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# CSR Report and Corporate Profile 2014



Published in August 2014





# Harnessing the Potential of Chemistry to Support a Century of Useful Manufacturing

For almost 100 years since its founding in 1918, the Tokuyama Group has been earnestly pursuing a high level of craftsmanship in manufacturing that serves society and benefits people.

The Group's technologies and products have been used in a wide array of goods and services that are useful in people's lives. Tokuyama's products are now making an impact in fields as diverse as IT, electronics, lifestyle goods, healthcare, the environment and energy.

In order to generate long-lasting value and benefits for societies and people everywhere, the Tokuyama Group will continue taking up challenges as it keeps building a business driven by continuous innovation.

Shortly following the end of World War I, Tokuyama was founded in 1918 in the town of Tokuyama (present-day Shunan City) in Yamaguchi Prefecture. The Company went on to achieve domestic production of soda ash, a key material that was fundamental for Japan's industrial development at the time.



## Editorial Policy

- The *CSR Report and Corporate Profile 2014* has been compiled for the purpose of providing stakeholders with clearly presented information on the Tokuyama Group's CSR initiatives and overall business activities. It is an integrated report available as a printed booklet or online PDF file. The PDF edition, available at the website below, includes more detailed numerical data and other information as well as other articles which could not be included in the print edition due to space limitations.  
[www.tokuyama.co.jp/eng/csr/report/](http://www.tokuyama.co.jp/eng/csr/report/)
- Eriko Nashioka of the Institute for Environmental Management Accounting was invited to offer a third-party opinion on this report. (Ms. Nashioka's comments are presented on page 20 of the online PDF edition.)
- The *CSR Report and Corporate Profile 2014* has been produced based on the *Environmental Reporting Guidelines* (Fiscal 2007 edition) published by the Ministry of the Environment of Japan.

## Scope of the Report

Period covered: Performance data is from fiscal 2013 (April 1, 2013 to March 31, 2014); certain activities carried out in fiscal 2014 are also included.  
Companies covered: Tokuyama Corporation; environmental-related data is for the Company's Tokuyama Factory and Kashima Factory; some performance data in the online PDF version includes 11 main manufacturing subsidiaries in the Tokuyama Group.  
Areas covered: Activities reported on were mainly carried out in Japan, however, some activities include group subsidiaries outside Japan  
Date of publication: August 31, 2014.

## On the cover

The artwork on the front and back covers employs a color gradation technique to express a 24-hour day. The images show everyday scenes of Tokuyama's products in use, suggesting how they can be useful for creating value for people and societies around the world in both the present and the future.

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# Working Together as a Group to Restructure Businesses and Ensure Success in the Global Market



Kazuhisa Kogo  
President  
Tokuyama Corporation

## Restructuring Businesses to Realize Our Centennial Vision

As the Tokuyama Group approaches 2018, the 100th anniversary of the Company's founding, we are now preparing for a new era, guided by our Centennial Vision and our motto of "Venture Spirit & Innovation." Indeed, only companies that innovate internally will be able to thrive in today's global market.

In fiscal 2013, the Japanese economy continued to recover moderately as corporate earnings improved across the board, supported by the government's proactive economic measures and aggressive monetary easing policy. Against this backdrop, we began carrying out our Profit Improvement Plan with a focus on restructuring the polycrystalline silicon business, improving profits in existing and new businesses, and improving companywide profitability.

As part of our efforts to improve companywide profitability, every employee has been engaged in the effort to cut costs. We were able to move forward with the plan ahead of schedule with the cooperation of our suppliers and contractors. As a result, the Company achieved dramatic increases in profit figures.

If we look closely at the Company's operating environment, however, we foresee no change in the declining demand for our core products in Japan, and although demand for polycrystalline silicon both for semiconductor and solar cell applications is projected to rise, challenging conditions are expected to continue unless the pressing issue of the general oversupply is resolved.

Taking this into account, we have been working to break away from our past dependence on the domestic market by transforming the Company's business structure so that it can successfully generate profits under the challenging conditions of the global market and continue to drive growth for the Tokuyama Group.

## Human Resources and CSR: The Foundations for the Basic Strategies of Our Centennial Vision

At Tokuyama, we believe that it is essential to provide employees with a vibrant and dynamic working environment that enables everyone to excel on the job. Training and developing outstanding human resources is the key to the ongoing growth of the Tokuyama Group.

We also recognize that Tokuyama's employees are important stakeholders when it comes to succeeding with our corporate social responsibility (CSR) initiatives. Accordingly, all Tokuyama people are encouraged to set career goals, which helps motivate them in their work, and to stay mentally and physically healthy by maintaining a positive work-life balance. This is our approach to building a vibrant workplace that enables employees to put our "Venture Spirit & Innovation" motto into practice.

## Taking the Initiative in Environmental Management and Giving Top Priority to Safety

Following a string of major accidents that occurred at chemical plants in Japan in the past few years, the industry overall is working hard to improve safety. At Tokuyama, we understand that safety must take top priority in all business activities, and we see improving safety capabilities as the most important obligation of top management.

We put these beliefs into practice by conducting regular training and drills for all workers at our factories and working as hard as we can to raise safety awareness. These efforts are the foundation required to

ensure safe and stable production operations, and ultimately to realize Tokuyama's mission of practicing true craftsmanship in manufacturing.

Tokuyama's production sites follow the principle of safety first, while striving to make improvements to manufacturing processes and to conserve energy in order to provide high-quality products with maximum efficiency. In this way, we can continue increasing both production capacity and product quality while earning a reputation as a trustworthy company in society. At the same time, we carry out environmental management at every stage of operations, knowing that putting greater emphasis on the environment will ultimately lead to sustainable growth for the Company and increase its corporate value.

## Engaging with Stakeholders—The Key to Our CSR Activities

Looking ahead, we will keep giving full attention to the obligations the Tokuyama Group is expected to fulfill by society while striving to enhance our CSR-oriented management in a manner befitting a global enterprise. I invite your feedback and would welcome a frank exchange of views on our activities and initiatives.

### Centennial Vision

**As a prominent manufacturer, we will continue to be responsive to society and create a better future through the vitality of our human resources and the creativity of chemistry.**

Tokuyama has formulated its Centennial Vision in preparation for 2018, the 100th anniversary of its founding. The basic strategies under this vision are to bolster international competitiveness and to strengthen strategically growing businesses by identifying the most promising areas and concentrating investment and operational resources in them. Guided by its motto, "Venture Spirit & Innovation," the Tokuyama Group has declared its commitment to developing as a globally competitive enterprise.

Profit Improvement Plan  
Framework for pursuing basic strategies

Having recorded a rapid decline in profit in its polycrystalline silicon business, Tokuyama formulated its Profit Improvement Plan in fiscal 2013 with the objectives of restructuring its polycrystalline silicon business, improving profits in existing and new businesses, and improving companywide profitability. The plan is currently being implemented group-wide.

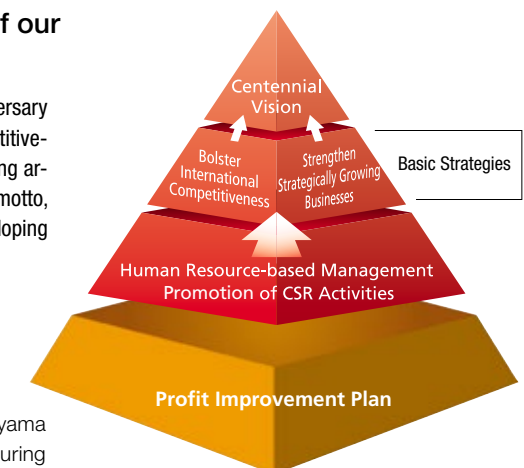
### 1 Safe and Dependable Operations at Factories (See Special Feature 1)

One of the basic strategies of Tokuyama's Centennial Vision is to bolster international competitiveness. As it approaches the 100th anniversary of its founding, the Company has positioned the Tokuyama Factory as its key facility for improving international competitiveness, and will work to enhance the factory's technologies, human resources, and systems as a product supply center. Tokuyama's basic policy is to take every necessary step to operate all group factories without any occupational accidents, disasters or environmental accidents.

