distributed by NL to us are sold or otherwise transferred outside the Contran Tax Group or in the event of certain restructuring transactions involving us. We have recognized deferred income taxes for our investment in Kronos common stock.

We are a party to a tax sharing agreement with Contran providing for the allocation of tax liabilities and tax payments as described in Note 1. Under applicable law, we, as well as every other member of the Contran Tax Group, are each jointly and severally liable for the aggregate federal income tax liability of Contran and the other companies included in the Contran Tax Group for all periods in which we are included in the Contran Tax Group. Contran has agreed, however, to indemnify us for any liability for income taxes of the Contran Tax Group in excess of our tax liability computed in accordance with the tax sharing agreement.

Owner Participation Agreement of Real Estate Management and Development Segment —Under an Owner Participation Agreement (“OPA”) entered into by LandWell with the Redevelopment Agency of the City of Henderson, Nevada, if LandWell develops certain real property for commercial and residential purposes in a master planned community in Henderson, Nevada, the cost of certain public infrastructure may be reimbursed to us through tax increment. The maximum reimbursement under the OPA is \$209 million, and is subject to, among other things, completing construction of approved qualifying public infrastructure, transferring title of such infrastructure to the City of Henderson, receiving approval from the Redevelopment Agency of the funds expended to be eligible for tax increment reimbursement and the existence of a sufficient property tax valuation base and property tax rates in order to generate tax increment reimbursement funds. We are entitled to receive 75% of the tax increment generated by the master planned community through 2036, subject to the qualifications and limitations indicated above. Due to the significant uncertainty of the timing and amount of any of such potential tax increment reimbursements, we recognize any such tax increment reimbursements only when received, see Note 12.

Note 19—Financial instruments:

The following table summarizes the valuation of our short-term investments and financial instruments by the ASC Topic 820 categories as of December 31, 2016 and 2017:

	Fair Value Measurements			
	Quoted Prices in Active Markets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	
	Total			
(In millions)				
<u>Asset (liability)</u>				
December 31, 2016:				
Marketable securities:				
Current	\$ 4.4	\$ —	\$ 4.4	\$ —
Noncurrent	253.5	.6	2.9	250.0
Interest rate swap	(3.1)	\$ —	\$ (3.1)	\$ —
December 31, 2017:				
Marketable securities:				
Current	\$ 3.0	\$ —	\$ 3.0	\$ —
Noncurrent	255.7	1.3	4.4	250.0

See Note 6 for information on how we determine the fair value of our marketable securities.

Certain of our sales generated by Chemicals Segment's non-U.S. operations are denominated in U.S. dollars. Our Chemicals Segment periodically uses currency forward contracts to manage a very nominal portion of currency exchange rate risk associated with trade receivables denominated in a currency other than the holder's functional currency or similar exchange rate risk associated with future sales. Derivatives that we use are primarily currency forward contracts and interest rate swaps. We have not entered into these contracts for trading or speculative purposes in the past, nor do we currently anticipate entering into such contracts for trading or speculative purposes in the future. Derivatives used to hedge forecasted transactions and specific cash flows associated with financial assets and liabilities denominated in currencies other than the U.S. dollar and which meet the criteria for hedge accounting are designated as cash flow hedges. Consequently, the effective portion of gains and losses is deferred as a component of accumulated other comprehensive income (loss) and is recognized in earnings at the time the hedged item affects earnings. Contracts that do not meet the criteria for hedge accounting are marked-to-market at each balance sheet date with any resulting gain or loss recognized in income currently as part of net currency transactions. The fair value of the currency forward contracts is determined using Level 1 inputs based on the currency spot forward rates quoted by banks or currency dealers.

At December 31, 2017, Kronos had no currency forward contracts outstanding. We did not use hedge accounting for any of our contracts to the extent we held such contracts during 2015, 2016 and 2017.

Interest rate swap contract - As part of our interest rate risk management strategy, in August 2015 Kronos entered into a pay-fixed/receive-variable interest rate swap contract with Wells Fargo Bank, N.A. to minimize our exposure to volatility in LIBOR as it relates to our forecasted outstanding variable-rate indebtedness. Under this interest rate swap, we paid a fixed rate of 2.016% per annum, payable quarterly, and received a variable rate of three-month LIBOR (subject to a 1.00% floor), also payable quarterly, in each case based on the notional amount of the swap then outstanding. The effective date of the swap contract was September 30, 2015. The notional amount of the swap started at \$344.8 million and declined by \$875,000 each quarter beginning December 31, 2015, with an original final maturity of the swap contract in February 2020. This swap contract was designated as a cash flow hedge and qualified as an effective hedge at inception under ASC Topic 815 in respect of our term loan indebtedness. The effective portion of changes in fair value on this interest rate swap was recorded as a component of other comprehensive income, net of deferred income taxes. Commencing in the fourth quarter of 2015, as interest expense accrued on LIBOR-based variable rate debt, we classified the amount we paid under the pay-fixed leg of the swap and the amount we receive under the receive-variable leg of the swap as part of interest expense, with the net effect that the amount of interest expense we recognize on our LIBOR-based variable rate debt each quarter, as it relates to the notional amount of the swap outstanding each quarter, to be based on a fixed rate of 2.016% per annum in lieu of the level of LIBOR prevailing during the quarter.

