



TOSOH

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# 2017 CORPORATE SOCIAL RESPONSIBILITY REPORT

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**TOSOH CORPORATION**



TOSOH



Tosoh strives to contribute to  
the realization of a sustainable society.

# Table of Contents

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2  
MANAGEMENT



8  
RESPONSIBLE CARE  
ACTIVITIES



18  
SAFETY



26  
ENVIRONMENT &  
SOCIETY



42  
CORPORATE  
GOVERNANCE



46  
KEY DATA &  
REFERENCES

## 2017 Corporate Social Responsibility Report Outline:

Tosoh has followed the *G4 Sustainability Reporting Guidelines* of the Global Reporting Initiative and the *2012 Environmental Reporting Guidelines* of Japan's Ministry of the Environment in producing this report.

Period covered: April 2016 to March 2017 (a portion of the information also refers to fiscal 2018, beginning April 2017).

Published: August 2017 (previously published: August 2016; next planned publication: August 2018).

Scope: Unless otherwise indicated, the information in this report refers only to the parent company, Tosoh Corporation. The group company input and output data on page 51 is for all 19 of the Tosoh Group's wholly owned domestic manufacturing subsidiaries listed below:

Asia Industry Co., Ltd.  
Tosoh AlA, Inc.  
Tosoh SGM Corporation  
Tosoh F-Tech, Inc.  
Tosoh Quartz Corporation  
Tosoh Silica Corporation  
Tosoh Speciality Materials Corporation  
Tosoh Zeolum, Inc.  
Tosoh Ceramics Co., Ltd.  
Tosoh Hi-Tec, Inc.

Tosoh Hyuga Corporation  
Tosoh Finechem Corporation  
Tosoh Organic Chemical Co., Ltd.  
Tohoku Tosoh Chemical Co., Ltd.  
Toyo Polymer Co., Ltd.  
Nippon Miractran Co., Ltd.  
Hokuetsu Kasei Co., Ltd.  
Rinkagaku Kogyo Co., Ltd.  
Lonseal Corporation

# *Management*

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## **To Our Stakeholders**

Tosoh's 2017 CSR Report provides a clear, easy-to-digest summary of financial and nonfinancial information, descriptions of Tosoh activities, and commentary concerning the direction Tosoh must take going forward. We ask our stakeholders to read through this report so that they may evaluate Tosoh from numerous perspectives, and we welcome any and all opinions and comments.

**Toshinori Yamamoto**  
**President**

## PRESIDENT'S MESSAGE

The enhancement of existing technology in line with societal needs and the delivery of unprecedented value are at the heart of Tosoh's corporate social responsibility (CSR) activities.



**Toshinori Yamamoto**  
President

### Tosoh's Business Environment

Fiscal 2017 saw considerable improvement in terms of trade, attributable in part to a weak yen and the leveling off of crude oil prices. An increasing number of companies in the chemical industry—including Tosoh—recorded strong financial performances. Tosoh achieved record profits and all of its initial sales targets.

Fiscal 2017 was only the first year of our newly formulated medium-term management plan, and yet we accomplished a number of the three-year plan's overall objectives. Tosoh management, however, places a dual emphasis on commodities and specialties, and the commodity sector is unstable because it is significantly influenced by external, often unclear, factors globally. Performance in commodities therefore will be key to Tosoh's ability to achieve all of the objectives for the final year of its medium-term business plan.

Management faces five major issues: meeting earnings expectations, implementing safety measures, devising a growth strategy, ensuring governance and compliance, and strengthening on-site capabilities. These issues are all closely tied to CSR activities, and as such management asks that Tosoh employees band together to tackle them with the five principles encapsulating the Tosoh Spirit in mind.

### The Philosophy behind Tosoh Spirit

Tosoh Spirit was formulated in the era of the bubble economy some 30 years ago. The company was reworking its corporate identity and had just changed its name from Toyo Soda Manufacturing Co., Ltd., to Tosoh Corporation. I am very fond of the tenets that Tosoh Spirit comprises, and I believe that even today they are firmly rooted in our corporate ethos.

An "eager acceptance of challenges" represents the willingness to set lofty goals. This requires that we view our situation objectively and unemotionally, applying the second principle: a "calm assessment of situations."

A "passionate response" symbolizes the courage not to give in regardless of how formidable the path might be to achieving our goals. It signifies the relentless pursuit of our mission, which is not possible without "firm resolve." I feel that "firm resolve" is synonymous with the word sustainability.

The fifth tenet of Tosoh Spirit, "cooperation and gratitude"—which implies employees working together and showing appreciation for one another—is extremely important. Tosoh exists because this and its other tenets were accepted and practiced by the various stakeholders that established the enterprise, and I want all employees to continue to observe and maintain them.

## PRESIDENT'S MESSAGE

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### Tosoh Spirit

- Eager acceptance of challenges
- Calm assessment of situations
- Passionate response
- Firm resolve
- Cooperation and gratitude

### The Strong Correlation between CSR Activities and Tosoh Spirit

The expression "CSR" was not common in Japan 30 years ago. A company's contribution to society manifested itself in practices such as donations to its community, cultural activities, or the sponsorship of sporting events. For the most part, however, the manufacturing sector prioritized profit, and it was not thought necessary to devote much effort or money to other things. Over time, society and corporate culture have matured to where the pursuit of profit alone is insufficient to justify a company's existence.

Today, a company is assessed based on its relationship with society. It must prioritize existing in harmony with its stakeholders, including its community, its clients, and its shareholders, and with the environment. I believe that Tosoh must develop accordingly.

"Cooperation and gratitude," already a tenet of Tosoh Spirit 30 years ago, has turned out to be a forward-looking idea underpinning our present-day CSR activities.

### My View of Tosoh's Societal Responsibilities

I believe that a company's essential role is to contribute to society from various perspectives through its business activities. Societal and market needs are changing at a furious pace. As a materials manufacturer, it is vital that Tosoh enhance its technology in line with societal demands and deliver to clients products of unprecedented value. I feel that this is Tosoh's truest contribution to society. I also feel that natural to this process and crucial to our philosophy in approaching our daily activities is maintaining the highest-possible standards with regard to quality and safety and our impact on the environment.

Tosoh's products are ubiquitous in daily life, but are often unseen. Our caustic soda and hydrochloric acid, for example, work invisibly to make possible clean tap water for people to drink. From materials essential to electrical appliances to dental ceramics and bioscience diagnostic reagents, our products play a role behind the scenes in bettering society by supporting comfort and convenience in everyday life.

### R&D Generates Value for Society

Lifestyles are becoming increasingly diverse, such that the demand for materials and products offering value is accelerating. To stay in step with this transformation, it is vital that we ascertain future market needs and societal issues. Tosoh looks ahead to determine what fields of business show promise and focuses its R&D on them. An internal corporate selection committee narrows our focus to materials and

functions that it deems to be of greatest potential. In recent years, we have concentrated on life sciences, the environment and energy, and electric materials. In anticipation of the adoption of sustainable development goals (SDGs) by the United Nations in 2015, we also began mapping out our R&D theme.

Simply undertaking activities pursued by other companies, however, is not how Tosoh will produce anything of unprecedented value. We are trying to look at things from a perspective different to other companies and to develop products that no company but Tosoh could develop. This, of course, is easier said than done. To this purpose, however, we have reorganized our R&D structure into seven facilities, each focusing on a particular field. We are also about to rebuild certain R&D facilities to consolidate and thereby enhance synergies and to provide our researchers with environments that inspire them.

Meanwhile, we are reviewing our fiscal 2017 CSR activities and pursuing enhanced productivity. In addition, we are shifting from corrective to preventive maintenance through an investment of ¥10 billion over three years in facility renovation. And we continue our transfer of skills to young researchers in the interest of safety, as this generated tangible results in the way of no serious accidents in fiscal 2017.

In our environmental activities, we have as a goal low-energy manufacturing. As such, we are reviewing our production methods under the

## PRESIDENT'S MESSAGE

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theme of enhanced energy efficiency. We have for many years been improving our energy efficiency per unit of production, but we are nearing the limit to the benefits of innovation at the production site. We aim to achieve further reductions in environmental loading by establishing entirely new production processes. We are also developing increasingly environmentally friendly materials that, in turn, improve the environmental performance of our customers' products. In this way, we are contributing directly and indirectly to the preservation of the global environment.

Since fiscal 2016, we have expanded our efforts in establishing systems and enhancing an awareness of governance and compliance from a focus on our Tokyo headquarters to encompass Tosoh Group companies worldwide. Business practices and cultures may differ between Japan and other countries, but we intend to continue our efforts toward unity in governance and compliance.

### Earning Society's Trust

Governance—the establishment of systems necessary to overseeing corporate operations—is exceedingly important. But it extends beyond the tangible. An executive's management style will not be successful if it does not satisfy employees. At Tosoh, the chief intangible element is Tosoh Spirit. Only if our management team is able to construct systems of imagination and spirit and of an all-encompassing nature am I convinced that it will succeed in fostering a positive atmosphere company-wide.

In this era of global business, continuing to operate based on a management philosophy that is uniquely Japanese will not work. I feel that as executives it is our responsibility to boldly adopt new and broader methods of management.

### My Role as the Leader of the Organization

As the president of the company, it is my responsibility to champion and coordinate our efforts to revitalize our CSR activities. I want at the appropriate time to share company issues and plans with employees and thereby inspire them. If such sharing does not come from the top, our CSR activities will seem mechanical and soulless. To ensure that Tosoh can continue to enjoy a positive atmosphere, I must lead by example and in this way show that we are not merely paying lip service to CSR.

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As a materials manufacturer, it is vital that Tosoh enhance its technology in line with societal demands and deliver to clients products of unprecedented value.



## MESSAGE FROM THE CHAIRMAN OF THE RC COMMITTEE

**Keiichiro Nishizawa**

Director, Executive Vice President,  
Chairman, RC Committee

**Developing a Sustainable Society by Promoting CSR**

In recent years, the demand for the disclosure by corporations of information related to their development of a sustainable society has become more pronounced. How corporations work to meet that demand and the other expectations of their stakeholders is also drawing considerable attention.

Tosoh's corporate philosophy serves as the foundation for its CSR activities. The company aims to contribute to the development of a sustainable society by continuing to offer value through its business activities. We believe that our societal responsibility is to continuously provide unprecedented value to the world.

**Basic Management Policies**

1. We will foster vigorous human resources based on the recognition that the origin of management and of dynamic corporate activity is people with a passionate sense of ownership.
2. We will work continuously to enhance our technological power and to develop superior products.
3. We will think in marketing terms and will apply our insights to our business activities.
4. We will constantly look to blaze trails by engaging in adventurous research and development activities.
5. We will seek global management resources and will cultivate markets worldwide.

**Tosoh Spirit**

- Eager acceptance of challenges
- Calm assessment of situations
- Passionate response
- Firm resolve
- Cooperation and gratitude

**Corporate Philosophy**

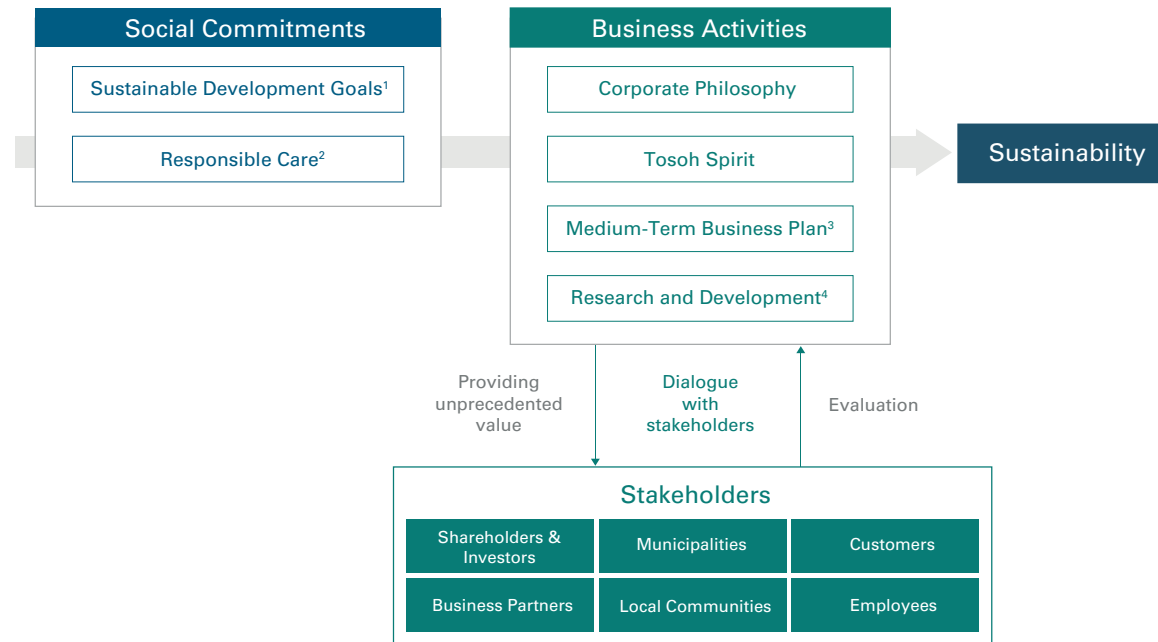
Contribute to bettering society through the chemistry of innovation



## ENHANCEMENT OF CORPORATE VALUE

As implied in its corporate philosophy, Tosoh makes optimum use of technologies to provide the world with products of unprecedented value that contribute to resolving the issues facing society. In September 2015, the member countries of the UN General Assembly adopted a set of goals—Sustainable Development Goals, or SDGs—with the purpose of ending poverty, protecting the planet, and ensuring prosperity for all, with specific targets intended to be achieved by the year 2030.

To enhance its corporate value and work toward the creation of a sustainable society, Tosoh integrates the UN's SDGs into its research and development activities. Through its business activities, Tosoh is contributing to the achievement of 7 of the 17 SDGs (Good Health and Well-Being; Clean Water and Sanitation; Affordable and Clean Energy; Industry; Innovation and Infrastructure; Responsible Consumption and Production; Climate Action; and Life on Land).



1. United Nations SDG website: [www.un.org/sustainabledevelopment/sustainable-development-goals/](http://www.un.org/sustainabledevelopment/sustainable-development-goals/).

3. Medium-Term Business Plan: [www.tosoh.com/annual-report](http://www.tosoh.com/annual-report).

2. For more information on Responsible Care, please refer to Responsible Care Activities on page 8 of this report.

4. Research and Development: [www.tosoh.com/investors/annual-reports/2017/research-development](http://www.tosoh.com/investors/annual-reports/2017/research-development).

# *Responsible Care Activities*

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## WHAT IS RESPONSIBLE CARE?

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The global chemical industry conducts a voluntary initiative called Responsible Care (RC). RC represents the activities undertaken by chemical industry business operators to ensure the protection of the environment, health, and safety in all business processes from chemical development and manufacturing to distribution, use, disposal, and recycling. RC also encompasses communication between business operators and society. In Japan, the Japan Chemical Industry Association's Responsible Care Committee heads up related activities.

Based on Tosoh's awareness of environmental conservation and the securing of safety and health as crucial issues of management, the company has formulated its Basic Principles Regarding the Environment, Safety and Health and an RC activity promotional structure under which to conduct RC activities.

