



ANNUAL REPORT 2014

Tosoh Corporation and consolidated subsidiaries
Fiscal year ended March 31, 2014

This document contains forward-looking statements, including, without limitation, statements concerning product development, objectives, goals, and commercial introductions, which involve certain risks and uncertainties. The forward-looking statements are also identified through the use of the word anticipates and other words of similar meaning. Actual results may differ significantly from the expectations contained in the forward-looking statements.

TOSOH CORPORATION



Annual Report 2014: Interview with the President



Q. Companies need more than a quick response to today's volatile markets. They need an overarching vision that matches their core competencies. Tosoh is the largest fully integrated manufacturer of its class of commodities in Asia and has experienced the market volatility of recent years. What are the Tosoh Group's mission, strengths, and strategic goals going forward?

A. Our mission remains to maintain or grow our market share as a comprehensive materials supplier serving manufacturers worldwide. We pride ourselves on a tradition of craftsmanship, quality, and innovation. And we further that tradition by bolstering our manufacturing hubs; investing in R&D; building regional sales networks; and looking out for M&A opportunities that can generate synergies, augment our portfolio, and extend our reach.

Our strategic goals are supported by our core strength, which, as you've noted, is the largest fully integrated manufacturing operations in our commodities class in Asia. The vinyl isocyanate chain as we call it supplies much of the raw materials, utilities, and infrastructure for the Tosoh Group's commodity and specialty products. We manage input and output along the chain to optimize cost competitiveness and quality.

Tosoh has designed a strategy to counteract the cyclicity of its chemicals business. By developing specialty products for niche markets, we provide ourselves with a buffer against downturns in the markets for our core commodities. The niche markets for our specialty products offer us the advantages of competitive superiority and of substantially higher profit margins. Commodities provide most of our cash flow, while specialties supply most of our profit.

The result is a dynamically balanced [commodities and specialties strategy](#) that positions us for stable profitability and growth. And I'm pleased to report that the strategy is working. We achieved an average 6.4% return on ordinary income across the board for the year under review. Although that represents growth, we have our sights set much higher.

Q. Your mission requires that the Tosoh Group stay in step with or abreast of the industries it serves. How are your strategies playing out at the group level? What initiatives or actions are under way?

A. [Specialty Group](#) Specialty markets are fast growing and profitable, and we are targeting a 20% return on ordinary income. Tosoh keeps pace with capital investments to match surging demand. We go where the growth is, and our strategies are taking us deeper into China and Southeast Asia, the Middle East, India, and South America. We are also pushing our established networks in North America and Europe for more growth. And we are keeping our options and eyes open for M&A deals and opportunities to build plants overseas.

The Tosoh Group has built its specialty businesses through practical R&D that has served evolving markets for the mega industries of electronics, automobiles, energy, bioscience, pharmaceuticals, and chemicals. Because we often work with our customers to customize materials and products and provide technical support for their specific needs, we also have developed marketing and sales bases worldwide for many of our specialty businesses.

Some of our activities in fiscal 2014 include approving a major capital investment by Tosoh SMD, Inc., in the 450-millimeter wafer semiconductor market and a decision to expand our high-silica zeolite (HSZ) production capacity. We also began constructing a plant to produce Rzeta, our unique, proprietary, emission-free reactive amine catalyst for polyurethane foam; announced the successful development of an ultra-degradation-resistant zirconia capable of withstanding extreme conditions; and launched a game-breaking high capacity Protein A-affinity separation media.

Chlor-alkali Group

Our strategies for the Chlor-alkali Group are geared toward commodity markets. Competitiveness and profitability amid expanding global production capacity and fluctuating costs and prices are the chief priorities. And although our goal is a lower 5% return on ordinary income, the Chlor-alkali Group's large sales volume can be extremely profitable in favorable markets.

Our fully integrated vinyl isocyanate chain's principal products, moreover, serve as feedstock for the numerous commodity products of the Chlor-alkali Group. Operations in Japan supply raw materials to the Tosoh Group's [PVC manufacturers](#) throughout Asia. Optimizing our upstream processes, therefore, improves the chain, as do cost reductions to offset rising raw material prices. These are clearly important and ongoing strategies.

Constant reengineering and innovation are essential, and so, too, are the resulting synergies. Our move into the methylene diphenyl diisocyanate (MDI) business, for example, has provided wide-ranging production and marketing synergies. But in MDI and other of the Chlor-alkali Group's businesses, we must decide whether to expand production capacity for economies of scale or remain the same size and move upmarket with value-added or quality products.

Carefully managing such considerations has given us a highly competitive chlor-alkali infrastructure, including independent electric power generation. And our geographical location grants us logistical advantages that position us to benefit from Asia's growing markets.

Activities in fiscal 2014 included clearing a bottleneck in vinyl chloride monomer (VCM) production at our Nanyo Complex that adds 200,000 metric tons of annual VCM production capacity. And we decided, significantly, to merge with another of our subsidiaries, our MDI production and sales subsidiary Nippon Polyurethane Industry Co., Ltd. (NPU).

Petrochemical Group

Our Petrochemical Group manufactures commodity and specialty products. It therefore requires diverse strategies, including cost-cutting innovations, product moves upstream, product mix management, and product line diversification.

This group produces roughly half of the ethylene required by our vinyl isocyanate chain and polyethylene operations and purchases the rest. As Tosoh's ethylene supplier, it has a major role in maintaining the cost competitiveness of many of our operations through flexible feedstock strategies that ensure the lowest raw material costs for the Tosoh Group.

Climbing naphtha prices have made diversifying the feedstock used in our cracking operations as important a cost-cutting strategy as managing the cracker output mix to maximize profitability. In the wake of the shale gas revolution and the availability of cheap liquefied petroleum gas and natural gas liquids feedstock, we also are developing added-value grades of ethylene to better compete with the many gas crackers coming onstream. We need as well to explore ways to benefit from the greater production of propylene and C4 fractions by naphtha crackers than by gas crackers.

We took numerous strategic actions in fiscal 2014, particularly to boost the value-added product lineups of the Petrochemical Group. Our R&D programs for special grades of polyphenylene sulfide (PPS) resins yielded Susteel-brand PPS, which boasts superior metal bonding for automotive applications and has attracted the attention of a major smartphone manufacturer. We are one of Japan's top manufacturers of ethylene vinyl acetate (EVA) for the solar cell market and continued our efforts to develop increasingly high-performance EVA products.

In addition, we took the next step in expanding the use of our new optical polymer in displays for smartphones, cell phones, and tablets. And we developed Tosoh HMS, a functional polymer that is a high-performance display substrate. We also developed two grades of high melt strength polyethylene (HMS-PE) suitable for medical-grade bottles.

Among established product lines, we focused on developing superior grades of chloroprene rubber (CR), such as sulfur-modified and latex chloroprene rubber grades. We likewise continued our chlorosulphonated polyethylene (CSM) product development program, which should expand production capacity. Tosoh is the world's major supplier of CSM to the high-end market, where it holds an approximately 70% share.

Engineering Group

Recent events involving Tosoh subsidiary Organo Corporation are notable. This specialist in water treatment and pure water generation technologies and systems is central to the Engineering Group, and its water treatment systems and soil remediation technologies are prized worldwide. Effective April 1, 2014, however, Organo restructured to upgrade its management and operations to deal with globalization and to emphasize the undeveloped medium-sized enterprises market domestically.

Q. Tosoh had an excellent year in fiscal 2014. Consolidated net sales grew ¥103.8 billion, or 15.5%, to ¥772.3 billion, and net income climbed ¥12.7 billion, or 75.3%, to ¥29.6 billion. How would you assess Tosoh's performance?

A. We seek a strategy that assures profitability under the severest conditions, but we know well, post-Lehman, that the global economy is a formidable foe. In fiscal 2014, though, Tosoh has benefited from many of the recent economic trends in Japan and globally. A weak yen has helped us with our exports more than it has hurt us with rising raw material and energy costs. And the benefits have combined with growing demand driven by upswings in the US, European, and Asian economies. China's economic growth has been disappointing, but China remains a substantial market.

Tosoh capitalizes on opportunities because of continued efforts to improve its cost competitiveness and because it has made the capital investments to position itself in strategic markets worldwide.

I can report that our commodity operations recovered [profitability in fiscal 2014](#). The caustic soda market was again weak globally, so strategic adjustments are needed. But the weakness was more than offset by recovery in our VCM production volume and our VCM operations' capitalization of the weak yen and strengthened global demand. Our MDI and other urethane raw material operations, too, were much improved and enjoyed shipment growth in Japan and the benefits of foreign exchange related gains in export prices.

Sales of the Petrochemical Group's commodity products, such as ethylene and propylene, were generally brisk.

Group profitability, though, improved significantly on the strength of price increases to cover the rising costs of naphtha and other raw materials.

Our Specialty Group again proved the wisdom of our dual commodities and specialties strategy with strong growth in sales and profits. Its performance came largely through the expansion of its main growth drivers: electrolytic manganese dioxide (EMD); zeolites; zirconia; and most of its bioscience products, such as separation media, high-performance liquid chromatography (HPLC) columns, and automated immunoassay (AIA) instruments.

I've touched only on the highlights. But it was a satisfying year that allows us to refocus on our core strategies.

Q. Despite Nippon Polyurethane Industry Co., Ltd. (NPU)'s challenges with its MDI operations, Tosoh has steadily increased its stake in NPU and is poised for a merger in mid-fiscal 2015. What are the objectives of that merger and its potential for contributing to profitability?

A. Let's start with a little history. We recognized MDI's growth potential and fit with our commodity and specialty operations in the mid-2000s. MDI is a raw material for polyurethane and a fine chemical with many uses in organic synthesis. It also has synergies with our diverse product lines, including organic synthesis compounds, polyurethane catalysts, and specialty polymers.

So we entered the MDI market with a stake in NPU and began integrating NPU's production into our operations by adding production facilities for NPU's raw materials. We then gradually increased our stake in NPU, making it a wholly owned subsidiary in July 2012, with the result that our vinyl chain became a vinyl isocyanate chain. NPU, however, fell on hard times starting in 2008 and amassed considerable red ink because of the strong yen, rising global MDI production, and a downturn in the global economy. The fight back to profitability has been challenging but not without value. NPU's cost cutting and move toward more value-added and profitable products, the yen's recent depreciation, and recoveries in Asian markets enabled NPU to return to profitability in fiscal 2014. MDI's improved cost competitiveness will render it potentially a major source of earnings for Tosoh.

The implications of the merger are obvious. We will have a larger, more flexible range and mix of products and greater opportunities to capitalize on synergies and cost reductions with an integrated vinyl isocyanate chain. We also, moreover, are well positioned in the polyurethane market. Polyurethane is a building block used throughout the manufacturing and construction industries. As such, polyurethane has potential, particularly in developing countries and specifically as a potential source of growth for Tosoh.

We feel that NPU is ready to take on a greater role within the Tosoh Group. It will consolidate our respective synergies under a single management for better, more flexible responses to fluctuating exchange rates, expanding global production capacity, and growing overseas manufacturing competition. Our shareholders have given the green light to the merger plan, and the merger will be effective on October 1, 2014.

Q. Let's look at Tosoh's core values. You have a well-structured corporate responsibility organization. What were your Responsible Care (RC) milestones in fiscal 2014, and where are you headed? What is Tosoh's policy for rewarding providers of financial capital? And what is Tosoh's stance on governance?

A. We are a member of the global RC initiative to improve chemical companies' performance environmentally and in safety and health. Tosoh annually sets policies and objectives that involve qualitative and quantitative targets. And we use the plan-do-check-act (PDCA) cycle to pursue improvement in our efficiency and effectiveness.

I wouldn't call them milestones, but we did reach our hard [targets](#) in fiscal 2014. We met myriad standards for controlled and registered substances in many countries. We lowered our energy consumption to 75% of our fiscal 1991 level. And we again exceeded our intermediate target for reducing emissions of registered substances in Japan, as we have for several years.

Safety is where we have experienced setbacks. We are nevertheless determined to make progress. I believe that our goal of achieving zero accidents, including at Tosoh Group companies, is achievable and obligatory. Safety comes first.

The direction of our RC program, meanwhile, is guided by our commitment to social responsibility in fulfilling our corporate credo of "supplying essentials for daily life." We recognize that Tosoh has to help solve emerging issues, such as those relating to the environment, energy conservation, and the depletion of natural resources.

To reward providers of corporate capital, we employ a policy of maintaining stable dividends while ensuring the internal reserves to move into the future and realize sustained growth. We try to accommodate the investment objectives of our shareholders. Most are long-term investors, particularly financial institutions, with few individual investors. Our emphasis, therefore, is establishing [corporate value](#).

Our stance on corporate governance is simple: thorough, long-term corporate governance enhances corporate value and growth. Robust corporate governance at Tosoh optimizes transparency, compliance, business performance, and operational efficiency. We have a solid system of oversight and of checks and balances to ensure that the system works.

Q. What is your view of Tosoh's business environment, strategies, and prospects?

A. We anticipate Japan's economy to weaken in early fiscal 2015 in reaction to a spike in demand ahead of the April 2014 hike in Japan's consumption tax. Yet there are expectations that corporate earnings, employment opportunities, and personal incomes will improve courtesy of the Japanese government's "Abenomics" policies and the recovery in the global economy.

Amid dynamic changes in global markets, I believe that we have the tools to manage a normal range of fluctuations and are well positioned for growth in strategic markets. The Tosoh Group is, therefore, making every effort to boost profitability by expanding its sales volume, maintaining an optimum pricing structure, and reducing costs.