### 2 Development of a High-Performance Scintillator Material for Neutron Detectors (See Special Feature 2)

Another basic strategy is to strengthen strategically growing businesses. In connection with this strategy, Tokuyama has developed a scintillator material for neutron detectors by applying the single crystal growth technology it has developed over many years. The Company is now in the process of commercializing this revolutionary new material. Demand for detectors that can monitor neutrons emitted from nuclear substances has grown sharply since the terrorist attacks in the United States on September 11, 2011.

Centennial Vision  
+ Profit Improvement Plan

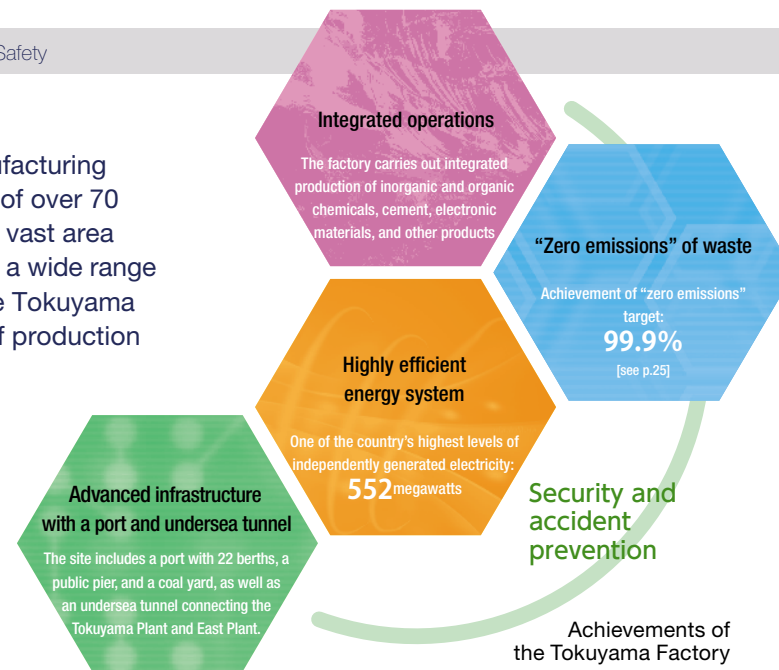






The Tokuyama Factory is Tokuyama's flagship manufacturing facility. About 3,000 employees as well as members of over 70 affiliated companies work at the site, which covers a vast area almost as large as the country of Monaco. Producing a wide range of products through highly integrated operations, the Tokuyama Factory is not only a world-leading facility in terms of production capacity, but also in terms of safety.

## Safety starts by equipping workers on the shop floor with the skills to make improvements and a keen awareness of risks



### Earning stakeholders' trust for almost a century

Situated at the site where the Company was founded, the Tokuyama Factory is the Group's main manufacturing facility, and the products it manufactures account for about 90% of non-consolidated sales. Since the Company was established in 1918, the factory has been producing a diverse range of products including soda ash, caustic soda, cement, polyvinyl chloride, polycrystalline silicon, aluminum nitride ceramics, and various kinds of chlorine-derived products.

Reflecting the Company's business growth over almost 100 years, operations at the Tokuyama Factory have become highly integrated, with many plants linked together and operational units working seamlessly to effectively utilize raw materials, products, byproducts, and waste matter. Moreover, the factory pursues an open integration model that goes beyond in-house connections to involve the many other companies at the Shunan Petrochemical Complex in terms of electricity, raw material supplies, and reuse of waste. This lean production system enables all of the companies to achieve a high level of efficiency, which has become one of Tokuyama's strengths.

Another one of the Company's strengths is the relations of trust it has built up with all of its stakeholders. Making the most of its business activities, Tokuyama continuously engages with employees, affiliated companies and suppliers, as well as government officials and members of the local community. The Tokuyama Factory, in particular, has been giving the highest priority to safety and accident prevention initiatives as a long-established member of the community, while continuously manufacturing products that are useful for peoples' lives.

Tokuyama Factory General Manager Hideki Adachi (second from left) discusses safety with employees from affiliated companies



### Ensuring safety by fostering good communication among all levels of personnel and affiliated companies

Working together with the local community, everyone at the Tokuyama Factory accepts the important responsibility of ensuring safety. With around 3,000 workers onsite, including members of affiliated companies, the Tokuyama Factory practices safety based on the principle that no one should ever leave the premises with an injury, following the slogan of "Going to work healthy and going home happy."

Production lines operate 24 hours around the clock over three alternating shifts. During the changeover of shifts, workers closely share information about safety and accident prevention in addition to work duties. Safety patrol teams also check production facilities on a daily basis.

The Occupational Health and Safety Committee holds meetings every month for the entire site, including affiliated companies. Meeting participants discuss countermeasures based on reported cases of problems and accidents both within and outside the Tokuyama Group, and share safety information within the site. Taking this information into account, each manufacturing division and section holds safety meetings every month. Discussions regarding safety-related initiatives are also held semi-annually with affiliated companies involved in equipment inspections and maintenance. In these discussions, cases of near misses\* that have been reported as well as proposals for specific improvements are being effectively applied in efforts to avoid hazards and prevent accidents.

\* Although near misses do not result in an accident or disaster, by identifying, recording, and sharing information on cases in which it is reasonable to assume that such mistakes could have directly led to such an incident, activities can be undertaken to prevent serious accidents or disasters before they occur.

#### Operational manuals posted on each control panel

As a standard practice, operational manuals explaining procedures that have been posted at a facility are also posted on each control panel. This improves operational efficiency while also helping to ensure that younger, less familiar workers do not make mistakes and that experienced workers do not become careless.



Total site area: 1,910,000 m<sup>2</sup>  
Number of workers: approx. 3,000



### Everyday care and attention make safe and reliable operations possible

Located at the Tokuyama Factory's East Plant, the Chemicals Manufacturing Department No. 2 produces organic solvents, which are essential for manufacturing polyvinyl chloride resin, as well as all kinds of products, which is made using ethylene dichloride and chlorine sent from the Chemical Manufacturing Department No. 1 via a pipeline in an undersea tunnel. By diligently carrying out safety and accident-prevention activities every day, the department's 95 workers have achieved an accident-free record for eight consecutive years—equivalent to 1.5 million man hours.

While the Chemicals Manufacturing Department No. 2 makes arrangements to ensure the safety of systems and equipment, it gives the highest priority to individual awareness and actions as it strives to extend the accident-free record to 10 years, or 2 million man hours. Working toward this goal, every year in May the department holds a safety workshop and invites experts from outside the Company to speak. The workshops aim to raise awareness of safety, never forgetting the accident which occurred on May 22, 1983 at the plant's chloromethane production facilities, which had a major impact on the surrounding environment. To ensure the stable manufacture of products that benefit people's lives, safe and reliable production processes are essential. Accordingly, Tokuyama asks all of its employees to pledge to eliminate accidents as it strives to create new value.



Various safety activities carried out in routine work  
Workers repeat the day's safety procedure goals together when changing shifts (upper left); a safety team on patrol at a production area (upper right); workers jointly operate a control panel (bottom left); a younger employee receives guidance at work (bottom right).

### The first step to safety is to be aware of hazardous environments



Yukihiro Miyamoto  
General Manager,  
Chemicals Manufacturing  
Department No. 2

To put it bluntly, there is no safe place at a chemical plant. Everyone is surrounded by many potential hazards, so keeping aware that one is in a dangerous area should be the first precaution. Without that approach, I don't think the plant can be safe. Since there is always pressure on the shop floor to increase production efficiency, everyone has a duty to ensure safety. So there can be no individual variations in the way we perceive danger—each and every one of us must properly recognize the dangers.

