

NL INDUSTRIES INC  
Form 10-K  
March 10, 2017

UNITED STATES

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM 10-K

Annual Report Pursuant to Section 13 OR 15(d) of the Securities Exchange Act of 1934:

For the fiscal year ended December 31, 2016

Commission file number 1-640

NL INDUSTRIES, INC.

(Exact name of Registrant as specified in its charter)

New Jersey 13-5267260  
(State or other jurisdiction of (IRS Employer  
incorporation or organization) Identification No.)

5430 LBJ Freeway, Suite 1700

Dallas, Texas 75240-2697

(Address of principal executive offices)

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

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

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Title of each class Name of each exchange on which registered  
Common stock New York Stock Exchange

No securities are registered pursuant to Section 12(g) of the Act.

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 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

Whether the Registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer or a smaller reporting company (as defined in Rule 12b-2 of the Act).

Large accelerated filer Accelerated filer Non-accelerated filer Smaller reporting company

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

The aggregate market value of the 8.3 million shares of voting stock held by nonaffiliates of NL Industries, Inc. as of June 30, 2016 (the last business day of the Registrant's most recently-completed second fiscal quarter) approximated \$21.4 million.

As of February 28, 2017, 48,705,884 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.



## PART I

### ITEM 1. BUSINESS

#### The Company

NL Industries, Inc. was organized as a New Jersey corporation in 1891. Our common stock trades on the New York Stock Exchange, or the NYSE, under the symbol NL. References to “NL Industries,” “NL,” the “Company,” the “Registrant,” “we,” “our,” “us” and similar terms mean NL Industries, Inc. and its subsidiaries and affiliate, unless the context otherwise requires.

Our principal executive offices are located at Three Lincoln Center, 5430 LBJ Freeway, Suite 1700, Dallas, TX 75240. Our telephone number is (972) 233-1700. We maintain a website at [www.nl-ind.com](http://www.nl-ind.com).

#### Business summary

We are primarily a holding company. We operate in the component products industry through our majority-owned subsidiary, CompX International Inc. (NYSE MKT: CIX). We operate in the chemicals industry through our noncontrolling interest in Kronos Worldwide, Inc. CompX and Kronos (NYSE: KRO); each file periodic reports with the Securities and Exchange Commission (SEC).

#### Organization

At December 31, 2016, Valhi, Inc. (NYSE: VHI) held approximately 83% of our outstanding common stock and a wholly-owned subsidiary of Contran Corporation held an aggregate of 93% of Valhi’s outstanding common stock. As discussed in Note 1 to our Consolidated Financial Statements, Lisa K. Simmons and Serena Simmons Connelly may be deemed to control Contran, Valhi, and us.

#### 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 cyclicity of our businesses (such as Kronos’ TiO<sub>2</sub> operations)
- Customer and producer inventory levels
- Unexpected or earlier-than-expected industry capacity expansion (such as the TiO<sub>2</sub> industry)
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Changes in raw material and other operating costs (such as energy, ore, zinc and brass 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 material (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, TiO<sub>2</sub> and component products)

Competitive products and substitute products

Price and product competition from low-cost manufacturing sources (such as China)

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- Customer and competitor strategies
- Potential consolidation of Kronos' competitors
- Potential consolidation of Kronos' customers
- The impact of pricing and production decisions
- Competitive technology positions
- Potential difficulties in integrating future acquisitions
- Potential difficulties in upgrading or implementing new accounting and manufacturing software systems
- The introduction of trade barriers
- Possible disruption of Kronos' or CompX's business, or increases in our cost of doing business resulting from terrorist activities or global conflicts
- The impact of current or future government regulations (including employee healthcare benefit related regulations)
- 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
- Kronos' ability to renew or refinance credit facilities
- Our ability to maintain sufficient liquidity
- The timing and amounts of insurance recoveries
  - The extent to which our subsidiaries or affiliates were to become unable to pay us dividends
- The ultimate outcome of income tax audits, tax settlement initiatives or other tax matters
- Uncertainties associated with CompX's development of new product features
- Our ability to utilize income tax attributes or changes in income tax rates related to such attributes, the benefits of which may not 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 us, with respect to asserted health concerns associated with the use of such products)
- The ultimate resolution of pending litigation (such as our lead pigment and environmental matters)
- Possible future litigation.

Should one or more of these risks materialize or if the consequences of such a 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.

Operations and equity investment

Information regarding our operations and the companies conducting such operations is set forth below. Geographic financial information is included in Note 2 to our Consolidated Financial Statements, which is incorporated herein by reference.

Component  
Products

CompX International Inc. - 87% owned at December 31, 2016 Chemicals Kronos Worldwide, Inc. - 30% owned at December 31, 2016	CompX manufactures engineered components that are sold to a variety of industries including recreational transportation (including boats), postal, office and institutional furniture, cabinetry, tool storage, healthcare, gas stations and vending equipment. CompX has three production facilities in the United States. Kronos is a leading global producer and marketer of value-added titanium dioxide pigments, or TiO <sub>2</sub> , a base industrial product used in imparting whiteness, brightness, opacity and durability to a diverse range of customer applications and end-use markets, including coatings, plastics, paper, inks, food, cosmetics and other industrial and consumer “quality-of-life” products. Kronos has production facilities in Europe and North America. Sales of TiO <sub>2</sub> represented about 93% of Kronos’ net sales in 2016, with sales of other products that are complementary to Kronos’ TiO <sub>2</sub> business comprising the remainder.
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COMPONENT PRODUCTS - COMPX INTERNATIONAL INC.

Industry overview - Through our majority-owned subsidiary, CompX, we manufacture engineered components that are sold to a variety of industries including recreational transportation (including boats), postal, office and institutional furniture, cabinetry, tool storage, healthcare, gas stations and vending equipment. 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 - CompX’s Security Products business, with one manufacturing facility in South Carolina and one in Illinois shared with the Marine Components business, 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. We believe that CompX is 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® electrical 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 CompX’s Security Products sales consists of products with specialized adaptations to an individual customer’s specifications, some of which are listed above. CompX also has 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 its STOCK LOCKS® distribution program.





CompX's Marine Components business, with a facility in Wisconsin and a facility shared with the Security Products business in Illinois, manufactures and distributes stainless steel exhaust components, gauges, throttle controls, trim tabs, hardware and accessories primarily for performance and ski/wakeboard boats. CompX's 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 and other billet aluminum accessories; and
- dash panels, LED lighting, wire harnesses and other accessories.

The following table sets forth the location, size and business operations for each of CompX's operating facilities at December 31, 2016:

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

SP – Security Products business

MC – Marine Components business

<sup>(1)</sup> ISO-9001 registered facilities

<sup>(2)</sup> ISO-9002 registered facility

We believe all of CompX's facilities are well maintained and satisfactory for their intended purposes.

Raw materials - The primary raw materials used in CompX's manufacturing processes are:

- zinc and brass (used in the Security Products business for the manufacture of locking mechanisms); and
- stainless steel (used primarily in the Marine Components business 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 10% of our total cost of sales for 2016. Total material costs, including purchased components, represented approximately 45% of our cost of sales in 2016.

CompX occasionally enters into short-term commodity-related raw material supply arrangements to mitigate the impact of future increases in commodity-related raw material costs. 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. CompX periodically enters into such arrangements for zinc and brass. During 2015 and

2016, markets for CompX's primary commodity-related raw materials, including zinc, brass and stainless steel, have generally been stable and relatively soft compared to historical levels. Markets for CompX's primary commodity-related raw materials are expected to remain relatively stable into 2017 with the possible exception of zinc, which has increased in price over the final months of 2016. 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

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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 - CompX holds a number of patents relating to component products, certain of which we believe to be important to CompX and its continuing business activity. Patents generally have a term of 20 years, and CompX's patents have remaining terms ranging from less than 1 year to 17 years at December 31, 2016. CompX's major trademarks and brand names in addition to CompX® include:

Security Products		Marine Components
CompX® Security Products™	Lockview®	CompX Marine®
National Cabinet Lock®	System64®	Custom Marine®
Fort Lock®	SlamCAM®	Livorsi® Marine
Timberline Lock®	RegulatoR®	Livorsi II® Marine
Chicago Lock®	CompXpress®	CMI™ Industrial
STOCK LOCKS®	GEM®	Custom Marine® Stainless Exhaust
KeSet®		The #1 Choice in Performance Boating®
TuBar®		Mega Rim®
StealthLock®		Race Rim®
ACE®		Vantage View®
ACE® II		GEN-X®
CompX eLock®		

Sales, marketing and distribution - A majority of CompX's component sales are sold directly 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 CompX's Security Products 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 businesses of the marketplace. These products are packaged and merchandised for easy availability and handling by distributors and end users.

We sell to a diverse customer base with only two customers representing 10% or more of our sales in 2016 (United States Postal Service and Harley Davidson representing 14% and 11%, respectively). Our ten largest customers accounted for approximately 46% of our sales in 2016.

Competition - The markets in which CompX participates are highly competitive. CompX competes 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. CompX focuses its efforts on the middle and high-end businesses of the market, where product design, quality, durability and service are valued by the customer. The Security Products business competes against a number of U.S. and non-U.S. manufacturers. The Marine Components business competes with small U.S. manufacturers and is minimally affected by non-U.S. competitors.

Regulatory and environmental matters - CompX's operations are subject to federal, state and local environmental 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"). CompX's operations are also subject to federal, state and local regulations relating to worker health and safety. We believe that CompX is 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 of operations. 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.

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Employees - As of December 31, 2016, CompX employed 516 people, all in the United States. We believe our labor relations are good at all of our facilities.

CHEMICALS - KRONOS WORLDWIDE, INC.

Business overview - Kronos is a leading global producer and marketer of value-added titanium dioxide pigments, or  $TiO_2$ , a base industrial product used in a wide range of applications. Kronos, along with its distributors and agents, sells and provides technical services for its products to approximately 4,000 customers in 100 countries with the majority of sales in Europe and North America. We believe that Kronos has developed considerable expertise and efficiency in the manufacture, sale, shipment and service of its products in domestic and international markets.

$TiO_2$  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.  $TiO_2$  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.  $TiO_2$  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.  $TiO_2$  is designed, marketed and sold based on specific end-use applications.

$TiO_2$  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,  $TiO_2$  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, Kronos believes that there are no effective substitutes for  $TiO_2$  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  $TiO_2$  in a number of end-use markets. However, these products are not able to duplicate the opacity performance characteristics of  $TiO_2$  and Kronos believes that these products are unlikely to have a significant impact on the use of  $TiO_2$ .

$TiO_2$  is considered a “quality-of-life” product. Demand for  $TiO_2$  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,  $TiO_2$  consumption has grown at a compound annual growth rate of approximately 3% since 1990. Per capita consumption of  $TiO_2$  in Western Europe and the United States far exceeds that in other areas of the world, and these regions are expected to continue to be the largest consumers of  $TiO_2$  on a per capita basis. We believe that Western Europe and North America currently account for approximately 20% and 17% of global  $TiO_2$  consumption, respectively. Markets for  $TiO_2$  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  $TiO_2$ , experience greater demand.

Products and end-use markets - Kronos, including its predecessors, has produced and marketed  $TiO_2$  in North America and Europe, its primary markets, for over 100 years. We believe that Kronos is the largest producer of  $TiO_2$  in Europe with approximately one-half of its sales volumes attributable to markets in Europe. The table below shows Kronos’ market share for its significant markets, Europe and North America, for the last three years.

	2014	2015	2016
Europe	18 %	18 %	17 %
North America	17 %	15 %	16 %

We believe that Kronos is the leading seller of TiO<sub>2</sub> in several countries, including Germany, with an estimated 9% share of worldwide TiO<sub>2</sub> sales volume in 2016. Overall, Kronos is one of the top five producers of TiO<sub>2</sub> in the world.

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Kronos offers its customers a broad portfolio of products that includes over 40 different TiO<sub>2</sub> pigment grades under the Kronos® trademark, which provide a variety of performance properties to meet customers' specific requirements. Kronos' major customers include domestic and international paint, plastics, decorative laminate and paper manufacturers. Kronos ships TiO<sub>2</sub> to customers in either a powder or slurry form via rail, truck and/or ocean carrier. Sales of its core TiO<sub>2</sub> pigments represented approximately 93% of Kronos' net sales in 2016. Kronos and its agents and distributors primarily sell its products in three major end-use markets: coatings, plastics and paper.

The following tables show Kronos' approximate TiO<sub>2</sub> sales volume by geographic region and end use for the year ended December 31, 2016:

Sales volumes percentages	Sales volumes percentages	
by geographic region	by end-use	
Europe	51 %	Coatings 56 %
North America	29 %	Plastics 31 %
Asia Pacific	10 %	Other 7 %
Rest of World	10 %	Paper 6 %

Some of the principal applications for Kronos' products include the following.

TiO<sub>2</sub> for coatings - Kronos' TiO<sub>2</sub> 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 TiO<sub>2</sub> 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 TiO<sub>2</sub> content.

TiO<sub>2</sub> for plastics - Kronos produces TiO<sub>2</sub> pigments that improve the optical and physical properties in plastics, including whiteness and opacity. TiO<sub>2</sub> is used to provide opacity in items such as containers and packaging materials, and vinyl products such as windows, door profiles and siding. TiO<sub>2</sub> also generally provides hiding power, neutral undertone, brightness and surface durability for housewares, appliances, toys, computer cases and food packages. TiO<sub>2</sub>'s high brightness along with its opacity is used in some engineering plastics to help mask their undesirable natural color. TiO<sub>2</sub> is also used in masterbatch, which is a concentrate of TiO<sub>2</sub> and other additives and is one of the largest uses for TiO<sub>2</sub> in the plastics end-use market. In masterbatch, the TiO<sub>2</sub> is dispersed at high concentrations into a plastic resin and is then used by manufacturers of plastic containers, bottles, packaging and agricultural films.

TiO<sub>2</sub> for paper - Kronos' TiO<sub>2</sub> 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 Kronos sells its TiO<sub>2</sub> to all segments of the paper end-use market, its primary focus is on the TiO<sub>2</sub> 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 TiO<sub>2</sub> 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. TiO<sub>2</sub> 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.

TiO<sub>2</sub> for other applications - Kronos produces TiO<sub>2</sub> to improve the opacity and hiding power of printing inks. TiO<sub>2</sub> 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. Kronos' TiO<sub>2</sub> is also used in textile applications where TiO<sub>2</sub> functions as an opacifying and delustering agent. In man-made fibers such as rayon and polyester, TiO<sub>2</sub> corrects an otherwise undesirable glossy and translucent appearance. Without the presence of TiO<sub>2</sub>, these materials would be unsuitable for use in many textile applications.

Kronos produces high purity sulfate process anatase TiO<sub>2</sub> 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. Kronos' TiO<sub>2</sub> 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, Kronos' TiO<sub>2</sub> is used commonly as a colorant in pill and

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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).

Kronos' TiO<sub>2</sub> business is enhanced by the following three complementary businesses, which comprised approximately 7% of its net sales in 2016:

• Kronos owns and operates 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 TiO<sub>2</sub> plants. We believe that Kronos has a significant competitive advantage because its mines supply the feedstock requirements for all of its European sulfate-process plants. Kronos also sells ilmenite ore to third-parties, some of whom are competitors, and Kronos sells 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.

• Kronos manufactures and sells iron-based chemicals, which are co-products and processed co-products of the sulfate and chloride process TiO<sub>2</sub> pigment production. These co-product chemicals are marketed through Kronos' Ecochem division and are primarily used as treatment and conditioning agents for industrial effluents and municipal wastewater as well as for the manufacture of iron pigments, cement and agricultural products.

• Kronos manufactures and sells titanium oxychloride and titanyl sulfate, which are side-stream specialty products from the production of TiO<sub>2</sub>. 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 - Kronos produces TiO<sub>2</sub> in two crystalline forms: rutile and anatase. Rutile TiO<sub>2</sub> is manufactured using both a chloride production process and a sulfate production process, whereas anatase TiO<sub>2</sub> 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 TiO<sub>2</sub>. 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 TiO<sub>2</sub> industry sales represented by chloride process pigments has increased relative to sulfate process pigments, and in 2016, 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 and cosmetics. Once an intermediate TiO<sub>2</sub> 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 TiO<sub>2</sub>. 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 TiO<sub>2</sub> from ilmenite or titanium slag. After separation from the impurities in the ore (mainly iron), the TiO<sub>2</sub> is precipitated and calcined to form an intermediate base pigment ready for sale or can be upgraded through finishing treatment. Kronos produced 546,000 metric tons of TiO<sub>2</sub> in 2016, up from the 528,000 metric tons produced in 2015. Kronos' production amounts include its share of the output produced by its TiO<sub>2</sub> manufacturing joint-venture discussed below in "TiO<sub>2</sub> Manufacturing Joint Venture." Kronos' average production capacity utilization rates were approximately 92%, 95%, and 98% of capacity in 2014, 2015, and 2016 respectively. Kronos' production rates in 2014 were impacted by the previously-reported lockout at its Canadian production facility that began in June 2013, as restart of production at the facility did not begin until February 2014. Kronos' production rates in 2014 and in the



first quarter of 2015 were also impacted by the implementation of certain productivity-enhancing improvement projects at other facilities as well as necessary improvements to ensure continued compliance with its permit regulations which resulted in longer-than-normal maintenance shutdowns in some instances.