In September 2017, in connection with the voluntary prepayment and termination of Kronos' term loan discussed in Note 8, Kronos voluntarily terminated this swap contract, as it no longer had any exposure to volatility in respect of LIBOR. The cost to us to early terminate the swap contract was \$3.3 million, which was paid to Wells Fargo concurrent with the termination. Such \$3.3 million charge is classified as part of our loss on prepayment of debt discussed in Note 9. Such \$3.3 million amount is also classified as part of the cash paid for interest disclosed in our Condensed Consolidated Statement of Cash Flows for the year ended December 31, 2017.

During 2015, 2016 and 2017 (prior to the termination of the interest rate swap contract), a pretax unrealized loss arising during the periods of \$4.4 million, \$3.1 million and \$2.3 million, respectively, was recognized in other comprehensive income (loss) related to the interest rate swap. During such periods, \$9 million, \$3.5 million and \$2.1 million, respectively, were reclassified from accumulated other comprehensive loss into earnings and are included in interest expense in our Consolidated Statements of Operations. From the inception of the swap until the swap contract termination, there had been no gains or losses recognized in earnings representing hedge ineffectiveness with respect to the interest rate swap. The fair value of the interest rate swap contract at December 31, 2016 was a \$3.1 million liability including \$2.9 million recognized as part of accounts payable and accrued liabilities and \$.2 million recognized as part of other noncurrent liabilities in our Consolidated Balance Sheet. See Notes 9 and 10.

The following table presents the financial instruments that are not carried at fair value but which require fair value disclosure as of December 31, 2016 and 2017:

	December 31, 2016		December 31, 2017	
	Carrying amount	Fair value	Carrying amount	Fair value
	(In millions)			
Cash, cash equivalents and restricted cash equivalents	\$ 174.8	\$ 174.8	\$ 461.7	\$ 461.7
Deferred payment obligation	9.0	9.0	9.3	9.3
Long-term debt (excluding capitalized leases):				
Kronos term loan	\$ 335.9	\$ 334.6	\$ —	\$ —
Kronos Senior Notes	—	—	471.1	495.1
Snake River Sugar Company fixed rate loans	250.0	250.0	250.0	250.0
Valhi credit facility with Contran	278.9	278.9	284.3	284.3
Tremont promissory note payable	14.5	14.5	13.1	13.1
BMI bank note payable	8.4	8.5	18.8	19.7
LandWell note payable to the City of Henderson	2.9	2.9	2.5	2.5

At December 31, 2016, the estimated market price of Kronos' term loan was \$983 per \$1,000 principal amount. At December 31, 2017, the estimated market price of Kronos' Senior Notes was €1,034 per €1,000 principal amount. The fair value of Kronos' term loan and Senior Notes was based on quoted market prices; however, these quoted market prices represent Level 2 inputs because the markets in which the term loan trades were not active. The fair value of our fixed-rate nonrecourse loans from Snake River Sugar Company is based upon the \$250 million redemption price of our investment in the Amalgamated Sugar Company LLC, which collateralizes the nonrecourse loans, (this is a Level 3 input). Fair values of variable interest rate notes receivable and debt and other fixed-rate debt are deemed to approximate book value. Due to their near-term maturities, the carrying amounts of accounts receivable and accounts payable are considered equivalent to fair value. See Notes 5 and 9.

Note 20—Recent accounting pronouncements:

Adopted

In January 2017, the FASB issued ASU 2017-04, *Intangibles—Goodwill and Other (Topic 350) Simplifying the Test for Goodwill Impairment*, which aims to simplify the subsequent measurement of goodwill by eliminating Step 2 from the goodwill impairment test. Previously, Step 2 measured a goodwill impairment loss by comparing the implied fair value of a reporting unit's goodwill with the carrying amount of that goodwill. Instead, under the new ASU, an entity should perform its annual, or interim, goodwill impairment test by comparing the fair value of a reporting unit with its carrying amount, and a goodwill impairment charge would be recognized for the amount by which the carrying amount exceeds the reporting unit's fair value. In no circumstances would the loss recognized exceed the total amount of goodwill allocated to that reporting unit. We have elected to adopt this ASU beginning with our goodwill impairment test performed in the third quarter of 2017. The application of ASU 2017-04 did not have a material effect on our Condensed Consolidated Financial Statements.

In February 2018, the Financial Accounting Standards Board (FASB) issued Accounting Standards Update (ASU) 2018-02, *Income Statement – Reporting Comprehensive Income (Topic 220)*, which permits a reclassification from accumulated other comprehensive income to retained earnings for stranded tax effects resulting from the 2017 Tax Act. The reclassification permitted by ASU 2018-02 is optional and is not required to be adopted, but if adopted it must be adopted by us no later than the first quarter of 2019 (with early adoption permitted). Consistent with Note 1, we have considered the optional nature of ASU 2018-02 and we have elected to not adopt the reclassification.

Pending Adoption

In May 2014, the FASB issued ASU No. 2014-09, *Revenue from Contracts with Customers (Topic 606)*. This standard replaces existing revenue recognition guidance, which in many cases was tailored for specific industries, with a uniform accounting standard applicable to all industries and transactions. The new standard, as amended, is currently effective for us beginning with the first quarter of 2018. Entities may elect to adopt ASU No. 2014-09 retrospectively for all periods for all contracts and transactions which occurred during the period (with a few exceptions for practical expediency) or modified retrospectively with a cumulative effect

recognized as of the date of adoption. We will adopt the standard in the first quarter of 2018 including the expanded disclosure requirements using the modified retrospective approach to adoption. We have completed an evaluation of our sales within our Chemicals and Component Products Segments which generally involve single performance obligations to ship goods pursuant to customer purchase orders without further underlying contracts, and as such we believe the adoption of this standard will have a minimal effect on our revenues from these Segments. Revenues from our Real Estate Management and Development Segment are generally under long-term contract and we believe certain fees we collect from builders when the builder sells a home to a customer which are currently recognized when received will need to be estimated and recognized as revenue at the time we sell the parcels to the builder versus our current practice which does not recognize revenue until the homes are sold. We will recognize additional revenue in our Real Estate Management and Development Segment as a result of the transition to the new ASU in the first quarter of 2018 related to this fee. We are in the process of evaluating the additional disclosure requirements across all segments.