### **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 the field of 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 responding to disaster 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 product design and the development of manufacturing processes

Undertake prior assessment during the development of new products and processes

Ensure product safety through total quality management

#### **Good Communication Initiatives**

Provide safety management-related information for products and chemical substances

Enhance public confidence through dialogue concerning business activities

TOSOH GROUP CODE OF CONDUCT

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**Create a workplace where employees can exhibit their capabilities to the fullest**

- Comply with laws, regulations, and social norms
- Comply with labor regulations
- Create a stable workplace
- Protect privacy
- Respect human rights and prohibit discrimination
- Use corporate assets appropriately
- Prohibit harassment
- Use information systems appropriately

**Honor the trust of customers and business partners and the expectations of shareholders**

- Prohibit bribery domestically and abroad
- Conduct appropriate levels of entertainment and gift giving
- Ensure fair trade
- Comply with import and export-related laws and regulations
- Comply with Antimonopoly Act and related laws and regulations
- Ensure product quality and safety
- Disassociate with antisocial forces
- Compete fairly
- Maintain proper accounting, record management, and information disclosure
- Respect intellectual property rights
- Manage confidential corporate information
- Prohibit insider trading
- Comply with donations and Political Funds Control Act

**Contribute to the stable development of society**

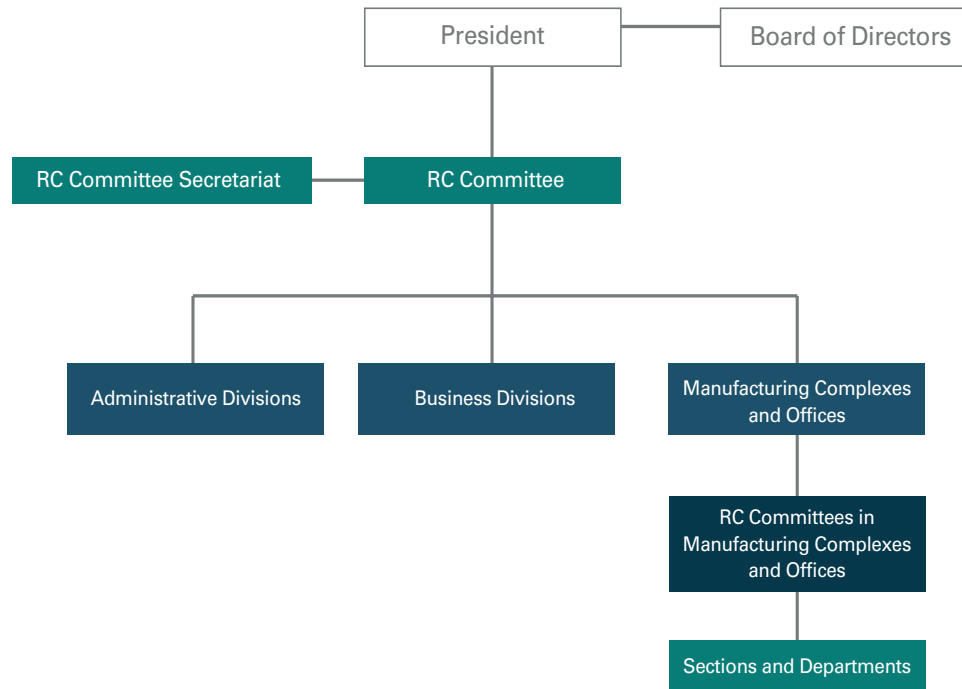
- Pursue environmental conservation and protection
- Strive for workplace health and safety
- Ensure awareness of societal responsibilities

## RC PROMOTIONAL STRUCTURE

The scope of Tosoh's RC activities encompasses environmental preservation, safety and disaster prevention, occupational health and safety, logistical safety, chemical and product safety, and quality assurance.

The Responsible Care Committee, which promotes RC activities, is chaired by the director responsible for the company's Environment, Safety and Quality Control Division, and its members include general managers from Tosoh's Purchasing and Logistics Division, operating divisions, manufacturing complexes and offices, and research centers. The RC Committee devises an annual RC activity plan and presents it to Tosoh's president. The president, in turn, presents the plan to the Board of Directors, which makes the final decision on the activities planned. Tosoh's manufacturing complexes and offices subsequently flesh out the plan's details and implement its planned activities.

The results of Tosoh's RC activities are published on the corporate website and in its CSR Report, and shared with local communities during exchange forums.



RC PROMOTION ACTIVITIES

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**RC Audit**

An RC Audit is conducted no less than once a year at the Nanyo and Yokkaichi Complexes, the Tokyo Research Center, and the Polyurethane Research Laboratory for the purpose of ascertaining the status of RC activities and formulating an activity plan for the next fiscal year.

The auditing body, comprising the RC Committee and RC Committee Secretariat, and the auditee discuss activity status and issues to be addressed during the next fiscal year.

**General Industrial Accident Prevention Council**

The General Industrial Accident Prevention Council comprises representatives of Tosoh Corporation and the Tosoh Group from the Nanyo and Yokkaichi Complexes and from Tosoh-affiliated companies and strives to create an optimal working environment within facilities. The council convened for the 102nd time in April 2017.

At council meetings, Tosoh and affiliated companies share their health and safety action plans, give talks on occupational safety, and present awards to facilities exhibiting superlative cooperation.

**Safe Environment Exchange**

The Environmental Protection and Quality Assurance Division conduct safe environment exchange forums for domestic group companies to promote safety and disaster prevention, occupational safety and health, and environmental preservation. At the forums, participants confirm and follow up on the implementation status of plans for RC activities, heightening sensitivity toward safety and the environment.



## RC ACTIVITY RESULTS AND GOALS

Priorities: Creating a workplace pervaded by a sense of vigilance and improving results from RC activities

	Fiscal 2017 Activity Results	Fiscal 2018 Activities and Goals
<b>Safety and Disaster Prevention and Occupational Safety and Health</b>	Abnormal events: 2, incidents of work time lost because of accidents: 6 <sup>1</sup> Promoted hazard prediction training activities, fortified 5S activities Implemented the promotion of the creation of manuals concerning operating technologies and education regarding same Launched use of what-if study method. <sup>2</sup> Formulated why-why analysis analytical structure and promoted the research of case studies Worked proactively to strengthen preventative maintenance	Aim for zero accidents and work-related injuries Instill comprehensive basic safety behaviors Promote personnel cultivation by fortifying and upgrading education Promote unscheduled risk assessment <sup>3</sup> Promote activities to eliminate similar accidents and disasters Ensure safety for piecework at complexes Promote leveraging of the Internet of Things (IoT)
	Formulated plan for seismic measures, such as spherical gas tanks, ahead of schedule, with the goal of completing measures by 2020 Considered the seismic evaluation and reinforcement of key buildings and formulated reinforcement plan <sup>4</sup>	Promote actions to prepare for earthquake and tsunami disasters Take concrete action toward achieving earthquake resistance for high-pressure gas facilities by 2020 Promote actions to secure the earthquake resistance of key buildings and preparation for tsunami disasters (ongoing)
	Completed recertification procedures for the Yokkaichi Complex (November 2016)	Recertify and maintain certification for high-pressure gas facilities Note that the Nanyo Complex is scheduled for recertification in December 2017
	Conducted safe environment exchanges for 12 companies, implemented safety audits for 2 companies, and conducted safe environment web conferences for group companies Conducted work audits for 7 companies and safety audits for 1 company	Decrease group company accidents and work time lost because of accidents compared with previous fiscal year Continue safe environment exchanges Further work audits (ongoing)

1. An abnormal event is defined as fires or oil leakage or damage related to a specified business operator. The Government Ordinance for Law on Liability for Oil Pollution Damage enacted in 1975 stipulates that in the event an abnormal event occurs, the fire department must be contacted immediately.

2. A what-if study is a method by which questions regarding the cause of an equipment malfunction or operational error are repeatedly asked, with the goal of examining potential dangers with regard to facilities and operations.

3. Risk assessment is the method of identifying the causes of potential dangers in work or operation, and of assessing the likelihood of the occurrence of accidents or damage and the potential impact to assess risk and in some cases may include measures to mitigate risk.

4. Key buildings refers to employee-occupied control rooms and offices that are used as evacuation centers in the event a tsunami occurs.

## RC ACTIVITY RESULTS AND GOALS

	Fiscal 2017 Activity Results	Fiscal 2018 Activities and Goals
<b>Environmental Conservation</b>	<p>Experienced non-compliance incident with industrial waste processing facility (incinerator) at the Nanyo Complex</p> <p>Had no cases of exceeding voluntary control values</p> <p>Implemented environmental education at the Nanyo and Yokkaichi Complexes</p> <p>Accumulated total emissions for fiscal 2017 of 593 metric tons</p> <p>Calculated final industrial waste disposal volume for fiscal 2017 of 1,382 metric tons</p> <p>Implemented disposal of small equipment containing PCBs as planned</p> <p>Continued proper storage of large equipment containing PCBs</p>	<p>Comply with mandated regulatory values and voluntary control values and do not exceed values</p> <p>Comply with voluntary control values (ongoing)</p> <p>Plan risk-mitigating measures to comply with Water Pollution Control Law</p> <p>Promote the proper disposal of industrial waste</p> <p>Transition to ISO 14001:2015<sup>5</sup></p> <p>Meet PRTR-designated substances emissions target of less than 560 metric tons a year<sup>6</sup></p> <p>Meet final disposal reduction target for industrial waste of 1,500 metric tons a year</p> <p>Devise plan for the disposal of equipment containing low concentrations of PCBs<sup>7</sup></p>
<b>Chemical and Product Safety</b>	<p>Complied with such foreign regulations pertaining to chemicals as Europe's Regulation on Registration, Evaluation, Authorization and Restriction of Chemicals (REACH)<sup>8</sup></p> <p>109 employees participated in an explanatory session on US, Australian, and Asian regulatory standards</p> <p>47 employees participated in an explanatory session at the Tokyo Research Center</p> <p>Completed the introduction of a chemical substances management system</p>	<p>Comply with domestic and foreign chemical substances regulations</p> <p>Execute registration as required under new and existing domestic and foreign chemical substances regulations (ongoing)</p> <p>Comply with domestic and foreign chemical substances regulations (ongoing)</p> <p>Continue conducting education concerning chemical substances regulations</p> <p>Hold explanatory sessions concerning foreign chemical substances regulations (ongoing)</p> <p>Hold explanatory sessions concerning chemical substances regulations</p> <p>Hold explanatory sessions concerning domestic chemical substances regulations</p> <p>Launch operation of chemical substances management system</p>

5. ISO 14001 is an international environmental management standard.

6. The Pollutant Release and Transfer Register (PRTR) stipulates the necessity of reporting the transfer volume and emission volume of substances that could cause damage to human beings or wildlife based on the Act on Confirmation, etc., of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof.

7. Equipment containing low concentrations of PCBs refers to transformers and other equipment containing low concentrations (0.5 ppm – 5,000 ppm (1 ppm = 1/1,000,000)) of polychlorinated biphenyl PCB.

8. The Regulation on Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) is a regulatory standard concerning chemical substances and their use established in Europe in 2007 for the purpose of preserving health and the environment. When the volume of chemical substances used in Europe exceeds a fixed level, registration, evaluation, authorization, and restriction standards apply.

RC ACTIVITY RESULTS AND GOALS

Fiscal 2017 Activity Results		Fiscal 2018 Activities and Goals
<b>Quality Assurance/ Pharmaceuticals</b>	<ul style="list-style-type: none"> <li>Implemented quality audits (system audits) of 22 manufacturing contractors</li> <li>Received 52 complaints concerning products</li> <li>Fortified management structure through audits and employee education</li> </ul>	<ul style="list-style-type: none"> <li>Fortify quality assurance structure for outsourced manufactured products</li> <li>Confirm quality assurance situation of manufacturing contractors</li> <li>Clarify quality assurance structure</li> <li>Reduce complaints concerning products to less than 42</li> <li>Fortify cooperation between quality assurance division and manufacturing division</li> <li>Promote inspections of raw materials suppliers (including packaging materials)</li> <li>Transfer ISO 9001 to 2015<sup>9</sup></li> <li>Fortify quality assurance structure for Bioscience Division</li> <li>Implement audits for manufacturing contractors for reagents for research and for measurement products</li> <li>Fortify audits for bioscience manufacturing contractors</li> <li>Fortify quality assurance structure for manufacturing and sales of pharmaceuticals</li> <li>Implement audits of pharmaceutical manufacturing contractors and fortify education for related parties</li> </ul>
<b>Logistics Safety</b>	<ul style="list-style-type: none"> <li>Recorded 35 incidents (86 ppm)</li> <li>Achieved a small delivery complaint rate of 98 ppm<sup>10</sup></li> <li>Suffered 3 major accidents</li> <li>Experienced 6 logistics accidents</li> </ul>	<ul style="list-style-type: none"> <li>Reduce logistics incidents and complaints to less than 50 ppm</li> <li>Lower small delivery complaint rate to less than 100 ppm</li> <li>Aim for zero major accidents</li> <li>Ensure safety for piecework at complexes</li> </ul>
<b>Public Dialogue</b>	<ul style="list-style-type: none"> <li>Implemented CSR explanatory sessions and speaker events with experts (8 explanatory sessions, 383 participants; 4 speaker events, 293 participants)</li> <li>Implemented media training (September 2016)</li> <li>Implemented RC community discussion</li> <li>Implemented factory visits</li> <li>Implemented exchange opportunities with municipalities</li> </ul>	<ul style="list-style-type: none"> <li>Upgrade content of CSR activities</li> <li>Promote risk communication (ongoing)</li> <li>Promote cooperation with local community (ongoing)</li> </ul>

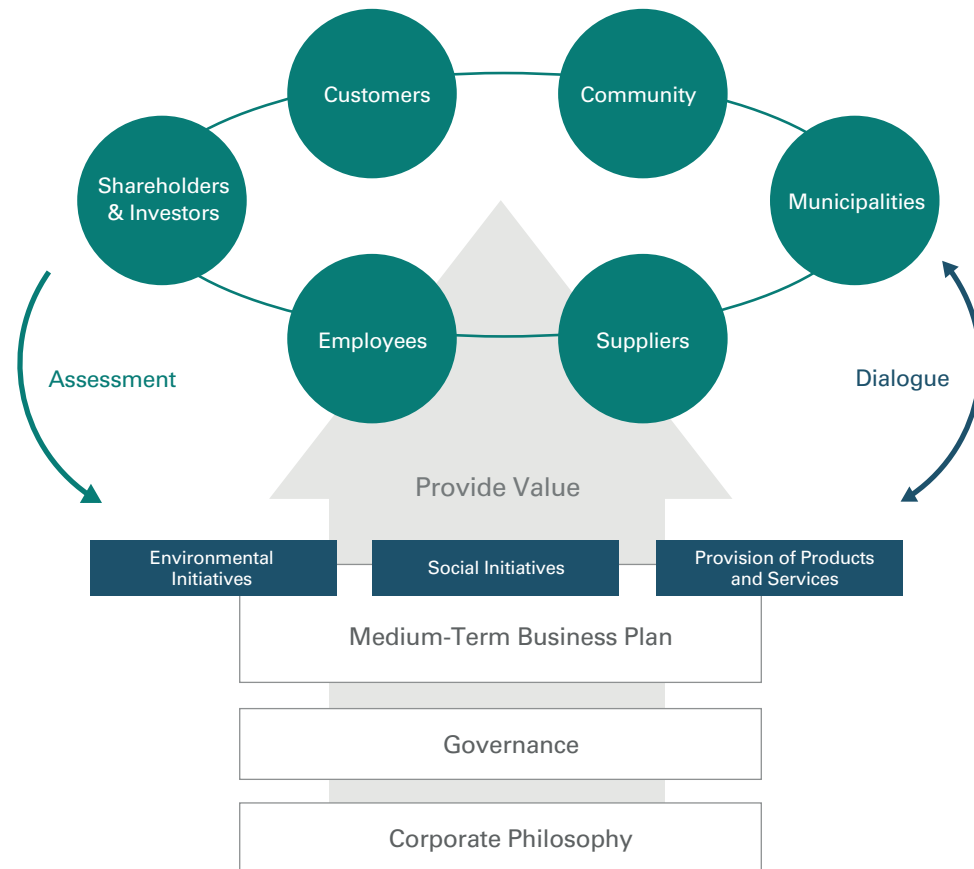
9. ISO 9001 is an international product management standard.