There are no magic tricks for guaranteeing safety. All we

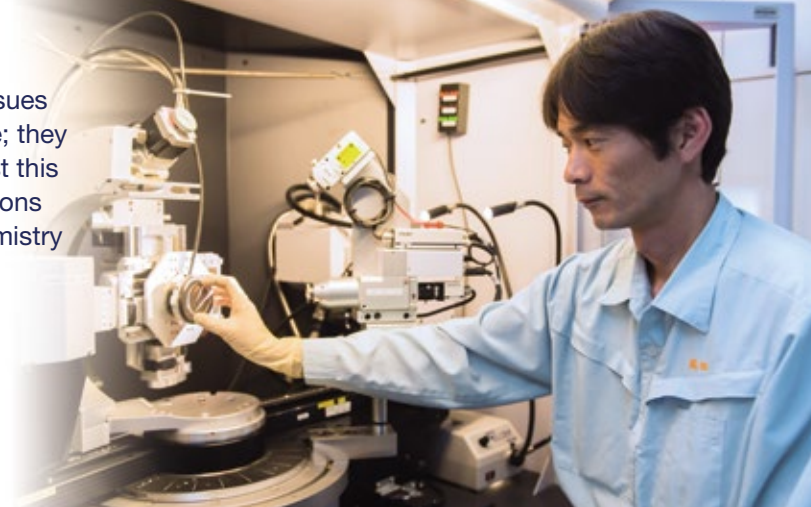
can do is continuously stress the importance of safety, again and again. Doing that increases our sensitivity toward risks and encourages us to practice safety. As a manager in charge of safety, I believe that I must be this kind of safety messenger. In my own words, I tell workers about accidents and disasters that have happened not only in my own experience but also outside the company. By drawing on my own experience and convictions, I try to get the workers to appreciate the importance of safety so that they truly understand the dangers and make sure to avoid them.





With the increasingly fast pace of globalization, issues confronting societies are becoming global in scale; they are common problems facing all humanity. Against this backdrop, Tokuyama is working to help find solutions to these problems by making the most of the chemistry capabilities it has built up over many years.

## Neutron-detection Scintillators Leverage the Innovative Power of Chemistry to Make Society Safer



### Creating New Technologies and Novel Materials That Benefit Society

Based on its R&D principle of contributing to the development of society through chemistry-derived technologies, Tokuyama is pursuing two overarching objectives in its research and development: to create unique, world-leading technologies by combining the Company's established core technologies with all-new technologies, and to produce original products by applying these technologies to meet the needs of the market.

To achieve these objectives, Tokuyama is proactively expanding its open innovation activities. The Company is collaborating in joint-research projects with universities and research institutes while focusing on fields it has developed over many years as a chemical manufacturer. These fields include organic and inorganic material synthesis, purification techniques, crystallization methods, electro-chemistry, and polymer chemistry technologies. The Company is also striving to accelerate its development of technologies and products that can help solve social issues and meet the need for new materials that can contribute to clean energy and energy conservation.

### Specializing in Key Areas and Speeding Up Development

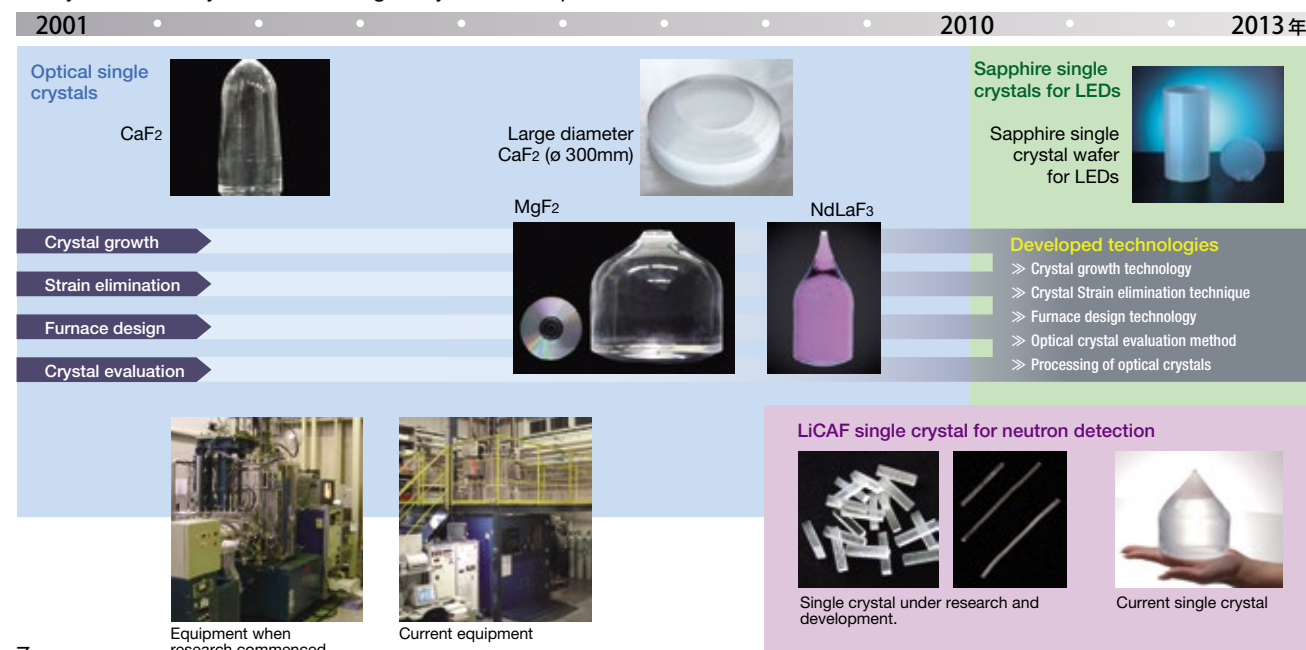
Tokuyama is focusing its R&D resources on key areas that may eventually lead to new kinds of value, materials and services that can be beneficial for addressing changes in society, such as an aging population and outdated infrastructure. In this way, the Company is accelerating its creation of original technologies and products that other companies cannot imitate.

### Leveraging Crystallization Technologies—One of Tokuyama's Strengths

As shown in the chronological chart below, Tokuyama has been carrying out research and development on optical single crystals since around 2000. Over the years, Tokuyama has developed and accumulated a large number of original technologies regarding crystal growth, strain elimination, furnace design, optical evaluation and processing of optical crystals.

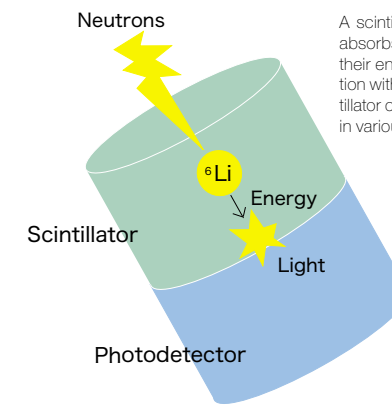
Meanwhile, countries all around the world began to tighten homeland security to combat terrorism in the wake of the simultaneous

### Tokuyama's History of Fluoride Single Crystal Development



### What is a neutron-detection scintillator?

A scintillator is a material which absorbs neutrons and converts their energy to light. In combination with a photodetector, a scintillator can be used as a detector in various applications.



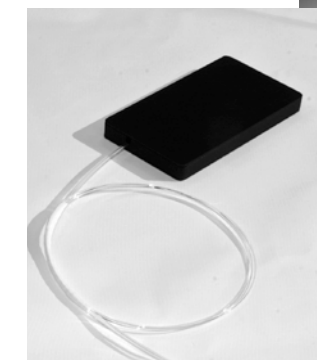
A security gate using neutron detectors to check for nuclear substances

terrorist attacks on the United States on September 11, 2001. In this context, a lot of neutron detectors have been rapidly deployed, especially in the United States, as a means to prevent the illicit proliferation of nuclear threats like plutonium and enriched uranium.