In January 2016, the FASB issued ASU 2016-01, *Financial Instruments-Overall (Subtopic 825-10): Recognition and Measurement of Financial Assets and Financial Liabilities*, which addresses certain aspects related to the recognition, measurement, presentation and disclosure of financial instruments. The ASU requires equity investments (except for those accounted for under the equity method of accounting or those that result in the consolidation of the investee) to generally be measured at fair value with changes in fair value recognized in net income. The amendment also requires a number of other changes, including among others: simplifying the impairment assessment for equity instruments without readily determinable fair values; eliminating the requirement for public business entities to disclose methods and assumptions used to determine fair value for financial instruments measured at amortized cost; requiring an exit price notion when measuring the fair value of financial instruments for disclosure purposes; and requiring separate presentation of financial assets and liabilities by measurement category and form of asset. The changes indicated above will be effective for us beginning in the first quarter of 2018, with prospective application required, and early adoption is not permitted. The most significant aspect of adopting this ASU will be the requirement to recognize changes in fair value of our available-for-sale marketable equity securities in net income (currently changes in fair value of such securities are recognized in other comprehensive income).

In February 2016, the FASB issued ASU 2016-02, *Leases (Topic 842)*, which is a comprehensive rewriting of the lease accounting guidance which aims to increase comparability and transparency with regard to lease transactions. The primary change will be the recognition of lease assets for the right-of-use of the underlying asset and lease liabilities for the obligation to make payments by lessees on the balance sheet for leases currently classified as operating leases. The ASU also requires increased qualitative disclosure about leases in addition to quantitative disclosures currently required. Companies are required to use a modified retrospective approach to adoption with a practical expedient which will allow companies to continue to account for existing leases under the prior guidance unless a lease is modified, other than the requirement to recognize the right-of-use asset and lease liability for all operating leases. The changes indicated above will be effective for us beginning in the first quarter of 2019, with early adoption is permitted. We are currently in the process of assessing all of our current leases across all of our segments. We have not yet evaluated the effect this ASU will have on our Consolidated Financial Statements, but given the material amount of our future minimum payments under non-cancellable operating leases at December 31, 2017 discussed in Note 18, we expect to recognize a material right-of-use lease asset and lease liability upon adoption of the ASU.

In March 2017, the FASB issued ASU 2017-07, *Compensation—Retirement Benefits (Topic 715) Improving the Presentation of Net Periodic Pension Cost and Net Periodic Postretirement Benefit Cost*, which requires that the service cost component of net periodic defined benefit pension and OPEB cost be reported in the same line item as other compensation costs for applicable employees incurred during the period. Other components of such net benefit cost are required to be presented in the income statement separately from the service cost component, and below income from operations (if such a subtotal is presented). These other net benefit cost components must be disclosed either on the face of the financial statements or in the notes to the financial statements. In addition only the service cost component is eligible for capitalization in assets where applicable (inventory or internally constructed fixed assets for example). The amendments in ASU 2017-06 are effective for us beginning with in the first quarter of 2018, early adoption as of the beginning of an annual period is permitted, retrospective presentation is required for the income statement presentation of the service cost component and other components of net benefit cost, and prospective application is required for the capitalization in assets of the service cost component of net benefit cost. We expect to adopt this ASU in the first quarter of 2018. We currently include a substantial portion of our net periodic defined benefit pension cost as part of compensation expense which is capitalized into inventory, and we do not present a subtotal for income from operations. A substantial portion of our net periodic OPEB cost is not capitalized into assets, and the service cost component of our net periodic OPEB cost is not material. Accordingly, adoption of this standard will change the amount of our aggregate compensation cost capitalized in inventory, mostly as it relates to our defined benefit pension plans. As disclosed in Note 11, the service cost component represented approximately \$9.9 million and \$11.4 million of our total net periodic defined benefit pension costs of \$22.9 million and \$29.9 million in 2016 and 2017, respectively.

Note 21—Quarterly results of operations (unaudited):