10. The small delivery complaint rate = number of complaints / incidents of transport x 1,000,000.

## TIES WITH OUR STAKEHOLDERS

Tosoh's main stakeholders are its shareholders, investors, customers, suppliers, and employees; the local communities of which it is a part; and the government administration and other municipal authorities of those communities. We believe that it is important in all of our business activities to build relationships of trust with each of our stakeholders.

Our various business activities are grounded in our corporate philosophy, governance system, and medium-term business plan. As a result, we provide quality products and services and engage in environmental and social initiatives. Furthermore, the conversations that we have with stakeholders, and their assessments of us, represent invaluable insights that we reflect in our business activities. We will continue to promote CSR initiatives in our business activities to ensure that we earn and maintain the trust and confidence of our stakeholders.



## TIES WITH OUR STAKEHOLDERS

### Dialogues with Stakeholders

Tosoh provides information about its business activities through its public website, its CSR report, and other means. We also gain invaluable insights from conversations with our stakeholders and from listening to their assessments of Tosoh.

### CSR Lectures

As of fiscal 2017, Tosoh has switched from publishing a Responsible Care (RC) report to publishing a CSR report. We asked in preparation for the change that Sophia University professor Yoshinao Kozuma speak at Tosoh to help employees understand CSR. After his presentation, participants were asked to complete a questionnaire. Their comments included the following: "I have a general understanding of CSR," "I would like the company to create more opportunities like this in the future," and "I would like you to explain the relationship between CSR and RC." We will as a result hold more such events to further our employees' awareness and understanding of CSR's implications.

	Role	Communication Tools	Communication Opportunities
Shareholders and investors	Disclosing business results, business policies, management strategy, and other information at the right time and as appropriate Building relationships of trust with shareholders and investors Ensuring appropriate return on investment	Annual reports Financial summaries, financial presentations Securities reports Business reports	General meeting of shareholders Financial reports presentation Individual meetings Teleconferences Plant tours
Customers	Providing safe, secure, consistent, and high-quality products and service Building relationships of trust with customers Developing products that meet customer needs and improving customer satisfaction	Product pamphlets Safety data sheets (SDS) Help desk	Business activities Quality assurance support Exhibitions User audits
Local communities	Ensuring safe and secure operations Contributing to community development Building and maintaining relationships of trust with local communities	Pamphlets about the Nanyo and Yokkaichi Complexes and the laboratories	Plant tours Exchange through community events Community dialogues and opportunities to exchange ideas
Municipalities	Complying with laws Disclosing information appropriately and in timely fashion	—	Filings Meetings
Suppliers	Ensuring fair trade		Purchasing activities
Employees	Providing a pleasant and meaningful place to work Improving systems and education to maximize the abilities of employees Ensuring stable lives for employees and their families	Internal newsletters Intranet Consultation and reporting hotlines	Labor-management council Research Business reports (interviews with superiors) Workplace meetings

# *Safety*

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## SAFETY ACTIVITIES

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### Safety and Disaster Prevention Activities

In pursuit of a working environment free of accidents and work time lost because of accidents, Tosoh has continuously undertaken a variety of safety-related activities. In fiscal 2017, unfortunately, there were two abnormal events and six cases of work time lost because of accidents, but the company's safety activities are beginning to produce results.

### Toward the Eradication of Industrial Accidents

In July 2013, the Japan Petrochemical Industry Association enacted *The Action Plan for Industrial Safety*, which incorporates guidelines for member companies. Following the accident and damage at a Tosoh facility, the company has taken action in accordance with the five action items laid out in the plan.

### 1. Commitment from Business Owners to Industrial Safety

The commitment of Tosoh's president is represented by the Basic Principles Regarding the Environment, Safety and Health.

Furthermore, inspiring executives and visiting plant control rooms to communicate directly with operators are ways by which the president is spreading the message regarding industrial safety.

### 2. Establishment of Goals for Industrial Safety

Our fiscal 2017 objectives were zero accidents and zero work time lost because of accidents.

### 3. Formulation of Implementation Plan for Safety Measures

Measures and activities undertaken by the RC Committee:

#### a) Implementation of comprehensive basic safety activities

Comprehensive observance of basic safety rules (greetings, compliance with regulations, 5S, pointing and calling, reporting, communicating, and discussing, etc.) and of complex executives leading by example

Proactive promotion of hazard prediction training activities to enhance the awareness of potential dangers (danger prediction training)

Fortification of 5S activities

#### b) Promotion of human resources cultivation through the fortification and upgrading of education

Promotion of maintenance and conducting of education, including the development of manuals incorporating background information on operating technologies

#### c) Promotion of risk assessment for emergency situations or modifications

Launch of what-if study operational method

\*Accident is defined as an abnormal event or similar accident as outlined in laws and regulations concerning petrochemical complexes.

## SAFETY ACTIVITIES

## d) Promotion of activities to eradicate similar accidents or industrial accidents

Conducting of case studies of near misses and the application of accident information\*

Promotion of case study research on accidents using why-why analysis

Consistency of operating as a company that uniformly manages accident case studies via an accident/damage information database (with search function)

## e) Securing of safety inside facilities for contract work

Fortification of education, guidance, and evaluations for affiliated companies

Implementation of risk assessment for work inside facilities and the promotion of risk-mitigating measures

## f) Promotion of Internet of Things application

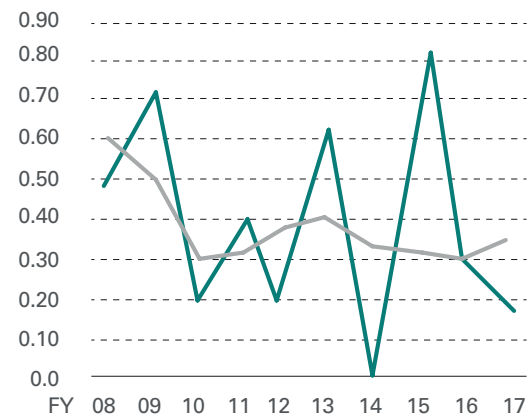
Promotion of the introduction of Internet of Things technology to optimize operations and enhance safety-related technology

## 4. Investigation and Evaluation of Progress toward Objectives and the Implementation of Measures

Fiscal 2017 objectives and results:

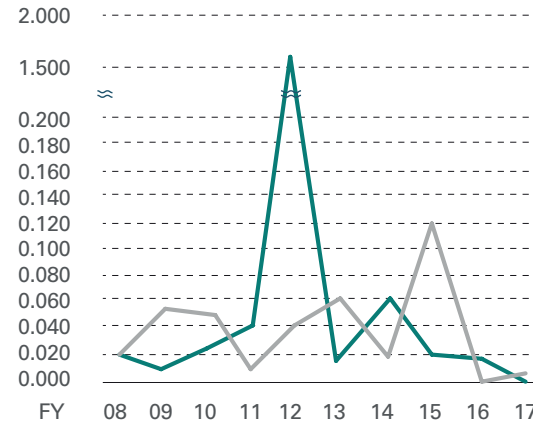
	Objectives	Results
Accidents (abnormal events)	0	2
Work time lost because of accidents	0	6 (1 employee, 5 affiliated companies)

## Occupational injury rate



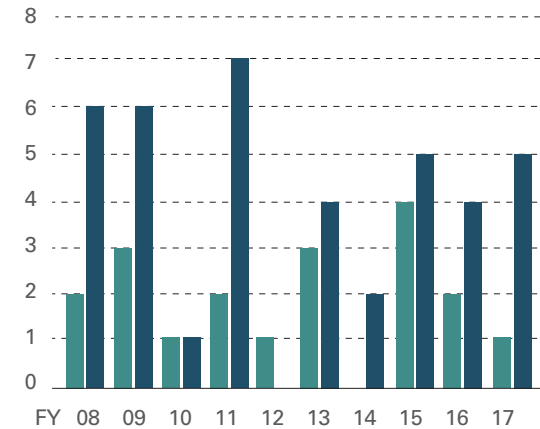
— Tosoh average — Japan Chemical Industry Association average

## Occupational injury severity rate



— Tosoh average — Japan Chemical Industry Association average

## Number of occupational injuries



■ Tosoh employees ■ Affiliated company employees

\*A near miss is a case where a disaster or accident nearly occurred

## SAFETY ACTIVITIES

**Promotion of Voluntary Safety Activities**

Among its RC activities, Tosoh enhances safety through the promotion of strategic risk assessment for unscheduled times and modifications. And for the purpose of promoting voluntary safety activities, Tosoh presents awards to workplaces with excellent safety results (no work time lost because of accidents) and with superlative 5S activity records. While headquarters and the complexes conduct joint comprehensive disaster preparedness training on a continuous basis, the complexes, furthermore, also participate in disaster preparedness contests to further upgrade their level of preparedness. We will continue to use the award criteria of external organizations, such as the Japan Petrochemical Industry Association. We will also conduct lectures by academics on safety to cultivate of a culture of safety.

**Promotion of Countermeasures for Earthquakes and Tsunami**

Seismic measures for high-pressure gas storage tanks: A plan for seismic measures, such as spherical gas tanks, is being formulated ahead of schedule, with the goal of completing the measures by 2020.

Achieving earthquake resistance for important structures: Seismic evaluation and fortification for important structures, such as the control rooms of the employee residences and the complexes, will be considered, and fortification will be executed sequentially.

**Application of Activities for Logistics Safety**

In fiscal 2017, three severe logistics-related accidents occurred. To prevent the recurrence of such accidents, primary contractor Tosoh Logistics provided guidance and confirmed the implementation status of preventive measures on the part of affiliated companies. Tosoh will continue to undertake measures to eradicate accidents.

**Acquisition of Certification for High-Pressure Gas**

In November 2016, the Yokkaichi Complex completed the renewal of its certification as a high-pressure gas safety certification agency. The Nanyo Complex began preparing to apply for the same certification.

	Overview	Causes	Countermeasures
<b>September</b>	A vessel transporting liquid caustic soda tilted during transport. No injuries to personnel or damage to the environment.	Problem/malfunction/insufficient or improper maintenance concerning water ballast piping	Repair of defective areas Fortification of inspections
<b>October</b>	A truck transporting products collided with a large tractor-trailer, causing part of cargo to fall onto the road and resulting in some product leakage. No injuries to personnel.	Lack of advance warning due to illness	Confirmation of physical condition prior to departure
<b>March</b>	A vessel carrying liquid caustic soda ran aground. No injuries to personnel or damage to the environment.	Insufficient or improper handover of duties Insufficient attention paid when one person on duty	Proper implementation of duty handover Implementation of field training for vessel crew Use of GPS course line

## SAFETY REFORM INITIATIVES

**REBUILDING TOSOH AS A SAFE CHEMICAL MANUFACTURER**

Safety Pledge: We pledge to be ever mindful of safety and the sanctity of human life, to continue to clearly pass on this commitment to future generations so that the lessons learned from this accident may never be forgotten, and to exert our best efforts to prevent such an accident from ever happening again.

**Kenichi Udagawa**

Former President  
November 13, 2012

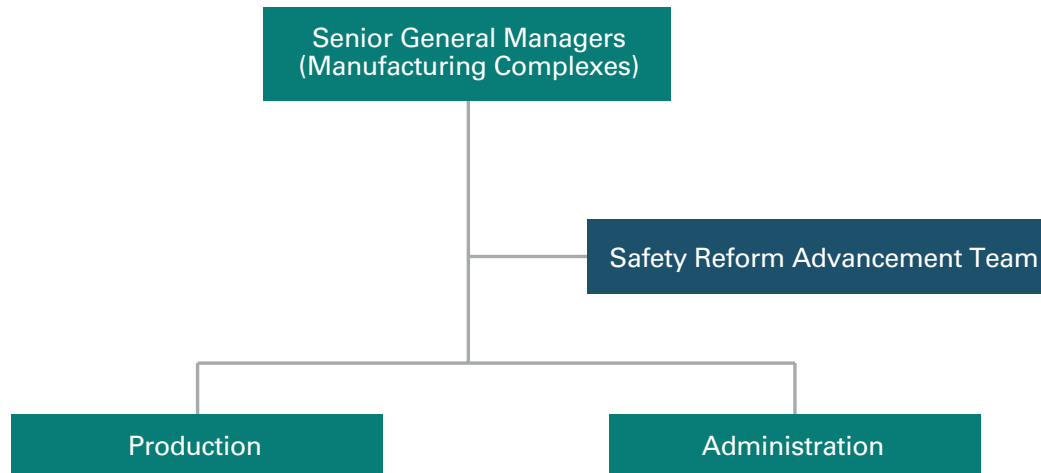
Tosoh will not forget the lessons of the November 13, 2011, explosion and fire at its Nanyo Complex's No. 3 Vinyl Chloride Monomer Plant. The company is moving forward with safety reforms to ensure that it is a safe chemical manufacturer where this kind of accident never happens again.

**Issuance of Safety Reform Guidelines**

To resolve the issues resulting from the explosion and fire, Tosoh issued *Safety Reform Guidelines* on June 26, 2012. To promote safety reform activities based on the *Safety Reform Guidelines*, in August 2012 Tosoh established Safety Reform Promotion Teams to be led by the deputy senior general managers at the Nanyo and Yokkaichi Complexes.

**Adoption of Safety Reform Activities**

Over the past five years, Tosoh has conducted activities concerning the five action items in the *Safety Reform Guidelines*. Initially, the Safety Reform Promotion Teams led activities undertaken, but at present most activities are being overseen by each production division. The Administrative Division has adopted the activities into its daily operations, and the activities are gradually permeating other divisions across the company. Examples of key activities are introduced on the next page.



## SAFETY REFORM INITIATIVES

**THE PRESIDENT'S DETERMINATION****President's Control Rooms Visits**

Tosoh's president has visited the Nanyo and Yokkaichi Complexes each year since fiscal 2013. These visits are an opportunity for the president to exchange thoughts about safety directly with workers.

Sometimes what the president hears from frontline people prompts managerial decisions about needed reforms. These include, for example, decisions to improve wastewater treatment facilities, to remove idle equipment, to strengthen preventative maintenance, and more.

Over the past five years, the president has visited 164 control rooms and offices and has interacted with nearly 4,000 workers.

**CULTIVATING A CULTURE OF SAFETY****Hazard Prediction Training Activities**

The Nanyo Complex brings in hazard prediction trainers to teach employees how to make hazard prediction training a daily habit.<sup>1</sup> This program is showing solid results. By fiscal 2017, workplace accidents were half what they had been in fiscal 2013, before this initiative began.

1. Hazard prediction training involves small group discussions of whatever can lead to dangerous workplace and job conditions. Its goal is to raise the awareness of dangers and of what needs to be done to eliminate them.

The Yokkaichi Complex is attempting to duplicate the successes of the Nanyo Complex's hazard prediction training activities. Its efforts to stimulate hazard prediction training initiatives reflect the strengthening of hazard prediction training activities at all of Tosoh's business units.

**5S and 3S Activities**

The Nanyo and Yokkaichi Complexes are coordinating 5S (sort, set in order, shine, standardize, sustain) and 3S activities.<sup>2</sup> These vast workplaces are doing so because such activities are traditionally left to the people on the shop floor.

Workers at the Nanyo and Yokkaichi Complexes maintain their workplaces in line with the 5S's and particularly with the 3S's of sort, set in order, and shine. This enables them to find what they need when they need it and to readily observe changes in plant and equipment operating conditions.

Workers at both complexes are expanding their 5S and 3S activities beyond hands-on maintenance. They are also developing maintenance management guidelines and inspecting each other's workplaces.