With the suddenly growing demand for neutron detectors, helium-3, the gas mainly used for neutron detection up until that time, fell into a supply crisis and became difficult to procure internationally due to the soaring price in the market. Consequently, there were urgent demands for the development of an alternative detector consisting of solid material instead of helium-3.

In response to this situation, Tokuyama focused its research on neutron-detection scintillators as a solid material to replace helium-3, drawing on the crystal technologies accumulated in the past. This led to the successful development of a special fluoride single crystal containing lithium-6 (<sup>6</sup>Li), which has a high sensitivity to neutrons. This fluoride single crystal can be handled and processed easily because it is a solid material, and can detect neutrons with higher speed and sensitivity than conventional gas. Thanks to these advantages, users can potentially utilize the material for a wide range of applications, not only security, but also environmental monitoring and boron neutron capture therapy (BNCT) for brain tumors and other forms of cancer.

An example of a portable detector module using of the LiCAF scintillator



LiCAF scintillator

LiCAF is a complex fluoride crystal made of lithium, calcium, aluminum, and fluorine. A LiCAF crystal scintillator can be used for neutron detection in a wide range of applications because it contains a high concentration of <sup>6</sup>Li, which is highly effective for capturing neutrons, and it can be formed in complex shapes and cover a large area.

BNCT is an advanced medical treatment which is expected to become popular. Particularly for the treatment of brain tumors, BNCT can annihilate only the cancer cells, greatly lessening the concern about side effects associated with conventional radiation therapies.

Tokuyama is currently conducting demonstration tests in various industries and trying to establish business models, aiming to commercialize its fluoride single crystal in fiscal 2015.

### Practical skills lead to knowledge, and repeating that process brings about new things



Kentaro Fukuda  
Doctor of Engineering  
Senior Researcher,  
Research & Development Department,  
MOT Division

Gas has been used to detect neutrons for a long time, and there was no progress made in switching over to a solid substance because there were no materials that could detect only neutrons without reacting to X-rays and gamma rays, which are released together with the neutrons. When solid materials were tried, they ended up reacting in some way to the X-rays and gamma rays. Therefore, our biggest challenge was to overcome this problem. We repeatedly carried out experiments while changing the combinations of materials, eventually testing over 1,000 different materials.

Growing fluoride crystals is not simple, but Tokuyama has very advanced technical expertise in crystallization and excellent facilities. Furthermore, we incorporated technologies from Tohoku University, with which we had been conducting joint-research in the past, and succeeded in drastically shortening the time required for

crystallization from the typical time of several weeks to just one or two days. As a result, we realized a fluoride crystal of sufficient performance after around one year.

As a researcher, I give about the same level of importance to practical skills as I give to theoretical thinking. Of course, many experiments end up in failure or produce different results than expected, but because of that, we can change our ideas and see things in new ways. By repeating this process over and over, anyone can learn things he didn't understand before, or develop skills that he didn't previously have. That is the true pleasure of doing research and development.

Now we are finally moving ahead with commercialization. Since the technology can be used in various industries, I hope this research makes further progress and our products contribute to society.





## Leveraging the Power of Chemistry to Create a Safer, More Comfortable Future

Tokuyama pursues the highest level of craftsmanship in its manufacturing operations, aiming to deliver benefit to people and value to society befitting a world-class chemical manufacturer.

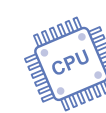
As the Company strives to contribute to society with products that create new possibilities for the future, everyone at Tokuyama is dedicated to taking on the challenges that lie ahead.



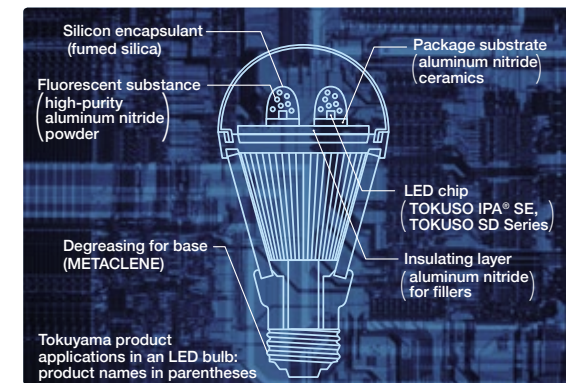
### Sustaining People's Lives Today and Supporting the Infrastructure of Tomorrow



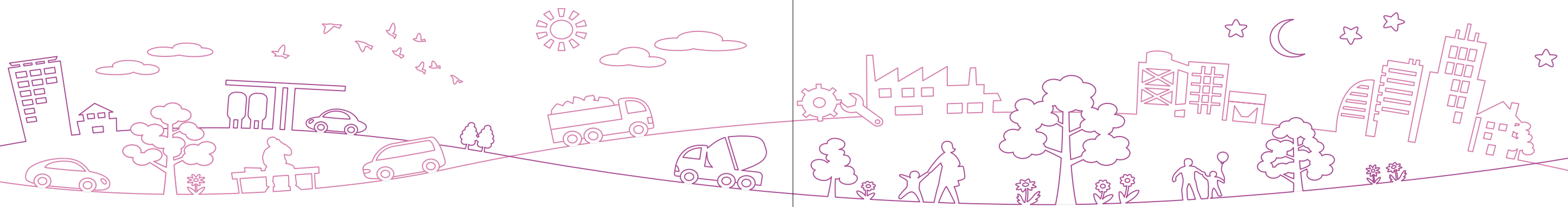
### Helping Make Every Day Comfortable and Healthy



### Supporting Society and People's Lifestyles with High-Performance, Highly Functional Products



### Promoting a Recycling-Oriented Society That Benefits People and the Environment



Since its establishment in 1918, Tokuyama has been producing soda ash, a product used as a raw material for various goods used in everyday life, including glass, soap, detergent, and food additives such as brine.\* Among these items, food additive grade soda ash is made exclusively by Tokuyama in Japan.

Tokuyama also produces hydrogen, which is a byproduct from its caustic soda manufacturing process. Amid high expectations for the usage of hydrogen as a future energy source, Tokuyama is working to popularize use of liquid hydrogen in society as a fuel cell material for next-generation eco-vehicles, by exploiting its potential for stable storage and transport.

Porum is Tokuyama's brand of microporous film which repels water but still allows air and moisture to penetrate. Because Porum is soft and highly functional, it can be used as back sheets for disposable infant and adult diapers. Tokuyama has been expanding its production facilities for Porum in response to rapidly growing consumption of disposable diapers, not only in Japan but also in emerging countries in recent years.

Products supported by Tokuyama technology can also be found in the medicine cabinet. Developed over many years, Tokuyama's organic synthesis technologies are helping people maintain their health through stable supply of the high quality active pharmaceutical ingredients.

\*Brine is a solution of soda ash (sodium carbonate) or other type of salt in water.

\* Active pharmaceutical ingredients are contained in drugs, and are listed as ingredients on the packaging of over-the-counter drugs.

Semiconductors are used in personal computers, LEDs, home appliances, automobiles and a vast number of industrial machines. Their efficiency and processing speed slows, however, when heat builds up inside the components, so finding ways to reduce this heat is an issue in the industry. Tokuyama's high-purity aluminum nitride ceramics effectively dissipate heat owing to their superior thermal conductivity. Consequently, they are used in heat-dissipating substrates of power semiconductors,\* which generate particularly large amounts of heat. In this way, Tokuyama is helping raise energy efficiency and energy conservation.

Tokuyama is a leading manufacturer in Japan for polycrystalline silicon, a key material for semiconductors. Polycrystalline silicon is also used for solar cells and it contributes to facilitating the adoption of renewable energy.

\* Power semiconductors are used to control and convert electricity in motors, lighting systems and other devices. They are widely used in machinery for manufacturing such products as personal computers, televisions, air conditioners, and automobiles.

As a basic material for social infrastructure, cement is essential for the development of society and public safety. At its cement plants, Tokuyama is reusing waste matter\* that had mostly been incinerated or sent to landfills in the past as raw materials or an alternative thermal energy source for cement production. In this way, the Company is helping to promote a recycling-oriented society.