Kronos operates four TiO<sub>2</sub> plants in Europe (one in each of Leverkusen, Germany; Nordenham, Germany; Langerbrugge, Belgium; and Fredrikstad, Norway). In North America, Kronos has a TiO<sub>2</sub> plant in Varennes, Quebec, Canada and, through the manufacturing joint venture described below in “TiQ Manufacturing Joint Venture,” a 50% interest in a TiO<sub>2</sub> plant in Lake Charles, Louisiana.

Kronos’ production capacity in 2016 was 555,000 metric tons, approximately three-fourths of which was from the chloride production process.

The following table presents the division of Kronos’ expected 2017 manufacturing capacity by plant location and type of manufacturing process:

Facility	Description	% of capacity by TiO <sub>2</sub> manufacturing process	
		Chloride	Sulfate
Leverkusen, Germany (1)	TiO <sub>2</sub> production, chloride and sulfate process, co-products	40 %	22 %
Nordenham, Germany	TiO <sub>2</sub> production, sulfate process, co-products	-	40
Langerbrugge, Belgium	TiO <sub>2</sub> production, chloride process, co-products, titanium chemicals products	21	-
Fredrikstad, Norway (2)	TiO <sub>2</sub> production, sulfate process, co-products	-	24
Varennes, Canada	TiO <sub>2</sub> production, chloride and sulfate process, slurry facility, titanium chemicals products	21	14
Lake Charles, LA, U.S. (3)	TiO <sub>2</sub> production, chloride process	18	-
Total		100 %	100 %

(1) The Leverkusen facility is located within an extensive manufacturing complex owned by Bayer AG. Kronos owns the Leverkusen facility, which represents about one-third of its current TiO<sub>2</sub> production capacity, but it leases 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 plant is located on public land and is leased until 2063.

(3) Kronos operates the Lake Charles facility in a joint venture with Huntsman P&A Investments LLC (HPA) (formerly Tioxide Americas, LLC), a subsidiary of Huntsman Corporation and the amount indicated in the table above represents the share of  $\text{TiO}_2$  produced by the joint venture to which Kronos is entitled. See “TiQ Manufacturing Joint Venture.”

Kronos owns the land underlying all of its principal production facilities unless otherwise indicated in the table above.

Kronos' production capacity has increased by approximately 9% over the past ten years due to debottlenecking programs, with only moderate capital expenditures. We believe that Kronos' annual attainable production capacity for 2017 is approximately 555,000 metric tons and we currently expect Kronos' production capacity will be at near-capacity levels in 2017.

Kronos also operates two ilmenite mines in Norway pursuant to a governmental concession with an unlimited term. In addition, Kronos operates a rutile slurry manufacturing plant in Lake Charles, Louisiana, which converts dry pigment manufactured for Kronos at the Lake Charles  $\text{TiO}_2$  facility into a slurry form that is then shipped to customers.

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

TiO<sub>2</sub> Manufacturing Joint Venture - Kronos 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 TiO<sub>2</sub> facility located in Lake Charles, Louisiana. Kronos shares production from the plant equally with Huntsman pursuant to separate offtake agreements, unless Kronos and Huntsman otherwise agree (such as in 2015, when Kronos purchased approximately 52% of the production from the plant).

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

The joint venture is not consolidated in Kronos' financial statements, because Kronos does not control it. Kronos accounts for its interest in the joint venture by the equity method. The joint venture operates on a break-even basis and therefore Kronos does not have any equity in earnings of the joint venture. Kronos is required to purchase one half of the TiO<sub>2</sub> produced by the joint venture. Kronos shares all costs and capital expenditures equally with Huntsman with the exception of feedstock (purchased natural rutile ore or slag) and packaging costs for the pigment grades produced. Kronos' share of net costs is reported as cost of sales as the TiO<sub>2</sub> is sold.

Raw materials - The primary raw materials used in chloride process TiO<sub>2</sub> 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. Kronos purchases chloride process grade slag from Rio Tinto Iron and Titanium Limited under a long-term supply contract that expires at the end of 2018, subject to two-year renewal periods if both parties agree. Kronos also purchases upgraded slag from Rio Tinto Iron and Titanium Limited under a long-term supply contract that expires at the end of 2019. Kronos purchases natural rutile ore under contracts primarily from Iluka Resources, Limited and Sierra Rutile Limited, and rutile ore under contracts with Sibelco Australia, all of which expire in 2017. In the past Kronos has been, and expects to continue to be successful in obtaining short-term and long-term extensions to these and other existing supply contracts prior to their expiration. Kronos expects the raw materials purchased under these contracts, and contracts that it may enter into, will meet its chloride process feedstock requirements over the next several years.

The primary raw materials used in sulfate process TiO<sub>2</sub> 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 TiO<sub>2</sub>, Kronos operates two rock ilmenite mines in Norway, which provided all of the feedstock for its European sulfate process TiO<sub>2</sub> plants in 2016. Kronos expects ilmenite production from its mines to meet its European sulfate process feedstock requirements for the foreseeable future. For its Canadian sulfate process plant, Kronos purchases 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. Kronos expects the raw materials purchased under these contracts, and contracts that it may enter into, to meet its sulfate process feedstock requirements over the next several years.

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

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The following table summarizes Kronos' raw materials purchased or mined in 2016.

Production process/raw material	Raw materials procured or mined (In thousands of metric tons)
<b>Chloride process plants:</b>	
Purchased slag or rutile ore	477
<b>Sulfate process plants:</b>	
Ilmenite ore mined and used internally	335
Purchased slag	26

Sales and marketing - Kronos' marketing strategy is aimed at developing and maintaining strong customer relationships with new and existing accounts. Because  $TiO_2$  represents a significant raw material cost for Kronos' customers, the purchasing decisions are often made by customers' senior management. Kronos works to maintain close relationships with the key decision makers, through in-depth and frequent in-person meetings. Kronos endeavors to extend these commercial and technical relationships to multiple levels within its customers' organization by using its direct sales force and technical service group to accomplish this objective. Kronos believes this has helped build customer loyalty to Kronos and strengthen its competitive position. Close cooperation and strong customer relationships enable Kronos to stay closely attuned to trends in its customers' businesses. Where appropriate, Kronos works in conjunction with customers to solve formulation or application problems by modifying specific product properties or developing new pigment grades. Kronos also focuses its sales and marketing efforts on those geographic and end-use market businesses where Kronos believes it can realize higher selling prices. This focus includes continuously reviewing and optimizing customer and product portfolios.

Kronos' marketing strategy is also aimed at working directly with customers to monitor the success of its 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 its customers. Kronos' marketing staff closely coordinates with its sales force and technical specialists to ensure that the needs of its customers are met, and to help develop and commercialize new grades where appropriate.

Kronos sells a majority of its products through its direct sales force operating from five sales offices in Europe and two sales offices in North America. Kronos also utilizes sales agents and distributors who are authorized to sell its products in specific geographic areas. In Europe, Kronos' sales efforts are conducted primarily through its direct sales force and its sales agents. Kronos' agents do not sell any  $TiO_2$  products other than Kronos® brand products. In North America, Kronos' sales are made primarily through its direct sales force and supported by a network of distributors. In addition to its direct sales force and sales agents, many of Kronos' sales agents also act as distributors to service its smaller customers in all regions. Kronos offers customer and technical service to the customers who purchase its products through distributors as well as to its larger customers serviced by its direct sales force.

Kronos sells to a diverse customer base with only one customer representing 10% or more of its sales in 2016 (Behr Process Corporation – 10%). Kronos' largest ten customers accounted for approximately 33% of sales in 2016.

Neither Kronos' business as a whole nor any of its principal product groups is seasonal to any significant extent. However,  $TiO_2$  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, Kronos has historically operated its production facilities at near full capacity rates throughout the entire year, which among other things helps to minimize its per-unit production costs. As a result, Kronos normally will build inventories during the first and fourth quarters of each year, in order to maximize product availability during

the higher demand periods normally experienced in the second and third quarters.

Competition - The TiO<sub>2</sub> industry is highly competitive. Kronos competes primarily on the basis of price, product quality, technical service and the availability of high performance pigment grades. Since TiO<sub>2</sub> is not a traded commodity, its pricing is largely a product of negotiation between suppliers and their respective customers.

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Although certain TiO<sub>2</sub> grades are considered specialty pigments, the majority of Kronos' grades and substantially all of its production are considered commodity pigments with price and availability being the most significant competitive factors along with quality and customer service. During 2015, Kronos had an estimated 9% share of worldwide TiO<sub>2</sub> sales volume, and based on sales volumes, we believe that Kronos is the leading seller of TiO<sub>2</sub> in several countries, including Germany.

Kronos' principal competitors are The Chemours Company, or Chemours (which was spun-off from E.I. du Pont de Nemours & Co. into a separate publicly-traded company in 2015); Millennium Inorganic Chemicals, Inc. (a subsidiary of National Titanium Dioxide Company Ltd.), or Cristal; Huntsman Corporation; and Tronox Incorporated. The top five TiO<sub>2</sub> producers (i.e. Kronos and its four principal competitors) account for approximately 58% of the world's production capacity. Huntsman completed its purchase of the TiO<sub>2</sub> business of Sachtleben Chemie GmbH in 2014, and has also announced its intent to exit the TiO<sub>2</sub> business (which, based on the latest public statements by Huntsman, is expected to occur during 2017). In 2015, Huntsman announced it was reducing its TiO<sub>2</sub> capacity by approximately 100,000 metric tons at one of its European sulfate process facilities. In August 2015, Chemours announced it was closing its plant in Delaware and shut down a production line at its facility in Tennessee, reducing its overall capacity by approximately 150,000 metric tons. In 2016, Huntsman announced it was closing its sulfate process facility in South Africa, reducing its overall capacity by 25,000 metric tons.

The following chart shows Kronos' estimate of worldwide production capacity in 2016:

Worldwide production capacity	
Chemours	18 %
Cristal	13 %
Huntsman	11 %
Kronos	9 %
Tronox	7 %
Other	42 %

Chemours has over one-half of total North American TiO<sub>2</sub> production capacity and is Kronos' principal North American competitor. In February 2017, Tronox announced a definitive agreement to acquire the TiO<sub>2</sub> business of Cristal. Tronox expects the acquisition, if it is completed, to occur by the end of 2017.

Over the past ten years, Kronos and its competitors have increased industry capacity through debottlenecking projects, which in part compensated for the shutdown of various TiO<sub>2</sub> plants in France, the United States, the United Kingdom and China. Chemours added a new 200,000 metric ton capacity line at its plant in Mexico which commenced production in the second quarter of 2016. Although overall industry demand is expected to remain strong in 2017 as a result of improving worldwide economic conditions, Kronos does not expect any other significant efforts will be undertaken by it or its principal competitors to further increase capacity for the foreseeable future, other than through debottlenecking projects. If actual developments differ from its expectations, the TiO<sub>2</sub> industry's performance and that of Kronos could be unfavorably affected.

The TiO<sub>2</sub> 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. Kronos believes it is unlikely any new TiO<sub>2</sub> plants will be constructed in Europe or North

America in the foreseeable future.

Research and development - Kronos employs 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 Kronos' chloride and sulfate production processes, improving product quality and strengthening Kronos' competitive position by developing new applications. Kronos' expenditures for these activities were approximately \$19 million in 2014, \$16 million in 2015 and \$13 million in 2016. Kronos expects to spend \$15 million on research and development in 2017.

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Kronos continually seeks to improve the quality of its grades and has been successful at developing new grades for existing and new applications to meet the needs of its customers and increase product life cycles. Since the beginning of 2012, Kronos has added four new grades for pigments and other applications.

Patents, trademarks, trade secrets and other intellectual property rights - Kronos has a comprehensive intellectual property protection strategy that includes obtaining, maintaining and enforcing its patents, primarily in the United States, Canada and Europe. Kronos also protects its trademark and trade secret rights and has entered into license agreements with third parties concerning various intellectual property matters. Kronos has also from time to time been involved in disputes over intellectual property.

Patents - Kronos has obtained patents and has numerous patent applications pending that cover its products and the technology used in the manufacture of its products. Kronos' patent strategy is important to Kronos and its continuing business activities. In addition to maintaining its patent portfolio, Kronos seeks patent protection for its 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. Kronos' U.S. patent portfolio includes patents having remaining terms ranging from less than one year to 20 years.

Trademarks and trade secrets - Kronos' trademarks, including Krono®, are covered by issued and or pending registrations, including in Canada and the United States. Kronos protects the trademarks that it uses in connection with the products it manufactures and sells and has developed goodwill in connection with the long-term use of its trademarks. Kronos conducts research activities in secret and it protects the confidentiality of its trade secrets through reasonable measures, including confidentiality agreements and security procedures including data security. Kronos relies upon unpatented proprietary knowledge and continuing technological innovation and other trade secrets to develop and maintain its competitive position. Kronos' proprietary chloride production process is an important part of its technology and its business could be harmed if Kronos fails to maintain confidentiality of its trade secrets used in this technology.

Employees - As of December 31, 2016, Kronos employed the following number of people:

Europe	1,850
Canada	365
United States (1)	45
Total	2,260

(1)Excludes employees of Kronos' Louisiana joint venture.

Certain employees at each of Kronos' production facilities are organized by labor unions. In Europe, Kronos' union employees are covered by master collective bargaining agreements for the chemical industry that are generally renewed annually. In Canada, Kronos' union employees are covered by a collective bargaining agreement that expires in June 2018. At December 31, 2016, approximately 87% of Kronos' 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 Kronos' business, results of operations, financial position or liquidity.

Regulatory and environmental matters - Kronos' 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 employees. Certain of Kronos' 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 Kronos' past and current operations and products have the potential to cause environmental or other damage. Kronos has implemented and continues to implement various policies and programs in an effort to minimize these risks. Kronos' policy is to comply with applicable environmental laws and regulations at all of its facilities and to strive to improve environmental performance. It is possible that future

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developments, such as stricter requirements in environmental laws and enforcement policies, could adversely affect Kronos' operations, including production, handling, use, storage, transportation, sale or disposal of hazardous or toxic substances or require Kronos to make capital and other expenditures to comply, and could adversely affect its consolidated financial position and results of operations or liquidity.

Kronos' 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 Kronos has not incurred and does not currently anticipate any material liabilities in connection with such environmental laws, it 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 Kronos' sulfate plant facilities in Germany, it recycles spent sulfuric acid either through contracts with third parties or at its own facilities. In addition, at Kronos' German locations it has a contract with a third party to treat certain sulfate-process effluents. At its Norwegian plant, Kronos ships 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, Kronos' facilities may be subject to environmental regulatory enforcement under U.S. and non-U.S. statutes. Typically Kronos establishes compliance programs to resolve these matters. Occasionally, Kronos may pay penalties. To date such penalties have not involved amounts having a material adverse effect on Kronos' consolidated financial position, results of operations or liquidity. We believe that all of Kronos' facilities are in substantial compliance with applicable environmental laws.

Kronos' capital expenditures related to ongoing environmental compliance, protection and improvement programs, including capital expenditures which are primarily focused on increased operating efficiency but also result in improved environmental protection such as lower emissions from its manufacturing facilities, were \$11.7 million in 2016 and are currently expected to be approximately \$14 million in 2017.

#### Other

In addition to our 87% ownership of CompX and our 30% ownership of Kronos at December 31, 2016, we also own 100% of EWI RE, Inc., an insurance brokerage and risk management services company. We also hold certain marketable securities and other investments. See Notes 5 and 16 to our Consolidated Financial Statements.

Regulatory and environmental matters - We discuss regulatory and environmental matters in the respective business sections contained elsewhere herein and in Item 3 - "Legal Proceedings." In addition, the information included in Note 17 to our Consolidated Financial Statements under the captions "Lead pigment litigation" and "Environmental matters and litigation" is incorporated herein by reference.

Insurance - We maintain insurance for our businesses and operations, with customary levels of coverage, deductibles and limits. See also Item 3 – “Legal Proceedings – Insurance coverage claims” and Note 13 to our Consolidated Financial Statements.

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Business strategy - 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 affiliates. As a result of this process, we have in the past and may in the future seek to raise additional capital, incur debt, repurchase indebtedness in the market or otherwise modify our dividend policies, consider the sale of our interests in our subsidiaries, affiliates, business, 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 also evaluate the restructuring of ownership interests among our respective subsidiaries and related companies.