	Quarter ended			
	March 31	June 30	Sept. 30	Dec. 31
(In millions, except per share data)				
Year ended December 31, 2016				
Net sales	\$ 348.3	\$ 387.5	\$ 393.1	\$ 390.5
Gross margin	48.4	64.7	85.7	101.4
Operating income	.5	16.9	34.8	55.2
Net income (loss) from continuing operations	\$ (14.0)	\$ (2.4)	\$ 13.3	\$ 24.1
Amounts attributable to Valhi stockholders:				
Income (loss) from continuing operations(2)	\$ (11.5)	\$ (3.2)	\$ 7.3	\$ 15.5
Loss from discontinued operations (2)	(7.9)	(5.5)	(4.3)	(6.3)
Net income (loss)	<u>\$ (19.4)</u>	<u>\$ (8.7)</u>	<u>\$ 3.0</u>	<u>\$ 9.2</u>
Earnings per share:				
Income (loss) from continuing operations	\$ (.04)	\$ (.01)	\$.02	\$.05
Loss from discontinued operations	(.02)	(.01)	(.01)	(.02)
Basic and diluted income (loss) per share	<u>\$ (.06)</u>	<u>\$ (.02)</u>	<u>\$.01</u>	<u>\$.03</u>
Year ended December 31, 2017				
Net sales	\$ 405.3	\$ 481.7	\$ 496.5	\$ 495.9
Gross margin	114.0	141.2	161.5	185.3
Operating income	60.1	78.8	98.6	125.4
Net income from continuing operations	\$ 23.5	\$ 163.3	\$ 62.2	\$ 162.8
Amounts attributable to Valhi stockholders:				
Income from continuing operations(2)	\$ 14.4	\$ 117.0	\$ 44.2	\$ 141.1
Income (loss) from discontinued operations (2)	(1.7)	(108.2)	1.7	(1.0)
Net income	<u>\$ 12.7</u>	<u>\$ 8.8</u>	<u>\$ 45.9</u>	<u>\$ 140.1</u>
Earnings per share:				
Income from continuing operations	\$.04	\$.34	\$.13	\$.41
Loss from discontinued operations	—	(.31)	—	—
Basic and diluted income per share	<u>\$.04</u>	<u>\$.03</u>	<u>\$.13</u>	<u>\$.41</u>

(1) We recognized the following amounts during 2016:

- a pre-tax charge of \$5.1 million in the first quarter related to the contract related intangible asset impairment (see Note 7);
- pre-tax insurance settlement gains of \$2.0 million, \$1.4 million and \$9 million in the first, second and fourth quarters, respectively, (see Note 14);
- a current income tax benefit of \$5.6 million in the third quarter and a current income tax expense of \$2.2 million in the fourth quarter related to the execution and finalization of an Advance Pricing Agreement between the U.S. and Canada (see Note 14);
- non-cash deferred income tax expense (benefit) of \$2.9 million and \$(.8) million and \$(4.3) million in the second, third and fourth quarters, respectively, as the result of a net decrease in our deferred income tax asset valuation allowance related to Kronos' German and Belgian operations (see Note 14);
- non-cash income tax expense of \$7.2 million related to an increase in our reserve for uncertain tax positions, mostly in the fourth quarter; and
- net income in the fourth quarter includes an immaterial out of period adjustment of \$4.3 million (\$2.7 million net of income tax) to correct for transaction costs related to the proposed sale of our Waste Management Segment incurred in earlier periods.

(2) We recognized the following amounts during 2017:

- non-cash deferred income tax benefit of \$5.0 million, \$157.6 million, \$7.8 million and \$16.3 million in the first, second, third and fourth quarters, respectively, as a result of the reversal of our deferred income tax asset valuation allowances associated with our Chemicals Segment's German and Belgian operations, (see Note 14);
- a pre-tax charge of \$7.1 million in the third quarter related to the loss on prepayment of debt (see Note 9);
- aggregate income tax benefit of \$11.8 million related to the execution and finalization of an Advance Pricing Agreement between Canada and Germany, mostly in the third quarter;
- provisional current income tax expense of \$76.2 million in the fourth quarter as a result of the 2017 Tax Act for the one-time repatriation tax imposed on the post-1986 undistributed earnings of our non-U.S. subsidiaries (see Note 14);
- non-cash deferred income tax benefit of \$77.1 million in the fourth quarter related to the revaluation of our net deferred income tax liability resulting from the reduction in the U.S. federal corporate income
- non-cash deferred income tax benefit of \$18.7 million in the fourth quarter as a result of the reversal of our deferred income tax asset valuation allowance related to certain U.S. deferred income tax assets of one of our non-U.S. subsidiaries (which subsidiary is treated as a dual resident for U.S. income tax purposes) (see Note 14); and
- aggregate provisional non-cash deferred income tax expense of \$5.3 million in the fourth quarter related to a change in our conclusions regarding our permanent reinvestment assertion with respect to the post-1986 undistributed earnings of our European subsidiaries (see Note 14).

The sum of the quarterly per share amounts may not equal the annual per share amounts due to relative changes in the weighted average number of shares used in the per share computations.

**ELEVENTH AMENDED AND RESTATED
UNSECURED REVOLVING
DEMAND PROMISSORY NOTE**

\$360,000,000.00

December 31, 2017

Section 1. *Promise to Pay.* For and in consideration of value received, the undersigned, VALHI, INC., a corporation duly organized under the laws of the state of Delaware (“*Borrower*”), promises to pay, in lawful money of the United States of America, to the order of CONTRAN CORPORATION, a corporation duly organized under the laws of the state of Delaware (“*Contran*”), or the holder hereof (as applicable, Contran or such holder shall be referred to as the “*Noteholder*”), the principal sum of **THREE HUNDRED SIXTY MILLION** and NO/100ths United States Dollars (\$360,000,000.00) or such lesser amount as shall equal the unpaid principal amount of the loan made by the Noteholder to Borrower together with accrued and unpaid interest on the unpaid principal balance from time to time pursuant to the terms of this Tenth Amended and Restated Unsecured Revolving Demand Promissory Note, as it may be amended from time to time (this “*Note*”). This Note shall be unsecured and will bear interest on the terms set forth in **Section 7** below. Capitalized terms not otherwise defined shall have the meanings given to such terms in **Section 19** of this Note.