2. The 5S's are sort, set in order, shine, standardize, sustain (*seiri, seiton, seiso, seiketsu, shitsuke*), and the 3S's are the most important of these: sort, set in order, and shine.

**DISCLOSURE AND USE OF INFORMATION****Risk Communication Activities<sup>3</sup>**

Tosoh is improving how its internal and external communications and public relations systems respond in the event of an accident. This includes our preparation of a handbook spelling out the procedures and precautions to be followed during an incident involving any one of our products. We have distributed this handbook to local authorities and residents in the vicinity of our facilities. The handbook is being used to maintain dialogue with local communities regarding risk communication activities.

**Why-Why Analysis Accident Studies**

To prevent the recurrence of accidents and problems, Tosoh conducts root cause analyses as a matter of principle. This is because we believe that it is vital to plan and execute countermeasures in advance and not to respond to incidents haphazardly. At Tosoh, we dig deeply into accident information and share that information across the organization through studies of past accidents using why-why and other methods of analysis. In fiscal 2017, this resulted in the implementation, for example, of problem countermeasures for the special high-voltage cables deployed at Tosoh facilities.

3. Risk communication is a program of sharing accurate information about product risks with local authorities and communities to improve mutual understanding and trust.

## SAFETY REFORM INITIATIVES

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### Visualization Using the Internet of Things

In fiscal 2017, Tosoh introduced its Visualization Dashboard. The dashboard consolidates on a single large monitor plant information that used to be spread across diverse systems. The Visualization Dashboard is an aspect of Tosoh's initiatives using IoT, or Internet of Things technologies to visualize plant information.\*

With visualization technology, it becomes possible to readily see issues that used to be difficult to notice. This is expected to contribute to safer plant operations.

### ENHANCED EDUCATION AND TRAINING

#### Training Using a Practice Plant

Tosoh opened a training plant for employee education and study at the Nanyo Complex in June 2016. The plant provides trainees with hands-on experience in plant behavior and control. The goal is to improve employee preparedness for abnormal events. Nearly 70 employees participated in 14 training sessions at the plant in fiscal 2017.

### Chemical Engineering Education and Certification System

Outside specialist consultants help Tosoh further the chemical engineering expertise of its manufacturing engineers. Engineers who attain a specified level of competency following training and achievement tests are awarded the title of Tosoh Senior Chemical Engineer, which is a real motivator. In fiscal 2017, 15 engineers were so acknowledged.

### CONTINUOUS INNOVATION AND IMPROVEMENT

#### So We Do Not Forget the Lessons of a Terrible Accident

To make sure that we are reminded of the lessons of our November 2011 accident, a safety monument is being erected on the grounds of the Nanyo Complex, and documents relating to the accident are being retained and displayed. November 13 of each year has been designated Safety Day, and safety experts give talks and hold safety activity conferences at the Nanyo and Yokkaichi Complexes.

### Improving Preventative Maintenance

Over the three-year period from fiscal 2015 to fiscal 2017, Tosoh invested nearly ¥10 billion to improve preventative maintenance. We will continue our preventative maintenance initiative in fiscal 2018.

An example of a preventative maintenance initiative is the inspection of pipe exteriors for corrosion.

\*The Internet of Things refers to the interconnection through the Internet of computing devices embedded in everyday things to facilitate the exchange of information about and the control of these things.

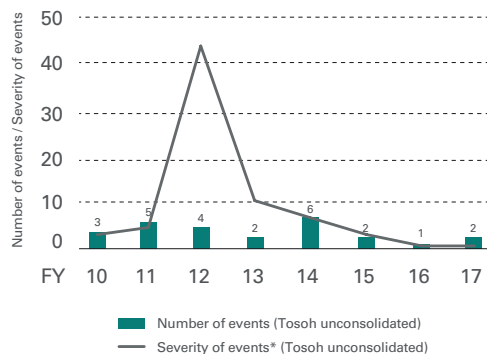


## SAFETY REFORM INITIATIVES

### Manager-Level Safety Improvement Budgeting Authority

Tosoh is giving workplace managers budgeting authority for safety measures. This will speed workplace safety improvements (total annual budget = approximately ¥400 million).

#### Occurrence of abnormal events



An example of a workplace safety improvement is the installation of covers on pipe flanges to prevent scattering.

The incidence of accidents is decreasing as a result of steady and consistent safety reforms.

### Minamata Convention Compliance

The Minamata Convention on Mercury was adopted internationally in October 2013. In 2016, the Japanese government enacted revisions to Japan's Act on Preventing Environmental Pollution of Mercury, Air Pollution Control Act, and Law Concerning Waste Disposal and Scavenging based on that convention.

Earlier, in 2013, Tosoh had established an RC directive to reduce its number of facilities using mercury by ceasing the use of mercury at any renewed facility. To date, all other Tosoh facilities are confirmed to be within the newly revised mercury concentration standard values set for smoke exhaust emitted from boilers and cement kilns.

Through the use of materials and fuels with low to no mercury content, Tosoh will work to suppress mercury concentrations in its smoke exhaust. The company will likewise protect the environment through the improved processing of industrial waste containing mercury.

### A MANUFACTURING COMPLEX WHERE EVERYONE HAS A LEADING ROLE TO PLAY IN SAFETY

Initially, it was senior management that took the lead in implementing safety initiatives at the Nanyo Complex. Now, however, non-management employees have taken over in ensuring that these activities take root. As evidence, note that abnormal events at the Nanyo Complex have shrunk to zero over the past two years and workplace accidents are likewise declining.

Everyone who works at the complex shares a unity of purpose. This is what will sustain these initiatives. Everyone is working with confidence to make the Nanyo Complex the safest and most profitable chemical complex in the world.

#### Akira Hironaga

Vice President  
Deputy Senior General Manager, Nanyo Complex; Team Leader, Safety Reformation Advancement

\* The severity of events is a metric used to assess the severity of an accident based on criteria set by the Japan Petrochemical Industry Association and conforms with the evaluative method of the US Center for Chemical Process Safety (CCPS).

# *Environment & Society*

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## ENSURING SAFE, SECURE PRODUCT DELIVERY

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Across the entire supply chain—from R&D, the procurement of raw materials, and manufacturing to quality assurance, sales, and distribution—Tosoh undertakes activities to ensure the safe, secure provision of products and services of the highest-possible quality.

### R&D INITIATIVES

Tosoh applies its newly developed and its existing technologies to the origination of new products and the enhancement of existing products. In so doing, it achieves its purpose of providing products of value to customers.

- Ensuring the safety of new products
- Ensuring and enhancing the quality of new products
- Developing high-value-added products
- Meeting customer needs
- Enhancing products

### QUALITY ASSURANCE INITIATIVES

Tosoh has implemented a quality management system (QMS) to maintain and enhance product quality. Furthermore, we place great emphasis on close communication with our customers to ensure swift responses to their inquiries.

- Sustaining QMS activities
- Inspecting manufacturing workplaces
- Evaluating manufacturing contractors
- Certifying legal and regulatory compliance
- Formulating measures to prevent the recurrence of product malfunctions and confirming the implementation of such measures

### PROCUREMENT INITIATIVES

Tosoh communicates with business partners and works with them to ensure a stable supply of raw materials to meet customer requirements.

- Pursuing the best-possible procurement conditions
- Being selective regarding business partners
- Confirming the quality of items to be procured
- Collecting and providing of information concerning procurement
- Managing delivery

### SALES INITIATIVES

Through close, regular communication, Tosoh ascertains customer needs. It then works in cooperation with its various divisions to provide swift, satisfactory responses to customer inquiries with the objective of earning and maintaining customers' trust.

- Pursuing customer satisfaction
- Providing unprecedented value
- Acquiring customers
- Conducting marketing activities

### MANUFACTURING INITIATIVES

Tosoh maintains and enhances product quality by managing its raw materials supply and its manufacturing processes. We also work to achieve the safe manufacturing of our products by ensuring the safe operation of our manufacturing facilities and safe conditions for our employees.

- Supervising operations at plants (safety, quality)
- Managing and confirming raw materials supply
- Educating facility operators (safety, quality)
- Conducting disaster preparedness training
- Patrolling workplaces

### LOGISTICS INITIATIVES

Tosoh ships products from its core bases, including the Nanyo and Yokkaichi Complexes, to domestic and international destinations. It works to raise transport quality and safety and to reduce environmental loading.

- Enhancing transport efficiency
- Conducting safety training
- Enhancing transport vehicles and packing materials
- Conducting comprehensive temperature control
- Issuing yellow cards comprehensively



## ENSURING SAFE, SECURE PRODUCT DELIVERY

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### R&D

Tosoh offers enhanced products and services and expanded product and service lines through the fusion of customer needs with Tosoh technologies.

Tosoh's development of new products may involve the first-time handling of compounds or chemicals. The company has for this reason established Product Safety Review Regulations to maintain the safety of its workers and customers from raw material to finished product. During the development and prior to the release of a new product, a Product Safety Review Committee of R&D, manufacturing, quality assurance, and sales personnel audits the product's quality and intended use, methods of manufacture and shipping, and conformity with laws and regulations.

### Procurement

Tosoh procures raw materials that it requires for manufacturing products from domestic and international sources. Its diversified network of sources and establishment of long-term agreements with those sources and its spot-market procurement practices ensure a steady supply of raw materials.

Furthermore, Tosoh investigates the chemical content and quality of the raw materials it intends to procure to ensure consistent quality and a small environmental footprint. We will continue to procure raw materials with the objective of providing our customers with a steady supply of safe products of the highest-possible quality.

### Manufacturing

Tosoh regularly conducts disaster drills at its Nanyo and Yokkaichi Complexes and all its plants in preparation for any emergency. In addition, facility managers conduct monthly inspections of all manufacturing sections to improve disaster prevention and safety and to protect the health of employees. The Tosoh Group's Environment, Safety and Quality Control Division has constructed an incident and injury information communication system by which to utilize and relay information gleaned from the disaster drills, the monthly inspections, and actual incidents to prevent and deal with disasters and incidents.

### Quality Assurance

As an indication to our customers that they can use our products confident in their safety, we have acquired ISO 9001 certification at our Nanyo and Yokkaichi Complexes. This is the International Organization for Standardization (ISO)'s recognition that we have in place a comprehensive quality management system (QMS) at each of those complexes.

We inspect our manufacturing facilities and those of our manufacturing contractors and of the makers of our raw materials and containers, and we inspect our logistics sites. In the event of quality issues, our manufacturing, quality assurance, and logistics divisions work to determine the cause and to formulate and implement solutions. We conduct our activities in this regard and report them to customers as swiftly as we can.

### Logistics

A large part of Tosoh's RC mission is to safely deliver its products to its customers. In fulfilling this mission, we partner with Tosoh Logistics Corporation, our principal logistics contractor, and regularly meet with shipping companies to, among other things, conduct training on handling chemical products, including drills for emergency contingencies.

To further assist shipping companies should accidents occur in their transport of hazardous substances, Tosoh issues them with yellow cards that contain information on emergency measures for and additional sources of information on hazardous substances. Tosoh also issues container yellow cards in an effort to ensure safe small container transport.

## ENSURING SAFE, SECURE PRODUCT DELIVERY

**Chemical Safety**

Tosoh complies with domestic and foreign regulations, assesses product safety, and provides product information to customers in its efforts to ensure the safe handling of its chemical products.

In accordance with the Globally Harmonized System (GHS) of Classification and Labeling of Chemicals, Tosoh provides safety data sheets (SDS) and labels with its products that contain crucial information for their handling. In fiscal 2017, Tosoh responded to the expanded range of hazardous substances requiring labeling.

Tosoh conducts notification, registration and application procedures related to such domestic laws as the Chemical Substance Control Law,<sup>1</sup> the Industrial Health and Safety Act,<sup>2</sup> and the Pharmaceutical and Medical Device Act.<sup>3</sup>

Tosoh complies with such foreign regulations pertaining to chemicals as Europe's Regulation on Registration, Evaluation, Authorization and Restriction of Chemicals (REACH).

Tosoh participates in the voluntary Japan Initiative of Product Stewardship (JIPS), a program promoted by the Japan Chemical Industry Association that exists to minimize the effects of chemicals on health and the environment. Tosoh continues to evaluate and publish product risk information for public view.

In fiscal 2017, 109 employees participated in an explanatory session on international regulatory standards as part of Tosoh's company-wide educational program.

1. Japan's Chemical Substance Control Law governs the inspection of chemical substances and imposes regulations related to manufacturing, etc.

2. Japan's Industrial Health and Safety Act

3. Japan's Pharmaceutical and Medical Device Act ensures the quality, validity, and safety of pharmaceuticals and medical devices.

## ENERGY CONSERVATION INITIATIVES

Tosoh participates in the Japan Chemical Industry Association (JCIA)'s Commitment to a Low Carbon Society and promotes energy conservation initiatives with the goal of a sustainable society in mind. In fiscal 2017, Tosoh added a carbon dioxide (CO<sub>2</sub>) reduction assessment to its capital spending indicators to promote energy conservation investment as part of its efforts to reduce its emissions of greenhouse gases.

### CSR REPORT READINGS (ENERGY CONSERVATION INITIATIVES)

Tosoh's participation in the JCIA's commitment to a Low Carbon Society reflects its compliance with the greenhouse gas reduction measures undertaken by the Japanese government. We target a 3% reduction in our business-as-usual (BAU) energy production CO<sub>2</sub> emissions by fiscal 2031.<sup>1</sup> We are establishing a company-wide energy management structure to achieve this aim.

Under this initiative, we are promoting a comprehensive energy conservation strategy that includes improvements in units of energy consumed, the use of alternative energy sources, reviews of energy-saving investment standards, and the use of government energy conservation subsidies. Tosoh thus continues its efforts to proactively conserve energy and resources as a responsible member of a more sustainable society.

#### Akihiro Yoshimizu

Vice President  
General Manager, Production &  
Technology Planning

### Fiscal 2017 Energy Conservation Activities

The fiscal 2017 energy unit index stood at 96.4% compared with fiscal 2010, and improved 1.1 percentage points compared with fiscal 2016. These results are due to greater operating efficiencies from higher operating rates at the Nanyo Complex and to steady progress in energy-saving and facilities upgrades at each of Tosoh's plants. Although our greenhouse gas emissions, such as of CO<sub>2</sub> from primary energy consumption, have increased with rising production volumes, we will continue to engage in improving our basic energy units and reducing our greenhouse gas emissions through energy-saving measures.

### Investments in Energy Saving and in Greenhouse Gas Reductions

In fiscal 2017, Tosoh's leading investments in energy saving and in greenhouse gas reductions focused on upgrading to energy-efficient electrolytic cells at the Nanyo and Yokkaichi Complexes and on introducing fuel optimization control technology at the Yokkaichi Complex's power plant. These investments have yielded a reduction in greenhouse gas emissions of approximately 12,000 metric tons a year from the Nanyo Complex and of nearly 5,000 metric tons a year from the Yokkaichi Complex. We plan to take advantage of a major upgrade of the Yokkaichi Complex to enhance the efficiency of its heat recovery systems.

### Environmental Initiatives in Logistics

Fiscal 2017 saw a 3.6% increase in CO<sub>2</sub> emissions compared with fiscal 2016 that was attributable to the logistics of increased product shipments. Tosoh also achieved a 0.5-point improvement in its logistics basic energy units through a modal shift to ship and rail transport.<sup>2</sup> We will continue our efforts to reduce emissions by using such energy-efficient transport as ships and railroads.

1. BAU emissions = production x base year (Japan Chemical Industry Association 2005 edition) CO<sub>2</sub> basic unit.

2. Logistics basic energy units = consumption converted to crude oil (kiloliter) / transport ton-kilograms (1 million ton-kilograms).