By building on our dynamically balanced dual specialties and commodities strategy, I feel confident that we will

achieve our goals for fiscal 2015, ending March 31, 2015. Tosoh's financial projections on a consolidated basis call for net sales of ¥810 billion, operating income of ¥46 billion, ordinary income of ¥45 billion, and net income of ¥52 billion.

I am optimistic that despite global political and market upheaval the world holds opportunities. Tosoh intends to support and indeed lead industrial progress. We are ideally positioned to capitalize on opportunities. And we are committed to delivering on our promise of profitability and investor value through Tosoh quality and the chemistry of innovation.



Annual Report 2014: At a Glance

Values

Values based on *monozukuri*—“a craftsman-like approach” to product detail and quality—have shaped Tosoh Corporation’s destiny and growth for more than 75 years. We take pride in having established a resilient global enterprise whose products and services are woven into the fabric of modern life.

Basics

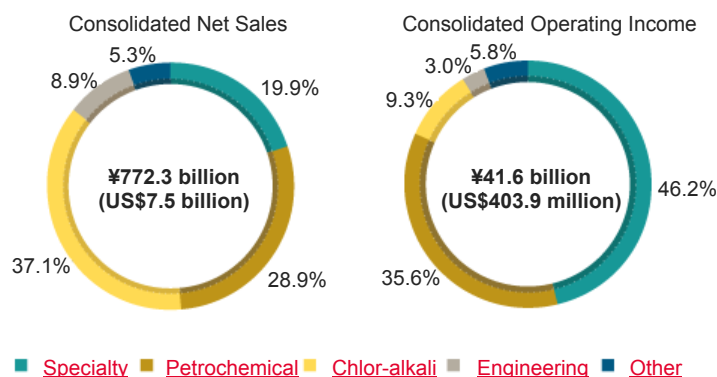
Tosoh Corporation was established in 1935 and is listed on the First Section of the Tokyo Stock Exchange. We are the parent company of the Tosoh Group, which comprises 130 companies worldwide and a multiethnic workforce of over 11,000 people and generated net sales of ¥772.3 billion (US\$7.5 billion) in fiscal 2014.

Products

Tosoh furnishes the raw materials for an astonishing array of products that have revolutionized modern civilization. Look around you. It is almost impossible to find a manufactured item that does not include something from Tosoh. Paper cups, computers, hybrid cars, homes, solar panels, office buildings, highways, communication networks, drinking water, clothes, shoes, pharmaceuticals, printer inks, cell phones, watches. Even, for some people, teeth—made from Tosoh’s superceramic, zirconia!

.....Learn more about [Tosoh's 1,500 products](#).

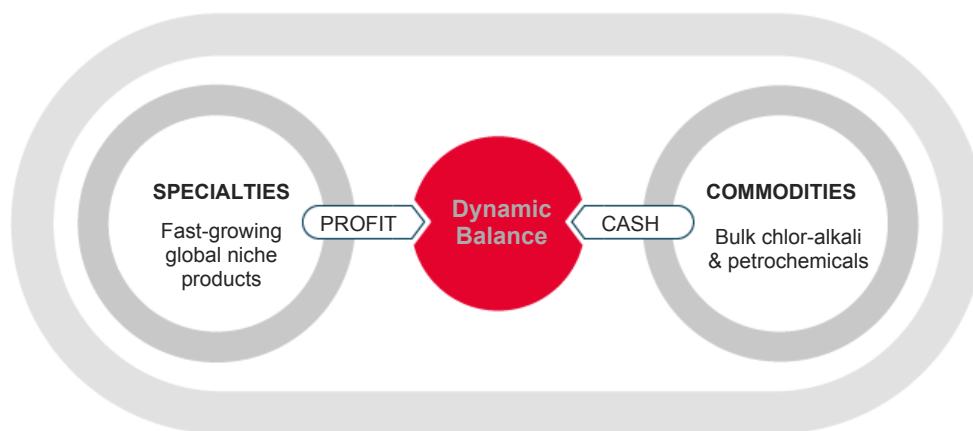
Results



Financial Highlights

	2014	2013	Percentage change
Net Sales	Millions of Yen 772,272	668,494	15.5% ▲
Operating Income	Millions of Yen 41,573	24,464	69.9% ▲
Net Income	Millions of Yen 29,564	16,867	75.3% ▲
Free Cash Flow	Millions of Yen 41,172	12,628	226.0% ▲
Net Income per Share	Yen 49.35	28.17	75.2% ▲
Dividends per Share	Yen 6	6	0%

Dynamic Balance Business Model



Our dynamic balance business model is based on our participation in high-value-added specialties to generate profits and commodities to provide cash flow.



Special Feature: Dynamic Balance

Dynamic Balance

A dynamic balance spans Tosoh's manufacturing operations, overseas operations, and product portfolio. It underpins our business strategies—their development and implementation.

Dynamically Balanced Manufacturing Operations

Dynamic balance begins in our manufacturing operations. Integrated production processes are essential to Tosoh's competitiveness. Bottlenecks, inefficient processes, and insufficient or excess production volumes are counterproductive and therefore costly. Balancing the largest integrated production capacity in Asia for vinyl products is a massive but crucial undertaking encompassing electric power, electrolysis, ethylene dichloride (EDC), vinyl chloride monomer (VCM), and polyvinyl chloride (PVC) plants and a global sales network.

A snapshot of the intricate interplay of processes within [our manufacturing operations](#) reveals why a dynamic balance of synergies is so essential. Inexpensive electricity and steam generated by our advanced electric power plants allow us to cost-effectively produce chlorine, sodium hydroxide, and hydrogen through electrolysis. The chlorine is the core feedstock driving our vinyl chain and a key raw material for our production of methylene diphenyl diisocyanate (MDI). MDI, in turn, is a principal raw material for polyurethane production and is central to making our vinyl chain a vinyl isocyanate chain.

As a by-product, our MDI production process also generates hydrogen chloride, which is recycled into our VCM production in Japan. The synergies between our VCM and MDI operations enable us to manufacture these products at significantly lower costs than our competitors. MDI manufacturing, meanwhile, also benefits from the low-cost hydrogen produced through electrolysis. We employ that hydrogen in making aniline, another important element for MDI production.

Balancing the making of each raw material and end product ensures a cost-competitive and stable internal supply for our operations. And that, in turn, guarantees a cost-competitive and stable external supply for our customers' needs at home and abroad.

Dynamically Balanced Overseas Operations

The dynamic balance that characterizes our manufacturing operations extends throughout our overseas operations. This ensures that the cascade of intermediate and end products from our vinyl isocyanate chain continues to flow.

When you manufacture as much as a million metric tons of a single product annually, it is important to ensure dependable consumption. All of the product, in other words, must be consumed. The dynamic balance of processes along the vinyl isocyanate chain is so interdependently linked that if one product suffers an interruption the chain is broken and the balance lost.

In our chlor-alkali business, for example, we have set up a [network](#) of PVC manufacturing and sales subsidiaries. They are strategically positioned throughout Southeast Asia and in China to ensure that their core chlor-alkali products are consumed and that the vinyl isocyanate chain and its flow of products thereby remain intact.

We furnish these subsidiaries, moreover, with raw materials at prices unaffected by availability or other fluctuations in international markets. The resulting control that this gives them over their product prices is designed to help them succeed and contributes to stable earnings for the Tosoh Group as a whole.

Here again, the balance is dynamic and vital to our success. Tosoh reaps a myriad of benefits when a product travels all the way through the manufacturing chain to a sale by a group subsidiary. Such is the beauty of balance that it also grants control.

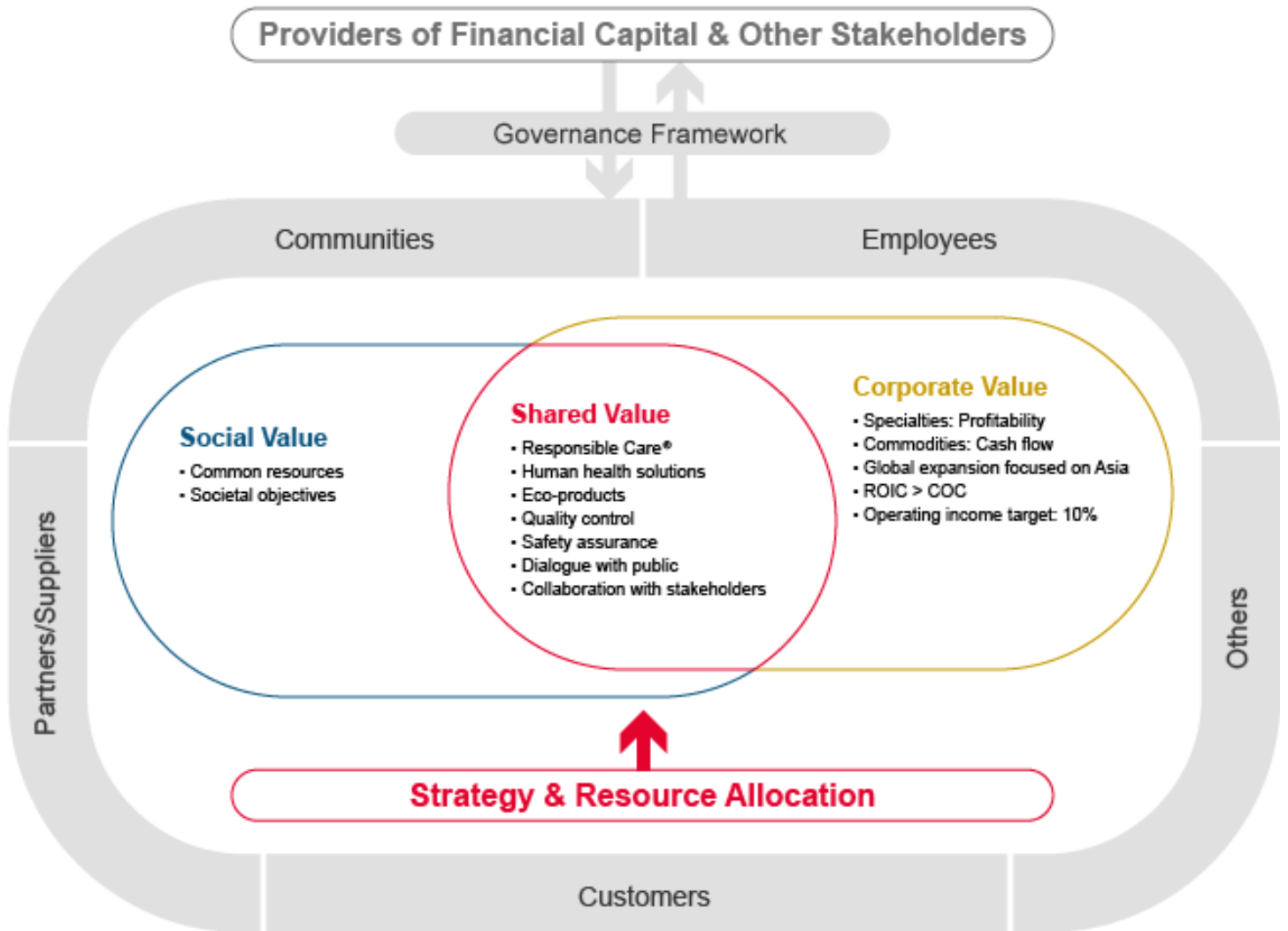
Dynamically Balanced Product Portfolio

Tosoh's introduction of specialty products to its product portfolio sprang from its need to counteract the cyclicity of its commodity operations amid the leapfrogging of demand and capacity. The company targets highly profitable niche specialty material markets where the opportunity exists to get in on the ground floor of emerging markets or where it has a technological advantage to ensure the dynamic balance of its product portfolio.

Originally, our strategic mix of specialties and commodities was meant only to mitigate downturns in commodity markets. The role of specialties in our operations has, of course, expanded, but their buffering capability remains valid and was amply demonstrated in fiscal 2014.

The Chlor-alkali Group, which accounts for many of our commodities products, contributed 37.1% of our consolidated net sales in fiscal 2014 but only 9.3% of our operating income. The Specialty Group, conversely, produced 46.2% of operating income on only 19.9% of net sales. The dynamic balance that supports our dual commodities and specialties strategy thus remains sound—sales of specialties continue to counteract downturns in commodities and to increase our profitability.

Creating Shared Value





Special Feature: Opportunities and Risks

Opportunities and Risks

Beyond ensuring stable cash flow and profitability, Tosoh's dual commodities and specialties strategy also hedges risks. Those risks include prices for crude oil and naphtha, which are essential fuels and raw materials for our commodity operations; trends in domestic and global economies and markets; disruptions to supply chains; and regulations on environmental protection. The diversity of Tosoh specialty products serving the world's semiconductor, consumer electronics, pharmaceutical, bioscience, automotive, and health care industries offers a degree of stability against such risks.

Our specialty products, though, have outgrown being merely a risk hedge. They represent an opportunity as a platform for Tosoh's business expansion. So we are determined to hold to our dual commodities and specialties strategy. It grants us the flexibility to adjust quickly to movements in our markets. And its dynamic balance allows us to take business risks and to view dire business circumstances with confidence.

The Tosoh Group's horizontal sharing of technologies can lead to solutions that can be commercialized. Adjusting the production mixes of our products enables us to reduce our exposure in weak markets and to capitalize on opportunities in rising markets. Increasingly strict environmental regulations also represent an opportunity to sell technological solutions to industry. The list goes on, but the bottom line is that we possess numerous means to reduce risk and attain sustainable growth.