Section 2. *Amendment and Restatement.* This Note renews, replaces, amends and restates in its entirety the Tenth Amended and Restated Unsecured Revolving Demand Promissory Note dated December 31, 2016 in the original principal amount of \$325,000,000.00 payable to the order of the Noteholder and executed by the Borrower (the “*Tenth Amended Note*”). The Tenth Amended Note renewed, replaced, amended and restated in its entirety the Ninth Amended and Restated Unsecured Revolving Demand Promissory Note dated December 3, 2015 in the original principal amount of \$325,000,000.00 payable to the order of the Noteholder and executed by the Borrower (the “*Ninth Amended Note*”). The Ninth Amended Note renewed, replaced, amended and restated in its entirety the Eighth Amended and Restated Unsecured Revolving Demand Promissory Note dated December 31, 2014 in the original principal amount of \$275,000,000.00 payable to the order of the Noteholder and executed by the Borrower (the “*Eighth Amended Note*”). The Eighth Amended Note renewed, replaced, amended and restated in its entirety the Seventh Amended and Restated Unsecured Revolving Demand Promissory Note dated December 31, 2013 in the original principal amount of \$275,000,000.00 payable to the order of the Noteholder and executed by the Borrower (the “*Seventh Amended Note*”). The Seventh Amended Note renewed, replaced, amended and restated in its entirety the Sixth Amended and Restated Unsecured Revolving Demand Promissory Note dated December 31, 2012 in the original principal amount of \$225,000,000.00 payable to the order of the Noteholder and executed by the Borrower (the “*Sixth Amended Note*”). The Sixth Amended Note renewed, replaced, amended and restated in its entirety the Fifth Amended and Restated Unsecured Revolving Demand Promissory Note dated December 31, 2011 in the original principal amount of \$100,000,000.00 payable to the order of the Noteholder and executed by the Borrower (the “*Fifth Amended Note*”). The Fifth Amended Note renewed, replaced, amended and restated in its entirety the Fourth Amended and Restated Unsecured Revolving Demand Promissory Note dated November 10, 2010 in the original principal amount of \$100,000,000.00 payable to the order of the Noteholder and executed by the Borrower (the “*Fourth Amended Note*”). The Fourth Amended Note renewed, replaced, amended and restated in its entirety the Third Amended and Restated Unsecured Revolving Demand Promissory Note dated July 1, 2010 in the original principal amount of \$100,000,000.00 payable to the order of the Noteholder and executed by the Borrower (the “*Third Amended Note*”). The Third Amended Note renewed, replaced, amended and restated in its entirety the Second Amended and Restated Unsecured Revolving Demand Promissory Note dated March 31, 2010 in the original principal amount of \$70,000,000.00 payable to the order of the Noteholder and executed by the Borrower (the “*Second Amended Note*”). The Second Amended Note renewed, replaced, amended and restated in its entirety the First Amended and Restated Unsecured Revolving Demand Promissory Note dated November 30, 2009 in the original principal amount of \$70,000,000.00 payable to the order of the Noteholder and executed by the Borrower (the “*First Amended Note*”). The First Amended Note renewed, replaced, amended and restated in its entirety the Unsecured Revolving Demand Promissory Note dated July 30, 2009 in the original principal amount of \$70,000,000.00 payable to the order of the Noteholder and executed by the Borrower (the “*Original Note*”). This Note renews, replaces, amends and restates in its entirety the Tenth Amended Note, the Ninth Amended Note, the Eighth Amended Note, the Seventh Amended Note, the Sixth Amended Note, the Fifth Amended Note, the Fourth Amended Note, the Third Amended Note, the Second Amended Note, the First Amended Note and the Original Note (collectively, the “*Prior Notes*”); *provided* that such amendment and restatement shall operate to renew, amend and modify the rights and obligations of the parties under each Prior Note, as provided herein, but shall not extinguish the obligations under each Prior Note, nor effect a novation thereof. As of the close of business on December 31, 2017, the unpaid principal balance of the Ninth Amended Note was \$284,300,000.00, the accrued and unpaid interest thereon was nil and the accrued and unpaid commitment fee thereon was nil, which is the unpaid principal, accrued and unpaid interest and accrued and unpaid commitment fee owed under this Note as of the close of business on the date of this Note. This Note contains the

entire understanding between the Noteholder and the Borrower with respect to the transactions contemplated hereby and supersedes all other instruments, agreements and understandings between the Noteholder and the Borrower with respect to the subject matter of this Note.

Section 3. Place of Payment. All payments will be made at Noteholder's address at Three Lincoln Centre, 5430 LBJ Freeway, Suite 1700, Dallas, Texas 75240-2697, Attention: Treasurer, or such other place as the Noteholder may from time to time appoint in writing.

Section 4. Payments. The unpaid principal balance of this Note and any accrued and unpaid interest thereon shall be due and payable on the Final Payment Date. Prior to the Final Payment Date, any accrued and unpaid interest on an unpaid principal balance shall be paid in arrears quarterly on the last day of each March, June, September and December, commencing March 31, 2018. All payments on this Note shall be applied first to accrued and unpaid interest, next to accrued interest not yet payable and then to principal. If any payment of principal or interest on this Note shall become due on a day that is not a Business Day, such payment shall be made on the next succeeding Business Day and the payment shall be the amount owed on the original payment date.

Section 5. Prepayments. This Note may be prepaid in part or in full at any time without penalty.