In addition, Tokuyama has achieved a 100% recycling rate for waste gypsum board by using its industry-first technologies. The Company's active efforts to reuse raw materials are attracting attention from various industries.

\* For every ton of cement it produces, Tokuyama uses 460 kilograms of waste matter or waste-derived substances as raw materials.



## Contributing to Society with Products That Help Support People's Daily Lives

### Providing Materials Essential for a Wide Array of Industries

Tokuyama produces a large number of materials that industries depend on to make the products which support modern lifestyles.

The Company's chemical products are transformed into many different types of products which help people accomplish their better lives.

#### Soda ash



Soda ash is used in a wide range of applications as a raw material for glass, detergent, and food and beverage additives, as well as a material used for the production of inorganic chemicals and iron and steel. Tokuyama is currently the only company in Japan making food additive grade soda ash.

#### Caustic soda



Caustic soda is an essential substance in the manufacturing processes of a broad array of products including paper, synthetic fibers, food seasonings, soap, and aluminum. With Japan's second highest production capacity of caustic soda at a single production site, Tokuyama is helping ensure a stable supply to various industries.

#### Chlorine derivatives



Chlorine, hydrochloric acid and other chlorinated substances are produced through the electrolysis of brine, and are used as raw materials for polyvinyl chloride, urethane, and various kinds of solvents, as well as everyday items such as tap water purifiers.

#### Soda Ash and Calcium Chloride Business

- \* Soda ash
- \* Calcium chloride (liquid or granular)
- \* Sodium bicarbonate

#### New Organic Chemicals Business

- \* Isopropyl alcohol (IPA)

#### Chlor-Alkali and Vinyl Chloride Business

- \* Caustic soda (liquid or flakes)
- \* Methylene chloride
- \* Propylene oxide (PO)
- \* Ethylene dichloride (EDC)
- \* Vinyl chloride monomer (VCM)

### Chemicals Business Division



#### Electronic Materials Business

- \* Polycrystalline silicon

#### Fumed Silica Business

- \* Fumed silica
- \* High-purity fused spherical silica

#### SHAPAL Business

- \* High-purity aluminum nitride powder and granules
- \* Aluminum nitride powder for fillers

#### IC Chemicals and Cleaning System Business

- \* High-purity chemicals for electronics manufacturing (TOKUSO IPA® SE, METACLENE® SE)
- \* Positive-type photoresist developer
- \* METACLENE®, YUTORUNA

### Specialty Products Business Division



### Driving the Evolution of IT and the Future of Energy and Environmental Technologies

Tokuyama's specialty products and technologies are among the world's best for enabling the extremely high performance of today's semiconductors, which are the central components powering cutting-edge electronic devices and are used in products such as smart phones, flat-screen televisions, and hybrid vehicles.

#### Polycrystalline silicon



Tokuyama's technologies for attaining extremely pure polycrystalline silicon contribute to bringing out the high performance of semiconductors. Having a high standard of product quality and process sustainability, Tokuyama has earned an excellent reputation and trust in the semiconductor industry as one of the world's market leaders in the production of polycrystalline silicon.

#### Aluminum nitride



Aluminum nitride ceramics have a higher rate of thermal conductivity and insulation compared to other kinds of ceramics. Used as heat-dissipation materials, they support stable operations of semiconductors used in advanced devices such as LEDs and optical transmission systems. Tokuyama possesses the world's top market share of the powdered form.

#### Chemicals for electronics manufacturing



As semiconductor devices become increasingly higher performance, extremely high purity is demanded in electronics manufacturing. In response to these advanced requirements, Tokuyama provides various kinds of high-purity chemicals for electronics production applications, including IPA.

### Drawing on the Full Potential of Chemistry to Make People's Lives Healthier and More Comfortable

Tokuyama is also engaged in the fields of healthcare and hygiene, providing countless people around the world with high-quality lifestyle and medical products that help make every day healthy and comfortable.

#### Microporous film



Microporous film repels water but allows air and moisture to penetrate. It is used as an air-permeable material attached to non-woven fabrics, moisture-absorption and drying agents, disposable heat pads, and back-sheets for disposable diapers.

#### Plastic lens-related materials



Photochromic dye materials protect the eyes from the sun's ultraviolet rays and change from transparent to either gray or brown when exposed to sunlight. In addition, the Company's hard-coating solutions improve abrasion resistance on the surface of lenses and are used worldwide.

#### Bulk pharmaceuticals



Tokuyama produces pharmaceutical ingredients and intermediates for drugs. The Company is contributing to achieving high-quality medical care as a good partner to pharmaceutical makers by ensuring a stable supply of high-quality products from its production facilities, which comply with strict manufacturing and quality control guidelines.

#### Fine Chemicals Business

- \* Pharmaceutical ingredients and intermediates for drugs
- \* Plastic lens-related materials

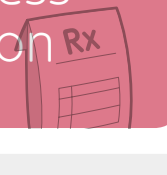
#### NF Business

- \* Microporous film

#### Products made by group companies

- \* Polyolefin film
- \* Reagents, analyzers and systems for clinical tests
- \* Dental materials and equipment
- \* Electro-dialyzers and ion exchange membranes for desalination and condensation
- \* Sensing elements and devices
- \* Plastic window sashes and related products, and residential construction materials

### Life & Amenity Business Division



### Cement Business Division



### Promoting a Recycling-Oriented Society with Recycling Technologies That Are Ahead of Their Time

Tokuyama works to help maintain and improve social infrastructure by supplying good-quality cement, and promotes a sustainable society by reusing industrial waste as a raw material in its cement production.

#### Cement Business



- \* Portland cement
- \* Cement for dam construction
- \* Blast furnace slag cement
- \* Ready-mixed concrete
- \* Cement-type stabilizer
- \* Plaster sheets for interior and inkjet printing

#### Recycling and Environment-related Business

- \* Utilization of waste plastic for fuel
- \* Utilization of incinerated ash as a raw material for cement
- \* Recycling of waste gypsum boards

Boasting the second-largest single cement plant in Japan, Tokuyama produces various kinds of cement for specific needs both in Japan and abroad, including ordinary, early-strength, and moderate-heat Portland cement, as well as blast furnace slag cement. It also produces products that are useful for structural foundation work, including cement soil stabilizers for reinforcing soft ground.

#### Recycling and Environment-related Business



As an environmental initiative far ahead of its time, Tokuyama began effectively utilizing waste matter as a raw material for cement in 1938. The Company has kept this mindset up to the present day, continuously creating new recycling businesses and technologies. For example, Tokuyama has recently drawn attention from the industrial waste processing industry for its continuous re-crystallization technology for industry-first waste gypsum board.



## Pursuing Corporate Social Responsibility by Practicing Socially Responsive Management

Aiming to be a company that is always trusted by society, Tokuyama has organized its management system to provide a foundation for conducting fair and impartial business activities, and is pursuing CSR-oriented management encompassing measures to ensure compliance and implement Responsible Care activities.



Tokuyama has created the above symbol for CSR promotion. Depicting a sunflower, the symbol is intended to convey the Company's active, healthy and honest stance toward CSR. Under this symbol, the Tokuyama Group will not only pursue compliance and efficiency in its business operations, but will also work to develop into a vibrant, sound corporate entity that is socially and environmentally beneficial and is trusted by all stakeholders.

### Tokuyama's Approach to CSR

Tokuyama pursues CSR to build good relations with all of its stakeholders, in accordance with its basic philosophy of CSR-oriented management and basic policy of "management that is responsive to society."

Recognizing that internal controls are the basis for CSR, Tokuyama is working to establish a CSR implementation structure that gives equal weight to ensuring sound corporate governance, securing compliance, strengthening risk management, and implementing Responsible Care activities, which are vital endeavors for a chemical manufacturer.