We and other entities that may be affiliated with Contran routinely evaluate acquisitions of interests in, or combinations with, companies, including related companies, perceived by management 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 have actively managed the businesses acquired 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 the acquired 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.

Available information - Our fiscal year ends December 31. We furnish our shareholders 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. Our consolidated subsidiary (CompX) and our significant equity method investee (Kronos) also file annual, quarterly, and current reports, proxy and information statements and other information with the SEC. We also make our annual report 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.nl-ind.com](http://www.nl-ind.com) as soon as reasonably practicable after they have been filed with the SEC. We also provide to anyone, without charge, copies of such documents upon written request. Such 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 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 about the operation of the Public Reference Room by calling the SEC at 1-800-SEC-0330. We are an electronic filer and the SEC maintains an internet website that contains reports, proxy and information statements and other information regarding issuers that file electronically with the SEC at [www.sec.gov](http://www.sec.gov).

#### 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 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.

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

We formerly manufactured lead pigments for use in paint. We 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,

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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."

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

The majority of our operating cash flows are generated by our operating subsidiaries and affiliates, and our ability to service liabilities and to pay dividends on our common stock (to the extent such dividends are declared by our board of directors) depends to a large extent upon the cash dividends or other distributions we receive from our subsidiaries and affiliates. Our subsidiaries and affiliates 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 and affiliates could be subject to restrictions on, or taxation of, dividends or repatriation of earnings under applicable law, monetary transfer restrictions, currency exchange regulations in jurisdictions in which our subsidiaries and affiliates operate or any other restrictions imposed by current or future agreements to which our subsidiaries and affiliates 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 and affiliates to pay dividends or make other distributions to us. If our subsidiaries and affiliates 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 (if declared) could be adversely affected.

In addition, a significant portion of our assets consist of ownership interests in our subsidiaries and affiliates. 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 actual value of such assets.

We operate in mature and highly competitive markets, resulting in pricing pressure and the need to continuously reduce costs.

Many of the markets CompX serves are highly competitive, with a number of competitors offering similar products. CompX focuses efforts on the middle and high-end business 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 because their costs are lower than our costs, especially products sourced from Asia.

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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.

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◆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 our current component products is critical to sustaining and growing our sales.

Historically, CompX's ability to provide value-added custom engineered component products that address requirements of technology and space utilization has been a key element of its success. CompX spends 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, 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 CompX's 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 CompX introduces will achieve the same degree of success that it has achieved with its 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 CompX attempts to introduce new product features in the future, we do not know if CompX will be able to increase production volume without encountering these or other problems, which might negatively impact our financial condition or results of operations.

Failure to protect our intellectual property rights or claims by others that we infringe their intellectual property rights could substantially harm our business.

CompX relies on patent, trademark and trade secret laws in the United States and similar laws in other countries to establish and maintain 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.

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

CompX operates production facilities in the United States and Kronos operates production facilities in several countries in North America and Europe. We believe that all production facilities are in substantial compliance with applicable environmental laws. 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 production facilities, Kronos consumes large amounts of energy, primarily electricity and natural gas. To

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date the climate change legislation in effect 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, income from operations and results of operations.

Higher costs or limited availability of our raw materials may reduce our earnings and decrease our liquidity.

Certain of the raw materials used in CompX'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. CompX occasionally enters 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 otherwise be 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.

For Kronos, the number of sources for and availability of certain raw materials is specific to the particular geographical region in which a facility is located. For example, titanium-containing feedstocks suitable for use in its TiO<sub>2</sub> facilities are available from a limited number of suppliers around the world. Political and economic instability in the countries from which Kronos purchases raw material supplies could adversely affect their availability. If Kronos' worldwide vendors were unable to meet their contractual obligations and it was unable to obtain necessary raw materials, Kronos could incur higher costs for raw materials or may be required to reduce production levels. Kronos experienced significantly higher ore costs in 2012 which carried over into 2013. Kronos has seen moderation in the purchase cost of third-party feedstock ore since 2013. Kronos may also experience higher operating costs such as energy costs, which could affect its profitability. Kronos may not always be able to increase selling prices to offset the impact of any higher costs or reduced production levels, which could reduce its earnings and decrease its liquidity.

Kronos has long-term supply contracts that provide for its TiO<sub>2</sub> feedstock requirements that currently expire through 2019. While Kronos believes it will be able to renew these contracts, there can be no assurance it will be successful in renewing these contracts or in obtaining long-term extensions to these contracts prior to expiration. Kronos' current agreements (including those entered into through February 2017) require Kronos to purchase certain minimum quantities of feedstock with minimum purchase commitments aggregating approximately \$605 million in years subsequent to December 31, 2016. In addition, Kronos 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 \$158 million at December 31, 2016. Kronos' commitments under these contracts could adversely affect its financial results if it significantly reduced production and was unable to modify the contractual commitments.

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

A significant portion of our net income is attributable to sales of TiO<sub>2</sub> by Kronos. Approximately 93% of Kronos' revenues are attributable to sales of TiO<sub>2</sub>. Pricing within the global TiO<sub>2</sub> industry over the long term is cyclical, and

changes in economic conditions, especially in Western industrialized nations, can significantly impact Kronos' earnings and operating cash flows. Historically, the markets for many of Kronos' products have experienced alternating periods of increasing and decreasing demand. Relative changes in the selling prices for Kronos' products are one of the main factors that affect the level of its profitability. In periods of increasing demand, Kronos' selling prices and profit margins generally will tend to increase, while in periods of decreasing demand Kronos' selling prices and profit margins generally tend to decrease. In addition, pricing may affect

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customer inventory levels as customers may from time to time accelerate purchases of TiO<sub>2</sub> in advance of anticipated price increases or defer purchases of TiO<sub>2</sub> in advance of anticipated price decreases. Kronos' ability to further increase capacity without additional investment in greenfield or brownfield capacity increases may be limited and as a result, Kronos' profitability may become even more dependent upon the selling prices of its products.

The TiO<sub>2</sub> industry is concentrated and highly competitive and Kronos faces price pressures in the markets in which it operates, which may result in reduced earnings or operating losses.

The global market in which Kronos operates is concentrated, with the top five TiO<sub>2</sub> producers accounting for over 50% 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 Kronos' competitors may be able to drive down prices for its products if their costs are lower than Kronos' costs. In addition, some of the competitors' financial, technological and other resources may be greater than Kronos' resources and such competitors may be better able to withstand changes in market conditions. Kronos' competitors may be able to respond more quickly to new or emerging technologies and changes in customer requirements. Further, consolidation of competitors or customers may result in reduced demand for Kronos' products or make it more difficult for Kronos to compete with competitors. The occurrence of any of these events could result in reduced earnings or operating losses.

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

As of December 31, 2016, Kronos had consolidated debt of approximately \$339 million, which relates primarily to a term loan entered into in February 2014. Kronos' level of debt could have important consequences to its stockholders (including us) and creditors, including:

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

In addition to Kronos' indebtedness, at December 31, 2016, Kronos is party to various lease and other agreements (including feedstock ore purchase contracts and other long-term supply and service contracts as discussed above) pursuant to which, along with its indebtedness, Kronos is committed to pay approximately \$433 million in 2017. Kronos' ability to make payments on and refinance its debt and to fund planned capital expenditures depends on Kronos' 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, Kronos' ability to borrow funds under its revolving credit facilities in the future will, in some instances, depend in part on its ability to maintain specified financial ratios and satisfy certain financial covenants contained in the applicable credit agreement.

Kronos' business may not generate cash flows from operating activities sufficient to enable Kronos to pay its debts when they become due and to fund other liquidity needs. As a result, Kronos may need to refinance all or a portion of its debt before maturity. Kronos may not be able to refinance any of its 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 Kronos' debt on favorable terms could have a material adverse effect on its financial condition.

ITEM 1B. UNRESOLVED STAFF COMMENTS

None

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## ITEM 2. PROPERTIES

Our principal executive offices are located in an office building located at 5430 LBJ Freeway, Dallas, Texas, 75240-2697. The principal properties used in the operations of our subsidiaries and affiliates, including certain risks and uncertainties related thereto, are described in the applicable business sections of Item 1 – “Business.” We believe that our facilities are generally adequate and suitable for our respective uses.

## ITEM 3. LEGAL PROCEEDINGS

We are involved in various legal proceedings. In addition to information that is included below, we have included certain of the information called for by this Item in Note 17 to our Consolidated Financial Statements, and we are incorporating that information here by reference.

### Lead pigment litigation

Our former operations included the manufacture of lead pigments for use in paint and lead-based paint. We, 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. 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 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, and
- we have 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.

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 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.

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In one of these lead pigment cases, in April 2000 we were 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 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. In February 2014, we filed a motion for a new trial, and in March 2014 the 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 and the appeal is proceeding with the appellate court. NL believes that this judgment is inconsistent with California law and is unsupported by the evidence, and we will defend vigorously against all claims.

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 us, 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.

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.

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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 us. 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.

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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, 2015 and 2016, we have not recognized any 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, 2016, we had accrued approximately \$117 million related to approximately 41 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 \$160 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, 2016, there were approximately 5 sites for which we are not currently able to reasonably estimate a range of costs. For these sites, generally the investigation is in the early stages, and we are 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

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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, we 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, and we are awaiting final approval from the EPA.

In June 2008, we 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 September 2008, we 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. We 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, we 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. The consent decree will become effective after it has been reviewed and officially approved by the federal court.

In August 2009, we were 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. We have denied liability and will defend vigorously against all claims.

In June 2011, we were 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

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Kansas, the Oronogo-Duenweg Lead Mining Belt Superfund Site in Jasper County, Missouri and the Newton County Mine Tailing Site in Newton County, Missouri. We have 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, we were 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, we were 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. If the mediation is unsuccessful, the case will become active, and we 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, we 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, we 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. The consent decree will become effective after it has been reviewed and officially entered by the court.

#### 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 matters.

We currently believe that the disposition of all claims and disputes, 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

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. In addition to information that is included below, we have included certain of the information called for by this Item in Note 17 to our Consolidated Financial Statements, and we are incorporating that information here by reference.

We have agreements with certain of our 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. See Note 13 to our Consolidated Financial Statements.

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

#### ITEM 4. MINE SAFETY DISCLOSURES

Not applicable



## PART II

## ITEM 5. MARKET FOR REGISTRANT'S COMMON EQUITY AND RELATED STOCKHOLDER MATTERS

Our common stock is listed and traded on the New York Stock Exchange (NYSE: NL). As of February 28, 2017, there were approximately 2,300 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 for the periods indicated, according to Bloomberg, and cash dividends paid during such periods. On February 28, 2017 the closing price of our common stock was \$5.90 per share.

	High	Low	Cash dividends paid
Year ended December 31, 2015			
First Quarter	\$8.65	\$6.86	-
Second Quarter	8.11	6.96	-
Third Quarter	7.46	2.99	-
Fourth Quarter	4.03	2.70	-
Year ended December 31, 2016			
First Quarter	\$3.04	\$1.93	-
Second Quarter	3.39	2.16	-
Third Quarter	5.90	2.28	-
Fourth Quarter	9.50	3.20	-
January 1, 2017 through February 28, 2017	8.75	5.40	-

In February 2014, our Board of Directors deferred consideration of a first quarter 2014 cash dividend, and no dividend was paid in the first quarter. In May 2014, after considering our results of operations, financial conditions and cash requirements for our businesses, our Board of Directors suspended our regular quarterly dividend. The declaration and payment of future dividends, and the amount thereof, is discretionary and is dependent upon these 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 might be paid. There are currently no contractual restrictions on the amount of dividends which we may pay.

## Performance graph

Set forth below is a table and 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, 2011 through December 31, 2016. The graph shows the value at December 31 of each year assuming an original investment of \$100 at December 31, 2011 and the reinvestment of dividends.

	2011	2012	2013	2014	2015	2016
NL common stock	\$100	\$92	\$94	\$72	\$25	\$68
S&P 500 Composite Stock Price Index	100	116	154	175	177	198
S&P 500 Industrial Conglomerates Index	100	120	169	171	200	218

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, 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 shareholders, 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, 2016, 163,000 shares are available for award under this plan. See Note 15 to our Consolidated Financial Statements.

## ITEM 6. SELECTED FINANCIAL DATA

The following selected financial data should be read in conjunction with our Consolidated Financial Statements and Item 7 - "Management's Discussion and Analysis of Financial Condition and Results of Operations."

	Years ended December 31,				
	2012	2013	2014	2015	2016
	(In millions, except per share data)				
<b>STATEMENTS OF OPERATIONS DATA:</b>					
Net sales	\$83.2	\$92.0	\$103.8	\$109.0	\$108.9
Income from component products operations	\$5.4	\$9.3	\$13.6	\$14.0	\$15.6
Equity in earnings (losses) of Kronos	\$66.4	\$(31.0 )	\$30.2	\$(52.8 )	\$13.2
Net income (loss)	\$79.1	\$(54.5 )	\$29.6	\$(22.7 )	\$16.7
Net income (loss) attributable to NL stockholders:					
Continuing operations	\$56.7	\$(55.3 )	\$28.5	\$(23.9 )	\$15.3
Discontinued operations <sup>(1)</sup>	17.8	-	-	-	-
Net income (loss) attributable to NL stockholders	\$74.5	\$(55.3 )	\$28.5	\$(23.9 )	\$15.3
<b>DILUTED EARNINGS PER SHARE DATA:</b>					
Net income (loss) attributable to NL stockholders:					
Continuing operations	\$1.16	\$(1.14 )	\$0.59	\$(0.49 )	\$0.31
Discontinued operations <sup>(1)</sup>	0.37	-	-	-	-
	\$1.53	\$(1.14 )	\$0.59	\$(0.49 )	\$0.31
Cash dividends per share	\$0.50	\$0.50	\$-	\$-	\$-
Weighted average common shares outstanding	48,667	48,672	48,679	48,688	48,701
<b>BALANCE SHEET DATA (at year end):</b>					
Total assets	\$676.5	\$682.0	\$496.2	\$349.3	\$385.0
Long-term debt, including current maturities	18.5	-	-	-	0.5
NL stockholders' equity	374.8	355.4	237.0	150.0	177.9
Total equity	388.1	369.0	251.5	165.3	194.3
<b>STATEMENTS OF CASH FLOW DATA:</b>					
Net cash provided by (used in):					
Operating activities	\$18.0	\$14.9	\$23.6	\$27.6	\$27.7
Investing activities <sup>(2)</sup>	94.4	1.0	(2.9 )	(4.3 )	(30.6 )
Financing activities	(44.1 )	(43.3 )	(0.3 )	(0.3 )	0.2

(1) In 2012, we sold CompX's Furniture Components operations for a net pre-tax gain of \$23.7 million which is included in discontinued operations.

(2) Prior period amounts have been reclassified to reflect the change in the statement of cash flow presentation with respect to restricted cash and cash equivalents. As a result, net cash provided by investing activities for the year ended December 31, 2012 increased by \$2.2 million and for the year ended December 31, 2013 decreased by \$2.0 million. For the year ended December 31, 2014, net cash used in investing activities decreased by \$0.4 million, and for the year ended December 31, 2015, net cash provided by operating activities decreased by \$0.5 million and net cash used in investing activities increased by \$0.4 million. See Note 19 to the Consolidated Financial Statements.





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

Business overview

We are primarily a holding company. We operate in the component products industry through our majority-owned subsidiary, CompX International Inc. We also own a noncontrolling interest in Kronos Worldwide, Inc. Both CompX (NYSE MKT: CIX) and Kronos (NYSE: KRO) file periodic reports with the SEC.

CompX is a leading manufacturer of engineered components utilized in a variety of applications and industries. Through its Security Products operations, CompX manufactures mechanical and electronic cabinet locks and other locking mechanisms used in recreational transportation, postal, office and institutional furniture, cabinetry, tool storage and healthcare applications. CompX also manufactures stainless steel exhaust systems, gauges, throttle controls, and trim tabs for the recreational marine and other industries through its Marine Components operations.

We account for our 30% non-controlling interest in Kronos by the equity method. Kronos is a leading global producer and marketer of value-added titanium dioxide pigments. TiO<sub>2</sub> is used for a variety of manufacturing applications including coatings, plastics, paper and other industrial products.

Net income (loss) overview

Our net income attributable to NL stockholders was \$15.3 million, or \$.31 per share, in 2016 compared to a net loss of \$23.9 million, or \$.49 per share, in 2015 and net income of \$28.5 million, or \$.59 per share, in 2014.