Special Feature: Sustainable Growth

Sustainable Growth

Our chemical commodities and our high-tech growth specialties propel our sustainable growth. The 37.1% of consolidated net sales generated by the Chlor-alkali Group in fiscal 2014—without the contribution of the Petrochemical Group's commodities—supplied the essential cash flow needed to cover the fixed costs and other expenses necessary for Tosoh to remain a going concern. This is as important to our customers as it is to us. Manufacturers around the world count on Tosoh to support their operations with stable supplies of raw materials. We fulfill that responsibility globally while remaining focused on market movements.

Our high-tech growth specialties, meanwhile, feature a long-standing tradition of frontier technology research. We develop the results first for highly profitable niche markets and later for substantially larger markets. This keeps us in tune with progress in contemporary industry and abreast of future industries. In this sense, our high-tech specialties are the growth drivers that lead the way in our pursuit of sustainable growth.

High-silica zeolites (HSZ) are a top Tosoh high-tech growth driver. These molecular sieves and their superior thermal stability, catalytic, and adsorption properties serve numerous purposes in the manufacturing and environmental industries. The short list includes petroleum refining catalysts; petrochemical catalysts; adsorbents of volatile organic compounds (VOCs); and catalyst material for automobile exhaust system catalytic converters. Soaring demand compelled Tosoh to double HSZ production capacity in 2009, substantially increase it again in 2013, and schedule another doubling of it for 2014.

The popularity of Tosoh's yttria-stabilized zirconia (YSZ) stems from a technological breakthrough that solved the characteristic brittleness of ceramics. Commonly known as ceramic steel, YSZ has high strength and wear resistance, flexibility, a long life, and heat-insulating properties and is basically chemically inert—a manufacturer's dream material.

YSZ's uses go beyond industry. It also is used in consumer goods and dental materials because of its natural beauty and soft texture. Amid soaring demand, Tosoh expanded YSZ production capacity 50% in 2009 and another 20% in 2012. YSZ appears poised for further growth following Tosoh's April 2014 announcement of its development of a nanocrystalline, ultra-degradation-resistant zirconia that is far superior to conventional products.

In the biosciences, Tosoh's Toyopearl is a longtime top seller in the separation media market, populated by pharmaceutical, food product, and bioscience companies. Toyopearl appeals to customers through its high quality, performance, and grades of packing materials for chromatography methods too numerous to mention.

Tosoh's Toyopearl portfolio helps purify virtually any protein, peptide, enzyme, nucleic acid, antibiotic, or small molecule. And Tosoh's global network of technical support services only adds to Toyopearl's appeal. Driving demand is the biopharmaceutical industry's global expansion and emphasis on biosimilar molecule development and antibody drug purification. And meeting demand depends heavily on efficient operations.



Special Feature: Efficiency

Efficiency

Efficiency and innovation fine-tune Tosoh's dynamic balance and thereby keep the company competitive and profitable. Global competition and growing economies compel Tosoh to reinvent and reengineer its processes and methodologies to heighten efficiency and productivity.

Our manufacturing and R&D operations work to improve our integrated vinyl isocyanate chain operations. We recently, for example, converted our MDI operations to a low-cost production process to stay apace of growing competition. We also are developing a piperazine (PIP) synthesis method to expand the potential of our ethyleneamine production line to raw materials for heavy metal chelating agents and reactive triethylenediamine (TEDA). And our recently expanded Toyopearl production capacity depends on new purification processes to broaden its targeted markets.

Debottlenecking production by improving processes often represents an inexpensive alternative to adding production capacity. Our decision to debottleneck our proprietary oxychlorination process at the Nanyo Complex added 200,000 metric tons of VCM production capacity. And our debottlenecking of CSM production in 2012 raised CSM production capacity by 1,000 metric tons, or more than 10%.

Technology is helping us deal with rising naphtha costs through feedstock diversification. We've enabled our crackers to employ heavier naphtha grades, improved the recovery efficiency for spent C4 and C5 fractions, and switched to butane and propane to enhance the flexibility of feedstock selection.

Sometimes, we work externally to develop production technology to keep us competitive. The n-BiTAC electrolyzers that we developed jointly with Chlorine Engineers Co., Ltd., have almost doubled production in our electrolysis plants since 1990. Yet we've still managed to reduce their energy calorie units 9%.

Labor productivity is crucial to production efficiency. Tosoh focuses on training and occupational safety and health. Training takes place on-site and through classes and Internet courses with an eye to each employee's abilities and career development.

Our Responsible Care (RC) program has in place many systems to monitor and improve safety methods and enhance employee safety awareness. Incidents or accidents are thoroughly investigated and analyzed to prevent repeats.

We also protect the physical and mental health of our employees with awareness and checkup and health monitoring programs. We especially watch employees with specific health concerns. Accidents and lost workdays because of sickness have a greater impact on labor productivity than lost workdays due to safety-related lost time incidents and accidents. Much of what we do to ensure productivity and efficiency overall results from our ability to innovate.



Special Feature: Innovation

Innovation

Innovation is as important to competitive strength and profitability as efficiency. At Tosoh, innovation springs mostly from the creative solutions provided by Tosoh's research and development (R&D) operations. Those solutions, so much the stock and trade of all businesses, keep the Tosoh Group's production and marketing at the top of their games.

The Specialty Group, for example, innovates based on the creative solutions furnished by our R&D personnel. It develops and improves technologies that support a steady stream of materials and products for the electronics, bioscience, and environmental conservation fields.

Rotary sputtering targets for the electronics industry are a prime example of the trend-setting technologies that Tosoh is developing. They are, at 70% to 80% efficiency, some 2.5 times more efficient than planar sputtering targets. Rotary sputtering targets also offer longer life and greater productivity. Tosoh was one of the first companies to develop and introduce rotary sputtering targets and so was well prepared for the wave of touch panels and other devices from the electronics industry that are the biggest applications for rotary sputtering targets.

Our R&D and innovation in the biosciences have the benefit of putting our products into the hands of people who make a difference. Examples include the many compact models of diagnostic equipment that we've developed to aid in the diagnosis and care of infectious and lifestyle diseases, including diabetes and high blood cholesterol. Innovation also is reflected in our joint research project on the frontier of bioscience with a university in Japan. That project seeks to develop a reagent for the detection and monitoring of a peptide to advance a cancer peptide therapy that involves creating a "cancer vaccine."

TS-300, our piperazine heavy metal treatment agent for incinerator fly ash, is an example of creative R&D in environmental conservation. It is specifically designed based on the latest trends in garbage treatment and incineration, such as increased melting treatments. The result: TS-300 features enhanced safety and functionality.

R&D for the Chlor-alkali Group is a search for innovative technologies to improve the productivity and quality of the processes and products of Tosoh's vinyl isocyanate chain. In fact, R&D by Tosoh and NPU is crucial to NPU's recovery. It supports NPU's enhanced cost-efficiencies, shift to higher-value-added products, and improved quality and thus higher price structure.

Petrochemical Group R&D revolves around reengineering cracker operations to raise output and improving and developing polymers and related technologies. Observing market trends opens opportunities for customization. A sharp decline, for example, in the C4 fraction production of butadiene and aromatic products, such as benzene, because of the switch to natural gas feedstock for crackers has opened a market for catalysts for the organic syntheses of these chemicals.

Also noteworthy is our R&D on the industrial-scale palladium-catalyzed cross-coupling production process used in the manufacture of liquid crystal display (LCD) and organic light-emitting diode (OLED) materials and pharmaceutical intermediaries. Tosoh enlisted the joint winner of the 2010 Nobel Prize in Chemistry, Emeritus Professor Akira Suzuki, of Hokkaido University, to help it commercialize its innovative process.



Responsible Care: Management

Commitment

President's Message

Our objectives in fiscal 2015 remain to achieve results from our safety reform activities while continuing to expand our earnings. Each Tosoh employee must be aware of and take responsibility for the need to ensure safety at Tosoh operations. Collectively, they must work as a team for zero accidents to thereby avoid lost time at our operations.

Results from Safety Reforms Are Essential

An explosion and fire occurred at and shut down the No. 2 Vinyl Chloride Monomer (VCM) Plant at our Nanyo Complex in November 2011. We've been implementing safety reforms since August 2012, when we completed our investigation, to prevent another such incident.

Reforms notwithstanding, some incidents have happened again. They are not, however, the result of insufficient know-how or deficient operating manuals, as was the case in November 2011. They stem from poorly managing equipment and plant maintenance.

We have increased allocations of money and time for maintenance and are working to eliminate operating difficulties. We also insist on new perspectives in managing facilities and substantially more-thorough risk assessments. To restore our reputation as a "safe chemical manufacturer," it is necessary for Tosoh employees to confront safety issues and demonstrate safety reforms.

Our Mission Is to Contribute to Society through Our Products

Tosoh's corporate mission is "to contribute to society through the chemistry of innovation." Good management is essential. That requires a commitment to superior products and regard for the environment, safety, and health. Emissions must be minimal and the characteristics of chemical substances understood. These are our responsibilities if we wish to supply products that benefit society.

We Must Coexist with Society and Build Mutual Trust

Corporate viability hinges largely on our being a member of society overall. We must communicate with the communities where we operate and aim for open and accessible places of business. Only then can we earn community trust and provide communities a sense of security.

Tosoh will merge with Nippon Polyurethane Industry Co., Ltd. (NPU), in October 2014. Our principal manufacturing facility, the Nanyo Complex, is adjacent to NPU, and it and NPU will assume more prominent roles in our operations and their surrounding communities following the merger. As well, Tosoh and NPU will combine their safety, health, and environmental initiatives and conduct the highest level of Responsible Care (RC) activities.

Looking ahead, we reaffirm the viability of chemical companies. We will offer safe products reliably and further develop our business with our stakeholders. The continuing guidance and support of stakeholders for our RC endeavors is welcomed and appreciated.

Message from the Chairman of the RC Committee

RC auditing discussions at Tosoh relate to day-to-day issues. Discussion outcomes are reflected in RC Committee policies, and ensuing activities are run through the plan-do-check-act (PDCA) cycle for refinement.

Following the explosion and fire at the Nanyo Complex's No. 2 VCM Plant in November 2011, we have undertaken groupwide initiatives based on safety reform guidelines drafted as a result of the accident investigation. Those initiatives include improving employee training and education, reviewing operating manuals, and identifying potentially unsafe production locations.

We regret that these efforts have not eliminated incidents, chiefly because of shortcomings in managing equipment and plant maintenance. Tosoh is committed to safety and has substantially increased its budget for plant maintenance. Translating commitment into action requires that each of us must raise our abilities to predict dangers, offer insights, and think of initiatives from new perspectives.

Manufacturing products invariably emits chemical substances into the atmosphere, water, and soil. To lessen our environmental impact, we must manage our chemical products from development to production to use.

And to safely and efficiently deliver products to customer satisfaction, it is important that we thoroughly manage the logistics of their transport. We must at all times communicate with the providers of logistics services to prevent distribution problems.

We know that it is important for everyone who handles, uses, and is even remotely exposed to Tosoh products—including employees, distributors, customers, and community members—to act in concert. So we work to ensure such cooperation.

Environmental Accounting

Tosoh applies environmental cost-benefit accounting to quantify its environmental programs. In fiscal 2014, because major projects were still ongoing, investments in environmental preservation amounted to ¥910 million, or ¥1.44 billion less than in the previous year.

ENVIRONMENTAL PROTECTION COSTS

(Billions of Yen)

ITEMS	MAJOR ACTIVITIES	CAPITAL SPENDING ¹			CURRENT EXPENDITURES ²
		FY 2012	FY 2013	FY 2014	FY 2014
Costs within business area		1.34	2.30	0.85	11.51
Pollution prevention	Exhaust gas and wastewater treatment	0.24	1.44	0.69	7.00
Global environmental protection	Electric power and fuel reduction measures	0.60	0.44	0.10	1.86
Resource recycling	Raw material and waste product recovery	0.50	0.42	0.06	26.5
Administration	Environmental management, impact assessment, environmental report publishing, environmental load auditing	0.03	0.02	0.05	0.47
Research and development	Environmental load reduction technology and environmental product development	0.19	0.03	0.01	1.14
Social activities	Association fees, planting, community contributions	0.00	0.00	0.00	0.02
Other		0.00	0.00	0.00	0.07
Total		1.56	2.35	0.91	13.21

1. Expenditures on capital investments for environmental protection purposes.

2. Expenditures related to such expenses as variable and labor costs for environmental protection purposes.

Health, Safety, Environmental Management

Basic Principles Regarding the Environment, Safety, and Health

In all of its business activities, Tosoh Corporation will contribute to the advancement of society through continuous innovation in chemistry, leading ultimately to the supply of products and services that bring customer satisfaction. At the same time, Tosoh will continue to regard environmental protection, safety, and health as top management priorities.