To achieve continuous growth as a group that is trusted by society and always chosen by customers, the Tokuyama Group has formulated its Code of Conduct and Five Conscience Clauses for all employees and officers. It makes the content of these documents known to all members of the Group by posting them on notice boards in the workplace and distributing them as booklets. Furthermore, each group company is setting its own action guidelines in an effort to forge relations with every type of stakeholder.

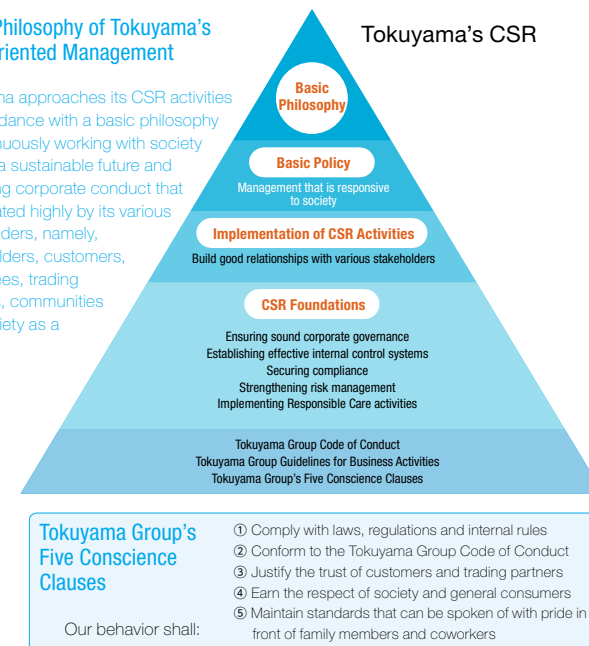
### Corporate Governance

#### Basic Approach

Recognizing that corporate governance provides an essential foundation for raising its corporate value, Tokuyama prioritizes routine inspections and periodic reviews as a means of continuously ensuring a proper framework for the conduct of management. Accordingly, the Company strives to fulfill the highest standards of corporate ethics and strictly comply with laws and regulations as it works to improve corporate value. With an awareness of its corporate social responsibility, Tokuyama practices "management that is responsive to society" in

### Basic Philosophy of Tokuyama's CSR-Oriented Management

Tokuyama approaches its CSR activities in accordance with a basic philosophy of continuously working with society to build a sustainable future and practicing corporate conduct that is evaluated highly by its various stakeholders, namely, shareholders, customers, employees, trading partners, communities and society as a whole.



order to earn the trust of stakeholders, including shareholders, customers, trading partners, employees and local communities.

#### Corporate Governance Framework

##### Board of Directors

Tokuyama's Board of Directors deliberates and makes decisions on important matters concerning the execution of the Company's business while supervising business operations. Tokuyama appoints two external directors for the purpose of strengthening the supervisory function of the Board of Directors. Moreover, the Company adopted an executive officer system in April 2011 for the purpose of separating the supervisory and executive functions.

##### Audit & Supervisory Board

Tokuyama's Audit & Supervisory Board reports on, discusses, and decides on important matters related to auditing. Its members attend meetings of the Board of Directors as well as other important company meetings while overseeing the execution of duties by the directors.

##### Human Resources Committee

Comprised of representative directors and external directors, the Human Resources Committee holds discussions on such matters as remuneration for directors and executive officers and the selection of candidates for director and executive officer positions in advance of Board of Directors meetings.

##### Executive Committee and Strategy Committee

Established as advisory bodies to the president, the Executive Committee and Strategy Committee are comprised of executive officers selected by the president. The Executive Committee drafts management plans and key strategies, discusses and decides on general business policies and plans, and provides the president with reports needed for making decisions on business matters. The Strategy Committee discusses important matters such as the pros and cons of pursuing certain businesses and the manner in which to execute them. It also assists the president in determining the direction of business objectives.

## Taking Our CSR Initiatives to the Next Level



**Tatsuo Segawa**  
Representative Director,  
Senior Managing Executive Officer  
(director responsible for the Corporate Social Responsibility Division)

I recognize that Tokuyama is expected to fulfill its corporate social responsibility while engaging with stakeholders. Accordingly, the Company determines the impact that each stage of its business activities has on communities and the environment while holding itself accountable for its actions. Through these activities, the Tokuyama Group is seeking to help create a sustainable future for everyone.

While aiming to remain a "prominent manufacturer that is responsive to society," the Tokuyama Group has been carrying out Responsible Care activities for many years. While these activities began as voluntary initiatives for managing chemical substances, they have driven the evolution of our environmental management, resulting in considerable reductions in energy consumption on a per-unit basis, and the establishment of a business for recycling materials used at the Company's cement factory.

We have made progress in establishing a platform for pursuing CSR activities in recent years, setting up an internal control system focused on compliance and risk management, reorganizing our management structure to strengthen corporate governance, and improving management transparency while emphasizing corporate ethics. Moving forward, we recognize the need to expand our CSR platform globally as the Group expands operations beyond Japan.

As we approach the Company's 100th anniversary in 2018, we are looking forward to launching a new era for the Tokuyama Group. We recognize that companies must continually transform themselves if they are to thrive in the future. As part of our new era, we intend to take our CSR initiatives to the next level as we live up to the basic principles of Tokuyama's CSR-oriented management.

#### CSR Promotion Council

Chaired by the president, the CSR Promotion Council was established to set CSR-related policies and goals, and ensure that activities are smoothly carried out so such goals are achieved. Positioning corporate governance and internal controls as the basis for CSR activities, the council deliberates on important matters concerning internal control systems.

#### Risk Management and Compliance Committee

Operating under the CSR Promotion Council, the Risk Management and Compliance Committee is chaired by the director responsible for the Corporate Social Responsibility Division. The committee takes the initiative in promoting risk management and compliance, which are both core elements of internal control systems.

#### Helpline Committee

The Helpline Committee is responsible for operating Tokuyama's whistleblowing helpline, which was set up to enable internal

reporting of legally questionable actions and behavior of executives or employees.

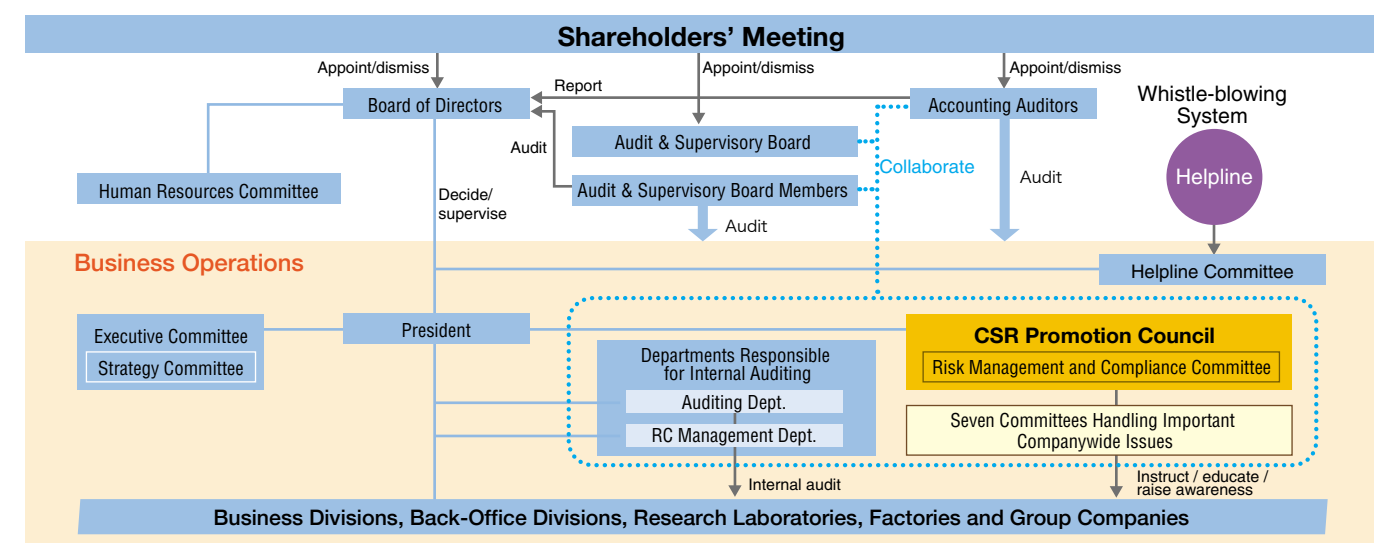
#### Departments Responsible for Internal Auditing

Tokuyama established the Auditing Department and the Responsible Care Management Department as its organizations responsible for internal auditing. Both departments conduct internal audits of all departments and divisions of the Company as well as group companies.