As more fully described below, the increase in our earnings per share from 2015 to 2016 is primarily due to the net effects of:

- equity in earnings from Kronos in 2016 of \$13.2 million compared to equity in losses from Kronos in 2015 of \$52.8 million,
- lower insurance recoveries in 2016 of \$3.3 million primarily related to an insurance recovery settlement for certain past lead pigment litigation defense costs we recognized in 2015,
- higher income from operations attributable to CompX in 2016 of \$1.6 million,
- lower litigation fees and related costs of \$1.3 million in 2016, and
- higher environmental remediation and related costs of \$.8 million in 2016.

As more fully described below, the decrease in our earnings per share from 2014 to 2015 is primarily related to the net effects of:

- equity in losses from Kronos in 2015 of \$52.8 million compared to equity in earnings from Kronos in 2014 of \$30.2 million,
- lower insurance recoveries in 2015 of \$6.7 million primarily related to an insurance recovery settlement for certain past lead pigment litigation defense costs we recognized in 2014,
- lower environmental remediation and related costs of \$2.1 million in 2015,
- lower litigation fees and related costs of \$2.2 million in 2015, and
- a first quarter non-cash income tax benefit in 2015 related to a net reduction in our reserve for uncertain tax positions of \$3.0 million.

Our 2016 net income attributable to NL stockholders includes:

- income of \$.01 per share, net of income taxes, related to insurance recoveries we recognized, and

income or loss, net of income taxes, included in our equity in earnings of Kronos:

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income of \$.01 per share related to Kronos' insurance settlement gains,  
income of \$.01 per share related to Kronos' current income tax benefit related to the execution and finalization of an Advance Pricing Agreement between the U.S. and Canada,  
income of \$.01 per share related to Kronos' recognition of a net deferred income tax benefit as the result of a net decrease in its deferred income tax asset valuation allowance related to its German and Belgian operations, and  
loss of \$.01 per share related to a net increase in Kronos' reserve for uncertain tax positions.  
Our 2015 net loss attributable to NL stockholders includes:

income of \$.06 per share related to a net reduction of our reserve for uncertain tax positions,  
income of \$.05 per share, net of income taxes, related to insurance recoveries we recognized, and  
loss, net of income taxes, included in our equity in losses of Kronos:  
loss of \$.65 per share related to Kronos' recognition of a deferred income tax asset valuation allowance related to its German and Belgian operations,  
loss of \$.07 per share related to certain workforce reduction charges recognized by Kronos, and  
loss of \$.03 per share related to Kronos' recognition of an other-than-temporary impairment charge in a marketable equity security.  
Our 2014 net income attributable to NL stockholders includes:

income of \$.14 per share, net of income taxes, related to insurance recoveries we recognized, and  
income of \$.02 per share, net of income taxes, included in our equity in earnings of Kronos related to a net reduction of Kronos' reserve for uncertain tax positions.

#### Outlook

We currently expect our net income attributable to NL stockholders in 2017 to be higher than 2016 primarily due to higher equity in earnings from Kronos and lower environmental and related costs in 2017, offset in part by lower income from operations attributable to CompX.

#### Critical accounting policies and estimates

The accompanying "Management's Discussion and Analysis of Financial Condition and Results of Operations" is based upon our Consolidated Financial Statements, which have been prepared in accordance with accounting principles generally accepted in the United States of America (GAAP). The preparation of these financial statements requires us 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 amount of revenues and expenses during the reported period. On an ongoing basis, we evaluate our estimates, including those related to the recoverability of long-lived assets, pension and other postretirement benefit obligations and the underlying actuarial assumptions related thereto, the realization of deferred income tax assets and accruals for litigation, income tax and other contingencies. We base our estimates on historical experience and on various other assumptions we believe to be 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 may differ significantly from previously-estimated amounts under different assumptions or conditions.

The following critical accounting policies affect our more significant judgments and estimates used in the preparation of our Consolidated Financial Statements:

**Investments** - We own investments in Valhi, Inc. 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 marketable debt

securities and publicly traded investees. We record an impairment charge when we believe an investment has experienced an other-than-temporary

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decline in fair value below its cost basis (for marketable securities) or below its carrying value (for equity method investees). In this regard, as of December 31, 2016 the market value of our marketable security investment exceeded our cost basis. See Note 5 to our Consolidated Financial Statements. At December 31, 2016, the \$11.94 per share quoted market price of our investment in Kronos (our only equity method investee) exceeded its per share net carrying value by over 250%.

**Long-lived assets** - We assess property and equipment for impairment only when circumstances (as specified in ASC 360-10-35, Property, Plant, and Equipment) indicate an impairment may exist. Our determination is based upon, among other things, our estimates of the amount of future net cash flows to be generated by the long-lived asset (Level 3 inputs) and our 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 for impairment during 2016 because no such impairment indicators were present.

**Goodwill** - Our net goodwill totaled \$27.2 million at December 31, 2016. 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. All of our net goodwill at December 31, 2015 is related to CompX's security products reporting unit. One of the requirements for the permitted use of a qualitative assessment is that a quantitative assessment must be performed periodically, and we used the quantitative assessment of ASC 350-20-35 for our 2016 annual impairment test to estimate the fair value of goodwill, using level 3 inputs of a discounted cash flow technique since level 1 and level 2 inputs of market prices were not available. No goodwill impairment was deemed to exist as a result of such 2016 annual impairment review, as the estimated fair value of CompX's security products reporting unit was in excess of its net carrying amount. See Note 7 to our Consolidated Financial Statements. 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.

**Benefit plans** - We maintain various defined benefit pension plans and postretirement benefits other than pensions (OPEB). The amounts recognized as defined benefit pension and OPEB expenses and the reported amounts of pension asset and accrued pension and OPEB costs are actuarially determined based on several assumptions, including discount rates, expected rates of returns on plan assets, expected health care trend rates and expected mortality. Variances from these actuarially assumed rates will result in increases or decreases, as applicable, in the recognized pension and OPEB obligations, pension and OPEB expenses and funding requirements. These assumptions are more fully described below under the heading "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. 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 in the future 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 the change in estimate was made. We record a reserve for uncertain tax where we believe it is more-likely-than-not our position 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.

**Contingencies** - We record accruals for environmental, legal and other contingencies and commitments when estimated future expenditures associated with such contingencies become probable, and the amounts can be reasonably estimated. However, new information may become available, or circumstances (such as applicable laws and regulations) may change, thereby resulting in an increase or decrease in the amount required to be accrued for such matters (and therefore a decrease or increase in reported net income in the period of such change).

Income from operations of CompX and Kronos is impacted by certain significant judgments and estimates, as summarized below:

**Chemicals (Kronos)** - allowance for doubtful accounts, impairment of equity method investments, long-lived assets, defined benefit pension and OPEB plans, loss accruals and income taxes, and

**Component products (CompX)** - impairment of goodwill and long-lived assets, loss accruals and income taxes.

In addition, general corporate and other items are impacted by the significant judgments and estimates for impairment of marketable securities and equity method investments, defined benefit pension and OPEB plans, deferred income tax asset valuation allowances and loss accruals.

Income (loss) from operations

The following table shows the components of our income (loss) from operations.

	Years ended December			% Change	
	31, 2014	2015	2016	2014-15	2015-16
	(Dollars in millions)				
CompX	\$13.6	\$14.0	\$15.6	3 %	11 %
Insurance recoveries	10.4	3.7	0.4	(64)	(88 )
Other income, net	.1	.1	-	-	(100 )
Corporate expense	(21.3)	(17.5)	(17.0)	(18)	(3 )
Income (loss) from operations	\$2.8	\$0.3	\$(1.0 )	(89)%	(467 )%

The following table shows the components of our income (loss) before income taxes exclusive of our income (loss) from operations.

	Year ended December			% Change	
	31, 2014	2015	2016	2014-15	2015-16
	(Dollars in millions)				
Equity in earnings (losses) of Kronos	\$30.2	\$(52.8)	\$13.2	(275)%	125 %
Interest and dividend income	1.6	1.2	1.7	(25 )	48
Interest expense	-	-	-	-	-





## CompX International Inc.

	Years ended December 31,			% Change	
	2014	2015	2016	2014-2015	2015-16
	(Dollars in millions)				
Net sales	\$103.8	\$109.0	\$108.9	5 %	- %
Cost of sales	71.6	75.6	73.7	6	(2 )
Gross margin	32.2	33.4	35.2	4	5
Operating costs and expenses	18.6	19.4	19.6	4	1
Income from operations	\$13.6	\$14.0	\$15.6	3	11
Percentage of net sales:					
Cost of sales	69	% 69	% 68	%	
Gross margin	31	31	32		
Operating costs and expenses	18	18	18		
Income from operations	13	13	14		

Net sales - Net sales for 2016 were comparable to 2015 because CompX's Security Products business 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. CompX's Marine Components business also contributed with higher sales to the waterski/wakeboard boat market. Relative changes in selling prices did not have a material impact on net sales comparisons.

Net sales increased approximately \$5.2 million from 2014 to 2015 led by strong demand within Security Products from existing government customers. CompX's Marine Components business also contributed to the increase primarily through higher sales to the waterski/wakeboard boat market. Relative changes in selling prices did not have a material impact on net sales comparisons.

Cost of sales and gross margin - 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 each of CompX's Security Products and Marine Components businesses.

Cost of sales and gross margin both increased from 2014 to 2015 primarily due to increased sales volumes. As a percentage of net sales, cost sales and resulting gross margin for 2015 were comparable to 2014 as improved variable margins and manufacturing efficiencies attributable to CompX's Marine Components business were substantially offset by slightly lower variable margins and increased fixed costs within CompX's Security Products business.

Operating costs and expenses - Operating costs and expenses consist primarily of sales and administrative-related personnel costs, sales commissions and advertising expenses directly related to product sales and administrative costs relating to CompX's business and corporate management activities, as well as gains and losses on plant, property and equipment. Operating costs and expenses in 2016 were comparable to 2015 on an absolute basis and as a percentage of sales. Operating costs and expenses increased slightly from 2014 to 2015 primarily as a result of increased personnel costs for CompX's Security Products business.

Income from operations - As a percentage of net sales, income from operations increased slightly from 2015 to 2016 while 2015 was comparable to 2014. Operating margins were primarily impacted by the factors impacting cost of sales, gross margin and operating costs discussed above.

General - CompX's profitability primarily depends on our ability to utilize our production capacity effectively, which is affected by, among other things, the demand for our products and our ability to control our manufacturing costs, primarily comprised of labor costs and materials. The materials used in our products consist of purchased components and raw materials some of which are subject to fluctuations in the commodity markets such

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as zinc, brass and stainless steel. Total material costs represented approximately 45% of our cost of sales in 2016, with commodity-related raw materials accounting for approximately 10% of our cost of sales. During 2015 and 2016, markets for our primary commodity-related raw materials, including zinc, brass and stainless steel, have generally been stable and relatively soft compared to historical levels. Markets for our primary commodity-related raw materials are expected to remain relatively stable into 2017 with the possible exception of zinc, which has increased in price over the final months of 2016. CompX occasionally enters 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- Raw Materials."

#### Results by reporting unit

The key performance indicator for CompX's reporting units is the level of their income from operations (see discussion below).

	Years ended December 31,			% Change	
	2014	2015	2016	2014-15	2015-16
	(Dollars in millions)				
<b>Net sales:</b>					
Security Products	\$91.4	\$95.6	\$94.7	5 %	(1 )%
Marine Components	12.4	13.4	14.2	8	6
Total net sales	\$103.8	\$109.0	\$108.9	5	-
<b>Gross margin:</b>					
Security Products	\$29.5	\$29.9	\$31.2	1	4
Marine Components	2.7	3.5	4.0	29	12
Total gross margin	\$32.2	\$33.4	\$35.2	4	5
<b>Income (loss) from operations:</b>					
Security Products	\$18.7	\$18.6	\$20.0	(1 )	8
Marine Components	.7	1.4	1.7	103	19
Corporate operating expenses	(5.8 )	(6.0 )	(6.1 )	4	1
Total income from operations	\$13.6	\$14.0	\$15.6	3	11
<b>Income (loss) from operations margin:</b>					
Security Products	20	% 19	% 21	%	
Marine Components	6	11	12		
Total income from operations margin	13	13	14		

Security Products - Security Products net sales decreased 1% to \$94.7 million in 2016 compared to \$95.6 million in 2015. 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. As a percentage of net sales, gross margin for 2016 increased compared to 2015 on favorable variable margins resulting from relative changes in product and customer mix particularly in the fourth quarter. Operating costs and expenses for 2016 were comparable to 2015. Security Products operating income as a percentage of net sales for 2016 increased compared to 2015 primarily as a result of the factors impacting gross profit and operating costs and expenses discussed above.

Security Products net sales increased 5% to \$95.6 million in 2015 compared to \$91.4 million in 2014. The increase in sales was primarily due to an increase of approximately \$3.0 million in sales to existing government customers. As a percentage of net sales, gross margin for 2015 decreased compared to 2014 due to relative changes in customer and product mix driving lower variable margins, and increased fixed costs. Operating costs and expenses increased approximately \$.5 million in 2015 compared to 2014 primarily as a result of increased personnel costs. Security Products operating income as a percentage of net sales for 2015 decreased compared to 2014 primarily as a result of the factors impacting gross margin and operating costs and expenses discussed above.

Marine Components - Marine Components net sales increased 6% in 2016 as compared to 2015, while 2015 net sales increased 8% over 2014. The increase in sales each year was primarily due to improved demand for products sold to the ski/wakeboard boat market, including the continuing introduction of new product lines to that market. As a percentage of net sales, gross margin and the operating income percentage for each period improved due to improved pricing, changes in customer and product mix, improved manufacturing efficiencies and increased leverage of fixed costs as a result of higher production volumes.

Outlook - We experienced robust demand for our products in 2015 and 2016 buoyed by continued high demand from certain large existing customers, including significant projects for government security applications which are not expected to recur. We continue to benefit from innovation and diversification in our product offerings to the recreational boat markets served by CompX's Marine Components business. We anticipate continued strong demand for our products in 2017, though we do not expect demand for government security applications to equal 2016 volumes. As in prior periods, we will continue to monitor general 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.

General corporate items, interest and dividend income, interest expense, provision for income taxes, noncontrolling interest and related party transactions

Insurance recoveries - We have agreements with certain insurance carriers pursuant to which the carriers reimburse us for a portion of our past lead pigment and asbestos litigation defense costs. Insurance recoveries include amounts we received from these insurance carriers. Substantially all of the \$3.7 million of insurance recoveries we recognized in 2015 relate to a first quarter settlement we reached with one of our insurance carriers in which they agreed to reimburse us for a portion of our past litigation defense costs. Substantially all of the \$10.4 million of insurance recoveries we recognized in 2014 relate to a settlement we reached with one of our insurance carriers in September 2014 in which they agreed to reimburse us for a portion of our past litigation defense costs.

The agreements with certain of our insurance carriers also include reimbursement for a portion of our future 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. Accordingly, these insurance recoveries are recognized when receipt is probable and the amount is determinable. See Notes 13 and 17 to our Consolidated Financial Statements.

Corporate expense - Corporate expenses were \$17.0 million in 2016, \$.5 million or 3% lower than in 2015 primarily due to lower litigation and related costs somewhat offset by higher environmental and related costs. Included in corporate expenses are:

- litigation and related costs of \$3.5 million in 2016 compared to \$4.8 million in 2015 and
- environmental and related costs of \$5.2 million in 2016 compared to \$4.4 million in 2015.

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Corporate expenses were \$17.5 million in 2015, \$3.8 million or 18% lower than in 2014 primarily due to lower environmental and related costs; and lower litigation and related costs. Included in corporate expenses are:

litigation and related costs of \$4.8 million in 2015 compared to \$7.0 million in 2014 and  
environmental and related costs of \$4.4 million in 2015 compared to \$6.5 million in 2014.

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Overall, we currently expect that our net general corporate expenses in 2017 will be lower than in 2016 primarily due to lower expected environmental remediation and related costs.

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 17 to our Consolidated Financial Statements. If our current expectations regarding the number of cases in which we expect to be involved during 2017 or the nature of such cases were to change, our corporate expenses could be higher than we currently estimate.

Obligations for environmental remediation costs are difficult to assess and estimate and it is possible that actual costs for environmental remediation will exceed accrued amounts or that costs will be incurred in the future for sites in which we cannot currently estimate our liability. If these events were to occur in 2017, our corporate expenses would be higher than we currently estimate. In addition, we adjust our environmental accruals as further information becomes available to us or as circumstances change. Such further information or changed circumstances could result in an increase in our accrued environmental costs. See Note 17 to our Consolidated Financial Statements.

Interest and dividend income – Interest income increased \$.6 million in 2016 compared to 2015 primarily due to higher cash and cash equivalent balances available for investment as well as interest income earned under CompX's loan to Valhi under a promissory note entered into in August 2016.

Dividend income decreased \$.4 million in 2015 compared to 2014 related to the reduction of Valhi's quarterly dividend from \$.05 per share to \$.02 per share, effective with its second quarter 2014 dividend.