Section 6. Borrowings. Prior to the Final Payment Date, Noteholder expressly authorizes Borrower to borrow, repay and re-borrow principal under this Note in increments of \$100,000 on a daily basis so long as:

- the aggregate outstanding principal balance does not exceed \$360,000,000.00; and
- no Event of Default has occurred and is continuing.

Notwithstanding anything else in this Note, in no event will Noteholder be required to lend money to Borrower under this Note and loans under this Note shall be at the sole and absolute discretion of Noteholder.

Section 7. Interest. The unpaid principal balance of this Note shall bear interest at the rate per annum of the Prime Rate plus one percent (1.00%). In the event that an Event of Default occurs and is continuing, the unpaid principal amount shall bear interest from the Event of Default at the rate per annum of the Prime Rate plus four percent (4.00%) until such time as the Event of Default is cured. Accrued interest on the unpaid principal of this Note shall be computed on the basis of a 365- or 366-day year for actual days (including the first, but excluding the last day) elapsed, but in no event shall such computation result in an amount of accrued interest that would exceed accrued interest on the unpaid principal balance during the same period at the Maximum Rate. Notwithstanding anything to the contrary, this Note is expressly limited so that in no contingency or event whatsoever shall the amount paid or agreed to be paid to the Noteholder exceed the Maximum Rate. If, from any circumstances whatsoever, the Noteholder shall ever receive as interest an amount that would exceed the Maximum Rate, such amount that would be excessive interest shall be applied to the reduction of the unpaid principal balance and not to the payment of interest, and if the principal amount of this Note is paid in full, any remaining excess shall be paid to Borrower, and in such event, the Noteholder shall not be subject to any penalties provided by any laws for contracting for, charging, taking, reserving or receiving interest in excess of the highest lawful rate permissible under applicable law. All sums paid or agreed to be paid to Noteholder for the use, forbearance or detention of the indebtedness of the Borrower to Noteholder shall, to the extent permitted by applicable law, be amortized, prorated, allocated and spread throughout the full term of such indebtedness until payment in full of the principal (including the period of any renewal or extension thereof) so that the interest on account of such indebtedness shall not exceed the Maximum Rate. If at any time the Contract Rate is limited to the Maximum Rate, any subsequent reductions in the Contract Rate shall not reduce the rate of interest on this Note below the Maximum Rate until the total amount of interest accrued equals the amount of interest that would have accrued if the Contract Rate had not been limited by the Maximum Rate. In the event that, upon the Final Payment Date, the total amount of interest paid or accrued on this Note is less than the amount of interest that would have accrued if the Contract Rate had not been limited by the Maximum Rate, then at such time, to the extent permitted by law, in addition to the principal and any other amounts Borrower owes to the Noteholder, the Borrower shall pay to the Noteholder an amount equal to the difference between: (i) the lesser of the amount of interest that would have accrued if the Contract Rate had not been limited by the Maximum Rate or the amount of interest that would have accrued if the Maximum Rate had at all times been in effect; and (ii) the amount of interest actually paid on this Note.

Section 8. Fees and Expenses. On the last day of each March, June, September and December, commencing March 31, 2018, and on the Final Payment Date, Borrower shall pay to Noteholder the Unused Commitment Fee for

such period, *provided, however*, Borrower will not owe any Unused Commitment Fee for any part of such period (prorated as applicable) that the Noteholder is a net borrower of money from the Borrower. In addition, Borrower and any guarantor jointly and severally agree to pay on the Final Payment Date to Noteholder any other cost or expense reasonably incurred by Noteholder in connection with Noteholder's commitment to Borrower pursuant to the terms of this Note, including without limitation any other cost reasonably incurred by Noteholder pursuant to the terms of any credit facility of Noteholder.

Section 9. *Remedy.* Upon the occurrence and during the continuation of an Event of Default, the Noteholder shall have all of the rights and remedies provided in the applicable Uniform Commercial Code, this Note or any other agreement among Borrower and in favor of the Noteholder, as well as those rights and remedies provided by any other applicable law, rule or regulation. In conjunction with and in addition to the foregoing rights and remedies of the Noteholder, the Noteholder may declare all indebtedness due under this Note, although otherwise unmatured, to be due and payable immediately without notice or demand whatsoever. All rights and remedies of the Noteholder are cumulative and may be exercised singly or concurrently. The failure to exercise any right or remedy will not be a waiver of such right or remedy.

Section 10. *Right of Offset.* The Noteholder shall have the right of offset against amounts that may be due by the Noteholder now or in the future to Borrower against amounts due under this Note.

Section 11. *Record of Outstanding Indebtedness.* The date and amount of each repayment of principal outstanding under this Note or interest thereon shall be recorded by Noteholder in its records. The principal balance outstanding and all accrued or accruing interest owed under this Note as recorded by Noteholder in its records shall be the best evidence of the principal balance outstanding and all accrued or accruing interest owed under this Note; *provided* that the failure of Noteholder to so record or any error in so recording or computing any such amount owed shall not limit or otherwise affect the obligations of the Borrower under this Note to repay the principal balance outstanding and all accrued or accruing interest.

Section 12. *Waiver.* Borrower and each surety, endorser, guarantor, and other party now or subsequently liable for payment of this Note, severally waive demand, presentment for payment, notice of nonpayment, notice of dishonor, protest, notice of protest, notice of the intention to accelerate, notice of acceleration, diligence in collecting or bringing suit against any party liable on this Note, and further agree to any and all extensions, renewals, modifications, partial payments, substitutions of evidence of indebtedness, and the taking or release of any collateral with or without notice before or after demand by the Noteholder for payment under this Note.