Action Policies

Basic Stance

- Promote initiatives based on awareness of the need to comply with laws and regulations and self-responsibility
- Establish targets, formulate action plans, and implement actions with the participation of all concerned
- Reflect audit results in future action plans

Environmental Protection Initiatives

- Conserve energy and resources through the use of the smallest-possible quantities of resources to obtain the greatest-possible benefits
- Lower emissions and waste through improved manufacturing processes and operational management

Safety Assurance Initiatives

- Prevent accidents and respond to disasters through facility safety management
- Maintain and manage emergency response capabilities through safety drills
- Eliminate accidents and disaster effects through the analysis of case studies

Product-Related Environmental and Safety Assurance Initiatives

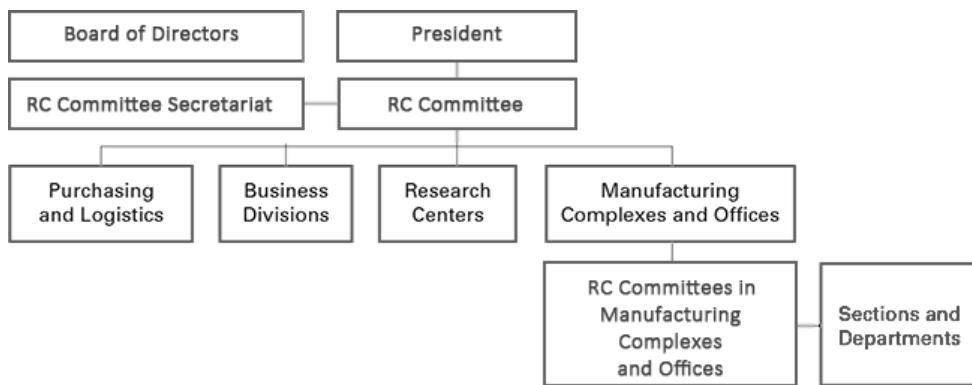
- Allow consideration for the environment, safety, and health to guide the product design and development of manufacturing processes
- Undertake prior assessment during the development of new products and processes
- Ensure product safety through total quality management

Communication Initiatives

- Provide safety management—related information for products and chemical substances
- Enhance public confidence through dialogue about business activities

Responsible Care Promotion Structure

To promote its RC activities, Tosoh has established an RC Committee. The director responsible for the company's Environment, Safety and Quality Control Division chairs the committee, and the committee's members include general managers from Tosoh's Purchasing and Logistics Division, operating divisions, manufacturing complexes and offices, and research centers. Our RC Committee decides the RC activity plan for each year and reports it to Tosoh's president, after which our Board of Directors makes the final decision on the plan. Our manufacturing complexes and offices then determine the details and carry out the planned activities.



Responsible Care Activities

	Results of RC Activities in Fiscal 2014	Objectives of RC Activities in Fiscal 2015
	Priorities	Priorities
	Promoted Employee Participation in RC Activities Based on Safety Reform Initiatives	Instill a Thorough Awareness of RC Activities in Each Employee
Safety and Disaster Prevention	<ul style="list-style-type: none"> Experienced six incidents despite safety reform measures across all corporate activities ⇒ Investigation of cause and prioritization Based on information issued by the public sector, prepared report on issues related to earthquake and tsunami policies that takes into account estimates of potential damage 	<ul style="list-style-type: none"> Strengthen the weakness in equipment management and plant maintenance that was the cause of trouble in fiscal 2015 Implement medium- to long-term plans for dealing with earthquakes and tsunami
Environmental Preservation	<ul style="list-style-type: none"> Attained RC objectives (369 metric tons/year) for the emissions of substances covered by the Pollutant Release and Transfer Register (PRTR) system Achieved RC objectives (1,768 metric tons/year by 2015) for the volume of industrial waste for final disposal Promoted the disposal of equipment containing polychlorinated biphenyls (PCBs) ⇒ Made decision to complete the disposal of equipment containing high concentrations of PCBs during fiscal 2014 	<ul style="list-style-type: none"> Continue managing the emissions of substances covered by the PRTR system Continue to reduce the volume of industrial waste for final disposal Complete the disposal of equipment containing high concentrations of PCBs and formulate plans for the disposal of equipment containing lower concentrations of PCBs.
Chemical and Product Safety	<ul style="list-style-type: none"> Complied with new Japan Industrial Standards (JIS) requirements for safety data sheets (SDS) Prepared SDS and labels to comply with the transition to the Global Harmonized System of Classification and Labeling of Chemicals (GHS) system in Thailand and South Korea 	<ul style="list-style-type: none"> Continue to comply with new JIS requirements for SDS Make further progress in complying with restrictions regarding chemical substances in overseas markets
Quality Assurance	<ul style="list-style-type: none"> Witnessed a decline in claims regarding logistical quality because of strengthened oversight and guidance. Experienced a claim because of deficiencies in process and plant maintenance 	<ul style="list-style-type: none"> Promote continuing quality assurance and continue to reduce claims among parties along the logistics chain through detailed claims analyses
Logistical Safety	<ul style="list-style-type: none"> Implemented measures to raise the awareness of product handling among concerned parties to deal with troubles when transporting goods 	<ul style="list-style-type: none"> Promote measures to reduce logistical problems based on analyses of issues and reduce problems related to route transport
Dialogue with the Public	<ul style="list-style-type: none"> Encouraged teamwork with communities To promote risk-related communications, prepared a pamphlet to educate the public on how to deal with leakages 	<ul style="list-style-type: none"> Continue to encourage teamwork with the community Offer clear information to stakeholders regarding risk

Stewardship

Stewardship of Social Responsibility

We will endeavor to continuously innovate products that contribute to the healthy development of society, to provide a reliable supply of our products, and to acquire the trust of society.

We will strive to be a prosperous business and a cooperative and contributing member of the local communities where we do business.



Responsible Care: Environment and Society

Environment and Safety

Input and Output

Our products are manufactured by reaction, cracking, and distillation. Tosoh's power generation plants and coal-fired boilers provide the electricity and steam, respectively, for reactions and cracking. We use industrial water and seawater to cool reactions.

We manage our generation of electricity and steam to balance our product output. We also manage our emissions to lessen the burden our production activities place on the environment.

Effective Use of Resources

Tosoh makes a significant contribution to recycling in its operations and in the surrounding communities. The company collects waste produced on location and from households and other companies near its operations and recycles it into new products.

Tosoh is able to process much of its waste, such as coal ash, as raw materials at its cement plant. At the Nanyo Complex manufacturing hub, the company is able to process not only industrial waste from nearby companies but also household garbage from local communities. In fiscal 2014, Tosoh's volume of industrial waste for final disposal amounted to only 0.4% of its industrial waste produced. Tosoh will continue to use resources as effectively as possible.

Industrial Waste Emissions

We dispose of and recycle almost all of our industrial waste. What we don't process we make available for use outside the Tosoh Group or dispose of in landfills.

Before issuing a manifest on handling industrial waste, Tosoh double checks the specifics of each, waste disposal. Through our manifests, we supervise waste leaving our facilities on-site and confirm final waste disposal or reuse. We also annually inspect our disposal sites.

Product Safety

Tosoh's raw materials and products contain specified-use and restricted substances under Japan's Fire Prevention Law, Law Concerning Poisons and Other Harmful Substances, and other laws. Ensuring safety each, step along the way is essential in all operations including R&D, manufacturing, logistic and quality assurance. Tosoh complies with safety requirements under its RC goals of "chemical product safety," "quality assurance," and "logistical safe and other internal directives.

R&D

R&D involves improving and developing products, from basic materials to cutting-edge technologies. Tosoh continues to develop products that meet customer needs on a daily basis.

Production

Providing stable product supplies is a chemical company's main mission. When adding new equipment, expanding capacity, and maintaining and upgrading facilities, the company establishes committees to assure that safe operations are achieved.

Safety and Reliability

Logistics

Tosoh conducts training programs for the companies that transport its products. It aims to raise safety awareness and establish safe supply lines between itself and its customers.

Quality Assurance

Tosoh has implemented a quality management system. It also emphasizes responding promptly to customer inquiries.

Safe Sourcing of Chemical Products

Tosoh engages in initiatives to comply with domestic and foreign legal regulations for the safe handling of chemicals. These include assessing product safety and providing product information.

Tosoh Initiatives

- Tosoh provides safety data sheets (SDS) along with its products to ensure the safe handling of its products in accordance with unified international classification and labeling requirements known as the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).
- Tosoh submits notifications, registrations, and applications in compliance with such domestic laws as the Chemical Inspection, Health and Sanitation, and Pharmaceuticals Laws.
- Tosoh complies with such foreign legal regulations as Europe's Registration Evaluation Authorization and Restriction of Chemicals (REACH).
- Tosoh participates in the autonomous Japan Initiative of Product Stewardship (JIPS) movement promoted by the Japan Chemical Industry Association. JIPS aims to minimize the effects of chemical products on health and the environment.

Human Rights, Human Resources, Diversity

Human Resources

Human Resources System

Tosoh's human resources system strives to inspire and then reward employees who exhibit a proactive attitude based on a strong sense of ownership.

Principles

Creative Organization

Enabling employees to realize their potential

Challenging Environment

Applying a grading system for thorough employee evaluation

Impartial Treatment

Rewarding employees who go the extra distance

Employee Education Programs

Tosoh has traditionally provided education and training programs to increase learning and interaction between company employees, create a stimulating workplace, and foster creative leaders. These education programs include on-site training, manager and other rank-based training sessions, vocational classes, and classes that promote internationalization. After 21 years, Tosoh is once again providing this type of training program on ships. Three employees participated in a program in fiscal 2014 that visited Singapore, Malaysia, and Thailand.

Recruitment Policies Promote Diversity

Transmitting technical skills from experienced to new workers is among Tosoh's recruitment policies. So we reemploy people after they retire. We also employ women, and we employ physically challenged persons to the legally recommended 2.0% of our workforce.

Human Resource Data

	Regular employees	Newly hired personnel	Reemployed personnel	Average age of regular employees	Average number of years worked by employees	Ratio of employees leaving
Fiscal 2013	2,516 (195)	133 (12)	239	40.5	18.8	2.27%
Fiscal 2014	2,548 (203)	148 (16)	239	40.0	18.4	0.86%

Note: Figures in parentheses are the number of female employees.

Contribution to Society

Learning Opportunities for Children

Every year, we invite children attending middle schools in the areas neighboring the Nanyo Complex to visit its facilities. Students interact with Tosoh employees and thereby increase their understanding and interest in chemistry and the chemical industry as a potential career path.

We also provide opportunities for other groups to visit the Nanyo Complex to similarly deepen an understanding of the chemical industry and specifically of Tosoh. Local chambers of commerce, for example, sponsor Summer Vacation Industry Tours for Children and Parents that, along with other group tours of primary and middle school students, visit the complex.

Opportunities for Interaction with Children

Tosoh also passes on the specialized knowledge, skills, and experience of its personnel to schoolchildren and their teachers in the communities near the Yokkaichi Complex. In response to requests from local governments, Yokkaichi Complex personnel teach chemistry in local classrooms, offer training courses for local school teachers, and conduct group plant tours for students and teachers to enhance the level of instruction in chemistry in schools throughout the neighboring communities.

At the Yokkaichi Children's Chemistry Seminar, held in August 2013, Tosoh personnel taught student attendees how to make bath powder using Tosoh's sodium bicarbonate.



Responsible Care: Governance

Corporate Governance and Management System

Tosoh is structuring to respond promptly to a changing business environment to thereby raise corporate value. We endeavor to manage our activities soundly and to a high degree of fairness and transparency.

We have formed five corporate governance committees consisting of directors and general managers from across the Tosoh Group: Internal Control Committee, Compliance Committee, Antimonopoly Compliance Committee, Export Supervision Committee, and RC Committee. All five function to gain the trust of society.

The Tosoh Group Code of Conduct

Basic Policy

Each of us will comply with all laws, internal regulations, and social mores related to our business activities.

Guidelines

1. Create workplaces where all employees can draw on their capabilities to the fullest (comply with laws, regulations, and norms in society and with rules of employment; respect human rights; forbid discrimination and harassment; and create a healthy workplace)
2. Respond to the expectations of customers, business partners, and shareholders (prevent bribery and corruption, comply with import and export laws and regulations and with antitrust laws and regulations, prohibit ties with antisocial elements, and prevent insider dealings)
3. Contribute to the healthy development of society (promote environmental conservation and protection, maintain a safe and clean workplace, and raise the awareness of stewardship for social responsibility)

Internal Control and Risk Management

Internal Control Committee

The Internal Control Committee monitors Tosoh's compliance with the financial reporting requirements of Japan's Financial Instruments and Exchange Act. Specifically, it supports the design and improvement of our internal controls.

It assesses the effectiveness and, based on assessments by our Audit Office, the status of our internal controls and formulates plans. It also prepares and publicly issues internal control reports. Its members are general managers from related departments.

Preparedness for Major Earthquakes

The Great East Japan Earthquake of 2011 taught Japan's Central Disaster Prevention Council and other groups that major earthquakes might occur and cause serious damage even where tremors are rare. Meetings in March and August 2012 produced conclusions about earthquakes and tsunami based on analyses of the Nankai Trough using megaquake models. Those conclusions, published in December 2013 and March 2014, included maps and more indicating the impact of tsunami on Yamaguchi Prefecture, home to Tosoh's Nanyo Complex, and Mie Prefecture, home to Tosoh's Yokkaichi Complex.

The Nanyo and Yokkaichi Complexes comply with all legal requirements, including the Construction Standards, High-Pressure Gas Safety, and Fire Service Laws. They are, with the exception of some electric power generation, designed to safely cease operation at a specified magnitude of earthquake. Working groups at the complexes confirm equipment and facility earthquake resistance and formulate tsunami and evacuation procedures—with priority on saving lives.

Compliance

Compliance Committee

Our Compliance Committee structures our compliance systems; formulates our corporate behavior guidelines; and prepares and implements our compliance-related training, research, and fact-finding. In April 2014, it revised the parent company's Japanese-language code of conduct and expanded it to the Tosoh Group. The new Tosoh Group Code of Conduct was produced in English and Chinese and establishes high standards for groupwide compliance.