Income tax expense (benefit) - We recognized an income tax expense of \$5.0 million in 2014, an income tax benefit of \$28.6 million in 2015 and an income tax benefit of \$2.8 million in 2016. Our income tax benefit in 2015 includes a first quarter non-cash income tax benefit of \$3.0 million related to the release of a portion of our reserve for uncertain tax positions due to the expiration of the applicable statute of limitations. In accordance with GAAP, we recognize deferred income taxes on our undistributed equity in earnings (losses) of Kronos. Because we and Kronos are part of the same U.S. federal income tax group, any dividends we receive from Kronos are nontaxable to us. Accordingly, we do not recognize and we are not required to pay income taxes on dividends from Kronos. Therefore, our effective income tax rate will generally be lower than the U.S. federal statutory income tax rate in periods during which we receive dividends from Kronos and recognize equity in earnings of Kronos (such as in 2014 and 2016). Conversely, our effective income tax rate will generally be higher than the U.S. federal statutory income tax rate in periods during which we receive dividends from Kronos and recognize equity in losses of Kronos (such as in 2015). We received aggregate dividends from Kronos of \$21.1 million in each of 2014, 2015 and 2016.

Our effective tax rate attributable to our equity in earnings (losses) of Kronos, including the effect of non-taxable dividends we received from Kronos, was 10.5% in 2014, 49.0% in 2015 and 21.2% in 2016.

See Note 14 to our Consolidated Financial Statements for more information about our 2016 income tax items, including a tabular reconciliation of our statutory tax expense (benefit) to our actual tax expense (benefit).

Noncontrolling interest - Noncontrolling interest in net income of CompX attributable to continuing operations is consistent in each of 2014, 2015 and 2016.

Related party transactions - We are a party to certain transactions with related parties. See Notes 1 and 16 to our Consolidated Financial Statements. It is our policy to engage in transactions with related parties on terms, in our opinion, no less favorable to us than we could obtain from unrelated parties.



## Equity in earnings (losses) of Kronos Worldwide, Inc.

	Years ended December 31,			% Change	
	2014	2015	2016	2014-15	2015-16
	(Dollars in millions)				
Net sales	\$1,651.9	\$1,348.8	\$1,364.3	(18 )%	1 %
Cost of sales	1,302.2	1,156.5	1,107.3	(11 )%	(4 )%
Gross margin	\$349.7	\$192.3	\$257.0		
Income (loss) from operations	\$149.7	\$(1.1 )	\$81.1	(101)%	7,473 %
Other, net	1.0	(11.2 )	0.6		105
Interest expense	(17.0 )	(18.5 )	(20.5 )		11
Income (loss) before					
income taxes	133.7	(30.8 )	61.2		
Income tax expense (benefit)	34.5	142.8	17.9		
Net income (loss)	\$99.2	\$(173.6 )	\$43.3		
Percentage of net sales:					
Cost of sales	79	% 86	% 81	%	
Income (loss) from operations	9	% -	% 6	%	
Equity in earnings (losses) of					
Kronos Worldwide, Inc.	\$30.2	\$(52.8 )	\$13.2		
TiO <sub>2</sub> operating statistics:					
Sales volumes*	496	525	559	6 %	7 %
Production volumes*	511	528	546	3 %	3 %
Change in TiO <sub>2</sub> net sales:					
TiO <sub>2</sub> product pricing				(14 )%	(3 )%
TiO <sub>2</sub> sales volumes				6 %	7 %
TiO <sub>2</sub> product mix/other				(2 )%	(2 )%
Changes in currency exchange rates				(8 )%	(1 )%
Total				(18 )%	1 %

\*Thousands of metric tons

Industry conditions and 2016 overview – Due to competitive pressures, Kronos' average TiO<sub>2</sub> selling prices decreased throughout 2015 and, to a much lesser extent, into the first quarter of 2016. Kronos' average selling prices at the beginning of 2016 were 17% lower as compared to the beginning of 2015. In the second quarter of 2016, Kronos' average selling prices began to rise due to the successful implementation of previously-announced price increases and average selling prices continued to rise through the remainder of 2016. Kronos' average selling prices at the end of 2016 were 10% higher than at the end of 2015, with higher prices in all major markets, most notably in export markets. Kronos experienced higher sales volumes in North American, European and export markets in 2016 as



compared to 2015, partially offset by lower sales volumes in the Latin American market in 2016 as compared to 2015.

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The following table shows Kronos' capacity utilization rates during 2015 and 2016.

	2015	2016
First Quarter	93 %	97 %
Second Quarter	100 %	95 %
Third Quarter	95 %	100 %
Fourth Quarter	92 %	100 %
Overall	95 %	98 %

Kronos' production rates in the first and fourth quarters of 2015 were impacted by the implementation of certain productivity-enhancing improvement projects at certain facilities, as well as necessary improvements to ensure continued compliance with its permit regulations, which resulted in longer-than-normal maintenance shutdowns in some instances.

Kronos continued to experience moderation in the cost of TiO<sub>2</sub> feedstock ore procured from third parties in 2015 and 2016. Kronos' cost of sales per metric ton of TiQ sold declined throughout 2015 and 2016 due to moderation in the cost of TiO<sub>2</sub> feedstock and the cost savings achieved from the 2015 implementation of a restructuring plan discussed below. Consequently, Kronos' cost of sales per metric ton of TiQ sold in 2016 was slightly lower than its cost of sales per metric ton of TiO<sub>2</sub> sold in 2015 (excluding the effect of changes in currency exchange rates).

In the second quarter of 2015, Kronos 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 its facilities impacting approximately 160 individuals. Kronos recognized an aggregate \$21.7 million charge in 2015 (substantially all of which was recognized in the second quarter) for such workforce reductions it had implemented through December 31, 2015, \$10.8 million of which is classified as part of cost of sales and \$10.9 million of which is classified in selling, general and administrative expense. The charge associated with the workforce reductions implemented in the third and fourth quarters of 2015, which impacted approximately 50 individuals, was not material due to the applicable law affecting such individuals, which generally provides for a short notice period (if any) and the payment of a nominal amount of severance (if any).

Net sales – Kronos' 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 TiO<sub>2</sub> selling prices (which decreased net sales by approximately \$40 million). TiO<sub>2</sub> 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.

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

Kronos' net sales decreased 18% or \$303.1 million in 2015 compared to 2014, primarily due to the net effect of a 14% decrease in average TiO<sub>2</sub> selling prices (which decreased net sales by approximately \$231 million) and a 6% increase in sales volumes (which increased net sales by approximately \$99 million). TiO<sub>2</sub> 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.

Kronos' sales volumes increased in 2015 compared to 2014 primarily due to higher sales in certain European and export markets, partially offset by lower sales in North American markets. Kronos estimates that changes in currency exchange rates decreased its net sales by approximately \$138 million, or 8%, as compared to 2014.

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Cost of sales - Cost of sales decreased \$49.2 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 TiO<sub>2</sub> 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.

Kronos' 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.

Kronos' cost of sales decreased \$145.7 million or 11% in 2015 compared to 2014 due to the net impact of lower raw materials and other production costs of approximately \$26 million (primarily caused by the lower third-party feedstock ore costs, as discussed above), a 3% increase in TiO<sub>2</sub> 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.

Kronos' cost of sales as a percentage of net sales increased to 86% in 2015 compared to 79% in 2014, as the unfavorable impact of lower average selling prices and the workforce reduction charge more than offset the favorable effects of lower raw material costs and efficiencies related to higher production volumes, as discussed above.

Gross margin and income (loss) from operations – Kronos' income from operations increased by \$82.2 million, from a loss from operations of \$1.1 million in 2015 to income from operations of \$81.1 million in 2016. Income (loss) from operations as a percentage of net sales increased to 6% in 2016 from less than 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. As discussed and quantified above, our gross margin increased 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. Kronos estimates that changes in currency exchange rates increased income from operations by approximately \$14 million in 2016 as compared to 2015.

Kronos' income from operations decreased by \$150.8 million, from income of \$149.7 million in 2014 to a loss from operations of \$1.1 million in 2015. Income (loss) from operations as a percentage of net sales decreased to less than 1% in 2015 from 9% in 2014. This decrease was driven by the decline in gross margin, which decreased to 14% in 2015 compared to 21% in 2014, as well as the negative impact of the workforce reduction charge classified as part of other operating expense (\$10.9 million). As discussed and quantified above, Kronos' gross margin decreased primarily due to the net effect of lower selling prices, workforce reduction costs classified as part of cost of sales (\$10.8 million), lower manufacturing costs (primarily raw materials), higher production volumes, and higher sales volumes. Kronos estimates that changes in currency exchange rates increased income from operations by approximately \$40 million in 2015 as compared to 2014.

As a percentage of net sales, selling, general and administrative expenses were relatively consistent at approximately 12% in 2014 and 13% in 2015 and 2016. As discussed above, the relative increase in 2015 is primarily due to the workforce reduction charge classified as part of selling, general and administrative (\$10.9 million).

Other non-operating income (expense) – Kronos recognized a \$12.0 million pre-tax impairment charge in the third quarter of 2015 due to other-than-temporary impairment on its investment in Valhi common stock held for sale.

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Kronos' interest expense increased \$1.5 million from \$17.0 million in 2014 to \$18.5 million in 2015 primarily due to higher average debt levels mostly offset by lower average interest rates in 2015. Kronos' interest expense increased \$2.0 million to \$20.5 million in 2016 compared to 2015 primarily due to the interest rate swap contract which was effective September 30, 2015 and higher average debt levels in 2016.

Income tax provision - Kronos recognized income tax expense of \$17.9 million in 2016 compared to \$142.8 million in 2015. As discussed below, Kronos' income tax expense in 2015 includes an aggregate non-cash deferred income tax expense of \$159.0 million related to the recognition of a deferred income tax asset valuation for its German and Belgian operations (mostly recognized in the second quarter), while Kronos' income tax expense in 2016 includes an aggregate \$2.2 million non-cash tax benefit as the result of a net decrease in such deferred income tax valuation allowance. Kronos' 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 is generally lower than the income tax rates applicable to our U.S. operations. Kronos' 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 between the U.S. and Canada. Excluding the effect of any increase or decrease in its deferred income tax asset valuation allowance, Kronos would generally expect our overall effective tax rate to be lower than the U.S. federal statutory rate of 35% primarily because of its non-U.S. operations. Kronos' effective income tax rate in 2015, excluding the impact of the deferred income tax asset valuation allowances it recognized, was higher than the U.S. federal statutory tax rate of 35%, primarily due to a current U.S. income tax benefit attributable to current year losses of one of its non-U.S. subsidiaries. Kronos' effective income tax rate in 2016, excluding the impact of the deferred income tax asset valuation allowances we recognized and the change to prior year tax as discussed above, was higher than the U.S. federal statutory rate of 35% primarily due to a fourth quarter increase in its reserve for uncertain tax positions. Excluding the impact of the deferred income tax asset valuation allowance we recognized and the change to prior year tax, Kronos expects its effective income tax rate to be lower than the U.S. federal statutory rate of 35% primarily because of its non-U.S. operations.

Kronos has substantial net operating loss (NOL) carryforwards in Germany (the equivalent of \$638 million for German corporate purposes and \$71 million for German trade tax purposes, respectively, at December 31, 2016) and in Belgium (the equivalent of \$93 million for Belgian corporate tax purposes at December 31, 2016), all of which have an indefinite carryforward period. As a result, Kronos has 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, Kronos 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) Kronos utilized a portion of such carryforwards during the most recent three-year period, and (iii) Kronos expected to utilize the remainder of the carryforwards over the long term. Kronos 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 its operating results during the second quarter of 2015 and Kronos' expectations at that time for its operating results for the remainder of 2015, which had been driven in large part by the trend in its average TiO<sub>2</sub> 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, Kronos 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 of Kronos' German and Belgian jurisdictions at June 30, 2015 (even considering that the carryforward period of Kronos' German and Belgian NOL carryforwards is indefinite, one piece of positive evidence). Accordingly, at June 30, 2015, Kronos concluded that it was required to recognize a non-cash deferred income tax asset valuation allowance under the more-likely-than-not recognition criteria with respect to its German and Belgian net deferred income tax assets at such date. Kronos recognized an additional non-cash deferred income tax asset valuation allowance during the second half of 2015 due to losses recognized by its

German and Belgian operations during such period. Such valuation allowance aggregated \$168.9 million at December 31, 2015. During 2016, Kronos recognized an aggregate \$2.2 million non-cash tax benefit as the result of a net decrease in such deferred income tax 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 its Belgian operations during such period. Kronos continues to believe it will ultimately realize the full benefit of these German and Belgian NOL carryforwards, in part because of their indefinite carryforward period. However, Kronos' ability to reverse all or a portion of either the German or Belgian

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valuation allowance in the future is dependent on the presence of sufficient positive evidence, such as the existence of cumulative profits in the most recent twelve consecutive quarters, and the ability to demonstrate future profitability for a sustainable period. Until such time as Kronos is able to reverse either valuation allowance in full, to the extent it generates additional losses in Germany or Belgium in the intervening periods, Kronos' effective income tax rate would be impacted by the existence of such valuation allowance, because such losses would effectively be recognized without any associated net income tax benefit, as such losses would result in a further increase in the deferred income tax asset valuation allowance. Alternatively, until such time as Kronos is able to reverse either valuation allowance in full, to the extent it generates income in Germany or Belgium in the intervening periods, Kronos' effective income tax rate would also be impacted by the existence of such valuation allowance, because such income may be recognized without any associated net income tax expense, subject to certain NOL usage limitations, as Kronos would reverse a portion of the valuation allowance to offset the income tax expense attributable to such income. In addition, any change in tax law related to the indefinite carryforward period of either of these NOLs could adversely impact Kronos' ability to reverse either valuation allowance in full. Kronos' Belgian operations continue to have cumulative losses in the most recent twelve consecutive quarters at December 31, 2016. Although the results of Kronos' German operations improved during 2016, indicating a change in the negative trend in earnings that existed at December 31, 2015, and Kronos utilized a portion of its German NOLs during 2016, and Kronos has cumulative income with respect to its German operations for the most recent twelve consecutive quarters at December 31, 2016, the sustainability of such positive trend in earnings has not yet been demonstrated at December 31, 2016, and accordingly Kronos does not currently have sufficient positive evidence under the more-likely-than-not recognition criteria to support reversal of the entire valuation allowance related to its German operations at such date. Consistent with Kronos' expectation regarding its consolidated results of operations in 2017 (as discussed below under the "Outlook" subsection), Kronos currently believes it is likely its German and Belgian operations will report improved operating results in 2017 as compared to 2016. Whether the operating results of either or both of Kronos' German and Belgian operations would improve to such an extent in 2017 that reversal of the valuation allowance in full would be supported by the presence of sufficient positive evidence is presently not ascertainable. However, if the positive trend in Kronos' German operating results continue during 2017 and continue to reflect cumulative income in the most recent twelve consecutive quarters such that the sustainability of such positive trend in earnings would then be demonstrated, it is possible Kronos' net deferred income tax asset with respect to its German operations could meet the more-likely-than-not recognition criteria sometime during 2017, at which time Kronos would reverse the deferred income tax asset valuation allowance related to its German operations, resulting in the recognition of a material non-cash income tax benefit. Reversal of the deferred income tax asset valuation allowance with respect to Kronos' Belgian operations would not occur until such time as the expected positive trend in the operating results of its Belgian operations had generated cumulative income in a twelve consecutive quarter period, and sustainability of such positive trend in earnings could be demonstrated.

Kronos recognized income tax expense of \$142.8 million in 2015 compared to income tax expense of \$34.5 million in 2014. Kronos' income tax expense in 2015 includes an aggregate non-cash deferred income tax expense of \$159.0 million related to the recognition of a deferred income tax asset valuation allowance for its German and Belgian operations (mostly recognized in the second quarter).

In 2014, Kronos' income tax expense was favorably impacted by an aggregate non-cash income tax benefit of \$5.1 million related to a net reduction in its reserve for uncertain tax positions. Kronos' earnings are subject to income tax in various U.S. and non-U.S. jurisdictions, and the income tax rates applicable to its pre-tax earnings (losses) of its non-U.S. operations are generally lower than the income tax rates applicable to its U.S. operations. Excluding the impact of the net reduction in Kronos' reserve for uncertain tax positions in 2014, its effective tax rate in such period was lower than the U.S. federal statutory tax rate of 35% primarily due to its non-U.S. earnings. Kronos' effective income tax rate in 2015, excluding the impact of the deferred income tax asset valuation allowance, was higher than the U.S. federal statutory tax rate of 35%, primarily due to a current U.S. income tax benefit attributable to current year losses of one of its non-U.S. subsidiaries.