## SAVING POWER TO LIGHT TOMORROW

Each department at Tosoh chooses its own energy-saving themes and energy- and resource-conservation initiatives to prevent global warming. This report presents some of those initiatives.

### AIMING TO BE THE BEST AT PER-UNIT ENERGY CONSUMPTION

#### Better Electrolytic Cells at the Nanyo Complex

The Nanyo Complex's salt electrolysis plant applies electrolytic cells to salt water to produce caustic soda through the process of electrolysis. This, the largest such plant in Japan, produces nearly one-third of the caustic soda produced domestically. To conserve energy, we are always trying to reduce the units of energy used by this electrolysis plant.

Electrolysis consumes enormous energy, and in fiscal 2010 we began replacing the plant's electrolytic cells with energy-efficient models. In our ceaseless efforts to evolve production technology in support of energy conservation, in fiscal 2014 we developed and implemented a new electrolytic cell capable of the world's highest levels of energy conservation. Installation of this state-of-the-art electrolytic cell at the plant has lowered its CO<sub>2</sub> emissions 3% compared with fiscal 2010, for an annual reduction of nearly 60,000 metric tons of CO<sub>2</sub>.

### STRIVING FOR EFFECTIVE AND ENVIRONMENTALLY SENSITIVE LOGISTICS

#### Greater Efficiency with Panamax Vessels

The coal used as fuel to generate power at the Nanyo Complex is transported by ships from Australia and other overseas sources. With the goals of increasing the efficiency of transport and of reducing the greenhouse gases produced in transporting its coal, Tosoh encourages the use of large transport ships known as Panamax vessels.\* The company modified its docking facilities to accommodate these vessels and opened the modified docks for use in October 2016. Although insufficient water depth prevents Panamax ships from docking fully laden, even at less-than-full load capacities these vessels carry about 50% more coal than conventional vessels. This has significantly diminished the burning of bunker C ship fuel per unit of coal shipped.

### MOVING TOWARD ADVANCED ENERGY CONSERVATION TECHNOLOGY

#### Optimized Ethylene Operating Conditions

In fiscal 2014, Tosoh installed an advanced control system that anticipates changes in ethylene plant operating states. Specifically, the system anticipates changes in raw materials or operating conditions. The system thus maintains stable yet optimal plant operating conditions, executing extremely accurate control to rival that of the most skilled plant operators. In particular, the system establishes the highest-possible level of energy efficiency.

\*Panamax vessels are the largest that can transit the Panama Canal. They have a deadweight (D/W) tonnage of approximately 60,000 - 80,000 metric tons.



SAVING POWER TO LIGHT TOMORROW

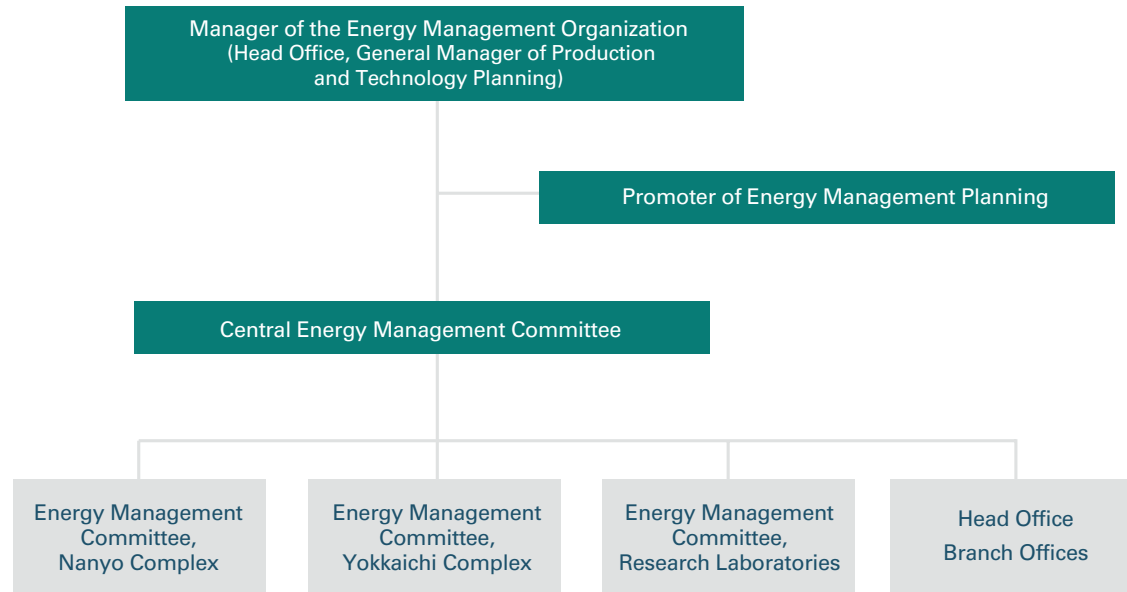
**RECYCLING TO PREVENT GLOBAL WARMING**

**Toward a Recycling-Oriented Society**

Tosoh's cement plant uses waste products and by-products as raw materials and as alternative sources of thermal energy. Starting in 2007, the plant began accepting and processing shipments of plastic waste. In 2015, it began taking automobile shredder residue (ASR) and appliance and other shredder residue (SR). In fiscal 2017, it processed nearly 18,000 metric tons of plastic waste, ASR, and SR, lowering the CO<sub>2</sub> released from its burning of fossil fuels nearly 33,000 metric tons. Waste heat recovery and energy-conservation measures have improved energy consumption units at the cement plant about 5% over a five-year period.

**Energy Management Organization**

Tosoh has established an energy management organization in accordance with Japan's Act on the Rational Use of Energy. That organization is led by the general manager of production and technology planning and is charged with rationalizing and reducing the use of energy in Tosoh's business units and transport of freight. Its job includes improving the company's energy consumption units and searching for alternative energy sources.



## ENERGY-SAVING PRODUCTS CONTINUE TO EVOLVE

Progress in developing chemicals is essential to solving many of the issues confronting society. With that in mind, the Tosoh Group engages in research and development based on a careful assessment of society's needs. Energy conservation is among society's pressing challenges, and Tosoh offers products to address this issue.

**CHLOR-ALKALI GROUP**

**Concrete Pavement.** In contrast with asphalt pavement, the durability of concrete pavement is high and its life cycle cost is low. Furthermore, rolling resistance is low, resulting in reduced fuel costs and reduced environmental loading.

**Vinyl Chloride Resin<sup>1</sup>.** Vinyl chloride resin consists of approximately 60% salt raw material. This saves oil resources and the volume of CO<sub>2</sub> emitted during manufacturing.

**Rigid Urethane Foam.** Rigid urethane foam is used as insulation in construction and for refrigerators. It is effective in improving heating and cooling efficiency for homes and contributes to convenience and energy savings in thin-wall refrigerators, which can handle increased content.

**Heat-Resistant Paint<sup>2</sup>.** Application of heat-resistant paint to the roofing of buildings aids in suppressing room temperatures inside the buildings. This paint helps to combat the urban heat island phenomenon and contributes to energy conservation and reduced CO<sub>2</sub> emissions.

**Plastic Sash Compound<sup>3</sup>.** Coupled with double glazing, this plastic sash compound provides superior insulation to that provided by aluminum sashes. And this results in energy savings in heating and cooling, thereby reducing CO<sub>2</sub> emissions and making a significant contribution to preserving the environment.

**PETROCHEMICAL GROUP****Ethylene Vinyl Acetate (EVA) for Sealing**

**Solar Cells.** EVA offers superb durability and total light transmittance and as such is ideal for sealing and protecting solar cells.

**Polyphenylene Sulfide (PPS) Resin.** Given its insulation qualities, resistance to heat, and strong adhesion to metals, PPS is used in the housing for hybrid vehicle generator motors and smartphone housing and battery covers.

**SPECIALTY GROUP**

**Solar Cell-Grade Diethylzinc<sup>4</sup>.** Solar cell-grade diethylzinc is becoming popular for use in zinc oxide film formation for transparent conductive film for thin-film solar cells.

**High-Speed Gel Permeation Chromatography (GPC) Column.** High-speed GPC columns are used in the separation and analysis of high molecular weight polymers. Compared with standard columns, they offer analysis in half the time using only one-sixth the amount of solvent.

**Silica for Low Fuel Consumption Tires<sup>5</sup>.** Applying silica to tires reduces their rolling resistance on pavement, thereby improving vehicle fuel efficiency and contributing to energy conservation.

**Organic Electroluminescent (EL) Charge Transport Material.** Used in organic EL displays that do not require backlighting EL charge transport material contributes to reduced energy consumption and extend display service life.

1. Product of Taiyo Vinyl Corporation

2. Product of Asia Industry Co., Ltd.

3. Product of Plast-Tech Corporation

4. Product of Tosoh Finechem Corporation

5. Product of Tosoh Silica Corporation

IN HARMONY WITH OUR EMPLOYEES

**Message from the Director of Human Resources**

**TOWARD A DYNAMIC WORKPLACE**

Tosoh's Human Resources (HR) team proactively pursues the development of personnel in line with the company's philosophy and growth strategy and the needs of society at large. Our growth as a global company requires that we do more than fortify our technological power. We must also cultivate globally capable employees whose motivation energizes our organization. To secure the dynamism that we seek, in employees and for our corporation, we are sourcing top talent, positioning that talent as accurately as possible domestically and internationally, implementing education and training for all levels of personnel, and establishing a stimulating workplace environment.

We have as an objective a workplace where employees can each display their abilities to the fullest amid such a positive atmosphere company-wide. In recent years, we have emphasized workplace reform and work-life balance and will continue to do so alongside our efforts to foster a secure and inspiring environment for employees.

**Yoshiyuki Uchiyama**

Vice President  
General Manager of Human Resources

**Fundamental Mindset**

Tosoh's HR system is designed to train and make the best use of employees. The objective is to foster the development of people who engage in their work with a passionate sense of ownership. To that end, we systematically implement a wide variety of systems of instruction and training that enable our personnel to draw on innate abilities. We strive for an environment where each member of a diverse workforce functions with a sense of purpose and accomplishment. We especially encourage employees to maintain a good work-life balance.

**Personnel System**

With the objective of developing employee capabilities and personnel cultivation, we are approaching job responsibilities, personnel development interviews, personnel performance appraisals, and the wage system in a coordinated fashion. Each employee, for example, meets twice annually with his or her supervisor for performance appraisals to set objectives and assess achievements. We deem these enhanced evaluations to be more persuasive in the development of personnel.

**Basic Philosophy Regarding Personnel System**

A "creative structure" enabling employees to fully exhibit their capabilities

A "bold corporate culture" in which evaluations are reflected in points

A "fair treatment" workplace based on performance recognition

**Company Employee-Related Data**

	FY 15	FY 16	FY 17
Regular employees <sup>1</sup>	3,326 (269)	3,338 (273)	3,337 (295)
New employees <sup>1</sup>	164 (19)	154 (15)	118 (17)
Disabled person employment rate <sup>2</sup>	1.67%	1.85%	1.83%
Employees with foreign citizenship	5	10	11
Number of re-employed workers	250	262	282
Average age of regular employees <sup>3</sup>	39.1	38.6	38.1
Average years of continuous service <sup>3</sup>	17.4	16.9	16.2
Employee turnover <sup>4</sup>	0.33%	0.46%	0.70%

- 1. Figures in parentheses ( ) refer to numbers of women.
- 2. Figures include dispatched employees.
- 3. Figures do not include reemployed or part-time company employees.
- 4. Figures do not include workers who have reached retirement age.

	FY 17 Results
Annual total working hours	1,898.99 hours/person
Annual total overtime working hours	200.89 hours/person
Rate of use of annual paid leave	81.6%

Excluding reemployed retirees, temporary employees, executive-level employees

## IN HARMONY WITH OUR EMPLOYEES

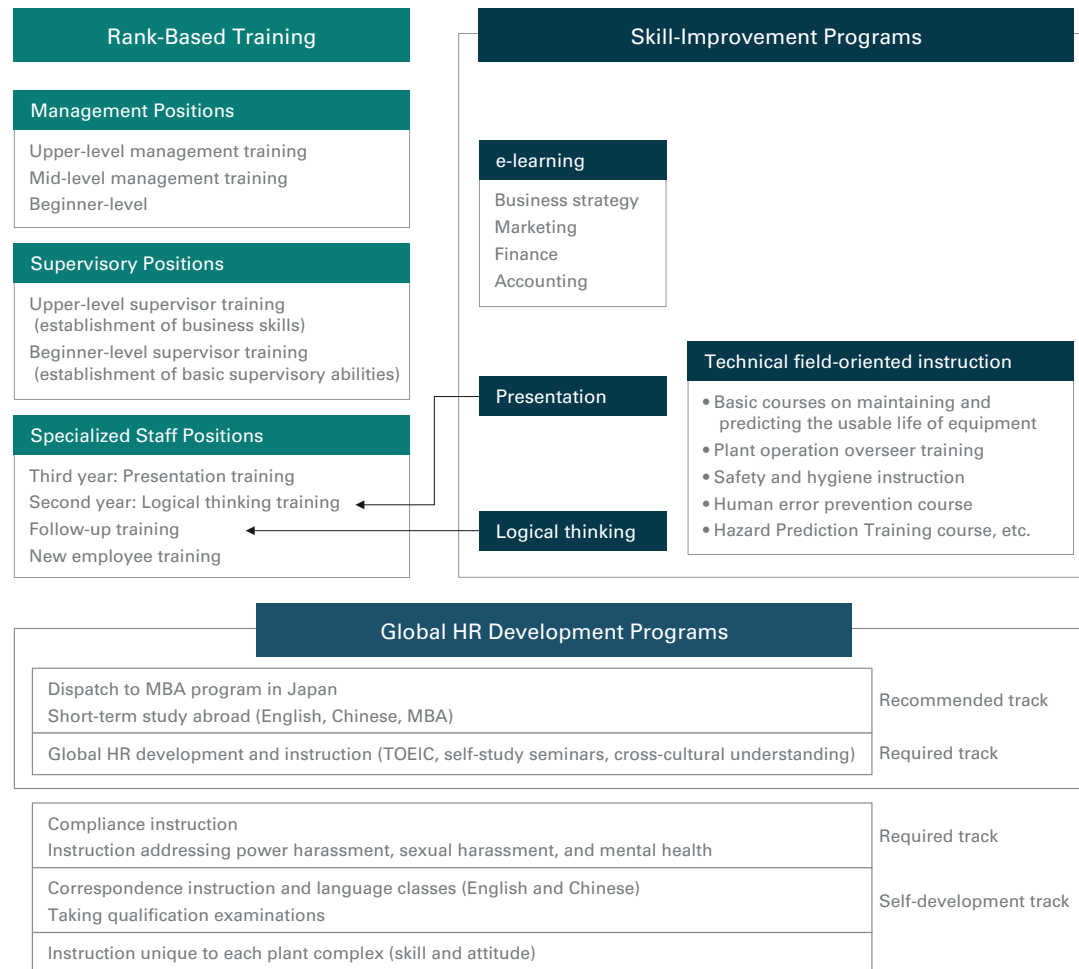
### Work Reform

We are making moves to reform the way we work, with a focus on reducing working hours and enhancing productivity. We are, for example, encouraging early-morning start times and the management of working hours. In fiscal 2017, we introduced a web-based meeting system to raise efficiency. This innovation has heightened employee workplace awareness and satisfaction and initiated a virtuous cycle that will lead to enhanced efficiency and to Tosoh's sustained development.

### Human Resource Development

We are developing a system under which employees can develop their cognitive skills and acquire knowledge and capabilities to assist them in doing their jobs safely and in a sustained manner.