Section 13. *Costs and Attorneys' Fees.* In addition to any other amounts payable to Noteholder pursuant to the terms of this Note, in the event the Noteholder incurs costs in collecting on this Note, this Note is placed in the hands of any attorney for collection, suit is filed on this Note or if proceedings are had in bankruptcy, receivership, reorganization, or other legal or judicial proceedings for the collection of this Note, Borrower and any guarantor jointly and severally agree to pay on demand to the Noteholder all expenses and costs of collection, including, but not limited to, reasonable attorneys' fees incurred in connection with any such collection, suit, or proceeding, in addition to the principal and interest then due.

Section 14. *Time of Essence.* Time is of the essence with respect to all of Borrower's obligations and agreements under this Note.

Section 15. *Jurisdiction and Venue.* THIS NOTE SHALL BE GOVERNED BY AND CONSTRUED IN ACCORDANCE WITH THE DOMESTIC LAWS OF THE STATE OF TEXAS, WITHOUT GIVING EFFECT TO ANY CHOICE OF LAW OR CONFLICT OF LAW PROVISION OR RULE (WHETHER OF THE STATE OF TEXAS OR ANY OTHER JURISDICTION) THAT WOULD CAUSE THE APPLICATION OF THE LAWS OF ANY JURISDICTION OTHER THAN THE STATE OF TEXAS. BORROWER CONSENTS TO JURISDICTION IN THE COURTS LOCATED IN DALLAS, TEXAS.

Section 16. *Notice.* Any notice or demand required by this Note shall be deemed to have been given and received on the earlier of **(i)** when the notice or demand is actually received by the recipient or **(ii)** 72 hours after the notice is deposited in the United States mail, certified or registered, with postage prepaid, and addressed to the recipient. The address for giving notice or demand under this Note **(i)** to the Noteholder shall be the place of payment specified in **Section 3** or such other place as the Noteholder may specify in writing to the Borrower and **(ii)** to Borrower

shall be the address below the Borrower's signature or such other place as the Borrower may specify in writing to the Noteholder.

Section 17. Amendment or Waiver of Provisions of this Note. No amendment or waiver of any provision of this Note shall in any event be effective unless the same shall be in a writing referring to this Note and signed by the Borrower and the Noteholder. Such amendment or waiver shall be effective only in the specific instance and for the specific purpose for which given. No waiver of any of the provisions of this Note shall be deemed or shall constitute a waiver of any other provisions, whether or not similar, nor shall any waiver constitute a continuing waiver.

Section 18. Successors and Assigns. All of the covenants, obligations, promises and agreements contained in this Note made by Borrower shall be binding upon its successors and permitted assigns, as applicable. Notwithstanding the foregoing, Borrower shall not assign this Note or its performance under this Note without the prior written consent of the Noteholder. Noteholder at any time may assign this Note without the consent of Borrower.

Section 19 Definitions. For purposes of this Note, the following terms shall have the following meanings:

- (a) **"Basis Point"** shall mean 1/100th of 1 percent.
- (b) **"Business Day"** shall mean any day banks are open in the state of Texas.
- (c) **"Contract Rate"** means the amount of any interest (including fees, charges or expenses or any other amounts that, under applicable law, are deemed interest) contracted for, charged or received by or for the account of Noteholder.
- (d) **"Event of Default"** wherever used herein, means any one of the following events:
 - (i) the Borrower fails to pay any amount due on this Note and/or any fees or sums due under or in connection with this Note after any such payment otherwise becomes due and payable and three Business Days after demand for such payment;
 - (ii) the Borrower otherwise fails to perform or observe any other provision contained in this Note and such breach or failure to perform shall continue for a period of thirty days after notice thereof shall have been given to the Borrower by the Noteholder;
 - (iii) a case shall be commenced against Borrower, or Borrower shall file a petition commencing a case, under any provision of the Federal Bankruptcy Code of 1978, as amended, or shall seek relief under any provision of any other bankruptcy, reorganization, arrangement, insolvency, readjustment of debt, dissolution or liquidation law of any jurisdiction, whether now or hereafter in effect, or shall consent to the filing of any petition against it under such law, or Borrower shall make an assignment for the benefit of its creditors, or shall admit in writing its inability to pay its debts generally as they become due, or shall consent to the appointment of a receiver, trustee or liquidator of Borrower or all or any part of its property; or
 - (iv) an event occurs that, with notice or lapse of time, or both, would become any of the foregoing Events of Default.
- (e) **"Final Payment Date"** shall mean the earlier of:
 - written demand by the Noteholder for payment of all or part of the unpaid principal, the accrued and unpaid interest thereon and the accrued and unpaid commitment fee thereon, but in any event no earlier than December 31, 2019; or
 - acceleration as provided herein.
- (f) **"Maximum Rate"** shall mean the highest lawful rate permissible under applicable law for the use, forbearance or detention of money.

- (g) **“Prime Rate”** shall mean the fluctuating interest rate per annum in effect from time to time equal to the base rate on corporate loans as reported as the Prime Rate in the Money Rates column of *The Wall Street Journal* or other reliable source.
- (h) **“Unused Commitment Amount”** for any period on after the date of this Note shall mean the average on each day of such period of the difference between (A) \$360,000,000.00 and (B) the amount of the unpaid principal balance of this Note.
- (i) **“Unused Commitment Fee”** shall mean the product of (A) 50 Basis Points per annum (pro rated to take into account that the fee is payable quarterly, or such shorter period if applicable) and (B) the Unused Commitment Amount.