Effects of Currency Exchange Rates

Kronos has substantial operations and assets located outside the United States (primarily in Germany, Belgium, Norway and Canada). The majority of its 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

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of its sales generated from its non-U.S. operations is denominated in the U.S. dollar (and consequently Kronos' 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 in U.S. dollars, while labor and other production costs are purchased primarily in local currencies. Consequently, the translated U.S. dollar value of Kronos' 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, Kronos' non-U.S. operations also generate currency transaction gains and losses which primarily relate to the (i) 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 Kronos' 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. Kronos periodically uses currency forward contracts to manage a portion of its currency exchange risk, and relative changes in the aggregate fair value of any currency forward contracts it holds from time to time serves in part to mitigate the currency transaction gains or losses Kronos would otherwise recognize from the first two items described above.

Overall, Kronos estimates that fluctuations in currency exchange rates had the following effects on its sales and income from operations for the periods indicated.

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)				
<b>Impact on:</b>					
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 Kronos' 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 Kronos' Canadian and Norwegian operations are denominated in the U.S. dollar.

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

- Approximately \$6 million from net currency transaction gains primarily caused 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).

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Impact of changes in currency exchange rates - 2015 vs. 2014					
	Transaction gains/(losses) recognized			Translation gain/(loss)- impact of rate changes	Total currency impact vs.2014
	2014	2015	Change		
(In millions)					
<b>Impact on:</b>					
Net sales	\$-	\$ -	\$ -	\$ (138)	\$ (138)
Income from operations	4	-	(4)	44	40

The \$138 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 2015 as compared to 2014. The strengthening of the U.S. dollar relative to the Canadian dollar and the Norwegian krone in 2015 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 \$40 million increase in income from operations comprised the following net effects:

- A reduction in the amount of net currency transaction gains during the two periods of approximately \$4 million. Such net currency transaction gains (losses) result primarily from U.S. dollar-denominated receivables and U.S. dollar currency held by our non-U.S. operations, which are translated into the applicable local currency at each balance sheet date. During 2014, a relative strengthening of the U.S. dollar relative to the euro and the Norwegian krone gave rise to a net \$4 million currency transaction gain, whereas we recognized a nominal currency transaction loss during 2015, and
- Approximately \$44 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 2015 as compared to 2014. Overall, the strengthening of the U.S. dollar relative to the euro in 2015 did not have a significant impact on our income from operations, as the reduction in net sales caused by such strengthening was substantially offset by the effect of our euro-denominated operating costs being translated into fewer U.S. dollars.

#### Outlook

During 2016 Kronos operated its production facilities at 98% of practical capacity compared to 95% in 2015. Kronos expects its production volumes to be slightly higher in 2017 as compared to 2016, as Kronos' production rates in 2017 will be positively impacted by the implementation of certain productivity-enhancing improvement projects at certain facilities. Assuming economic conditions do not deteriorate in the various regions of the world, Kronos expects its 2017 sales volumes to be comparable to 2016 sales volumes. Kronos will continue to monitor current and anticipated near-term customer demand levels and align its production and inventories accordingly.

Kronos continued to experience moderation in the cost of TiO<sub>2</sub> feedstock ore procured from third parties in both 2015 and 2016. Kronos' cost of sales per metric ton of TiQ sold declined throughout 2015 and 2016 due to the moderation in the cost of TiO<sub>2</sub> feedstock and the cost savings achieved from the 2015 implementation of a restructuring plan discussed below. Consequently, Kronos' cost of sales per metric ton of TiQ sold in 2016 was slightly lower than its cost of sales per metric ton of TiO<sub>2</sub> sold in 2015 (excluding the effect of changes in currency exchange rates). Kronos expects its cost of sales per metric ton of TiO<sub>2</sub> sold in 2017 will range from being comparable to slightly higher than

its per-metric ton cost in 2016.

Kronos started 2016 with selling prices 17% lower than the beginning of 2015, and prices declined by an additional 1% in the first quarter of 2016. In the second quarter of 2016, Kronos' average selling prices began to rise due to the implementation of previously-announced price increases and average selling prices continued to rise for the remainder of 2016. Kronos' average selling prices at the end of 2016 were 10% higher than at the end of

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2015, and were also higher as compared to its overall average selling prices for the full year of 2016. Industry data indicates that overall TiO<sub>2</sub> inventory held by producers has declined significantly during 2016. In addition, Kronos believes most customers hold very low inventories of TiO<sub>2</sub> with many operating on a just-in-time basis. With the strong sales volumes experienced in 2016, Kronos continues to see evidence of strengthening demand for our TiO<sub>2</sub> products in certain of our primary markets. Kronos and its major competitors have announced price increases, which Kronos began implementing in the second quarter of 2016, as contracts have allowed. The extent to which Kronos will be able to achieve any additional price increases in the near term will depend on market conditions.

Kronos initiated a restructuring plan in 2015 designed to improve our long-term cost structure. As part of such plan, Kronos implemented certain voluntary and involuntary workforce reductions during 2015 at certain of Kronos' facilities impacting approximately 160 individuals. Such workforce reductions are expected to result in approximately \$19 million of annual cost savings. Since the majority of workforce reductions had been implemented by July 1, 2015, the full year 2016 did not reflect this annual cost savings, as a portion of such annual cost savings were achieved in the second half of 2015 affecting year over year comparisons. These workforce reductions are not expected to negatively impact Kronos' ability to operate its production facilities at their practical capacity rates, as evidenced by the production levels we achieved in 2016. In addition to the workforce reductions implemented in 2015, Kronos is also in the process of implementing other cost reduction initiatives throughout the organization, including the implementation of continued process productivity improvements.

Overall, Kronos expects income from operations in 2017 will be higher as compared to 2016, principally as a result of expected higher average selling prices in 2017 as compared to 2016 and to a lesser extent from the favorable effects of anticipated higher production volumes in 2017. In addition, and as discussed above, if the positive trend in Kronos' German operating results experienced in 2016 continue during 2017, and Kronos continues to reflect cumulative income in the most recent twelve consecutive quarters for our German operations such that the sustainability of such positive trend in earnings would then be demonstrated, it is possible Kronos' net deferred income tax asset with respect to its German operations could meet the more-likely-than-not recognition criteria sometime during 2017, at which time Kronos would reverse the deferred income tax asset valuation allowance related to its German operations, resulting in the recognition of a material non-cash income tax benefit.

Due to the constraints of high capital costs and extended lead time associated with adding significant new TiO<sub>2</sub> production capacity, especially for premium grades of TiO<sub>2</sub> products produced from the chloride process, Kronos believes increased and sustained profit margins will be necessary to financially justify major expansions of TiO<sub>2</sub> production capacity required to meet expected future growth in demand. As a result of customer decisions over the last year, some industry projects to increase TiO<sub>2</sub> production capacity have been cancelled or deferred indefinitely, and announcements have been made regarding the closure of certain facilities. Given the lead time required for production capacity expansions, a shortage of TiO<sub>2</sub> products could occur if economic conditions improve and global demand levels for TiO<sub>2</sub> increase sufficiently.

Kronos' expectations for its future operating results are based upon a number of factors beyond Kronos's 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 Kronos' expectations, Kronos' results of operations could be unfavorably affected.

Assumptions on defined benefit pension plans and OPEB plans

Defined benefit pension plans - We maintain various defined benefit pension plans in the U.S. and the U.K. See Note 11 to our Consolidated Financial Statements.

Under defined benefit pension plan accounting, defined benefit pension plan expense and prepaid and accrued pension costs are each recognized 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.

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We recognized consolidated defined benefit pension plan expense of \$.1 million in 2014, \$.4 million in 2015 and \$.9 million in 2016. The funding requirements for these defined benefit pension plans are 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 plans of approximately \$1.6 million in 2014, \$.8 million in 2015 and \$.6 million in 2016.

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, 2016, our projected benefit obligations for defined benefit plans comprised \$45.0 million related to U.S. plans and \$9.3 million for the U.K. plan, which is associated with a former disposed business. We use different discount rate assumptions in determining our defined benefit pension plan obligations and expense for the plans we maintain in the United States and the U.K. as 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, 2014 and		Obligations at
	expense	Obligations at	Obligations at
	in	December 31, 2015 and	December 31, 2016 and
	2015	expense in 2016	expense in 2017
United States	3.8%	4.1%	3.9%
United Kingdom	3.5%	3.8%	2.5%

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 from 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 in which benefits are not still being earned by active employees).

At December 31, 2016, approximately 76% of the plan assets related to plan assets for our plans in the U.S., with the remainder related to the United Kingdom plan. We use different long-term rates of return on plan asset assumptions for our U.S. and U.K. defined benefit pension plan expense because the respective plan assets 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. 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.

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

	December 31,	
	2015	2016
Equity securities and limited partnerships	56 %	58 %
Fixed income securities	38	36
Other	6	6
Total	100%	100%

We regularly review our actual asset allocation for our U.K. plan, and will periodically rebalance the investments in the plan to more accurately reflect the targeted allocation. 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.

Our assumed long-term rates of return on plan assets for 2014, 2015 and 2016 were as follows:

	2014	2015	2016
United States	7.5%	7.5%	7.5 %
United Kingdom	6.0%	6.0%	5.25 %

We currently expect to use the same long-term rate of return on plan asset assumptions in 2017 as we used in 2016 for purposes of determining the 2017 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 would be based in part upon expected increases in future compensation levels. However, we have no active employees participating in our defined benefit pension plans. Such plans are closed to additional participants and assumptions regarding future compensation levels are not applicable for our plans.

In addition to the actuarial assumptions discussed above, because we maintain a defined benefit pension plan in the U.K., 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 tables 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 included in earnings of any cumulative unrecognized actuarial losses, while any actuarial losses generated in future periods would reduce the favorable amortization effect included in earnings of any cumulative unrecognized actuarial gains.

During 2016, all of our defined benefit pension plans generated a combined net actuarial gain of approximately \$.1 million. This actuarial gain resulted primarily due to the actual 2016 return on plan assets being higher than the expected return, partially offset by the unfavorable impact of decreases in discount rates from December 31, 2015 to December 31, 2016.

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Based on the actuarial assumptions described above and our current expectation for what actual average currency exchange rates will be during 2017, we expect to recognize defined benefit pension expense of approximately \$.8 million in 2017. In comparison, we expect to be required to contribute approximately \$.3 million to such plans during 2017.

As noted above, defined benefit pension expense and the amounts recognized as accrued pension costs are based upon the actuarial assumptions discussed above. 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 of our plans as of December 31, 2016, our aggregate projected benefit obligations would have increased by approximately \$1.1 million at that date. Such a change would not materially impact our defined benefit pension expense for 2017. Similarly, if we lowered the assumed long-term rate of return on plan assets by 25 basis points for all of our plans, such a change would not materially impact our defined benefit pension expense for 2017.

OPEB plans - We provide certain health care and life insurance benefits for eligible retired employees in the U.S. Under other postretirement employee benefits (OPEB) accounting, 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. See Note 11 to our Consolidated Financial Statements for a discussion of the consolidated OPEB cost we recognized during the last three years, the amount of our accrued OPEB costs and the associated actuarial assumptions utilized.

Based on such actuarial assumptions and amended benefit formula, we expect to recognize consolidated OPEB income of approximately \$.1 million in 2017. In comparison, we expect to be required to make approximately \$.4 million of contributions during 2017.

We believe that all of the actuarial assumptions used are reasonable and appropriate. If we had lowered the assumed discount rate by 25 basis points for all of our OPEB plans as of December 31, 2016, our aggregate projected benefit obligations would not materially impact our OPEB costs. Similarly, a one percent assumed change in health care trend rates would not materially impact our OPEB costs.

#### Non-U.S. Operations

Kronos - Kronos has substantial operations located outside the United States (principally Europe and Canada) for which the functional currency is not the U.S. dollar. As a result, the reported amount of our net investment in Kronos will fluctuate based upon changes in currency exchange rates. At December 31, 2016, Kronos 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 from operating activities, excluding the impact of deferred taxes and relative changes in assets and liabilities, are generally similar to trends in our income (loss) from operations.

Changes in working capital are primarily related to changes in receivables and inventories (as discussed below) and payables and accrued liabilities.

Net cash provided by operating activities was \$27.7 million in 2016 compared to \$27.6 million in 2015. The \$.1 million net increase in cash provided by operating activities includes the net effects of:

- higher income from operations of CompX in 2016 of \$1.6 million;
- higher amount of net cash used for relative changes in receivables (excluding insurance recoveries), inventories, payables and accrued liabilities in 2016 of \$.9 million,
- higher cash paid for environmental remediation and related costs in 2016 of \$.4 million, and
- lower cash received for insurance recoveries in 2016 of \$3.4 million.

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Net cash provided by operating activities was \$27.6 million in 2015 compared to \$23.6 million in 2014. The \$4.0 million net increase in cash provided by operating activities includes the net effects of:

- lower amount of net cash used for relative changes in receivables (excluding insurance recoveries), inventories, payables and accrued liabilities in 2015 of \$.7 million,
- lower cash paid for environmental remediation and related costs in 2015 of \$8.9 million, and
- lower cash received for insurance recoveries in 2015 of \$8.0 million.

We do not have complete access to CompX's cash flows in part because we do not own 100% of CompX. A detail of our consolidated cash flows from operating activities is presented in the table below. Intercompany dividends have been eliminated. The reference to NL Parent in the tables below is a reference to NL Industries, Inc., as the parent company of CompX and our other wholly-owned subsidiaries.

	Years ended December 31,		
	2014	2015	2016
	(In millions)		
Net cash provided by (used in) operating activities:			
CompX	\$ 12.2	\$ 13.5	\$ 13.9
NL Parent and wholly-owned subsidiaries	13.5	16.3	16.0
Eliminations	(2.1 )	(2.2 )	(2.2 )
Total	\$ 23.6	\$ 27.6	\$ 27.7

Relative changes in working capital can have a significant effect on cash flows from operating activities. As shown below, our total average days sales outstanding increased from December 31, 2015 to December 31, 2016 primarily as a result of the timing of sales and collections in the last month of 2016 compared to 2015. As shown below, our average number of days in inventory increased slightly from December 31, 2015 to December 31, 2016 after assuming more normalized levels following an intentional inventory build at the end of 2014. The variability in days in inventory primarily relates to the complexity of the production processes, and therefore the length of time it takes to produce end products. For comparative purposes, we have provided 2014 numbers below.

	2014	2015	2016
Days sales outstanding	32 days	31 days	36 days
Days in inventory	90 days	76 days	79 days

#### Investing activities

Capital expenditures, substantially all of which relate to CompX, have primarily emphasized improving our manufacturing facilities and investing in manufacturing equipment, utilizing new technologies and increased automation of the manufacturing process, to provide for increased productivity and efficiency in order to meet expected customer demand and properly maintain our facilities and technology infrastructure. Capital expenditures were \$2.9 million in 2014, \$4.3 million in 2015, and \$3.2 million in 2016. Capital expenditures of approximately \$.5 million in 2014 relate to the implementation of a new manufacturing and accounting system for CompX's Security Products business and Marine Components business that was implemented in January 2014.

Investing activities in 2016 also include net loans by CompX to Valhi of \$27.4 million under a promissory note receivable from an affiliate. See Note 16 to our Consolidated Financial Statements.

#### Financing activities

Cash flows from financing activities include CompX dividends paid to its stockholders other than us aggregating \$.3 million in each of 2014, 2015 and 2016. Financing activities in 2016 also includes net borrowings of \$.5 million under our secured revolving credit facility with Valhi entered into in November 2016. See Notes 10 and 16 to our Consolidated Financial Statements.

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In February 2014, our Board of Directors deferred consideration of a first quarter 2014 cash dividend and no dividend was paid in the first quarter. In May 2014, after considering our results of operations, financial conditions and cash requirements for our businesses, our Board of Directors suspended our regular quarterly dividend. The declaration and payment of future dividends, and the amount thereof, is discretionary and is dependent upon these 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 might be paid. There are currently no contractual restrictions on the amount of dividends which we may pay. Distributions to noncontrolling interests consist of CompX dividends paid to shareholders other than us.

#### Outstanding debt obligations

At December 31, 2016, NL had outstanding debt obligations of \$.5 million under its secured revolving credit facility with Valhi, and CompX did not have any outstanding debt obligations. We are in compliance with all of the covenants contained in our revolving credit facility with Valhi at December 31, 2016. See Note 10 to our Consolidated Financial Statements.

Kronos' North American and European revolvers and its term loan 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 our assets to, another entity, and contains other provisions and restrictive covenants customary in lending transactions of this type. Certain of Kronos' 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' 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. Kronos is in compliance with all of its debt covenants at December 31, 2016. Kronos believes that it will be able to continue to comply with the financial covenants contained in its credit facilities through their maturity.

#### Liquidity

Our primary source of liquidity on an ongoing basis is our cash flow from operating activities and credit facilities with affiliates and banks as further discussed below. We generally use these amounts to fund capital expenditures (substantially all of which relate to CompX), pay ongoing environmental remediation and litigation costs, and provide for the payment of dividends (if declared).