In addition to traditional on-the-job training, we are developing an employee cultivation system (see diagram on the right) to ensure that young employees are able to build a sound foundation of basic skills and that key personnel are developed. Our educational programs encompass all levels of employee, from the newly hired to the established executive, and we are enriching the educational opportunities available through an emphasis on participation in skill-enhancement programs and the provision of education on compliance. We review our educational opportunities and their content as necessary and base review outcomes on whether training is having a positive effect on employees.



## IN HARMONY WITH OUR EMPLOYEES

**Education by Technological Field**

At the Nanyo and Yokkaichi Complexes, we are working to formulate an educational structure that reflects the views of the employees at the workplace with the aim of achieving safe, steady, and efficient plant operation.

Tosoh is working to improve information sharing on problems between top management and its complexes through opportunities for exchange, such as direct conversation between manufacturing section chiefs and the president and training for section chiefs. We are also conducting practical courses utilizing simulators and experience-based learning to help plant operators maintain and enhance their technological skills.

**Cultivation of Global Human Resources**

We are stepping up our efforts to develop personnel required in the globalization of our business activities. We are providing support for a variety of activities, including the introduction of the TOEIC examination within the company, the fortification of English- and Chinese-language study courses, and one- and three-month overseas study programs—all for the purpose of developing cognitive skills that will help Tosoh succeed in the global marketplace.

**Enhanced Work-Life Balance**

We support a work-life balance. To this end, we have in place various allowances for child-rearing and caregiving, including leave for both. We also reduce workloads for our employees

from pregnancy through child-raising. To ensure that all employees are aware of what we offer them to achieve a work-life balance, we've published a guidebook. It introduces our approaches to pregnancy, childbirth, and child-rearing, including financial assistance and required procedures. We are also helping our employees take annual paid vacations. We've instituted our Refreshment Support Vacation System, which advocates for employees taking at least five consecutive-day vacations yearly. In fiscal 2017, the rate at which employees took paid vacations reached 81.6%.

We will continue with our policy of creating an environment where we can work with enthusiasm while valuing the diverse lifestyles of every employee.

**Kurumin Certification**

Kurumin was founded by the Ministry of Health, Labour and Welfare based on Japan's Act on Advancement of Measures to Support Raising Next-Generation Children and encourages companies to formulate action plans that support their employees in balancing work and family life. Companies that meet standards and achieve their action plan goals receive Kurumin certification.

**Work-Life Balance-Related Data**

	FY 15	FY 16	FY 17
Women's child care leave recipients (new) and percentage taken/returned to work	12 Leave taken: 100% Returned: 100%	9 Leave taken: 100% Returned: 100%	10 Leave taken: 100% Returned: 100%
Men's child care leave recipients	31 Leave taken: 24%	34 Leave taken: 30%	39 Leave taken: 30%
Employees taking advantage of reduced working hours to facilitate child care	19	7	12
Employees taking family-care leave	1	2	0

IN HARMONY WITH OUR EMPLOYEES

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**Respect for Human Rights**

Respect for fundamental human rights is a pillar of the Tosoh Group Code of Conduct. In line with revisions to Japan's Child Care and Family Care Leave Law, we have added to the policy measures concerning harassment about leave taken for childbirth, childcare, and family care after May 2017 and concerning the harassment of sexual minorities (LGBT, etc.). We have also established internal and external consultation services and a countermeasures committee to deal with cases of alleged harassment.

**Health Promotion Activities**

We are developing an array of activities to support the physical and mental well-being of our employees. Our health promotion activities, which treat physical fitness, good lifestyle habits, and mental health as the three pillars of well-being, are planned annually and independently by each plant's Health Promotion Committee. Health consultations are arranged with nurses and health outreach workers, and health-related lectures and other events are organized. There are also employee-run walking events and other participatory programs.

We seek the preservation and improvement of employee health and the promotion and maintenance of comfortable workplaces and work environments.

A stress check system has also been implemented that in fiscal 2017 was administered to 94% of Tosoh's employees.

**Promotion of the Employment and Active Engagement of Diverse Personnel**

We believe that we must work proactively to attract top talent so that we can continue to provide unprecedented value to customers. This belief involves our efforts to promote diversity in the workplace.

We are, for instance, increasing our number of female employees. We've hired 88 women in the past five years, such that female employees account for 8.8% of our staff. Our hiring policy follows the Law Regarding Promoting the Participation of Women in the Workplace (Act Promoting Women's Participation and Advancement in the Workplace). But our HR efforts in this regard go beyond merely expanding our job categories and hiring more women. We encourage our female employees to participate actively in the workplace and to aspire to management positions.



## IN HARMONY WITH OUR EMPLOYEES

**Labor and Management**

Tosoh and its labor union hold a Central Labor-Management Council meeting on a monthly basis for the purpose of achieving a common awareness of issues, including the management situation, personnel affairs, and working conditions.

Through specifically themed council meetings, labor and management have succeeded in creating a favorable, stable relationship built on trust. Going forward, both sides will continue to consider the other's position, will communicate closely and openly, and will work cooperatively for corporate development and employee empowerment.

**Reemployment of Retirees**

To ensure continuity in the transmission of knowledge and skills, we are inviting our retirees to return to the workplace. Abundant hands-on experience makes these reemployed veteran workers ideal training specialists.

**Employment of Disabled People**

As part of our ongoing efforts to expand the employment of disabled people and their benefits package, we have employed health keepers at the Tokyo Headquarters.

**Employment of Foreign Nationals**

We are actively working to hire employees from abroad to further Tosoh's development overseas.

**Female Employees**

	FY 15	FY 16	FY 17
Number of female employees	269	273	295
Number of female new graduates or mid-career female hires	23	19	22
Number of management-level female employees	4	3	4
Proportion of management-level female employees	0.61%	0.46%	0.60%

## IN HARMONY WITH SOCIETY

**NANYO COMPLEX****Workplace Experience Program**

The Nanyo Complex is accepting apprentices from nearby junior high schools to participate in its workplace experience program.

Participants interact directly with employees and experience daily work activities, and it is hoped that they will gain an interest in and the proper attitude toward the work. Comments from students who have participated in the program include, "This was a valuable opportunity for me to think about my future."

**CORPORATE HEADQUARTERS****Yume/Kagaku-21****Summer Vacation Children's Science Experiment Show**

The 13th edition of the Summer Vacation Children's Science Experiment Show, held by a science industry association, featured fun and interesting science experiments. At the Tosoh booth, attendees had the opportunity to make original coasters using colored polyethylene beads. The event gives children the opportunity to get closer to science by exploring its mysteries.

**NANYO COMPLEX****Volunteer Cleanup at Nagata Kaisui Koen Park**

Each year before the beaches officially open, volunteers from the Nanyo Complex mow the lawn and pick up garbage at nearby Nagata Kaisui Koen Park. The mountain of grass and refuse collected fills about 200 garbage bags. The activity helps preserve the park, an oasis for local residents, and ensures that its numerous visitors can enjoy sun and surf in a clean, pleasant environment during the most popular season.

**YOKKAICHI COMPLEX****Visiting Lectures**

The Yokkaichi Complex is conducting lectures at elementary and junior high schools in its vicinity at the request from the Yokkaichi City Board of Education. Members of "Let's" serve as lecturers, and students experience making bath additives using soda produced by Tosoh. Tosoh promotes this type of activity to give students opportunities to experience science.

**TOKYO RESEARCH CENTER****Baseball Field Opened to Boys' Baseball Team**

On weekends and holidays, the Tokyo Research Center grants the Sohen Powers rubber baseball boys' team access to its baseball field for team practices. The purpose of the team is to help teach team members the values of courtesy, trust, cooperation, and responsibility. Employees at the center can hear the players' excitement every time they practice on the field.

**YOKKAICHI COMPLEX****Municipal Disaster Preparedness Training**

The Yokkaichi Complex's neighboring municipalities of Hazu, Tomida, and Tomisuhara undertake evacuation guidance training from the complex that involves experience in the use of an automated external defibrillator (AED) and fire extinguishers and in escaping from a smoke-filled room. Disaster awareness for waterfront areas is particularly high, and the training is intense. Tosoh's work with the local community through this disaster preparedness training is a great opportunity to promote mutual understanding and to showcase the work it has done to bolster safety at the Yokkaichi Complex.

IN HARMONY WITH SOCIETY

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**NANYO COMPLEX****Third Annual Shinnanyo Moon Festa**

Each year at Eigenzan Koen Park, the Shinnanyo Chamber of Commerce stages Moon Festa Shinnanyo. The event involves the alignment and simultaneous evening lighting of lanterns to create a surreal effect. To help daytime visitors enjoy the event, the Nanyo Complex provides inflatable playground equipment and sets up street stalls. Tosoh hopes that the gathering gives residents the opportunity to interact and contributes to the area's continued growth.

**POLYURETHANE RESEARCH LABORATORY****Certificate of Appreciation from the Minister of Health, Labour and Welfare**

The Polyurethane Research Laboratory has been supporting blood drives for nearly 30 years, and at the 52nd National Conference for Promoting Blood Donation it received a certificate of appreciation from Japan's Minister of Health, Labour and Welfare. The award is given to organizations or individuals involved in blood donation activities for a total of more than 10 years, including 2 consecutive years. Demand for blood is expected to continue to grow, and the Polyurethane Research Laboratory intends to continue supporting blood drives and contributing to society.

**YOKKAICHI COMPLEX****Sixth RC Yokkaichi Regional Dialogue**

The RC Yokkaichi Regional Dialogue is an event held by 12 companies in Yokkaichi that are members of the Japan Chemical Industry Association (JCIA) and participated in by local residents and government representatives. Under the theme, "Corporate Security, Disaster Preparedness, and Environmental Conservation Activities with the Objective of Safety and Security," the sixth edition of the event featured talks, special presentations, and panel discussions and was a great forum for exchange. It serves as an excellent step toward cooperation between private citizens and the private and public sectors in planning for disaster preparedness and environmental conservation.

## ENVIRONMENTAL ACCOUNTING

Tosoh's environmental accounting initiatives seek to better quantify the investments and expenses involved in environmental conservation.

## Environmental Conservation Cost

Millions of yen

Classification	Major initiatives	Investments <sup>1</sup>				Expenses <sup>2</sup>
		FY 15	FY 16	FY 17	FY 17	
Business area cost		8,950	1,230	2,610	11,210	
Public hazard prevention cost	Exhaust gas and wastewater treatment	7,740	720	1,940	6,540	
Global environmental conservation	Power and fuel reduction	300	360	490	1,940	
Resource circulation cost	Raw material and waste product recovery	910	150	180	2,730	
Administration cost	Environmental management, environmental impact assessment, environmental report publishing, environmental load monitoring	90	20	20	670	
R&D cost	Environmental load reduction technology, environmentally conscious product development	20	120	60	1,880	
Social activity cost	Association membership fees, replanting and beautification, community environmental support	0.0	0.0	0.0	30	
Other		0.0	0.0	0.0	80	
<b>Total</b>		<b>9,060</b>	<b>1,370</b>	<b>2,690</b>	<b>13,870</b>	

1. Facility investment and other expenditures for environmental conservation.
2. Expenses, including variable and labor costs, for environmental conservation.

Scope: Nanyo Complex, Yokkaichi Complex, Tokyo Research Center, Polyurethane Research Laboratory  
Target Period: April 1, 2016–March 31, 2017

For the most part, our figures follow the *Environmental Accounting Guidelines* of Japan's Ministry of the Environment. Some figures, however, are unspecified by said guidelines and are aggregated based on in-house rationale.

## Economic Benefit

Millions of yen

Details		FY 15			FY 16		FY 17	
					Nanyo	Yokkaichi	Total	
Revenue	Revenue from contract and sale of waste for recycling and from unusable products	560	580	440	360	800		
Expense savings	Energy conservation	2,580	2,830	2,410	370	2,780		
	Resource conservation	2,600	3,220	810	440	1,250		
<b>Total</b>		<b>5,740</b>	<b>6,630</b>	<b>3,660</b>	<b>1,170</b>	<b>4,830</b>		

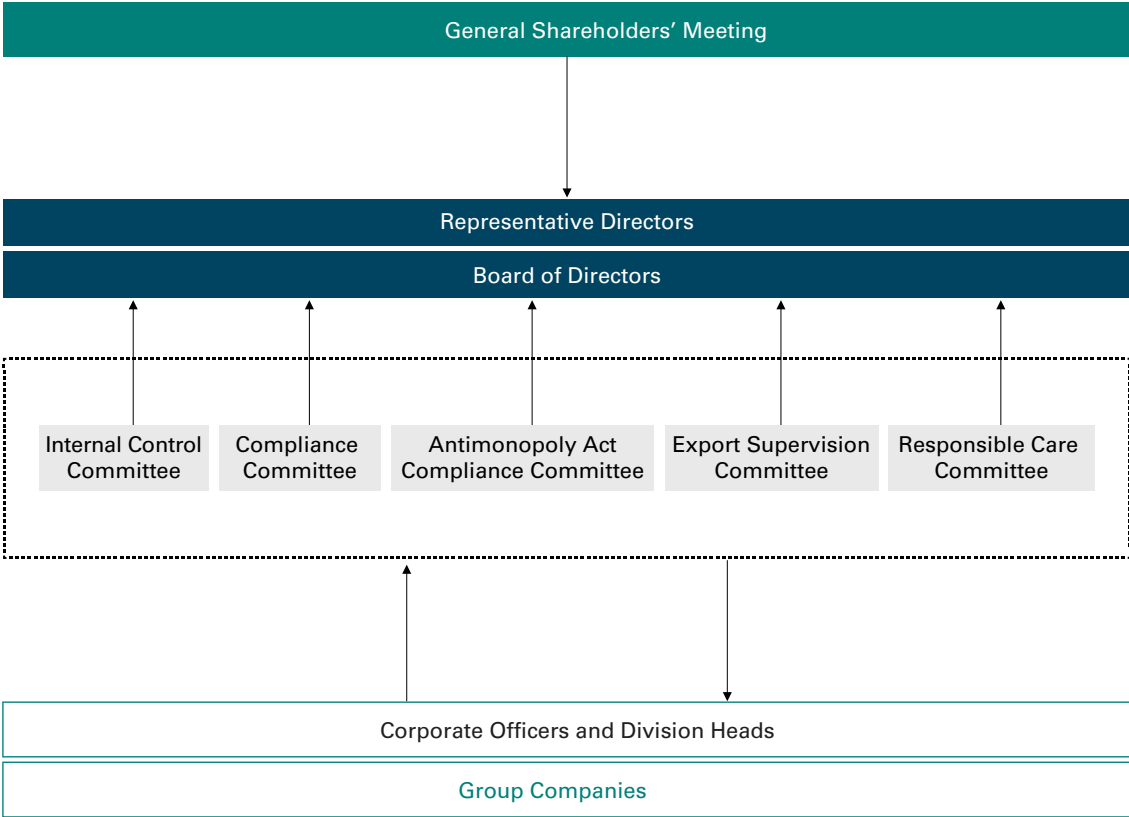
# Corporate Governance

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### GOVERNANCE SYSTEM

In addition to formulating an efficient organizational structure that permits swift response to changes in the management environment, Tosoh practices corporate management with a high degree of fairness and transparency toward the continued enhancement of its corporate value. To this end, Tosoh respects the importance and spirit of the Corporate Governance Code and will pursue corporate governance in a manner most suitable for the company.





## DIRECTORS AND AUDITORS

### Board of Directors

Tosoh's Board of Directors comprises 10 directors, including 2 external directors, and, in principle, convenes monthly. It discusses key management issues and supervises the performance of duties by all directors and executive officers. The Board of Directors also determines the selection and dismissal of executive officers and the responsibility for the performance of duties.