The committee also has established a compliance hotline to allow employees and others to anonymously report compliance-related indiscretions. In addition, it has a section on our intranet site highlighting the latest compliance-related developments. Also included are quizzes on compliance, real-life examples of compliance, and more to heighten employee awareness of the importance of compliance.

Board of Directors

Director

Kenichi Udagawa
Shinhachiro Emori
Yasuyuki Koie
Toshinori Yamamoto
Sukehiro Itoh
Eiji Inoue
Masaki Uchikura
Keiichiro Nishizawa

Katsushi Tashiro
Yasuo Yamamoto
Koji Kawamoto
Masayuki Yamada
Hiroto Murata

Audit and Supervisory Board Members

Katsumi Ishikawa
Shinji Tanaka
Tetsuya Teramoto
Tsuneyasu Ozaki

Substitute Audit and Supervisory Board Members

Setsuo Iwabuchi
Tutomu Matsuoka



Review of Operations: Specialty

Snapshot

The [Specialty Group](#) meets the needs of diverse customers for high-value-added [bioscience](#), [organic chemical](#), and [advanced material](#) products and technologies. Its extensive portfolio offerings are solidly positioned in stable and expanding niche markets and individually and collectively are critical contributors to Tosoh's profitability.

The Specialty Group's clients span the globe and include the pharmaceutical, health care, semiconductor, consumer electronics, and automobile industries. They include emerging businesses whose success hinges on the Specialty Group's development of solutions to fuel their progress. Innovative products and technologies from the Specialty Group align Tosoh with market opportunities and offer potential for sustainable expansion strategies.

Group Performance and Markets

Strong Performance: Specialty Group fiscal 2014 net sales rose 16.5% over fiscal 2013 group net sales, to ¥153.4 billion (US\$1.5 billion). That constituted 19.9% of Tosoh's consolidated net sales, compared with 19.7% in fiscal 2013. Group operating income climbed 114.0%, to ¥19.2 billion (US\$186.8 million), for 46.2% of Tosoh's consolidated operating income—a dramatic increase from 36.7% a year earlier and equivalent to an operating income to net sales ratio of 12.5%.

The Specialty Group's shipments of [ethyleneamines](#) decreased because of reductions in production volume to improve profitability. Declining ethyleneamine production volume, however, was somewhat offset by ethyleneamine price increases and the yen's depreciation.

Shipments of bromine and bromine fire retardant products, meanwhile, rose, as did shipments of separation-related products, especially of liquid chromatography packing materials. Shipments of the group's [automated immunoassay \(AIA\)](#) instruments and in vitro diagnostic reagents also increased.

With export prices firming because of the weaker yen, shipments of [electrolytic manganese dioxide \(EMD\)](#) for dry cell and rechargeable batteries likewise rose. [High-silica zeolite \(HSZ\)](#) shipments, too, were boosted, by strong demand for HSZ as petrochemical catalysts and in automobile catalytic converters. In addition, zirconia shipments to the dental materials market recorded gains.

Developments

Strategic Resource Allocation to Create Value: Persistent ethyleneamine oversupply compelled Tosoh to [shut down](#) its oldest ethyleneamine production line in August 2013. In its place, the company is constructing a plant to produce [Rzeta](#), Tosoh's proprietary, new, and unique emission-free reactive amine catalyst for polyurethane foam. Tosoh plans to launch Rzeta in November 2014.

In fiscal 2014, Tosoh announced a further, 50% [expansion of HSZ production](#) capacity at its Nanyo Complex. The capacity expansion is scheduled for completion in September 2014 and will meet increasing demand for auto emission catalysts, a category where Tosoh aims for a top share globally.

Tosoh Group company Tosoh SMD, Inc., will invest heavily in its US facility. The investment will provide facilities for developing and producing physical vapor deposition sputtering targets for the emerging 450-millimeter wafer semiconductor market, which is likely to transform the competitive landscape of the semiconductor industry.

In November 2013, Tosoh launched worldwide sales of its [Toyopearl AF-r Protein A HC-650F](#). This newly developed, high-performance Protein A-affinity separation media achieves 30% to 50% greater antibody adsorption than similar products. It is representative of a class of media indispensable to the biopharmaceutical industry's purification of monoclonal antibodies in the production of antibody biopharmaceuticals. Antibody biopharmaceuticals have high efficacy in treating such life-threatening diseases as cancer and are a research priority in the biopharmaceutical industry.

Strategies and Outlook

Organic Chemicals

The Specialty Group's focus in [organic chemicals](#) in fiscal 2015 is on further restoring the profitability of its once top-earning ethyleneamines. The group will continue its shift to high molecular weight amines and its expansion of its global ethyleneamine derivative network, particularly for its [TEDA, Toyocat, and Rzeta](#) polyurethane catalyst operations.

The goals are higher pricing levels and larger market shares for core ethyleneamine grades. And in February 2014 Tosoh announced [global price increases for its major ethyleneamines](#), effective April 1, 2014. With an annual ethyleneamine production capacity of 71,000 metric tons, the Tosoh Group is one of the world's largest producers of ethyleneamines, approximately 80% of which are exported.

The group's medium-term strategy for its [bromine and brominated derivative](#) products, of which Asia is the largest consumer, is to stay ahead of the competition by expanding product sales and reducing costs. Building a new production facility is also among the strategies under consideration.

Long term, the group's [eco-business strategy](#) is twofold. The group will continue making the piperazine-based agents that are its core environmental product line, and it will reinforce its competitiveness in the environmental and recycling market and top-of-the-line brand category. The group is looking beyond its domestic market, at China and other Asian countries, to ensure growth for its eco-business products and services.

Advanced Materials

In [advanced materials](#), the Specialty Group is targeting increased sales of [zirconia](#) for dental applications, in part by introducing translucent and colored zirconia that differentiate its products in the market. It also is expanding its zeolite operations to emphasize [HSZ](#) product offerings that meet demand from the automotive, oil and energy, and environmental industries. With the rapid shift to ethane as a raw material for petroleum crackers for the shale gas revolution, catalysts for producing aromatics represent an especially good opportunity.

The traditional battery market is in decline, but uses for its raw materials are rapidly evolving. Among the Specialty Group's priorities in its EMD operations is a strategy for developing manganese applications other than batteries. It intends, too, to establish itself as a major producer of manganese-based cathode materials. Its product lines encompass EMD, of which Tosoh is the world's largest producer, and chemical manganese oxide (CMO), which is used for the dry cell and secondary battery markets.

The Specialty Group's thin film materials and quartz operations are ramping up production capacity for 300-millimeter wafer manufacturing and a foothold in the 450-millimeter wafer market. Part of the group's strategy involves entering the next-generation memory and printable electronics markets and developing and expanding sales of products for atomic layer deposition (ALD) and coating applications.

Bioscience

Tosoh seeks a major presence in the global [bioscience](#) market. One of the Specialty Group's immediate-term focuses is to expand sales of separation columns and Toyopearl in biopharmaceutical-related markets. The group will shift its line of columns to [ultrahigh-performance liquid chromatography \(UHPLC\) products](#), which are rapidly becoming mainstream.

A focus in fiscal 2015 will be to press the advantage gained by the introduction of [Toyopearl AF-r Protein A HC-650F](#) separation media. The group's recent expansion of its Toyopearl production capacity should support its aim of winning a bigger share of the global separation media market.

The global diabetes market is worth approximately ¥50 billion and growing. Tosoh has ample room to raise its share of this market and to thereby contribute more to improving health outcomes for diabetics worldwide.

Treating diabetes is a Tosoh emphasis. The Specialty Group's bioscience operations offer various [GHb analyzer models](#) suitable for developed and developing countries.

Tosoh, moreover, is researching the high incidence of tuberculosis in emerging countries and particularly in India and Indonesia, which are among the top three countries by number of tuberculosis patients. Molecular testing for tuberculosis is exponentially faster than traditional methods and is an area of expertise for Tosoh.

In fiscal 2015, Tosoh will launch a new TRC system in the [emerging molecular testing systems market](#).

Key Opportunity Checklist

- ✓ Leverage advanced medical diagnostics technologies to help medical caregivers improve the lives of more people
- ✓ Participate in the dramatic transformation of the global semiconductor industry by garnering business in the emerging 450-millimeter wafer semiconductor market
- ✓ Look beyond present regions to target opportunities in developed and developing economies, focusing particularly on the growing markets of Asia



Review of Operations: Chlor-alkali

Snapshot

The [Chlor-alkali Group](#) operates the largest fully integrated manufacturing capacities of their kind for chemical commodities in Asia and supplies the worldwide chlor-alkali industry with raw materials for a vast range of products. It is well positioned to take advantage of opportunities in Asia's expanding markets.

The group's main products are [chlorine](#), [caustic soda](#), [vinyl chloride monomer \(VCM\)](#), [polyvinyl chloride \(PVC\)](#) resins, [calcium hypochlorite](#), and [sodium bicarbonate](#). It both sells these raw materials and furnishes them as feedstock to [Tosoh's fully integrated vinyl isocyanate chain](#), which yields Tosoh's commodity and specialty products.

The Chlor-alkali Group also supplies its products to the isocyanate operations of Tosoh's wholly owned subsidiary Nippon Polyurethane Industry Co., Ltd. (NPU). NPU uses them principally to produce [methylenediphenyl diisocyanate \(MDI\)](#) and hexamethylene diisocyanate (HDI).

MDI is a key component of the group's and Tosoh's strategies because it is a raw material for polyurethane and a fine chemical with multiple uses in organic synthesis. It also offers attractive marketing synergies with Tosoh's diverse product lines, including organic synthesis compounds, polyurethane catalysts, and specialty polymers. HDI has applications in high-performance paints and other specialty polymers.

The Chlor-alkali Group's chemical commodities business is thriving as economies grow worldwide. But shipments and prices are constantly changing as supply and demand fluctuate. The group, however, has developed the know-how and the systems to optimize its production mix to match circumstances and to enable Tosoh to compete in the worldwide chlor-alkali industry.

The group also oversees Tosoh's [cement operations](#). Cement production utilizes waste and coal ash, slag, and other by-products from Tosoh's operations and elsewhere to play a valuable role in recycling and reducing costs. Tosoh's cement output is sold entirely to Taiheiyo Cement Corporation, Japan's largest cement manufacturer.

Group Performance and Markets

Impressive Gains: Chlor-alkali Group net sales rose to ¥286.3 billion (US\$2.8 billion) in fiscal 2014, a gain of 20.6% over fiscal 2013 group net sales. The group accounted for 37.1% of Tosoh's consolidated net sales, up from 35.5% a year earlier. It also improved its operating income ¥5.5 billion, to ¥3.9 billion (US\$37.7 million), for an operating income to net sales ratio of 1.4%.

The group's exports and domestic shipments of caustic soda contracted in fiscal 2014, but a recovery in VCM manufacturing volumes supported an increase in VCM and PVC shipments. The yen's depreciation and improved overseas markets, moreover, supported higher VCM and PVC export prices. Domestically sold PVC also benefited from a price increase implemented early in the fiscal year. The group's urethane raw materials, meanwhile, benefited from rising export prices resulting from the yen's depreciation, and the group capitalized by increasing urethane raw material shipments.

The Chlor-alkali Group's cement operations continued to benefit from rebuilding efforts following the Great East Japan Earthquake. The group's shipments of cement increased as a result of strong, mostly domestic demand.

Progress

Strategic Resource Allocation to Create Value: Tosoh completed the implementation of an improved oxychlorination process at its Nanyo Complex in October 2013. The process clears a hurdle in producing VCM from ethylene dichloride (EDC) adds 200,000 metric tons to Tosoh's VCM production capacity.

Tosoh Group subsidiary [Taiyo Vinyl Corporation](#) is [increasing the annual PVC production capacity](#) at its plant in Chiba Prefecture, adjacent to metropolitan Tokyo, by 10,000 metric tons. The expanded facilities are scheduled for completion in October 2014 and will meet domestic demand for PVC. They will contribute specifically to meeting the substantial requirements for PVC in recovering from the Great East Japan Earthquake.

Tosoh Corporation, meanwhile, has decided to [merge with NPU](#) to strengthen NPU's operations for recovered profitability and a greater role in the Tosoh Group. NPU's isocyanate operations are integral to Tosoh's fully integrated vinyl chain operations. The merger will consolidate the companies' synergies under a single management structure to better respond to fluctuating exchange rates, expanding global production capacity, and rising competition from overseas manufacturers.

Tosoh's three-stage merger plan was approved at the company's annual general meeting of shareholders in June 2014. The merger will occur on October 1, 2014.

Strategies and Outlook

Vinyl Isocyanate Chain

Tosoh is committed to long-term corporate value, and the Chlor-alkali Group's VCM and PVC products are integral to that objective. The company, however, takes a balanced approach toward its product lines to ensure sustainable profitability. Management's assessment is that the Chlor-alkali Group's primary chloride line of caustic soda and related products is more profitable than VCM and PVC. So the group needs to strengthen its offerings of caustic soda and competitive caustic soda derivatives.

Medium term, there are significant opportunities for caustic soda sales in Oceania, centered on Australia, and in Southeast Asia and North America. Prospects are favorable for sales of hypochlorite, sodium bicarbonate, sodium sulfate, and other products. Even in Japan, where demand for caustic soda has contracted, Tosoh holds almost a 20% market share.