#### Framework for Ensuring Risk Management and Compliance

As a framework for ensuring risk management and compliance, Tokuyama has established the CSR Promotion Council, under which important company-wide issues are handled by seven committees: the Financial Reporting Committee, Fair Trade Compliance Committee, Foreign Trade Compliance Committee, Information Security Committee, Environmental Measures Committee, Safety Measures Committee, and Product Safety and Quality Assurance Committee.

#### Corporate Governance Structure







## Protecting the Environment, Ensuring Safety, and Promoting Good Health for People and Local Communities

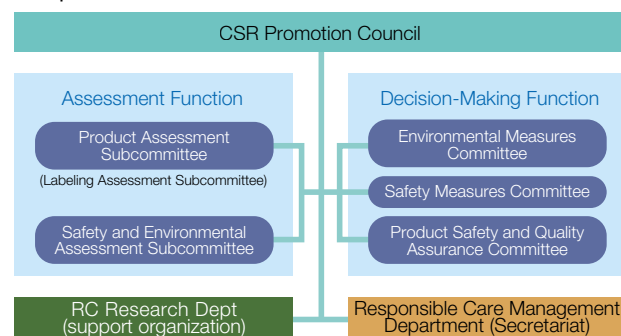


Responsible Care activities are an essential component of Tokuyama's corporate social responsibility. Tokuyama has put in place company-wide infrastructure for promoting Responsible Care, and is incorporating this initiative in each of its management systems as it strives to continuously improve its environmental, safety, and quality systems.

### What is Responsible Care?

Responsible Care is a voluntary management initiative through which companies that manufacture and handle chemical substances undertake measures for protecting the environment and ensuring the safety and health of their employees as well as members of the public. It covers all operations, from the development of chemical substances to their manufacturing, distribution, usage, final consumption and disposal. Responsible Care also encourages the public disclosure of these activities along with dialogue and communication with members of society. The Responsible Care initiative originated in Canada in 1985, and is currently used in 52 countries around the world. In 1995, the Japan Chemical Industry Association (JCIA) set up the Japan Responsible Care Council, and later renamed it the Responsible Care Committee. As of April 1, 2014, the committee had 104 corporate members. As one of the original members of the organization, Tokuyama has been actively implementing Responsible Care activities as the basis for its environmental management and CSR activities.

### Responsible Care Promotion Structure



This laboratory checks the safety of chemicals and assesses their environmental impact using simulations. It also carries out environmental measurements, working environment measurements and ultra-trace analysis of substances under regulation and chemical pollutants

This department promotes RC activities throughout the Group, covering the areas of the environment, safety and quality.

### Framework for Promoting Responsible Care

As a framework for promoting Responsible Care, Tokuyama has established a number of related organizations that pursue concrete initiatives under its CSR Promotion Council, which is chaired by the company president. Specifically, it set up the Environmental Measures Committee, Safety Measures Committee, and Product Safety and Quality Assurance Committee as decision-making bodies, and the Product Assessment Subcommittee and several other subcommittees as assessment organizations.

### Responsible Care Evaluation and Management System

Tokuyama formulates medium-term plans for its Responsible Care activities, and sets policies and goals aimed at achieving the plan every fiscal year. Individual departments then create and carry out specific plans based on these policies and goals. The results of initiatives are evaluated at the end of each fiscal year and incorporated in plans for the following fiscal year.

Tokuyama is currently carrying out Responsible Care activities under a four-year plan launched at the beginning of fiscal 2011.

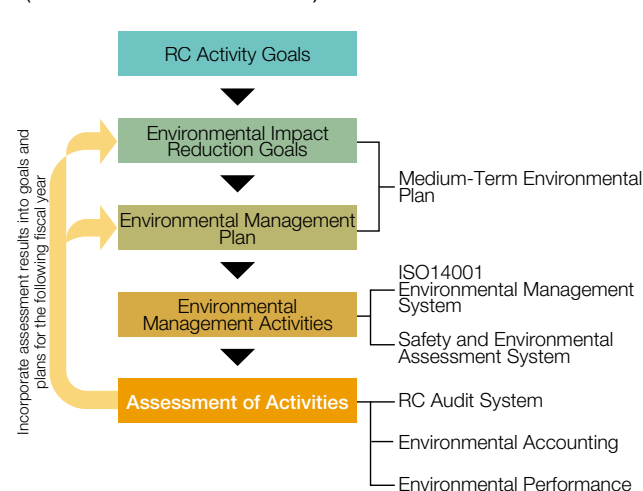
### Operation of Management Systems

#### »ISO 14001 environmental management system

The Company's Tokuyama Factory and Kashima Factory have acquired ISO 14001 certification, an international standard for environmental management systems. Each factory sets an environmental policy and goals in line with Tokuyama's company-wide environmental policy, and undertakes related activities intended to alleviate environmental impact, conserve energy, reduce waste, and recycle resources.

Tokuyama's head office, branch offices and research laboratories also set policies and goals according to the scale of their respective operations, and pursue such activities as energy conservation, waste reduction, and resource recycling.

### RC Activity Evaluation and Management System (Environmental Preservation)



#### »ISO 9001 quality management system

Tokuyama has acquired ISO 9001 certification for its quality management system, which has been operating since fiscal 2002 as a company-wide system encompassing sales, development and all other operations.

#### »Occupational health and safety management systems

In accordance with the New Occupational Health and Safety Guidelines issued by the Japan Chemical Industry Association (JCIA), Tokuyama has established and is operating occupational health and safety management systems at each of its workplaces. In fiscal 2005, the Tokuyama Factory expanded its safety management system by incorporating a broader range of safety-related activities.

### Assessment Systems

Tokuyama has set up several assessment systems in an effort to reduce environmental- and safety-related risks.

#### »Safety and environmental assessments

Tokuyama conducts safety and environmental assessments before newly installing, expanding or modifying any of its facilities. The Company checks the safety design of equipment, the safety level of materials to be handled, compliance with the laws and regulations, the impact on the environment, and other factors with the aim of ensuring facilities that are easy to operate, simple to maintain, and not prone to accidents or disasters. The assessments are conducted at the three separate stages of basic plans, designs, and preliminary operations, in

A safety data sheet is a document for recording information related to the risks and toxicity of chemical substances. It is prepared to facilitate the safe handling of such substances, and includes the names of the substances, safety measures, and procedures for responding to emergencies.

order to verify that the facilities have been planned to be safe and environmentally friendly, built according to design specifications, and completely ready for operation.

#### »Product and labelling assessments

As a means to ensure product safety, Tokuyama conducts a product safety assessment at every stage of operations, from the initial research and development stage through to market release. The assessments confirm compliance with legal requirements and evaluate the level of various risks, including the safety of chemical substances used in the product, their potential impact on the environment, and their effect on human health. The Company also checks all labelling in documents such as product catalogs, safe handling manuals, and safety data sheets in order to ensure that instructions and warnings are complete and accurate.

### Responsible Care Implementation Infrastructure and Management System Operations

#### »Auditing systems

Tokuyama has established an auditing system for the purpose of verifying that each of its workplaces carries out their respective activities in an appropriate manner in accordance with company-wide policies.