### Analysis and Evaluation of the Effectiveness of the Board of Directors

Tosoh annually conducts an analysis and evaluation of the effectiveness of its Board of Directors and publishes an overview of the results. In fiscal 2017, the company surveyed its board members for their opinions. The findings show that the Board of Directors is effectively executing its role.

Also in fiscal 2017, Tosoh undertook reviews of discussion criteria and of the frequency of reported items to ensure that its Board of Directors can focus on important matters related to management. Both reviews yielded substantial results. They indicated the necessity of the board's enhancing its discussions of management and business strategies related to Tosoh's medium-term business plan. The Board of Directors will therefore focus on this going forward.

### Board of Auditors

Tosoh's Board of Auditors is made up of four auditors, including two external auditors, and, in principle, convenes monthly. The Board of Auditors evaluates the behavior and business execution of the Board of Directors.

The auditors attend such important gatherings as the Board of Directors meeting, receive reports from the directors, and review documentation related to key decisions. They also exchange information and opinions as appropriate with the company's Internal Control Committee and with the accounting auditor to improve the efficiency and effectiveness of audits.

To elevate the performance of its auditors, Tosoh has established a secretariat within its Board of Auditors.

### Board of Directors (as of June 28, 2017)

	Internal	External (Independent)
Directors	8	2

### External Directors and Auditors

Tosoh has established proprietary independence evaluation standards for its external directors and auditors. If none of the items under the standards are applicable, the determination is that independence is secured.

The company selects external directors and auditors based on their vast experience and knowledge of corporate management. It also designates external directors in accordance with directives from the Tokyo Stock Exchange (TSE) and reports their appointments to the TSE.

In June 2016, Tosoh introduced an executive officer system to improve the efficacy and speed of management by differentiating decision-making duties from supervisory duties. This will help Tosoh respond to rapid changes in its business environment and to prioritize transparency regarding the responsibilities of management.

### Board of Auditors (as of June 28, 2017)

	Internal	External (Independent)
Directors	2	2

## COMPLIANCE STRUCTURE

### Internal Control Committee

Tosoh's Internal Control Committee assists in designing and developing Tosoh's internal controls to ensure the company's compliance with financial reporting standards as stipulated by Japan's Financial Instruments and Exchange Act.

The committee evaluates internal controls with respect to audits by the Audit Office and adjusts controls accordingly. It also drafts and publicly issues internal control reports.

The Internal Control Committee enhances the awareness of internal controls among Tosoh Group companies regarding the compliance structure and various risks.

### Compliance Committee

Tosoh's Compliance Committee ensures that directors and employees comply with the Tosoh Group Code of Conduct and display high ethical and moral standards and a high degree of fairness. The committee has also set up internal and external compliance hotlines that assure anonymity to help deter compliance-related indiscretions and to help rapidly resolve issues.

### Export Supervision Committee

Tosoh's Export Supervision Committee deliberates on measures ensuring the company's safe and secure management of exports, fulfillment of its duty as an international corporation, and compliance with Japan's Foreign Exchange and Foreign Trade Act. It has also had each business unit designate a head and an export manager for cargo control. In short, it has established an export compliance structure.

### Antimonopoly Act Compliance Committee

Tosoh's Antimonopoly Act Compliance Committee endorses a fair, free, competitive business environment. It encourages emerging business activities and corporate development in line with the internal rules, manuals, and other instructional materials it prepares to ensure compliance with Japan's Antimonopoly Act.

### MANAGING WITH FAIRNESS AND TRANSPARENCY TO ENHANCE CORPORATE VALUE

We believe that our contribution to the development of a sustainable society requires that we enhance our corporate value by remaining a company our stakeholders can trust. Accomplishing this makes it imperative for us to work closely with stakeholders to devise various activities that increase our corporate value.

Maintaining a high degree of fairness and transparency through sound corporate governance is the cornerstone of sustainable company operation, and Tosoh is working to reinforce its corporate governance activities. Basic guidelines for employee compliance in the execution of daily duties are outlined in the Tosoh Group Code of Conduct, and we are making efforts toward company-wide observance.

We will manage ourselves with fairness and the proper and transparent disclosure of information in mind to secure and maintain society's trust and thereby contribute to our continued development.

#### Koji Kawamoto

Director, Executive Vice President  
Manager of Corporate Control and Accounting

# Key Data & References

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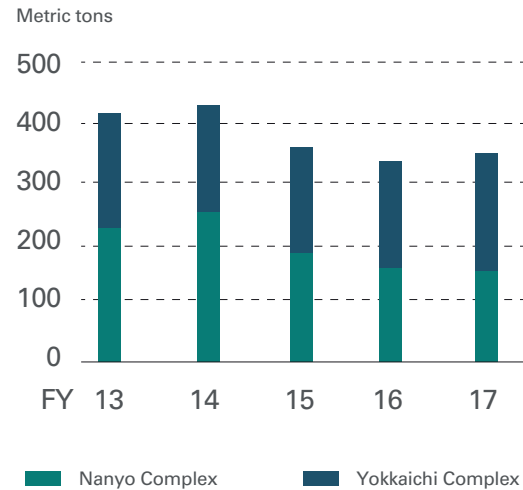
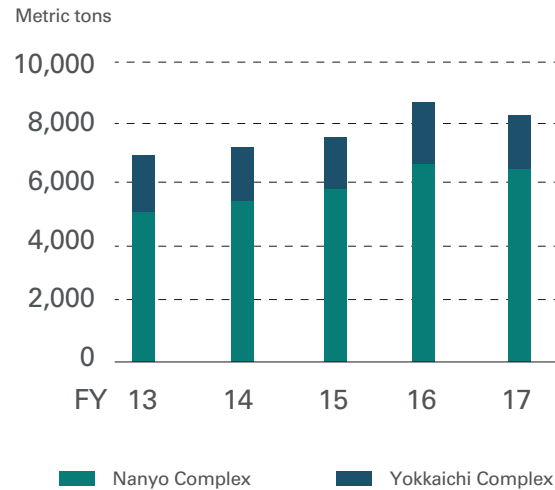


## ATMOSPHERIC PRESERVATION

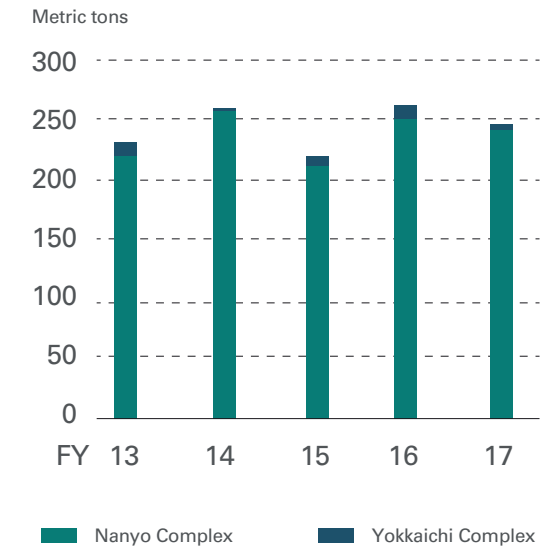
We release smoke containing sulfur oxide (SO<sub>x</sub>), nitrogen oxide (NO<sub>x</sub>), and particulate matter into the atmosphere because of operations involving fuel-burning boilers and furnaces. Acid rain and the potential impact of atmospheric emissions on people's health are a concern. As a result, regulatory values for each generating facility and total volume controls for each business unit have been established by Japan's Air Pollution Control Act.

We have also established values for each of our business units under regulations or agreements with the municipalities where we operate. In addition, we have independently set values to achieve sustainable environmental preservation.

We did not exceed any regulatory values in fiscal 2017. Tosoh will nevertheless continue to work hard to meet and better the values set forth in regulations and agreements.

SO<sub>x</sub> (sulfur oxide)NO<sub>x</sub> (nitrogen oxide)

## Dust



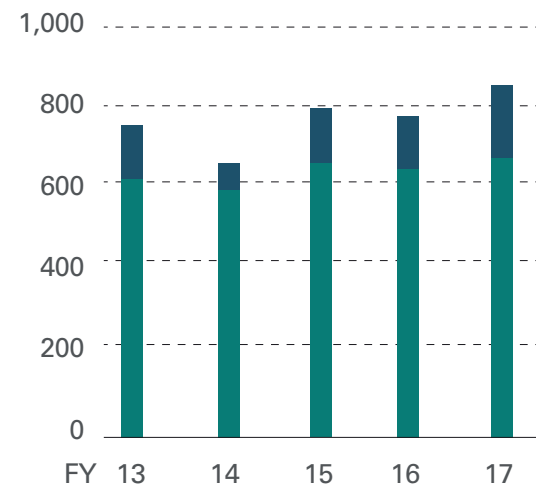
## WATER PRESERVATION

Areas of heavy concentrations of industrial activity along open seacoasts and near more closed bodies of water, such as Tokyo Bay, Ise Bay and the Inland Sea, are protected by effluent regulations based on drainage standards and by Japan's Water Pollution Prevention Act. Each of Tosoh's business units operate under municipal effluent regulations or agreements. Tosoh also has its own effluent values in pursuit of sustainable environmental preservation.

Tosoh did not exceed any regulatory values in fiscal 2017 and yet will continue to work with great effort to meet and improve upon the values established by regulations and agreements.

**COD (chemical oxygen demand)**

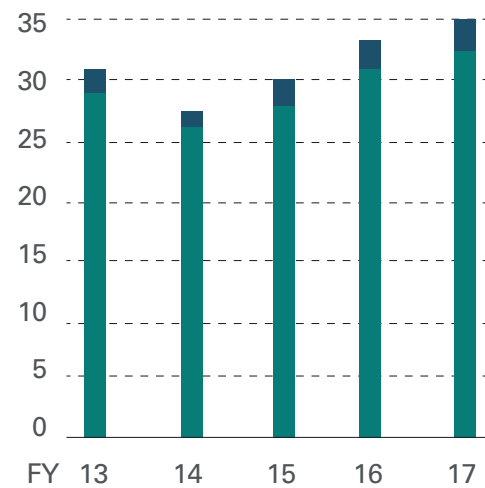
Metric tons



■ Nanyo Complex ■ Yokkaichi Complex

**Phosphorus**

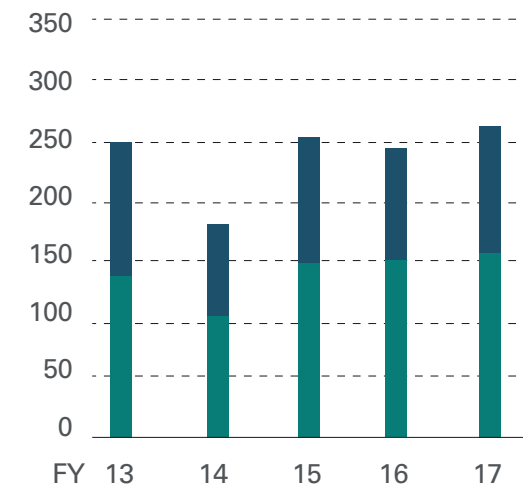
Metric tons



■ Nanyo Complex ■ Yokkaichi Complex

**Nitrogen**

Metric tons



■ Nanyo Complex ■ Yokkaichi Complex

## INDUSTRIAL WASTE AND CLASS 1 CHEMICAL EMISSIONS

### Effective Resource Utilization

We recycle almost all of the industrial waste produced by our in-house power generators at our facilities, including coal ash, which we use in the production of cement. Our Nanyo Complex, for example, either reuses or reprocesses almost 100% of the industrial waste it produces. It even uses general and industrial waste from outside sources to fuel its cement plant.

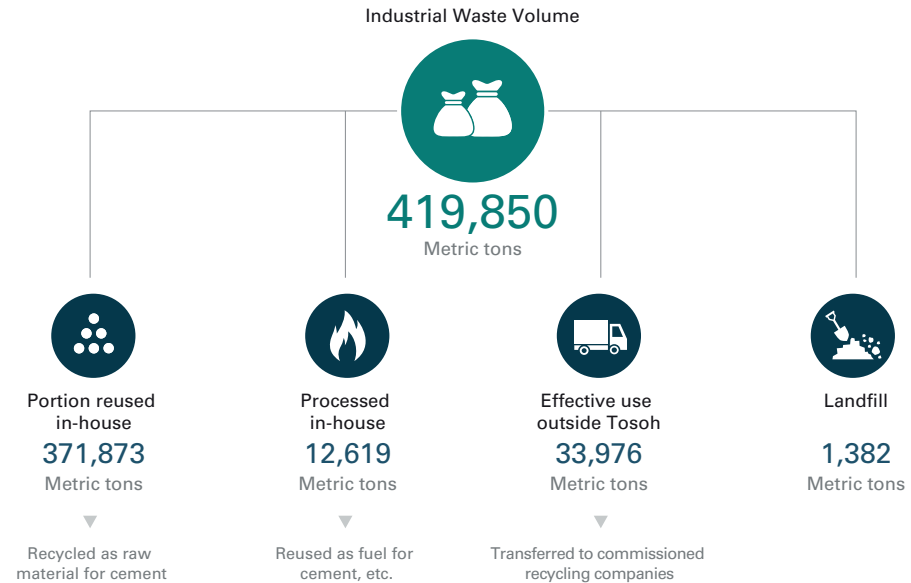
Tosoh's final disposal volumes for fiscal 2017 constituted 0.33% of its overall industrial waste. We continue to pursue more effective uses of finite resources.

### Industrial Waste Emissions

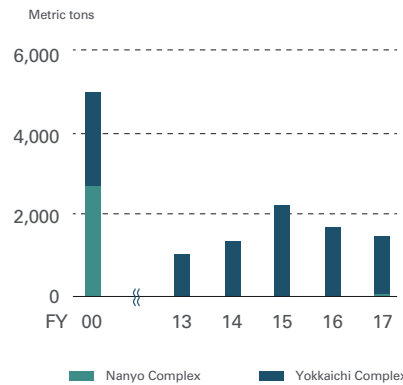
The total volume of the industrial waste disposed of by Tosoh in fiscal 2017 was 1,382 metric tons. This was well below our Responsible Care (RC) target of 1,768 metric tons a year. We now have as our objective achieving the Japan Business Federation (Keidanren) target for 2020: a reduction to 30% of the fiscal 2000 industrial waste disposal volume. Tosoh will work toward this target in part by dropping its RC industrial waste disposal goal for fiscal 2018 to 1,515 metric tons.

### Class 1 Chemical Emissions

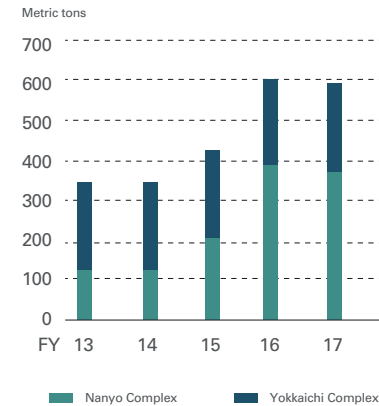
Tosoh seeks to lessen its emissions of Class 1 chemical substances under Japan's Pollutant Release and Transfer Register (PRTR) Law. In so doing, we contribute to a cleaner environment. Our Class 1 chemical emissions in fiscal 2017 totaled 593 metric tons, down 10 metric tons from fiscal 2016.