The Chlor-alkali Group is devising ways to share its independent electricity generation capabilities among its domestic factories and thereby boost the cost competitiveness of its primary chloride product line. Such initiatives will enable the group to address the rising per kilowatt cost of its electric power generation facilities amid rising global commodity costs. Environmental taxes on fossil fuels will be implemented incrementally in Japan over the next few years, and steps must be taken to keep electric power costs at Tosoh competitive.

Keeping VCM product prices in line with rising naphtha and other fixed costs is likewise under evaluation. Also being considered is shifting priorities to domestic and overseas markets that present opportunities for profitability amid changing exchange rates, market conditions, and technologies.

We are focusing on products, including PVC, produced by Tosoh subsidiaries. Our plan is to encourage subsidiaries to collaborate in expanding markets while ensuring their profitability. Specifically, our goal for our VCM and PVC operations is to provide stable VCM supplies to our PVC manufacturing subsidiaries while maximizing profits, which in practice means strengthening domestic sales and seeking sales opportunities overseas in such markets as Indonesia and India. In contrast, China has become a difficult market characterized by its rising use of the carbide method to produce PVC.

Tosoh produces more than 35% of Japan's VCM output and is the domestic leader in PVC resins, accounting for one-fourth of national output. Domestic demand for VCM and PVC for post-earthquake reconstruction is expected to remain firm in fiscal 2015. Long term, VCM and PVC demand should consistently increase throughout Asia, and Tosoh expects to benefit despite heightened competition at home and abroad.

MDI and HDI

Tosoh and NPU will merge in fiscal 2015, and it is a Tosoh priority to make that process a success. The transition includes tapping Tosoh's ample resources to further NPU's business strategies. NPU plans, for example, to exploit the newly combined R&D capabilities to develop profitable new products.

NPU's conversion, meanwhile, to low-cost MDI production is mostly complete. And NPU management is contemplating additional production capacity in anticipation of a competitor's market exit. NPU intends to exploit this opportunity to capture market share and raise prices.

NPU likewise seeks to augment its greater than 50% dominance of the domestic polymeric MDI market. Another objective is to improve the color and quality characteristics of monomeric MDI to support higher pricing.

In addition, NPU is in the final stages of setting up an MDI stockpiling base in Singapore. This will reinforce its MDI marketing drive in Asia, particularly in ASEAN markets.

NPU also is targeting a growing share of the overseas HDI market, through expanded sales to US and European customers. In addition, it will expand its sales of liquid polycarbonate diol (PCD), a highly pliable and tough raw material for polyurethane resin products, and of other of its products.

Cement

The Chlor-alkali Group's one-kiln cement production system is lessening fixed costs through reduced maintenance and lower labor and outsourcing expenses. Improved waste plastic processing capacity and capability also contribute to operational profitability.

Medium term, the group is considering increasing the waste plastic processing of its cement operations, and this will involve an upgrade to its cement manufacturing facilities. It also will continue its programs to conserve energy and reduce energy costs.

In fiscal 2015, the group anticipates that demand for cement will remain flat. This is primarily due to a combination of a slackening in demand from Great East Japan Earthquake rebuilding projects and an increase in demand for the 2020 Olympics in Tokyo. In addition, private-sector demand is expected to be strong.

Key Opportunity Checklist

- ✓ Enhance position as the clear leader in chlor-alkali in Asia and as a major chlor-alkali player globally
- ✓ Take advantage of healthy demand for MDI in Asia, which is increasing at 10% per year
- ✓ Leverage merger with NPU to maintain or increase share of the polymeric market



Review of Operations: Petrochemical

Snapshot

The [Petrochemical Group](#) supplies diverse customers with conventional and high-performance and specialty products. [Olefins](#) and [polymers](#) are its main product lines, and the group maintains its competitive edge by moving its products upstream, managing its product mix, cutting its costs, and diversifying its product lines. The Petrochemical Group bridges the gap between the Specialty and Chlor-alkali Groups in Tosoh's dual commodities and specialties strategy.

Tosoh and the Petrochemical Group's customers use olefins to manufacture a broad range of products, from automotive additives to food flavors and fragrances. Tosoh has utilized its olefins feedstock from the group to become an integrated manufacturer of hydrocarbon-based products and their derivatives, including [ethylene](#), [propylene](#), [cumene](#), and [aromatic compounds](#).

The Petrochemical Group's polymer operations manufacture [ethylene vinyl acetate \(EVA\)](#); [low-density polyethylene \(LDPE\)](#); [linear low-density polyethylene \(LLDPE\)](#); [high-density polyethylene \(HDPE\)](#); and such functional polymers as chloroprene rubber (CR), adhesive polymers, and engineering plastic resins. Those operations adapt product specifications to meet customer needs for polymers in consumer and industrial products. Various grades of EVA are found in everything from solar cells to shoe-soles. LDPE is used in medical applications and food packaging. And HDPE is applied in injection moldings and high-purity pharmaceutical containers.

[Chlorosulphonated polyethylene \(CSM\) rubber](#) and [polyphenylene sulfide \(PPS\)](#) feature in the Petrochemical Group's functional polymer lineup. CSM is a highly durable rubber in short supply worldwide, and Tosoh is the leading global CSM producer. PPS is an engineering plastic also in great demand globally. It is valued by automotive manufacturers for enabling lighter, more fuel efficient vehicles.

Group Performance and Markets

Strongest Gains in Tosoh Group: The Petrochemical Group posted net sales of ¥223.5 billion (US\$2.2 billion) in fiscal 2014, a 19.1% jump from a year earlier. The group's contribution to Tosoh's consolidated net sales edged up from 28.1% in fiscal 2013 to 28.9%. Its operating income rose ¥4.2 billion, or a solid 40.3%, to reach ¥14.8 billion (US\$143.7 million), for an operating income to net sales ratio of 6.6%. The Petrochemical Group's operating income accounted for 35.6% of Tosoh's consolidated operating income.

Shipments of ethylene, propylene, cumene, and other olefins were brisk in fiscal 2014 and were supported by increased production in the absence of scheduled maintenance. Cumene in particular benefited from a weak yen and consequently generated high returns from exports. Tosoh raised its olefin product prices to offset higher costs for naphtha and other raw materials and production generally.

Polyethylene resin sales were invigorated by a recovery in the photovoltaic cell market that boosted shipments of EVA copolymer. Shipments of CR and CSM expanded on the strength of recovering demand in markets abroad and improved export prices resulting from the yen's depreciation. Escalating naphtha costs, meanwhile, compelled Tosoh to increase domestic polyethylene resin prices.

Progress

The Petrochemical Group has developed two new grades of high melt strength polyethylene (HMS-PE). They are suited to use in medical bottles that meet Japan's safety standards and are highly transparent. The group also plans to develop and sell variations for infusion bags, ampoules, and unit-dosage dispensers for eyedrops and other medicines. Sampling is beginning in anticipation of an early launch of commercial applications.

Strategies and Outlook

Olefins

The Petrochemical Group anticipates growing demand for olefins in fiscal 2015. The Japanese government's so-called Abenomics monetary and fiscal stimulation policies to date lend optimism to the domestic market for continued progress. A weakened yen and a strengthened stock market have improved circumstances particularly for corporate Japan's export-oriented companies, ushering in growing capital investment.

Over the next three years, three ethylene plants will be shut down in Japan by Tosoh's domestic competitors, at a pace of one a year. This will improve supply and demand for olefins in Japan and will leave Tosoh as the only

provider of olefins in the Chukyo region, around Nagoya.

Elsewhere in Asia, the Petrochemical Group's olefins business is hampered by the influx of product from Middle Eastern suppliers and from added production capacity at Asian suppliers to meet the region's economic growth. Long term, however, the group sees olefins as a growth market because developing economies invariably consume increasingly large amounts of plastics, as is happening throughout the Asia-Pacific region.

Petrochemical manufacturing depends on naphtha. So rising oil prices challenge the group's operational stability. The Petrochemical Group, however, has implemented a feedstock diversification strategy and seeks cost savings in the portion of ethylene it sources externally.

The group also relies on its refining and petrochemical modeling system (RPMS) to deal with a changing business environment. It adjusts the mix of its cracker output, for instance, to maximize profitability. As a result, it is prepared to expand by taking advantage of opportunities that arise from managing the balance among production rates, product mix, and market prices.

Polyethylenes

Global economic recovery has raised demand for polyethylenes. The Petrochemical Group nevertheless forecasts a mixed performance for its product categories, with only some growth in shipments overall. Increased prices in some categories, though, and the weak yen will contribute to improvements in profitability.

The group, meanwhile, is emphasizing high-value-added products in its polyethylene (PE) market strategy. Among its PE product lines, the group is cultivating additional niche markets for [Melthene](#). It aims for profitability by expanding its sales of "easy-peel" Melthene for industrial and food products and has recently introduced plastic cap liners, layer binding adhesives, and dimming glass for automobiles.

In addition, the group will focus on expanding its sales of EVA grades for the solar cell market, for masking, and for ink enhancers.

Functional Polymers

The profitability of the Petrochemical Group's functional polymers, except PVC paste, will benefit from a weak yen in the same way as its PE products. Demand for functional polymers, though, is expected to be stronger than for PE products.

PVC paste remains underpriced. But the group plans to raise the product's profitability by expanding its share of high-margin specialty PVC paste grades for the automotive industry and for high-performance wallpaper and flooring.

The group, meanwhile, is repositioning itself in the technically advanced segment of the CR market by expanding its line of and introducing superior-grade products. This includes CR grades that do not contaminate metal molds and sulfur-modified CR grades.

Tosoh is the world's top supplier of CSM to the high-end market, a position buttressed by a declining yen. The Petrochemical Group's continued product development program will lead to Tosoh's further expansion in production capacity and market growth.

Differentiating Tosoh's PPS resin products is essential to overcoming the global oversupply of PPS and ensuring the profitability of the company's PPS resins business. The Petrochemical Group as a result offers special grades of PPS resins. These include Susteel-brand PPS, which features superior metal bonding for automotive applications. A major smartphone manufacturer began using the group's SGX-grade PPS resin in its mobile phone casings in 2013. And several Chinese smartphone makers have since introduced the product into their manufacturing processes.

Key Opportunity Checklist

- ✓ Boost sales of olefins abroad as emerging markets increasingly utilize plastic products
- ✓ Target high-performance petrochemical products to balance conventional ones
- ✓ Remain the global leader in CSM amid firm demand and short supply worldwide



Review of Operations: Engineering

Snapshot

The [Engineering Group](#) comprises water treatment and pure water generation leader [Organo Corporation](#), groundwater and soil survey and soil purification and remediation operator Eco-Techno Corporation, and construction company Tohoku Denki Tekko Co., Ltd.

The group focuses on two core areas of concern in today's communities: water and soil treatment and environmental testing. These markets may be mature or maturing in advanced countries, but they are growing rapidly in developing economies around the world. The Engineering Group's technological prowess in these areas represents strong potential for business development.

Group Performance and Markets

Strategic Response to Challenging Conditions: In fiscal 2014, the Engineering Group recorded a decrease of ¥4.2 billion in net sales, to ¥68.6 billion (US\$666.2 million), from net sales in fiscal 2013. The decrease was mainly due to postponements or cancellations of projects in Japan. And it occasioned a ¥4.2 billion decline in operating income, to ¥1.3 billion (US\$12.2 million), for an operating income to net sales ratio of 1.8%.

The Engineering Group accounted for 8.9% of Tosoh's fiscal 2014 consolidated net sales, compared with 10.9% in fiscal 2013. Its contribution to Tosoh's consolidated net operating income likewise declined, from 17.8% to 3.0%.

The group's domestic sales of water treatment facilities, services, and related chemicals slackened because of postponements or cancellations of capital investment, maintenance, renovation, and other business by Japanese customers in the electric power generation and other industries. Its overseas water treatment related orders and sales, however, rose on the strength of improved industrial performance, particularly in the global electronics industry. Overall sales of the group's construction-related activities likewise rose compared with the previous year.

Strategic Moves

Strategic Collaboration and Reorganization: In July 2013, Organo concluded a business alliance with Katayama Nalco Inc. in the water treatment chemicals business. The two companies will work together to expand their water treatment businesses. Organo's chief products are in water and wastewater treatment chemicals, while Katayama Nalco's core lines are process-related chemicals for steel, petrochemicals, and pulp and paper. Organo expects the alliance will add upwards of ¥2 billion to the Engineering Group's annual net sales by fiscal 2016.

On April 1, 2014, Organo launched a comprehensive reorganization that includes merging six regional sales companies and Organo Yamashita Chemical Corporation.

The reorganization addresses the steady growth of regional sales company profits at the expense of Organo, the parent company. It is expected to raise the efficiency of sales activities and make it easier to approach potential customers among small and medium-sized enterprises (SMEs).

The reorganization has three goals: strengthen sales capabilities, by establishing a single, flat sales organization that can expand sales to SMEs; integrate management resources; and strengthen cost competitiveness, by eliminating redundant operations and boosting procurement power.

Strategies and Outlook

Water Treatment

Tosoh subsidiary Organo Corporation is a specialist in water treatment and pure water generation technologies and systems. It focuses on water treatment systems for industry and for municipal waterworks and sewage treatment plants. Organo also offers soil remediation technologies that rank highly worldwide.

Organo's operations encompass two business segments: water treatment engineering and functional products. Its water treatment engineering consists of plant and solutions businesses. The plant business markets water treatment systems. The solutions business maintains and manages delivered systems. Organo's functional products business sells consumables, including standard products, chemicals, and food processing materials.