At December 31, 2016, we had aggregate cash, cash equivalents and restricted cash of \$98.2 million, substantially all of which was held in the U.S. A detail (in millions) by entity is presented in the table below.

CompX	\$33.2
NL Parent and wholly-owned subsidiaries	65.0
Total	\$98.2

In addition, at December 31, 2016 we owned 14.4 million shares of Valhi common stock with an aggregate market value of \$49.7 million. See Note 5 to our Consolidated Financial Statements. We also owned 35.2 million shares of Kronos common stock at December 31, 2016 with an aggregate market value of \$420.5 million. See Note 6 to our Consolidated Financial Statements.



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 affiliates. As a result of this process, we have in the past and may in the future seek to raise additional capital, incur debt, repurchase indebtedness in the market or otherwise, modify our dividend policies, consider the sale of our interests in our subsidiaries, affiliates, business, 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.

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We periodically evaluate acquisitions of interests in or combinations with companies (including related companies) perceived by management to be undervalued in the marketplace. These companies 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.

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 obligations (defined as the twelve-month period ending December 31, 2017). If actual developments differ materially from our expectations, our liquidity could be adversely affected. In this regard, Valhi has agreed to loan us up to \$50 million on a revolving basis. At December 31, 2016, we had \$.5 million in outstanding borrowings under this facility, and we had \$49.5 million available for future borrowing under the facility. See Note 10 to our Consolidated Financial Statements.

#### Capital expenditures

Capital expenditures for 2017 are estimated at approximately \$3.6 million, substantially all of which relate to CompX. Capital spending for 2017 is expected to be funded through cash on hand and cash generated from operations.

#### 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. A detail of annual dividends we expect to receive from our subsidiaries and affiliates in 2017, based on the number of shares of common stock of these affiliates we own as of December 31, 2016 and their current regular quarterly dividend rate, is presented in the table below.

	Shares held at December 31, 2016 (In millions)	Quarterly dividend rate	Annual expected dividend (In millions)
Kronos	35.2	\$ .15	\$ 21.1
CompX	10.8	.05	2.2
Valhi	14.4	.02	1.1
Total expected annual dividends			\$ 24.4

#### Investments 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 decisions 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.

## Summary of other contractual commitments

As more fully described in the notes to our Consolidated Financial Statements, we are party to various leases and other agreements which contractually and unconditionally commit us to pay certain amounts in the future. See Notes 17 to our Consolidated Financial Statements. The following table summarizes our contractual commitments as of December 31, 2016 by the type and date of payment.

Contractual commitment	Payment due date				Total
	2017	2018/2019	2020/2021	2022 and after	
	(In millions)				
Indebtedness: principal payments	\$-	\$ -	\$ -	\$ .5	\$ .5
Operating leases	.3	.6	.5	.6	2.0
Purchase obligations	9.7	.4	-	-	10.1
Fixed asset acquisitions	.9	-	-	-	.9
	\$10.9	\$ 1.0	\$ .5	\$ 1.1	\$13.5

The timing and amount shown for principal payments on our outstanding indebtedness (which consists of our secured revolving credit facility with Valhi) is based on the contractual maturity date of such indebtedness. Interest expense associated with such outstanding indebtedness at December 31, 2016 is not material. The amount shown for our commitments related to operating leases and fixed asset acquisitions are based upon the contractual payment amount and the contractual payment date for such commitments. The timing and amount shown for raw material and other purchase obligations, which consist of all open purchase orders and contractual obligations (primarily commitments to purchase raw materials) is also based on the contractual payment amount and the contractual payment date for such commitments. Fixed asset acquisitions include firm purchase commitments for capital projects.

The above table does not reflect any amounts that we might pay to fund our defined benefit pension 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. We expect to fund an aggregate of \$.7 million to our defined benefit pension and OPEB plans during 2017, as discussed in further detail above.

The above table also does not reflect any amounts that we might pay to settle any of our uncertain tax positions, 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.

## Commitments and contingencies

We are subject to certain commitments and contingencies, as more fully described in Note 17 to our Consolidated Financial Statements or in Part I, Item 3 of this report. In addition to those legal proceedings described in Note 17 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 us) with respect to asserted health concerns associated with the use of such products and (ii) 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, enactment of such legislation could have such an effect.

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#### Off balance sheet financing arrangements

Other than operating lease commitments disclosed in Note 17 to our Consolidated Financial Statements, we are not party to any material off-balance sheet financing arrangements.

#### ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

General - We are exposed to market risk from changes in currency exchange rates, interest 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. We have an outstanding principal amount of indebtedness of \$.5 million at December 31, 2016 bearing interest at prime plus 1.875% (5.63% at December 31, 2016) with a maturity date of December 31, 2023. The carrying value of such outstanding indebtedness approximates its fair value.

Marketable security prices - We are exposed to market risk due to changes in prices of the marketable securities which we own. The fair value of our equity securities at December 31, 2015 and 2016 was \$19.3 million and \$49.7 million, respectively. The potential change in the aggregate fair value of these investments, assuming a 10% change in prices, would be \$1.9 million and \$5.0 million at December 31, 2015 and 2016, respectively.

Raw materials - CompX will occasionally enter into short-term raw material arrangements to mitigate the impact of future increases in raw material costs. Otherwise, we generally 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 price to be stable or because long-term supply agreements for those materials are generally not available. We do not engage in commodity hedging programs.

Other - The above discussion and sensitivity analysis presented above 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 of future events, gains or losses. Such forward-looking statements are subject to certain risks and uncertainties some of which are listed in "Business."

#### 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 that 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

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performing similar functions, as appropriate to allow timely decisions to be made regarding required disclosure. Each of Robert D. Graham, our Chairman of the Board, President and Chief Executive Officer and Gregory M. Swalwell, our Executive Vice President and Chief Financial Officer, have evaluated the design and effectiveness of our disclosure controls and procedures as of December 31, 2016. Based upon their evaluation, these executive officers have concluded that our disclosure controls and procedures are effective as of the date of this 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 framework 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, 2016.

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.

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 have been no changes to our internal control over financial reporting during the quarter ended December 31, 2016 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 (NYSE), certifying our compliance with the corporate governance listing standards of the NYSE. During 2016, our chief executive officer filed such annual certification with the NYSE. The 2016 certification was unqualified.

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Our chief executive officer and chief financial officer are also required to, among other things, quarterly file certifications with the SEC regarding the quality of our public disclosures, as required by Section 302 of the Sarbanes-Oxley Act of 2002. We have filed the certifications for the quarter ended December 31, 2016 as Exhibits 31.1 and 31.2 to this Annual Report on Form 10-K.

ITEM 9B. OTHER INFORMATION

Not applicable

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PART III

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

The information required by this Item is incorporated by reference to our 2017 definitive proxy statement to be filed with the SEC pursuant to Regulation 14A within 120 days after the end of the fiscal year covered by this report.

ITEM 11. EXECUTIVE COMPENSATION

The information required by this Item is incorporated by reference to our 2017 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 2017 proxy statement.

ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS, AND DIRECTOR INDEPENDENCE

The information required by this Item is incorporated by reference to our 2017 proxy statement. See also Note 16 to our Consolidated Financial Statements.

ITEM 14. PRINCIPAL ACCOUNTING FEES AND SERVICES

The Information required by this Item is incorporated by reference to our 2017 proxy statement.

PART IV

ITEM 15. EXHIBITS AND FINANCIAL STATEMENT SCHEDULES

(a) and (c) Financial Statements

The Registrant

The consolidated financial statements of the Registrant listed on the accompanying Index of Financial Statements (see page F-1) are filed as part of this Annual Report.

50%-or-less persons

The consolidated financial statements of Kronos (30%-owned at December 31, 2016) are incorporated by reference in Exhibit 99.1 of this Annual Report pursuant to Rule 3-09 of Regulation S-X. Management's Report on Internal Control Over Financial Reporting of Kronos is not included as part of Exhibit 99.1. The Registrant is not required to provide any other consolidated financial statements pursuant to Rule 3-09 of Regulation S-X.

(b) Exhibits

We have included as exhibits the items listed in the Exhibit Index. We will furnish a copy of any of the exhibits listed below upon payment of \$4.00 per exhibit to cover our cost to furnish the exhibits. Pursuant to Item 601(b)(4)(iii) of Regulation S-K, any instrument defining the rights of holders of long-term debt issues and other agreements related to indebtedness which do not exceed 10% of consolidated total assets as of December 31, 2016 will be furnished to the Commission upon request.

Item No. Exhibit Index

3.1	Certificate of Amended and Restated Certificate of Incorporation dated May 22, 2008 - incorporated by reference to Exhibit 1 to the Registrant's Proxy Statement on Schedule 14A (File No. 001-00640) for the annual meeting held on May 21, 2008.
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- 3.2 Amended and Restated Bylaws of NL Industries, Inc. as of May 23, 2008 - incorporated by reference to Exhibit 3.1 of the Registrant's Current Report on Form 8-K (File No. 001-00640) filed with the U.S. Securities and Exchange Commission on May 23, 2008.
- 10.1 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 to the Registrant's Annual Report on Form 10-K (File No. 001-00640) for the year ended December 31, 1985.
- 10.2 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 to the Registrant's Quarterly Report on Form 10-Q (File No. 001-00640) for the quarter ended September 30, 1993.

10.3 Joint Venture Agreement dated as of October 18, 1993 between Tioxide Americas Inc. and Kronos Louisiana, Inc. - incorporated by reference to Exhibit 10.3 to the Registrant's Quarterly Report on Form 10-Q (File No. 001-00640) for the quarter ended September 30, 1993.

10.4 Kronos Offtake Agreement dated as of October 18, 1993 between Kronos Louisiana, Inc. and Louisiana Pigment Company, L.P. - incorporated by reference to Exhibit 10.4 to the Registrant's Quarterly Report on Form 10-Q (File No. 001-00640) for the

quarter ended  
September 30,  
1993.

Item No. Exhibit Index

10.5 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 to the  
Registrant's  
Annual Report  
on Form 10-K  
(File No.  
001-00640)  
for the year  
ended  
December 31,  
1995.

10.6 Tioxide  
Americas  
Offtake  
Agreement  
dated as of  
October 18,  
1993 between  
Tioxide  
Americas  
Inc. and  
Louisiana  
Pigment  
Company,  
L.P. -  
incorporated  
by reference  
to Exhibit 10.5

to the  
Registrant's  
Quarterly  
Report on  
Form 10-Q  
(File No.  
001-00640)  
for the quarter  
ended  
September 30,  
1993.

10.7 Amendment  
No. 1 to  
Tioxide  
Americas  
Offtake  
Agreement  
dated as of  
December 20,  
1995 between  
Tioxide  
Americas Inc.  
and Louisiana  
Pigment  
Company,  
L.P. -  
incorporated  
by reference  
to Exhibit  
10.24 to the  
Registrant's  
Annual Report  
on Form 10-K  
(File No.  
001-00640)  
for the year  
ended  
December 31,  
1995.

10.8 Parents'  
Undertaking  
dated as of  
October 18,  
1993 between  
ICI American  
Holdings Inc.  
and Kronos



Worldwide,  
Inc. (f/k/a  
Kronos, Inc.) -  
incorporated  
by reference  
to Exhibit 10.9  
to the  
Registrant's  
Quarterly  
Report on  
Form 10-Q  
(File No.  
001-00640)  
for the quarter  
ended  
September 30,  
1993.

10.9 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 the  
Registrant's  
Quarterly  
Report on  
Form 10-Q  
(File No.  
001-00640)  
for the quarter  
ended  
September 30,  
1993.

10.10

Form of  
Assignment  
and  
Assumption  
Agreement,  
dated as of  
January 1,  
1999, between  
Kronos Inc.  
(formerly  
known as  
Kronos  
(USA), Inc.)  
and Kronos  
International,  
Inc. -  
incorporated  
by reference  
to Exhibit 10.9  
to Kronos  
International,  
Inc.'s  
Registration  
Statement on  
Form S-4 (File  
No.  
333-100047).

10.11 Form of Cross  
License  
Agreement,  
effective as of  
January 1,  
1999, between  
Kronos Inc.  
(formerly  
known as  
Kronos  
(USA), Inc.)  
and Kronos  
International,  
Inc. -  
incorporated  
by reference  
to Exhibit to  
Kronos  
International,  
Inc.'s  
Registration  
Statement on

Form S-4 (File  
No.  
333-100047).

10.12 Euro  
80,000,000  
Facility  
Agreement,  
dated June 25,  
2002, among  
Kronos Titan  
GmbH & Co.  
OHG, Kronos  
Europe  
S.A./N.V.,  
Kronos Titan  
A/S and  
Titania A/S, as  
borrowers,  
Kronos Titan  
GmbH & Co.  
OHG, Kronos  
Europe  
S.A./N.V. and  
Kronos Norge  
AS, as  
guarantors,  
Kronos  
Denmark  
ApS, as  
security  
provider,  
Deutsche  
Bank AG, as  
mandated lead  
arranger,  
Deutsche  
Bank  
Luxembourg  
S.A., as agent  
and security  
agent, and  
KBC Bank  
NV, as  
fronting bank,  
and the  
financial  
institutions  
listed in  
Schedule 1

thereto, as  
lenders -  
incorporated  
by reference  
to Exhibit 10.1  
to the  
Quarterly  
Report on  
Form 10-Q of  
NL Industries,  
Inc. (File No.  
001-00640)  
for the quarter  
ended June 30,  
2002.

10.13 First  
Amendment  
Agreement,  
dated  
September 3,  
2004, Relating  
to a Facility  
Agreement  
dated June 25,  
2002 among  
Kronos Titan  
GmbH,  
Kronos  
Europe  
S.A./N.V.,  
Kronos Titan  
AS and  
Titania A/S, as  
borrowers,  
Kronos Titan  
GmbH,  
Kronos  
Europe  
S.A./N.V. and  
Kronos Norge  
AS, as  
guarantors,  
Kronos  
Denmark  
ApS, as  
security  
provider, with  
Deutsche  
Bank

Luxembourg  
S.A., acting as  
agent -  
incorporated  
by reference  
to Exhibit 10.8  
to the  
Registration  
Statement on  
Form S-1 of  
Kronos  
Worldwide,  
Inc. (File No.  
333-119639).

10.14 Second  
Amendment  
Agreement  
Relating to a  
Facility  
Agreement  
dated June 25,  
2002 executed  
as of June 14,  
2005 by and  
among  
Deutsche  
Bank AG, as  
mandated lead  
arranger,  
Deutsche  
Bank  
Luxembourg  
S.A. as agent,  
the  
participating  
lenders,  
Kronos Titan  
GmbH,  
Kronos  
Europe  
S.A./N.V,  
Kronos Titan  
AS, Kronos  
Norge AS,  
Titania AS  
and Kronos  
Denmark ApS  
- incorporated  
by reference

to Exhibit 10.3  
to the Annual  
report on  
Form 10-K  
(File No.  
333-100047)  
of Kronos  
International,  
Inc. for the  
year ended  
December 31,  
2009.

Item No. Exhibit Index

10.15 Third  
Amendment  
Agreement  
Relating to a  
Facility  
Agreement  
dated June 25,  
2002 executed  
as of May 26,  
2008 by and  
among  
Deutsche Bank  
AG, as  
mandated lead  
arranger,  
Deutsche Bank  
Luxembourg  
S.A., as agent,  
the  
participating  
lenders, Kronos  
Titan GmbH,  
Kronos Europe  
S.A./N.V,  
Kronos Titan  
AS, Kronos  
Norge AS,  
Titania AS and  
Kronos  
Denmark ApS -  
incorporated by  
reference to  
Exhibit 10.4 to  
the Annual  
report on Form  
10-K (File No.  
333-100047) of  
Kronos  
International,  
Inc. for the  
year ended  
December 31,  
2009.

10.16

Fourth  
Amendment  
Agreement  
Relating to a  
Facility  
Agreement  
dated June 25,  
2002 executed  
as of  
September 15,  
2009 by and  
among  
Deutsche Bank  
AG, as  
mandated lead  
arranger,  
Deutsche Bank  
Luxembourg  
S.A., as agent,  
the  
participating  
lenders, Kronos  
Titan GmbH,  
Kronos Europe  
S.A./N.V.,  
Kronos Titan  
AS, Kronos  
Norge AS,  
Titania AS and  
Kronos  
Denmark ApS -  
incorporated by  
reference to  
Exhibit 10.5 to  
the Annual  
report on Form  
10-K (File No.  
333-100047) of  
Kronos  
International,  
Inc. for the  
year ended  
December 31,  
2009.