BORROWER:**VALHI, INC.**

By: /s/ Gregory M. Swalwell
Gregory M. Swalwell
Executive Vice President, Chief Financial Officer and Chief Accounting Officer

Address:

5430 LBJ Freeway, Suite 1700
 Dallas, Texas 75240-2697

As of the date hereof, Contran Corporation, as the Noteholder, hereby agrees that this Note renews, replaces, amends and restates in its entirety each Prior Note (but shall not extinguish the obligations under each Prior Note, nor effect a novation thereof), and that the unpaid principal of \$284,300,000.00, the accrued and unpaid interest thereon of nil and the accrued and unpaid commitment fee thereon of nil that was owed under the Tenth Amended Note as of the close of business on December 31, 2017 are the unpaid principal, the accrued and unpaid interest thereon and the accrued and unpaid commitment fee thereon, respectively, owed under this Note as of the close of business on the date of this Note.

CONTRAN CORPORATION

By: /s/ Bryan A. Hanley
Bryan A. Hanley
Vice President and Treasurer

SUBSIDIARIES OF THE REGISTRANT

Name of Corporation	Jurisdiction of Incorporation or Organization	% of Voting Securities Held at December 31, 2017 (1)
ASC Holdings, Inc.	Utah	100%
Andrews County Holdings, Inc.	Delaware	100%
Waste Control Specialists LLC (2)	Delaware	100%
Kronos Worldwide, Inc. (3)	Delaware	50%
NL Industries, Inc. (3), (4), (5)	New Jersey	83%
CompX International Inc. (5)	Delaware	87%
Tremont LLC	Delaware	100%
TRECO LLC	Nevada	100%
Basic Management, Inc.	Nevada	63%
Basic Water Company	Nevada	100%
Basic Water Company SPE LLC	Nevada	100%
Basic Environmental Company LLC	Nevada	100%
Basic Power Company	Nevada	100%
Basic Remediation Company LLC	Nevada	100%
Basic Land Company	Nevada	100%
The LandWell Company LP (6)	Delaware	50%
Henderson Interchange Sign LLC	Nevada	100%
TRE Holding Corporation	Delaware	100%
TRE Management Company	Delaware	100%
Tall Pines Insurance Company	Vermont	100%
Medite Corporation	Delaware	100%
Impex Realty Holding, Inc.	Delaware	100%

- (1) Held by the Registrant or the indicated subsidiary of the Registrant.
- (2) Sold by the Registrant on January 26, 2018.
- (3) Subsidiaries of Kronos are incorporated by reference to Exhibit 21.1 of Kronos' Annual Report on Form 10-K for the year ended December 31, 2017 (File No. 333-100047). NL owns an additional 30% of Kronos directly.
- (4) Subsidiaries of NL are incorporated by reference to Exhibit 21.1 of NL's Annual Report on Form 10-K for the year ended December 31, 2017 (File No. 1-640).
- (5) Subsidiaries of CompX are incorporated by reference to Exhibit 21.1 of CompX's Annual Report on Form 10-K for the year ended December 31, 2017 (File No. 1-13905).
- (6) TRECO LLC owns an additional 27% of The LandWell Company LP directly.

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We hereby consent to the incorporation by reference in the Registration Statement on Form S-8 (No. 333-181791) of Valhi, Inc., of our report dated March 15, 2018, relating to the consolidated financial statements, which appears in this Form 10-K.

/s/ PricewaterhouseCoopers LLP

PricewaterhouseCoopers LLP

Dallas, Texas

March 15, 2018

I, Robert D. Graham, certify that:

- 1) I have reviewed this Annual Report on Form 10-K of Valhi, Inc.;
- 2) Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
- 3) Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
- 4) The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
 - a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an Annual Report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
- 5) The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent function):
 - a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: March 15, 2018

/s/ Robert D. Graham

Robert D. Graham

Vice Chairman of the Board, President and Chief Executive Officer

I, Gregory M. Swalwell, certify that:

- 1) I have reviewed this Annual Report on Form 10-K of Valhi, Inc.;
- 2) Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
- 3) Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
- 4) The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
 - a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
- 5) The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent function):
 - a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: March 15, 2018

/s/ Gregory M. Swalwell

Gregory M. Swalwell

Executive Vice President, Chief Financial Officer and Chief Accounting Officer

**CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002**

In connection with the Annual Report of Valhi, Inc. (the “Company”) on Form 10-K for the year ended December 31, 2017 as filed with the Securities and Exchange Commission on the date hereof (the “Report”), we, Robert D. Graham, Vice Chairman of the Board, President and Chief Executive Officer, and Gregory M. Swalwell, Executive Vice President, Chief Financial Officer and Chief Accounting Officer of the Company, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that:

- (1) The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and
- (2) The information contained in the Report fairly presents, in all material respects, the financial condition and result of operations of the Company.

/s/ Robert D. Graham

Robert D. Graham
Vice Chairman of the Board, President and Chief Executive Officer
March 15, 2018

/s/ Gregory M. Swalwell

Gregory M. Swalwell
Executive Vice President, Chief Financial Officer and Chief Accounting
Officer
March 15, 2018

Note: The certification the registrant furnishes in this exhibit is not deemed “filed” for purposes of Section 18 of the Securities Exchange Act of 1934, as amended, or otherwise subject to the liabilities of that Section. Registration Statements or other documents filed with the Securities and Exchange Commission shall not incorporate this exhibit by reference, except as otherwise expressly stated in such filing.