In fiscal 2015, Organo anticipates further growth in many of its product lines amid improving domestic and global economic conditions. It will focus on sales of wastewater desulfurization treatment systems and integrated gasification combined cycle (IGCC) wastewater treatment systems. Its environmental-related sales, however, will be adversely affected by a lack of orders in fiscal 2014.

Large-scale projects, though, are scheduled for the electronics industry. And Organo will take advantage of the upswing to expand orders and sales to that industry. It also aims for strong gains in sales to the pharmaceutical industry. In addition, it will expand its solutions business and continue to reduce costs to improve profitability.

Organo also expects increased sales to industrial customers following its parent and group company reorganization for strengthened sales operations. Organo will strive for orders especially for wastewater treatment systems from the untapped SME segment.

In fiscal 2015, Organo will continue to make functional products a priority because of their contribution to stable earnings. At the same time, the business alliance with Katayama Nalco will support cost reductions. New products, an upgraded sales organization, and an expanded granulation business will also contribute to Organo's profitability.

The mature domestic market compels Organo to increasingly look abroad for business especially in water treatment engineering for power stations. This sees Organo leverage its network of subsidiaries and affiliates in China, Thailand, Malaysia, Taiwan, Vietnam, and Indonesia and convert its overseas activities to local operation and staffing as appropriate.

Other Operations

Tohoku Denki Tekko is poised for further progress in its performance in fiscal 2015 based on a greater-than-forecast growth in orders a year earlier. This subsidiary's cost structure has been improved, and it is reviewing its public works labor and material costs. Ongoing domestic economic recovery and capital investments in the Tohoku region for post-disaster reconstruction following an initial delay will fuel business opportunities.

Tohoku Denki Tekko's strategic objectives include adopting a solutions-oriented sales approach in its industrial electrical machinery businesses that goes beyond hardware to planning, construction, and installation. New business is always a priority. And the subsidiary will develop its bag filter system business to lift its reputation as a systems provider. In addition, Tohoku Denki Tekko will review the merits of selling its facility maintenance and repair services for Tosoh Group companies in the Kanto region.

Key Opportunity Checklist

- ✓ Focus on international opportunities to counter mature conditions domestically
- ✓ Target the rapidly modernizing areas of Asia with water treatment facilities and thermal plant projects, particularly in Indonesia and Vietnam



Review of Operations: Other

Snapshot

Tosoh is committed to close connections among its business operations and customers. It relies on its [other businesses](#) to ensure those connections.

The timely provision of support for Tosoh's diverse operations and for Tosoh's customers is mission critical. Tosoh's other businesses thus are always on call.

They handle facility construction, maintenance, expansion, and upgrading; administrative services; personnel training; information technology (IT) support; and more. They also contribute essential research and analytical support for Tosoh's introduction of innovative technologies, products, and services.

Tosoh works to ensure that each of its other businesses evolves from a cost center to a profit center. And it ensures that they compete with external suppliers for Tosoh Group business, which benefits them and the Tosoh Group by promoting cost and administrative effectiveness and technological advances.

Group Performance and Markets

Superior Services and Earnings: In fiscal 2014, other business net sales edged up 3.8% over net sales the year before, to ¥40.6 billion (US\$394.0 million). Operating income rose 11.1%, to ¥2.4 billion (US\$23.6 million), for an operating income to net sales ratio of 6.0%. The performance improvements were the result of the growth in sales of Tosoh's trading company and logistics subsidiaries.

Other businesses contributed 5.3% of Tosoh's consolidated net sales in fiscal 2014, compared with 5.8% in fiscal 2013. They also accounted for 5.8% of Tosoh's consolidated operating income, versus 8.9% a year earlier.

Strategies and Outlook

Logistics

Tosoh's logistics operations involve four main areas: (1) assisting Tosoh companies and manufacturing groups by reducing manpower requirements and improving efficiency; (2) providing risk management processes and other procedures to upgrade safety and quality; (3) ensuring that shipping terminals and warehouses have the capacity to meet the Tosoh Group's changing needs and to optimize shipping route traffic; and (4) supporting overseas expansion.

In fiscal 2015, logistics operations will focus on fostering the synergies of [Tosoh Corporation's merger with NPU](#). They will help the merged operations and [Tosoh Silica Corporation](#) improve their earnings.

Logistical cost-reduction projects include reorganizing the transport of VCM at the [Nanyo Complex](#) following the 200,000-metric-ton VCM production capacity expansion there. In addition, there will be projects to reassess the outsourcing of loading and delivery services for truck and train logistics at the Nanyo Complex and to rearrange Tosoh's shipping fleet schedules.

Quality control and safety projects also figure among logistics operations in fiscal 2015. This involves updating Tosoh's crisis management manual and expanding the scope of its equipment maintenance system, including the number of group companies covered.

General Services

Tosoh puts people first. And it has established other businesses to handle personnel management, employee benefit administration, and training.

General services will continue its mandate to handle and improve personnel management and employee benefit administration and training in fiscal 2015. This includes encouraging subsidiary and affiliate participation in the Tosoh Group salary administration system to support ongoing efforts to raise efficiency.

Overall, general services will try to raise the level of its services, to implement safety and career- stage education and training programs, and to ensure the optimum health of employees.

Analysis and Research

Tosoh's chemical analysis operations provide Tosoh Group companies worldwide with a wide range of sophisticated services specializing in organic, inorganic, and polymer chemistry and in electronic materials. These services support Tosoh's product and application development programs.

In fiscal 2015, analysis and research operations will take further steps to boost Tosoh's technical capabilities, brand reputation, and profitability. Ongoing research for Tosoh Group companies in structural analysis, organic chemistry, surface analysis, high-molecular weight polymers, and inorganic chemistry will continue. About half of the research is conducted at the Nanyo Complex, with the Yokkaichi Complex and Tokyo operations handling the rest.

Tosoh's analysis and research operations will continue to install new equipment to upgrade the level and scope of their testing capabilities. The budget for such equipment is set at approximately ¥110 million in fiscal 2015.

In addition, analysis and research operations will further expand outside the Tosoh Group. External sales have been edging up in recent years. And following the establishment of marketing programs in fiscal 2014, the fiscal 2015 target is to cultivate business with major customers outside the Tosoh Group. Tosoh's analysis and research operations promote their services in part by preparing scientific papers, making presentations, and participating in conferences and other events.

Information Systems

Tosoh's information systems maintains more than 300 servers, nearly 8,000 personal computers, and around 170 networks across 44 companies. Such work spans administrative and factory operation systems. Information systems has also developed an enterprise resource planning (ERP) system that allows Tosoh management to assess the performance of Tosoh Group members.

Information systems is tasked with evaluating and introducing technology, systems, and services. It also maintains and upgrades systems and services and reduces IT costs for the Tosoh Group.

Ongoing information systems projects include installing various information and communications technologies (ICTs) at Tosoh Corporation and at Tosoh Group companies. These include advanced plant information (PI) web services and PI systems, concentrated at the Nanyo and Yokkaichi Complexes. In April 2014, information systems installed a work process management system for Tosoh Techno-System, Inc., and it will be integrating the NPU and Tosoh Corporation systems in time for the merger in October 2014.

A high level of reorganization activity in fiscal 2015 leads information systems to expect firm growth in its sales.

In the meantime, it is reinforcing the skills of its staff members by managing their education and training. Specific areas include writing applications for the group's core IT systems, capabilities in a diverse range of programming languages, and skills in innovation and process improvement.

Key Opportunity Checklist

- ✓ Target business development outside the Tosoh Group
- ✓ Support the global expansion initiatives of the Tosoh Group



Annual Report 2014: Research and Development

Policies and Themes

We have an R&D team of about 860 people constantly at work on product and technology improvements and on laying the groundwork for future business. In fiscal 2014, we invested ¥12.5 billion (US\$121.6 million) in our R&D programs. The goal of our R&D programs is to strengthen our core businesses and to enhance our ability to generate tomorrow's products today. To stay on the leading edge in our fields of interest, we also do joint research with external research facilities, at universities and other educational institutions, and at public research laboratories. Internally, we encourage collaboration to maximize organizational resources and generate synergies.

Our R&D oversight organization comprises various committees responsible for distinct research themes. They also drive the commercialization of new products and technologies. To ensure balanced oversight, representatives from our business units, laboratories, and strategy divisions sit on these committees. The committees determine the most promising strategies for Tosoh's businesses while considering the Tosoh Group's social responsibilities and environmental policies.

Tosoh concentrates its R&D resources on life sciences, energy and environmental conservation, and electronic materials. R&D departments within our business groups improve and expand applications for their group products. And our main R&D operations conduct programs to cultivate new products and markets.

A primary mission of our life sciences R&D work is to provide developed and developing economies access to high-end diagnostics and biopharmaceutical technologies. Our bioscience R&D themes revolve around separation technologies and immunoassay and genetic testing reagents. We are in particular devoting resources to an emerging Tosoh strength in protein modification technology.

Our R&D in energy and environmental conservation emphasizes themes related to shifts in the chemical industry driven by public opinion and regulation. Specifically, our R&D programs focus on high market growth potential rechargeable lithium-ion batteries (LIBs), catalysts and chelates for removing harmful substances, and solar power materials.

Dramatic advances in semiconductors and consumer electronics dictate our electronic materials R&D programs. We are researching and developing technologies and materials for photomasks and substrates, thin layer deposition, solar power, and electronic displays to keep abreast of and to foster further evolution in the semiconductor and consumer electronics industries.

Among our most important emphases in R&D is how to combine the strengths of our diverse R&D operations for optimum results. We continue to examine methods of integrating R&D thematically and of improving collaboration in R&D generally. Recently, we forged an organization-wide organic electroluminescence materials R&D project.

R&D is about people. And we nurture the scientific and leadership skills of our R&D personnel. About five years ago, we introduced a management of technology (MOT) program to develop our R&D managers. A similar program fosters today's researchers at Tosoh. We also hold events to encourage cohesion among our research staff and provide opportunities for our R&D people to network and exchange information.

Specialty Group

Tosoh's functional materials R&D yields products to meet society's pressing needs in cutting-edge environmental stewardship, health care, and electronics technologies.

It contributes to highly efficient, reasonably priced solar power generation. Our solar power R&D encompasses physical vapor deposition (PVD) materials for both thin film silicon and copper indium gallium selenide (CIGS) photovoltaic cells. Its various programs yield increasingly efficient materials and technologies, such as transparent conducting oxide (TCO) sputtering targets that achieve higher photovoltaic cell efficiency than standard targets.

Our R&D on sputtering targets supports manufacturing technologies for semiconductors and flat-panel displays. We've achieved sputtering targets for the manufacture of the thin film transistor oxide semiconductors used in flat-panel displays and for the low-temperature, low-resistance thin film used in increasingly popular touch-panel displays. Following our commercialization of electron transport materials, we began producing the high-efficiency electron hole transport materials used in organic light-emitting diode (OLED) displays. We also are developing, among other materials, organometallic compound materials for the next generation of miniaturized circuits.

Our energy and environmental conservation R&D contributes especially to the automotive industry. It has produced groundbreaking work on zeolites for automotive catalytic converters. And it continues to develop improved manganese oxide materials for use in the cathodes of the rechargeable LIBs popular in electric vehicles and other applications.

Tosoh's eco-products, meanwhile, are the result of ongoing R&D to improve the company's heavy metal chelating. We recently produced an agent for removing anionic heavy metals, such as hexavalent chromium, that complements our line of cationic heavy metal chelates.

Tosoh's vision of its role within the global health care industry is to support better medical care in developing and developed countries for infectious diseases, cardiovascular diseases, cancer, and diabetes. We strive to put

advanced medical diagnostic systems into the hands of medical caregivers and researchers. Our R&D has made particular progress in developing diagnostic tools for infectious diseases. Tosoh's molecular testing systems for tuberculosis, for example, are exponentially faster than traditional methods.

As well, our R&D efforts have produced zirconia dental materials that are contributing to better treatments in dentistry.

Our biomedical R&D yields the high-performance separation media essential for analysis and purification. Tosoh's strengths in protein modification technology are growing, particularly in the purification technologies for the human-derived proteins used in leading-edge antibody drug development and early-stage cancer testing technology.

Chlor-alkali Group

R&D innovations in electrolysis and other technologies strengthen the vinyl isocyanate chain at the core of Tosoh's business in basic chemicals.

Tosoh uses n-BiTAC bipolar ion-exchange membrane electrolyzer cells for electrolyzing salt. They represent the first link in the company's vinyl isocyanate chain and are the best of their kind in electrical efficiency. Tosoh R&D continues to develop and test cathodes that likewise conserve power.

Tosoh's R&D operations work to develop technologies to improve vinyl isocyanate chain manufacturing, from catalyst development through process improvement and debottlenecking.

In managing the integration of the vinyl and isocyanate components of the chain, moreover, Tosoh and NPU collaborate on developing or reengineering processes. Their joint efforts boost yields and heighten the efficiency by which the raw materials and intermediates shared by the plants are used to produce vinyl products and, in the case of NPU's isocyanate chain, methy diphenyl diisocyanate (MDI), hexamethylene diisocyanate (HDI), and other urethane-based products.

The R&D organizations of Tosoh and NPU play important roles in developing technologies and products to support NPU's efforts to improve its cost efficiency and expand its product lines. NPU's products range from polymeric and monomeric MDI to higher-value-added products, such as HDI, liquid polycarbonate diol (PCD), and thermoplastic polyurethane (TPU) elastomer.