10.17 Fifth  
Amendment  
Agreement  
Relating to a  
Facility



Agreement dated June 25, 2002 executed as of October 28, 2010 by and among Deutsche Bank AG, as mandated lead arranger, Deutsche Bank Luxembourg S.A., as agent, the participating lenders, Kronos Titan GmbH, Kronos Europe S.A./N.V., Kronos Titan AS, Kronos Norge AS, Titania AS and Kronos Denmark ApS - incorporated by reference to Exhibit 10.1 to the Current Report on Form 8-K of Kronos International, Inc. dated October 28, 2010 (File No. 333-100047).

10.18 Sixth Amendment Agreement Relating to a Facility Agreement dated June 25, 2002 executed as of September 27, 2012 by and among

Deutsche Bank  
AG, as  
mandated lead  
arranger,  
Deutsche Bank  
Luxembourg  
S.A., as agent,  
the  
participating  
lenders, Kronos  
Titan GmbH,  
Kronos Europe  
S.A./N.V,  
Kronos Titan  
AS, Titania  
AS, Kronos  
Norge AS, and  
Kronos  
Denmark ApS -  
incorporated by  
reference to  
Exhibit 10.1 to  
the Kronos  
Worldwide,  
Inc. Current  
Report on  
Form 8-K (File  
No.  
001-31763)  
filed with the  
U.S. Securities  
and Exchange  
Commission on  
October 3,  
2012.

10.19 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.

10.20 Tenth  
Amended and  
Restated  
Unsecured  
Revolving  
Promissory  
Note dated  
December 31,  
2016 in the  
original  
principal  
amount of  
\$60.0 million  
executed by  
Valhi, Inc. and  
payable to the  
order of  
Kronos  
Worldwide,  
Inc. -  
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,  
2016.

10.21 Credit Agreement, dated June 18, 2012, by and among Kronos Worldwide, Inc., certain of its subsidiaries and Wells Fargo Capital Finance, LLC - incorporated by reference to Exhibit 10.1 to the Kronos Worldwide, Inc. Current Report on Form 8-K (File No. 001-31763) dated January 30, 2017 and filed on January 30, 2017.

10.22 Third Amendment to Credit Agreement, dated January 30, 2017, by and among Kronos Worldwide, Inc., certain of its subsidiaries and Wells Fargo Capital Finance, LLC - incorporated by reference to Exhibit 10.2 to the Kronos Worldwide, Inc. Current Report on

Form 8-K (File  
No.  
001-31763)  
dated January  
30, 2017 and  
filed on  
January 30,  
2017.

10.23 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 to  
the Current  
Report on  
Form 8-K (File  
No.  
001-31763) of  
Kronos  
Worldwide,  
Inc. dated  
February 18,  
2014 and filed  
on February  
18, 2014.

10.24 First  
Amendment to  
Credit  
Agreement  
dated May 21,  
2015 among  
the registrant,  
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  
dated May 21,  
2015 filed by  
Kronos  
Worldwide,  
Inc. (File No.  
1-31763) on  
May 21, 2015.

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Item No. Exhibit Index

10.25 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) of Kronos Worldwide, Inc. dated February 18, 2014 and filed on February 18, 2014.

10.26 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) of  
Kronos  
Worldwide,  
Inc. dated  
February 18,  
2014 and filed  
on February  
18, 2014.

10.27 \* Kronos  
Worldwide,  
Inc. 2012  
Director Stock  
Plan -  
incorporated  
by reference to  
Exhibit 4.4 of  
Kronos  
Worldwide,  
Inc.  
Registration  
statement on  
Form S-8 (File  
No.  
333-113425).  
Filed on May  
31, 2012.

10.28 \* CompX  
International  
Inc. 2012  
Director Stock  
Plan -  
incorporated  
by reference to  
Exhibit 10.2 of



CompX  
International  
Inc.'s Annual  
Report on  
Form 10-K  
(File No.  
001-00640) for  
the year ended  
December 31,  
2012.

10.29 \* NL Industries,  
Inc. 2012  
Director Stock  
Plan -  
incorporated  
by reference to  
Exhibit 4.4 of  
Registrant's  
statement on  
Form S-8 (File  
No.  
001-00640)  
Filed on May  
31, 2012.

10.30 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 10.29

to the  
Registrant's  
Annual Report  
on Form 10-K  
(File No.  
001-00640) for  
the year ended  
December 31,  
2015.

10.31 Intercorporate  
Services  
Agreement by  
and between  
Contran  
Corporation  
and Kronos  
Worldwide,  
Inc. -  
incorporated  
by reference to  
Exhibit 10.1 to  
the Kronos  
Worldwide,  
Inc. Quarterly  
Report on  
Form 10-Q  
(File No.  
001-31763) for  
the quarter  
ended March  
31, 2004.

10.32 Intercorporate  
Services  
Agreement  
between  
CompX  
International  
Inc. and  
Contran  
Corporation  
effective as of  
January 1,  
2004 -  
incorporated  
by reference to  
Exhibit 10.2 to  
the CompX

International  
Inc. Annual  
Report on  
Form 10-K  
(File No.  
1-13905) for  
the year ended  
December 31,  
2003.

10.33 Intercorporate  
Services  
Agreement by  
and between  
Contran  
Corporation  
and NL  
Industries,  
Inc. effective  
as of January  
1, 2004 -  
incorporated  
by reference to  
Exhibit 10.1 to  
the NL  
Industries,  
Inc. Quarterly  
Report on  
Form 10-Q  
(File No.  
001-00640) for  
the quarter  
ended March  
31, 2004.

10.34 Amended and  
Restated Tax  
Agreement  
between Valhi,  
Inc. and  
Kronos  
Worldwide,  
Inc. -  
incorporated  
by reference to  
Exhibit 10.1 to  
the Annual  
Report on  
Form 10-K of

Kronos  
Worldwide,  
Inc. (File No.  
001-31763) for  
the year ended  
December 31,  
2012.

10.35 Amended and  
Restated Tax  
Agreement  
among NL  
Industries,  
Inc., Valhi,  
Inc. and  
Contran  
Corporation  
effective  
December 1,  
2012  
incorporated  
by reference to  
Exhibit 10.40  
to the Annual  
Report on  
Form 10-K  
(File No.  
001-00640) of  
the Registrant  
for the year  
ended  
December 31,  
2012.

10.36 First Amended  
and Restated  
Unsecured  
Revolving  
Demand  
Promissory  
Note dated  
December 31,  
2016 in the  
original  
principal  
amount of  
\$40.0 million  
executed by  
Valhi, Inc. and

payable to the order of CompX International Inc. - incorporated by reference to Exhibit 10.5 to the Annual Report on Form 10-K of CompX International Inc. (File No. 1-13905) for the year ended December 31, 2016.

10.37 Loan Agreement between NLKW Holding, LLC, as Borrower, and Valhi, Inc., as Lender, dated as of November 14, 2016 incorporated by reference to Exhibit 10.1 to the Current Report on Form 8-K (File No. 001-00640) of the Registrant dated November 14, 2016 and filed on November 15, 2016.

Item No.	Exhibit Index
10.38	Pledge and Security Agreement made by and between NLKW Holding, LLC in favor of Valhi, Inc., dated as of November 14, 2016 incorporated by reference to Exhibit 10.2 to the Current Report on Form 8-K (File No. 001-00640) of the Registrant dated November 14, 2016 and filed on November 15, 2016.
10.39	Back-to-Back Loan Agreement between the registrant, as Borrower, and NLKW Holding, LLC, as Lender, dated as of November 14, 2016 incorporated by reference to Exhibit 10.3 to the Current Report on Form 8-K (File No. 001-00640) of the Registrant dated November 14, 2016 and filed on November 15, 2016.
10.40	Back-to-Back Pledge and Security Agreement made by and between the registrant in favor of Valhi, Inc., dated as of November 14, 2016 incorporated by reference to Exhibit 10.2 to the Current Report on Form 8-K (File No. 001-00640) of the Registrant dated

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November 14, 2016 and  
filed on November 15,  
2016.

- 21.1 \*\* Subsidiaries of the Registrant.
- 23.1 \*\* Consent of PricewaterhouseCoopers LLP with respect to NL's consolidated financial statements.
- 23.2 \*\* Consent of PricewaterhouseCoopers LLP with respect to Kronos' consolidated financial statements.
- 31.1 \*\* Certification
- 31.2 \*\* Certification
- 32.1 \*\* Certification
- 99.1 Consolidated financial statements of Kronos Worldwide, Inc. - incorporated by reference to Kronos' Annual Report on Form 10-K (File No. 1-31763) for the year ended December 31, 2016.
- 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 arrangement.

\*\* Filed herewith



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.

NL Industries, Inc.

(Registrant)

By: /s/ Robert D. Graham  
Robert D. Graham, March 10, 2017  
(Chairman, 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:

/s/ Robert D. Graham  
  
Robert D. Graham, March 10, 2017  
(Chairman, President and Chief Executive Officer)

/s/ Keith R. Coogan  
Keith R. Coogan,  
March 10, 2017  
(Director)

/s/ Gregory M. Swalwell  
  
Gregory M. Swalwell, March 10, 2017  
(Executive Vice President and  
Chief Financial Officer, Principal Financial Officer)

/s/ Loretta J. Feehan  
Loretta J. Feehan,  
March 10, 2017  
(Director)

/s/ Amy Allbach Samford  
  
Amy Allbach Samford, March 10, 2017  
(Vice President and Controller,  
  
Principal Accounting Officer)

/s/ John E. Harper  
John E. Harper, March 10,  
2017  
(Director)

/s/ C. H. Moore, Jr.  
C. H. Moore, Jr., March  
10, 2017  
(Director)

/s/ Thomas P. Stafford  
Thomas P. Stafford,  
March 10, 2017  
(Director)

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NL INDUSTRIES, INC.

Annual Report on Form 10-K

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

Index of Financial Statements

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All financial statement schedules have been omitted either because they are not applicable or required, or the information that would be required to be included is disclosed in the Notes to the Consolidated Financial Statements.

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REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Stockholders and Board of Directors of NL Industries, Inc.:

In our opinion, the consolidated financial statements listed in the accompanying index present fairly, in all material respects, the financial position of NL Industries, Inc. and its subsidiaries as of December 31, 2015 and 2016, and the results of their operations and their cash flows for each of the three years in the period ended December 31, 2016 in conformity with accounting principles generally accepted in the United States of America. These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these financial statements based on our audits. We conducted our audits of these financial statements in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements, assessing the accounting principles used and significant estimates made by management, and evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

/s/ PricewaterhouseCoopers LLP

Dallas, Texas

March 10, 2017

## NL INDUSTRIES, INC. AND SUBSIDIARIES

## CONSOLIDATED BALANCE SHEETS

(In thousands, except per share data)

	December 31,	
	2015	2016
<b>ASSETS</b>		
Current assets:		
Cash and cash equivalents	\$96,462	\$93,162
Restricted cash and cash equivalents	3,246	3,791
Accounts and other receivables, net	8,977	10,586
Inventories, net	15,098	14,974
Prepaid expenses and other	981	986
<b>Total current assets</b>	<b>124,764</b>	<b>123,499</b>
Other assets:		
Note receivable from affiliate	-	27,400
Marketable securities	19,260	49,731
Investment in Kronos Worldwide, Inc.	140,695	120,346
Goodwill	27,156	27,156
Other assets, net	3,331	3,276
Deferred income taxes	11	-
<b>Total other assets</b>	<b>190,453</b>	<b>227,909</b>
Property and equipment:		
Land	5,138	5,146
Buildings	21,502	22,811
Equipment	64,051	66,112
Construction in progress	1,567	1,098
	92,258	95,167
Less accumulated depreciation	58,152	61,583
<b>Net property and equipment</b>	<b>34,106</b>	<b>33,584</b>
<b>Total assets</b>	<b>\$349,323</b>	<b>\$384,992</b>

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## NL INDUSTRIES, INC. AND SUBSIDIARIES

## CONSOLIDATED BALANCE SHEETS (CONTINUED)

(In thousands, except per share data)

	December 31,	
	2015	2016
<b>LIABILITIES AND STOCKHOLDERS' EQUITY</b>		
Current liabilities:		
Accounts payable	\$4,557	\$5,026
Accrued and other current liabilities	10,558	10,624
Accrued environmental remediation and related costs	8,668	13,350
Payable to affiliates	220	1,717
Income taxes	5	26
<b>Total current liabilities</b>	<b>24,008</b>	<b>30,743</b>
Noncurrent liabilities:		
Long-term debt from affiliate	-	500
Accrued pension cost	14,155	12,874
Accrued postretirement benefits (OPEB) costs	2,773	2,310
Accrued environmental remediation and related costs	104,465	103,308
Deferred income taxes	25,035	27,445
Other	13,636	13,542
<b>Total noncurrent liabilities</b>	<b>160,064</b>	<b>159,979</b>
Equity:		
NL stockholders' equity:		
Preferred stock, no par value; 5,000 shares authorized; none issued	-	-
Common stock, \$.125 par value; 150,000 shares authorized; 48,692 and		
48,706 shares issued and outstanding	6,086	6,088
Additional paid-in capital	300,543	300,674
Retained earnings	88,679	104,004
Accumulated other comprehensive loss	(245,358)	(232,846)
<b>Total NL stockholders' equity</b>	<b>149,950</b>	<b>177,920</b>
Noncontrolling interest in subsidiary	15,301	16,350
<b>Total equity</b>	<b>165,251</b>	<b>194,270</b>
<b>Total liabilities and equity</b>	<b>\$349,323</b>	<b>\$384,992</b>

Commitments and contingencies (Notes 14 and 17)

See accompanying notes to consolidated financial statements.

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## NL INDUSTRIES, INC. AND SUBSIDIARIES

## CONSOLIDATED STATEMENTS OF OPERATIONS

(In thousands, except per share data)

	Years ended December 31,		
	2014	2015	2016
Net sales	\$ 103,846	\$ 108,994	\$ 108,920
Cost of sales	71,598	75,593	73,753
Gross margin	32,248	33,401	35,167
Selling, general and administrative expense	18,641	19,430	19,593
Other operating income (expense):			
Insurance recoveries	10,368	3,657	443
Other income, net	186	120	9
Corporate expense	(21,323 )	(17,480 )	(17,009 )
Income (loss) from operations	2,838	268	(983 )
Equity in earnings (losses) of Kronos Worldwide, Inc.	30,161	(52,770 )	13,171
Other income (expense):			
Securities transactions, net	16	3	-
Interest and dividends	1,618	1,172	1,732
Interest expense	-	-	(4 )
Income (loss) before taxes	34,633	(51,327 )	13,916
Income tax expense (benefit)	5,003	(28,611 )	(2,777 )
Net income (loss)	29,630	(22,716 )	16,693
Noncontrolling interest in net income of subsidiary	1,131	1,193	1,368
Net income (loss) attributable to NL stockholders	\$ 28,499	\$ (23,909 )	\$ 15,325
Amounts attributable to NL stockholders:			
Basic and diluted net income (loss) per share	\$ 0.59	\$ (0.49 )	\$ 0.31
Weighted average shares used in the calculation of net			
income (loss) per share	48,679	48,688	48,701

See accompanying notes to consolidated financial statements.



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## NL INDUSTRIES, INC. AND SUBSIDIARIES

## CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME (LOSS)

(In thousands)

	Years ended December 31,		
	2014	2015	2016
Net income (loss)	\$29,630	\$(22,716)	\$16,693
Other comprehensive income (loss), net of tax:			
Marketable securities	(107,057)	(46,917)	20,278
Currency translation	(20,357 )	(18,211)	(3,475 )
Interest rate swap	-	(445 )	55
Defined benefit pension plans	(18,616 )	2,548	(3,998 )
Other postretirement benefit plans	(993 )	(294 )	(348 )
Total other comprehensive income (loss), net	(147,023)	(63,319)	12,512
Comprehensive income (loss)	(117,393)	(86,035)	29,205
Comprehensive income attributable to noncontrolling interest	1,131	1,193	1,368
Comprehensive income (loss) attributable to NL stockholders	\$(118,524)	\$(87,228)	\$27,837

See accompanying notes to consolidated financial statements.

## NL INDUSTRIES, INC. AND SUBSIDIARIES

## CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY

Years ended December 31, 2014, 2015 and 2016

(In thousands)

	Common stock	Additional paid-in capital	Retained earnings	Accumulated other comprehensive loss	Noncontrolling interest in subsidiary	Total equity
Balance at December 31, 2013	\$6,084	\$ 300,223	\$84,089	\$ (35,016 )	\$ 13,615	\$368,995
Net income	-	-	28,499	-	1,131	29,630
Other comprehensive loss, net of tax	-	-	-	(147,023 )	-	(147,023)
Issuance of NL common stock	1	76	-	-	-	77
Cash dividends	-	-	-	-	(328 )	(328 )
Other, net	-	89	-	-	10	99
Balance at December 31, 2014	6,085	300,388	112,588	(182,039 )	14,428	251,450