### Total Landfill Waste



### PRTR-Applicable Substance Emission Volume



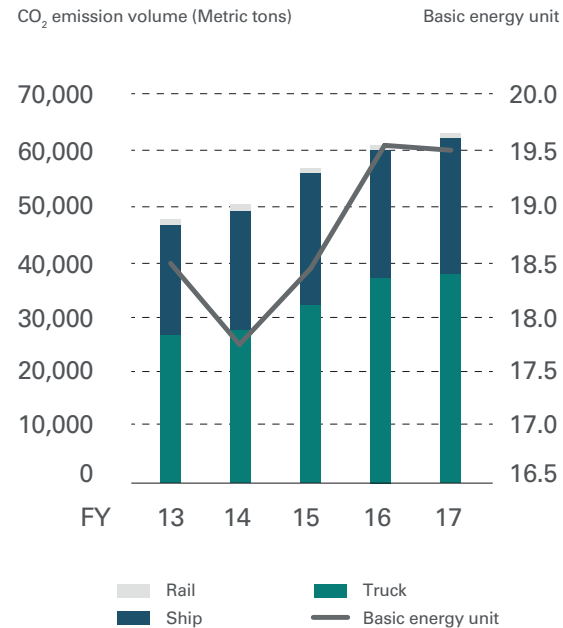


## ENVIRONMENTAL INITIATIVES IN LOGISTICS

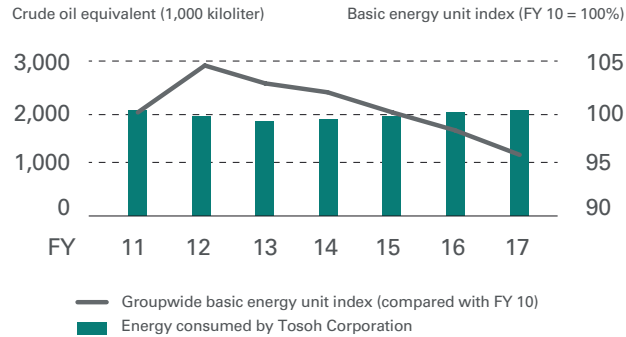
### Environmental Initiatives in Logistics

Fiscal 2017 saw a 3.6% increase in CO<sub>2</sub> emissions compared with fiscal 2016 that was attributable to the logistics of increased product shipments. Tosoh also achieved a 0.5-point improvement in its logistics basic energy units through a modal shift to ship and rail transport. We will continue our efforts to reduce emissions by using such energy-efficient transport as ships and railroads.

### CO<sub>2</sub> Emissions and Basic Energy Unit

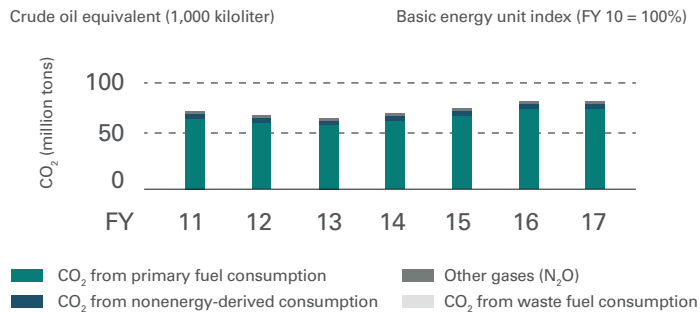


### Energy Consumption Index of Energy Used



Values for the crude oil equivalent of energy used and for the energy consumption index versus fiscal 2010 are calculated using the method stipulated by Japan's Act on the Rational Use of Energy. Figures for fiscal 2015 take into account energy consumed in October and thereafter with regard to the merger with Nippon Polyurethane Industry Co., Ltd. (NPU).

### Greenhouse Gas Emissions

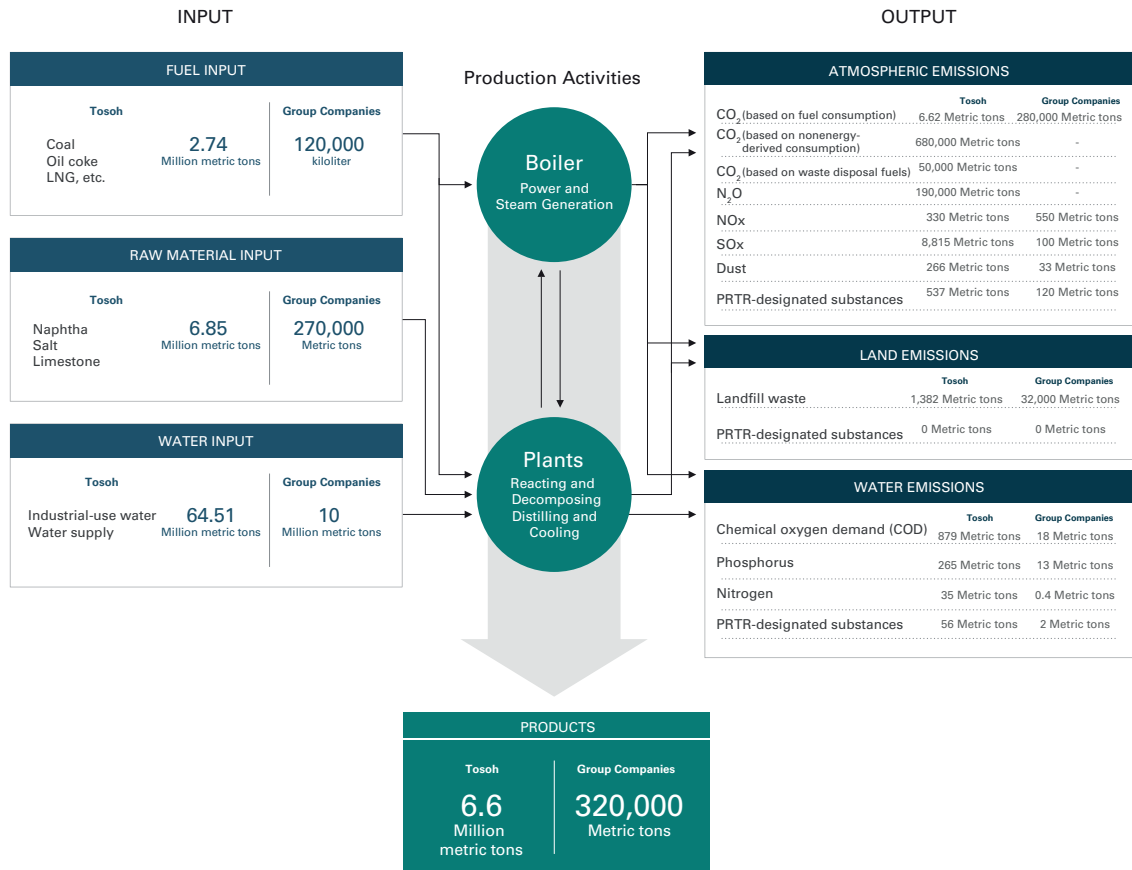


We calculated our energy-derived CO<sub>2</sub> emissions using the Mandatory Greenhouse Gas Accounting and Reporting System, which is based on Japan's Act on the Promotion of Global Warming Countermeasures. Values from fiscal 2010 through the first half of fiscal 2015 include emissions from NPU.

GROUP COMPANY INPUT AND OUTPUT

Tosoh combines the reaction, decomposition, and distillation of raw materials to manufacture products. The source of heat for reaction and decomposition is the steam from our power-generation boilers. The electricity generated by those boilers in turn powers the equipment for these processes. Industrial-use water and seawater are applied to reduce reaction heat.

We maintain a balance between fuel input and the power generation and product output of each plant. We are also conscious of mitigating our emissions of substances that harm the environment.



**HEAD OFFICE**

Tosoh Corporation  
3-8-2, Shiba  
Minato-ku, Tokyo 105-8623  
Japan

For further information, please contact  
International Corporate Development  
Tel: +81 (3) 5427 5118  
Fax: +81 (3) 5427 5198  
info@tosoh.com www.tosoh.com

**DATE OF INCORPORATION**

February 11, 1935

**PAID-IN CAPITAL**

¥55.2 billion

**NUMBER OF EMPLOYEES**

12,292

**INDEPENDENT AUDITORS**

KPMG AZSA LLC

As of March 31, 2017

**COMMON STOCK**

Authorized: 1,800,000,000 shares  
Issued: 650,161,912 shares

**NUMBER OF SHAREHOLDERS**

27,596

**STOCK EXCHANGE LISTING**

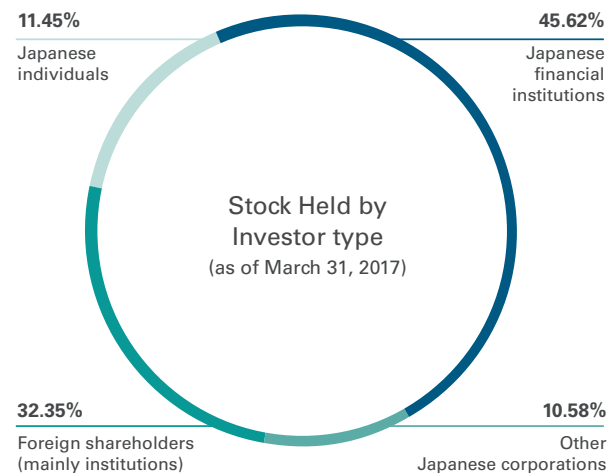
Tokyo Stock Exchange  
Ticker Symbol: JP: 4042

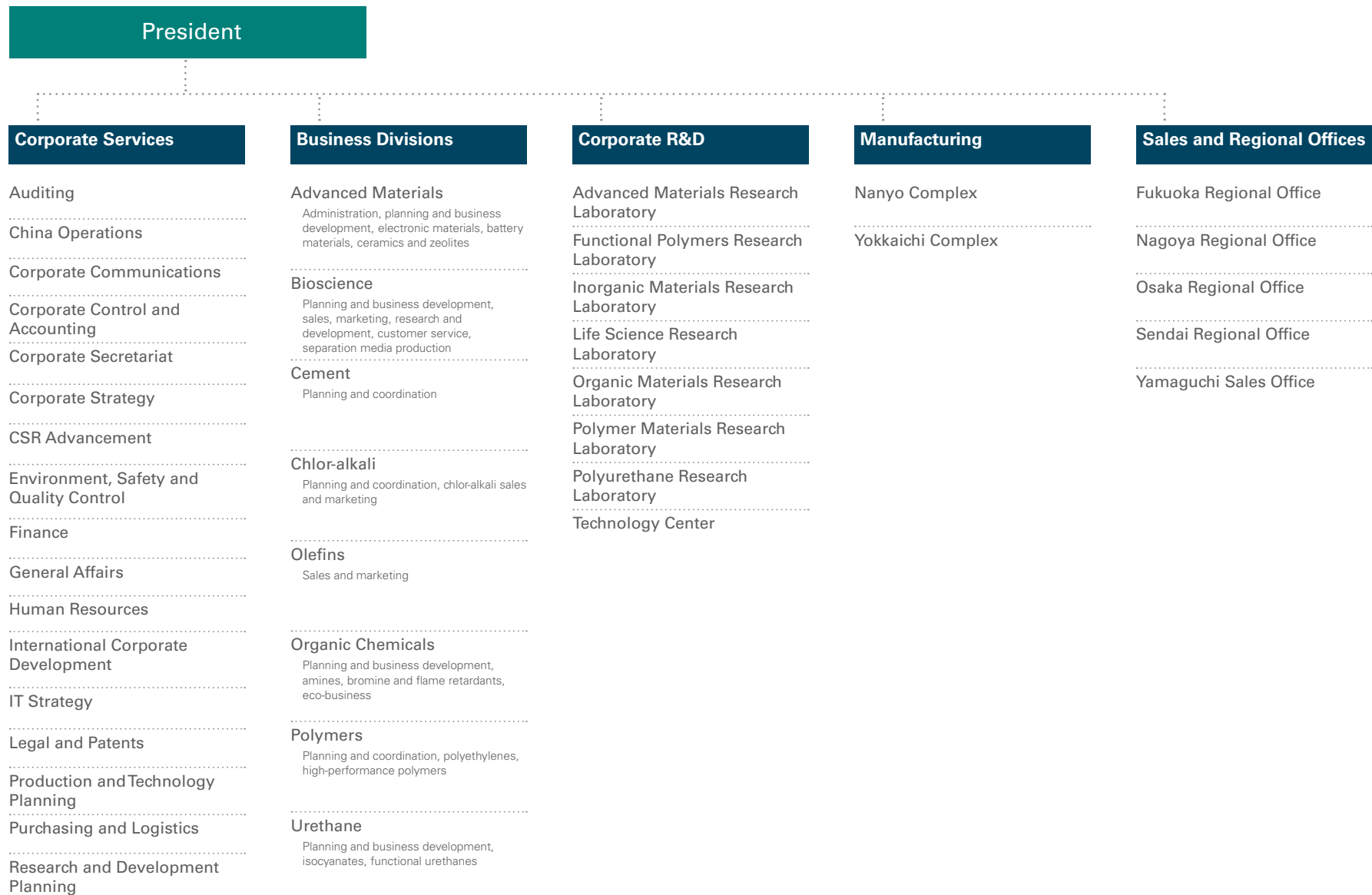
**TRANSFER AGENT FOR SHARES**

Sumitomo Mitsui Trust Bank, Ltd.  
2-8-4, Izumi  
Suginami-ku, Tokyo 168-0063  
Japan

**LARGEST SHAREHOLDERS**

	Shares held (Thousands of shares)	Percent of total
The Master Trust Bank of Japan, Ltd. (Trust Account)	41,841	6.44
Japan Trustee Services Bank, Ltd. (Trust Account)	31,480	4.85
Mizuho Bank, Ltd.	22,057	3.40
Chase Manhattan Bank GTS Clients Account Escrow	17,962	2.77
Sumitomo Mitsui Trust Bank, Limited	15,004	2.31
Mitsui Sumitomo Insurance Co., Ltd.	14,904	2.30
Nippon Life Insurance Company	13,366	2.06
The Norinchukin Bank	12,985	2.00
Japan Trustee Services Bank, Ltd. (T5)	11,125	1.71
The Yamaguchi Bank, Ltd.	9,944	1.53





As of June 28, 2017

**BOARD OF DIRECTORS**

Toshinori Yamamoto	Representative Director, President
Katsushi Tashiro	Representative Director
Keiichiro Nishizawa	Director
Koji Kawamoto	Director
Nobuaki Murashige	Director
Masayuki Yamada	Director
Shingo Tsutsumi	Director
Etsuya Ikeda	Director
Tsutomu Abe	External Director
Kenji Ogawa	External Director

**AUDIT & SUPERVISORY**

Sukehiro Itoh	Internal Auditor
Eiji Inoue	Internal Auditor
Tetsuya Teramoto	External Auditor
Tsuneyasu Ozaki	External Auditor

**CORPORATE OFFICERS**

Toshinori Yamamoto	President				
Katsushi Tashiro	Executive Vice President	Katsumi Mineshige	Vice President	Haruhisa Nishi	Vice President
Keiichiro Nishizawa	Executive Vice President	Noriaki Ohshima	Vice President	Shunya Shinohara	Vice President
Koji Kawamoto	Executive Vice President	Toshinori Hayashi	Vice President	Hisaoki Harada	Vice President
Nobuaki Murashige	Executive Vice President	Noriaki Hajima	Vice President	Masayuki Kudo	Vice President
Masayuki Yamada	Executive Vice President	Nobuhiro Ogawa	Vice President	Toru Adachi	Vice President
Shingo Tsutsumi	Senior Vice President	Akihiro Aiiso	Vice President	Hiroyuki Yoshimura	Vice President
Etsuya Ikeda	Senior Vice President	Jun Oyamada	Vice President	Satoru Yonezawa	Vice President
Masao Nakano	Senior Vice President	Yoshiyuki Uchiyama	Vice President	Toru Doi	Vice President
Yutaka Kohmoto	Senior Vice President	Akira Hironaga	Vice President	Hideyuki Obayashi	Vice President
Mamoru Kuwada	Senior Vice President	Masanobu Kasai	Vice President	Akihiro Yoshimizu	Vice President



**TOSOH**

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