R&D at Tosoh and NPU underpins NPU's installation of a low-cost MDI production system and efforts to improve the color and quality characteristics of monomeric MDI to support a higher price structure. Tosoh and NPU also cooperate in R&D to develop applications for heat-resistant polyurethane foam used in the construction industry and for other urethane-based products.

Petrochemical Group

Tosoh's R&D in petrochemicals adds value to commodities. Its purpose is primarily to improve and develop polymers and related technologies. The company's research, development, and improvement program for commodity polyethylenes differentiates Tosoh's products with superior functionality. New and better grades of foams, laminates, food product packaging, and other products contribute to our Petrochemical Group's sales.

Our petrochemicals R&D results in new applications for our high melt elasticity polyethylenes for use in the automotive, packaging, construction materials, and medical care industries. Recent developments include high melt strength polyethylene (HMS-PE) suitable for use in medical unit-dosage dispensers for eyedrops and other medicines and in medicine bottles and ampoules.

R&D in petrochemicals contributes to the photovoltaic cells market through Tosoh's high-performance ethylene vinyl acetate (EVA) sealing film. Tosoh is one of only a few companies worldwide making grades of EVA suitable for the encapsulant film of photovoltaic cells. And our researchers are developing highly durable EVA-based adhesives.

The supply of raw materials for petrochemical resins provided by C5 and C9 fractions is becoming an issue in the petrochemical industry because of the decline in the operating rates of naphtha crackers. Consequently, Tosoh's researchers are concentrating on developing manufacturing technologies that substantially improve the production volume of naphtha crackers.

The company's high-performance resins lineup benefits from R&D that has led to polyphenylene sulfide (PPS) resins with superior metal bonding and high thermal conductivity characteristics. Our metal adhesion PPS compounds are popular in the electronics industry. Commercial applications of PPS resins are available for smartphone bodies and for LED lighting parts. We also are developing materials that resist the surface degradation common in insulation materials.

Petrochemicals R&D also has resulted in reengineering our chloroprene rubber (CR) manufacturing processes to expand CR production and in developing new grades of CR in accordance with customer requirements. Similarly, we are working to improve our production processes for chlorosulphonated polyethylene (CSM) rubber and to develop new CSM grades to support our position as the world's top CSM manufacturer.

Much of Tosoh's R&D in petrochemicals involves discovering new applications for products and developing new products for those applications. We are looking into uses for PVC paste besides wallpaper and flooring materials. And we are aggressively developing polymer materials for use in optical materials for LCDs and in substrate materials for flexible displays. We recently developed Tosoh HMS, a new functional polymer with application in displays. Tosoh HMS boasts superior optical properties and heat resistance.

Engineering Group

The R&D Center of our subsidiary Organo Corporation forms the core of Engineering Group R&D. That facility emphasizes developing basic technologies, improving products, and devising new products and services to complement and bolster Organo's offerings. These include development on water treatment equipment, such as pure, superpure, and clean water producing equipment; water treatment plants, such as wastewater treatment or chromatography separation systems; water treatment chemicals; and food additives and materials for food processing.



Annual Report 2014: Financial Section

Six-Year Summary

YEARS ENDED MARCH 31	2009	2010	2011	2012	2013	2014
Results of Operations (Millions of yen)						
Net sales	733,506	628,706	684,399	687,131	668,494	772,272
Operating income	-20,314	13,047	33,532	23,737	24,464	41,573
Operating income ratio (%)	-2.8	2.1	4.9	3.5	3.7	5.4
Net income (loss)	-25,262	6,890	10,015	9,379	16,867	29,564
Research and development expenses	14,373	13,819	13,427	12,880	12,208	12,513
Capital expenditures	49,100	30,000	24,700	19,300	26,100	23,700
Depreciation	60,908	51,983	50,317	44,481	36,943	34,677
Cash Flows (Millions of yen)						
Cash flows from operating activities	27,055	81,654	49,643	55,322	36,076	67,238
Cash flows from investing activities	-64,858	-29,150	-26,986	-17,582	-23,448	-26,066
Cash flows from financing activities	67,634	-51,893	-25,907	-22,661	-24,518	-45,534
Cash and cash equivalents at end of year	55,912	56,915	52,662	67,359	57,358	55,127
Financial Position (Millions of yen)						
Total assets	762,796	739,659	725,918	708,721	735,102	721,749
Total equity	185,880	190,898	193,512	200,197	219,286	249,797
Interest-bearing debt	435,564	387,529	364,173	343,559	325,995	286,205
Per Share Data (Yen)						
Net income (loss) per share	-42.20	11.51	16.74	15.67	28.17	49.35
Total equity per share	258.98	271.59	275.35	285.88	315.15	365.85
Dividends per share	6.00	6.00	6.00	6.00	6.00	6.00
Key Ratios						
Return on earnings (%)	-14.3	4.3	6.1	5.6	9.5	14.5
Return on assets (%)	-3.2	0.9	1.4	1.3	2.3	4.1
Total assets turnover (times)	0.93	0.84	0.93	0.96	0.93	1.06
Equity ratio (%)	20.3	22.0	22.7	24.1	25.7	30.4
Dividend payout ratio (%)	—	—	53.0	—	24.3	14.2
Debt-to-equity ratio (%)	281.0	238.5	221.0	200.8	172.7	130.6
Number of employees	11,166	11,089	11,221	11,238	11,268	11,421
Stock Indicators						
Stock price (closing), end of year (yen)	186	238	299	230	262	398
Market capitalization (millions of yen)	111,329	142,404	178,902	137,633	156,913	238,459
Price earnings ratio (times)	—	20.7	17.9	14.7	9.3	8.1
Price book-value ratio (times)	0.72	0.88	1.09	0.80	0.83	1.09

Management's Discussion and Analysis

Generally favorable business conditions in Japan and globally supported a strongly improved performance for the Tosoh Group in the fiscal year ended March 31, 2014.

The Japanese government's fiscal initiatives drove domestic economic recovery in the fiscal year under review. And that combined with improving markets overseas to better business conditions considerably for the Tosoh Group. Also of benefit to Tosoh and other Japanese exporting firms was a weak yen. As well, Tosoh negotiated price increases in many of its product categories in fiscal 2014 amid surging naphtha prices. Naphtha rose from ¥57,450 per kiloliter in fiscal 2013 to ¥67,275 per kiloliter in fiscal 2014.

Tosoh in addition took measures to better manage the profitability of its weak product lines, such as ethyleneamines. With the exception of its Engineering Group, Tosoh's business segments posted growth in sales and profits in fiscal 2014.

Changes in Accounting Standards

In fiscal 2014, the company and its domestic subsidiaries adopted, except for the revisions in the calculation method for retirement benefit obligations and service cost, "Accounting Standard for Retirement Benefits" (ASBJ Statement No. 26) and "Guidance on Accounting Standard for Retirement Benefits" (ASBJ Guidance No. 25). For an explanation of the effects of these standards on our operational results, see the Notes to the Consolidated Financial

Statements.

Net Sales

Tosoh's consolidated net sales for fiscal 2014 reflected the improved business climate. Consolidated net sales increased 15.5%, to ¥772.3 billion (US\$7.5 billion).

Operating Expenses and Operating Income

Our cost of sales increased 14.5%, to ¥629.8 billion (US\$6.1 billion). Gross profit rose 20.2%, to ¥142.5 billion (US\$1.4 billion). And our gross profit margin climbed to 18.5%, from 17.7% a year earlier.

Selling, general and administrative expenses expanded 7.2%, to ¥100.9 billion (US\$1.0 billion). R&D expenditures edged up 2.5%, to ¥12.5 billion (US\$121.6 million).

Operating income jumped 69.9%, to ¥41.6 billion (US\$403.9 million). Among other income (expenses), the impact of lower foreign exchange gains was somewhat tempered by the lack of major expenses.

Tosoh reported net other income of ¥6.0 billion (US\$57.9 million) in fiscal 2014, compared with net other income of ¥7.2 billion in the previous fiscal year. Income before income taxes and minority interests advanced 50.3%, to ¥47.5 billion (US\$461.9 million).

Net Income

Minority interests in the net income of subsidiaries totaled ¥0.5 billion (US\$4.4 million) in fiscal 2014, compared with ¥1.3 billion a year earlier. As a result, the Tosoh Group registered net income of ¥29.6 billion (US\$287.3 million), up 75.3% from fiscal 2013. Net income per share, undiluted, amounted to ¥49.35 (US\$0.48), compared with ¥28.17 in the previous fiscal year. Tosoh maintained its annual dividend per share at ¥6.00 (US\$0.06).

Performance by Geographic Region

Export sales and sales outside Japan by overseas subsidiaries were ¥313.6 billion (US\$3.0 billion) in fiscal 2014. This amount represented 40.6% of consolidated net sales, up 4.2 percentage points from fiscal 2013. Sales in Asia accounted for ¥234.4 billion (US\$2.3 billion) of total export sales and sales outside Japan and for 30.4% of consolidated net sales, an increase of 4.0 percentage points from a year earlier.

Dividend Policy

Tosoh aims to maintain a balance between its internal reserves for R&D; its capital expenditures, which are designed to sustain steady high growth; and its returns to its shareholders. The company intends to provide a stable dividend to shareholders on a continuous basis, subject to business conditions.

In fiscal 2014, our annual dividends per share were ¥6.00 (US\$0.06). As a result, the consolidated payout ratio for the year under review was 14.2%, compared with 24.3% in fiscal 2013. Tosoh will continue to invest its internal reserves in competitive product development and global business strategies in a bid to respond to anticipated changes in its business environment.

Financial Position and Liquidity

Fund Procurement and Liquidity Management

Tosoh raises working capital as necessary through short-term bank loans and other means. The company decides on the funding method for its long-term capital requirements, such as capital investment, after determining the investment recovery period and risk. In fiscal 2014, Tosoh financed its capital expenditure and R&D activities primarily from cash provided by operating activities.

Assets, Liabilities, and Net Assets

Current assets as of March 31, 2014, decreased 2.2% from a year earlier, to ¥402.0 billion (US\$3.9 billion). Cash and cash equivalents declined 3.9%, to ¥55.1 billion (US\$535.6 million). Trade receivables, a major component of current assets, decreased 5.0%, to ¥188.4 billion (US\$1.8 billion), while inventories edged up 0.7%, to ¥129.6 billion (US\$1.3 billion).

Current liabilities contracted 7.0% from the previous fiscal year, to ¥340.6 billion (US\$3.3 billion) in fiscal 2014. Working capital, therefore, totaled ¥61.3 billion (US\$595.9 million), compared with ¥44.7 billion a year earlier. The current ratio was 1.18 times, up from 1.12 times in fiscal 2013.

Property, plant and equipment moved down slightly, 3.3%, to ¥232.6 billion (US\$2.3 billion). Declines in current assets resulted in total assets decreasing 1.8% from a year earlier, to ¥721.7 billion (US\$7.0 billion). Interest-bearing debt was ¥286.2 billion (US\$2.8 billion) as of March 31, 2014, down from ¥326.0 billion at the previous fiscal year-end. Long-term debt continued its downward trend, dropping 15.7%, to ¥103.4 billion (US\$1.0 billion).

Total shareholders' equity increased 13.7% year on year, to ¥216.4 billion (US\$2.1 billion), mainly because of a 21.5% rise in retained earnings, to ¥146.4 billion (US\$1.4 billion). Net unrealized gains on securities reflected the rise in stock prices at fiscal year-end and rose 25.1%, to ¥6.2 billion (US\$59.9 million).

Total net assets climbed 13.9% year on year, to ¥249.8 billion (US\$2.4 billion). Net assets per share totaled ¥365.85 (US\$3.55), compared with ¥315.15 a year earlier. Return on average total net assets was 12.6%, and the net asset ratio was 30.4%, compared with 25.7% in fiscal 2013.

Capital Expenditures and Depreciation

Cash Flows

Net cash provided by operating activities was ¥67.2 billion (US\$653.3 million), an increase from ¥36.1 billion in fiscal 2013. The principal sources of cash were income before income taxes and minority interests and depreciation and amortization. The major use of cash was a decrease in trade payables.

Investing activities absorbed ¥26.1 billion (US\$253.3 million) in cash flows, up from ¥23.4 billion in the previous fiscal year. Increased payments for the purchases of property, plant and equipment and increased purchases of investment securities resulted in an overall rise in investment cash flows.

Free cash flow, therefore, was positive. The excess of cash flows from operating activities over the cash absorbed in investing activities amounted to ¥41.2 billion (US\$400.0 million), compared with free cash flow of ¥12.6 billion in fiscal 2013.

Net cash used in financing activities was ¥45.5 billion (US\$442.4 million), compared with ¥24.5 billion in the previous year. The principal reason for the increase in net cash used was a large reduction in proceeds from long-term debt. Cash and cash equivalents on March 31, 2014, were ¥55.1 billion (US\$535.6 million), down 3.9% from a year earlier.

Projections for Fiscal 2015

Tosoh is anticipating further growth in fiscal 2015. The company forecasts an increase in consolidated net sales, to ¥810 billion, resulting in operating income of ¥46 billion and net income of ¥52 billion.

In preparing these sales and earnings projections for fiscal 2015, Tosoh's management has assumed an average exchange rate of ¥100.00 to the US dollar, compared with ¥95 in fiscal 2014. Management has also assumed an average naphtha cost—a benchmark of raw material costs in the chemical industry—of ¥70,000 per kiloliter in Japan, up from the projection of ¥62,000 per kiloliter in fiscal 2014.

[Management's Discussion and Analysis](#) (PDF)

[Financial Statements](#) (PDF)