#### »Safety and environmental audits

Tokuyama conducts safety and environmental audits on an annual basis in order to verify the applicability of its environmental conservation management and accident- and disaster-prevention measures. Led by the director chairing the Safety Measures Committee and the Environmental Measures Committee, auditing teams inspect each workplace, including the Purchasing & Logistics Department, Health Management Center, and all organizations subject to inspection under

### Basic Philosophy of Responsible Care

#### Basic Policy

As a member of the JCIA Responsible Care Committee, Tokuyama Corporation carries out Responsible Care activities that protect the environment and preserve safety and health throughout the entire chemical substance life cycle, from development and manufacturing to distribution, use, final consumption and disposal.

Our social mission is to aggressively tackle and systematically solve environmental issues in particular, which, in turn, will lead to sustainable corporate and social development. Based on this recognition, we promote Environmental Management, a management policy that emphasizes the environment, in all of our business activities, including development, manufacturing and sales.

#### Action Objectives

- Promote environmental protection**
  - Implement an ISO 14001-based Environmental Management System and reduce environmental impact
- Observe the laws and regulations**
  - Observe international rules, domestic laws and regulations and industrial standards
  - Thoroughly implement export management rules on materials under control

#### 3. Promote energy conservation and curb global warming

- Achieve top-class unit energy consumption in the industry for each product

#### 4. Promote resource recycling and work toward reduction and the proper management of waste materials

- Promote the material recycling and thermal recycling of resources
- Work toward achieving a paperless office

#### 5. Promote process safety, disaster prevention and occupational health and safety

- Aim for zero accidents and disasters based on the principles of self-responsibility and the self-management of safety
- Achieve a comfortable working environment and protect people's safety and health

#### 6. Ensure strict product safety standards

- Offer environmentally friendly products that can be used with safety
- Provide proper information on how to use products and what precautions to take

#### 7. Deepen the relationship of trust with society

- Publicly disclose information on the Company's activities concerning environmental protection, process safety and disaster prevention, occupational health and safety, and chemical product safety
- Actively engage in dialogue with the local communities



Japan's High Pressure Gas Safety Act. The results of the audits are compiled in reports and distributed to all departments concerned along with the company president.

» Audits by third parties

Tokuyama undergoes ISO 9001 and ISO 14001 examinations conducted by accreditation organizations. According to the most recent examination for maintaining ISO 9001 certification conducted in April 2014, three items were designated as opportunities for improvement, and the Company dealt with each accordingly. Likewise, examinations for renewing ISO 14001 certifications were carried out at the Tokuyama Factory in October 2013 and the Kashima Factory in November 2013. A total of nine items were identified, seven of which were designated as opportunities for improvement and two as cases of minor nonconformity. The factories then undertook remedial measures based on the findings.

» Internal audits

In accordance with its occupational health and safety management system as well as ISO 9001 and ISO 14001 standards, Tokuyama periodically conducts internal audits covering the progress of its action plans, the status of system operations, and other related matters. If problems are uncovered, relevant personnel are notified and remedial measures are taken.

Education and Training

Tokuyama provides all employees with general training on Responsible Care within its multi-tier group educational programs. Moreover, personnel involved in environmental management, safety management, occupational health and safety, and quality management are provided practical education and training in each of these respective management activities.

» Environmental management training

The Tokuyama Factory and the Kashima Factory have established educational and training programs based on ISO 14001 environmental manuals. Offered to employees and contracted workers alike, the training focuses on the importance of environmental conservation and compliance with relevant laws and regulations. In fiscal 2013, approximately 3,400 people participated in the training. In addition, 18 internal auditors participated in training sessions aimed at enhancing their auditing skills.

» Safety management and occupational health and safety training

Tokuyama provides its staff with training covering a wide range of topics including: hazard prediction; practical education; pre-operation hazard prediction; safety regulations; in-house specialized courses on electricity, oxygen deficiency, waste incinerators, and other topics; foreman skills; troubleshooting; usage of fire prevention and extinguishing systems; evacuation drills; general disaster drills; traffic safety; and the provision of accident- and disaster-prevention assistance offsite.

» Quality management training

Tokuyama provides training on ISO-related issues in each of its workplaces. In fiscal 2013, eight key personnel from various workplaces completed an ISO 9001 internal auditor training course, and in

August 2013, 32 internal auditors participated in an auditor skills improvement seminar led by company personnel.

Business Continuity Planning Initiatives

A business continuity plan (BCP) is an action plan prepared by a business for the purpose of minimizing the impact of a disaster, accident or other state of emergency on its core operations, and for enabling the earliest possible recovery and resumption of operations that have been temporarily suspended by such circumstances.

Tokuyama formulated a Basic Policy for Continuing Operations in the Event of a Disaster (see p. 18, upper left), and established a BCP based on a near-future scenario of a major earthquake occurring directly below the Tokyo metropolitan area. The Company is also drawing up BCPs to respond to such events as a major earthquake along the Nankai Trough and new influenza pandemics.

» Initial emergency response and BCP drills

As a part of BCP initiatives, in December 2013 the Company held an initial emergency response drill to test its BCP based on the scenario of an earthquake hitting Tokyo during regular business hours. Held for a second time following the first drill in the previous year, the drill involved the Tokuyama Factory, the Kashima Factory, the Tsukuba Research Laboratory and 13 group companies located in the Tokyo metropolitan area.

During the simulation drill, an emergency response headquarters was established in Tokuyama's head office in Tokyo, and at the same time, a Tokuyama support headquarters was set up at the Tokuyama Factory, the safety of employees and officers was confirmed, communication channels were secured, information on damage sustained was collected and shared, and relief supplies were distributed (see photos on p. 18, upper right).

In addition to the initial emergency response drills, a simulation drill for continuing essential operations was carried out by the Chemicals Business Division at the Tokuyama Factory in March 2014, based on the scenario of a shutdown of the Tokyo Head Office. The drill tested the Tokuyama Factory's ability to transfer the chain of command and key duties handled by the Tokyo Head Office to its sales and production departments at the factory, and, with these departments in charge, secure communication channels, share information, and prepare to continue operations.

Basic Policy for Continuing Operations in the Event of a Disaster

- ① We shall ensure the physical safety of employees and officers, temporary staff, and visitors to the Company.
- ② We shall quickly confirm the safety of employees and officers and their families.
- ③ We shall repair and maintain all worksites and take steps to prevent any secondary damage.
- ④ We shall assist local communities with recovery of social functions.
- ⑤ We shall work to resume business activities as soon as possible and minimize the impact on our stakeholders.
- ⑥ We shall provide regular training and education to employees and officers and specify their roles in the event of a disaster.

(Established by the CSR Promotion Council on March 29, 2012)



An emergency response headquarters was set up in the Tokyo Head Office and teams were assembled to respond to the disaster during a drill to test the BCP based on a major earthquake hitting the Tokyo metropolitan area.



Damage in the surrounding area was determined and the information was shared during the simulation drill.

Priority Tasks and Results of Responsible Care Activities in Fiscal 2013

Category	Priority tasks	Results
Management	Review of Responsible Care management by top managers	<ul style="list-style-type: none"> <li>● Held meetings on promoting CSR</li> <li>● Conducted safety, environment, and quality audits</li> </ul>
Environmental conservation	<ul style="list-style-type: none"> <li>● Comply with legal requirements and other regulations</li> <li>● Achieve zero environmental accidents</li> <li>● Achieve targets for reducing environmental impact                             <ul style="list-style-type: none"> <li>- Reduce emissions of substances that affect the environment</li> <li>- Conserve energy</li> <li>- Maintain "zero emissions" of waste</li> </ul> </li> <li>● Continue making improvements to environmental management systems</li> </ul>	<ul style="list-style-type: none"> <li>● Strictly complied with legal requirements</li> <li>● No environmental accidents</li> <li>● Reduced emissions of substances that affect the environment                             <ul style="list-style-type: none"> <li>Atmospheric emissions                                     <ul style="list-style-type: none"> <li>- SOx emissions reduced by 48% year on year</li> <li>- NOx emissions increased by 9% year on year</li> <li>- Beat target for reducing soot emissions by 14%</li> </ul> </li> <li>Water quality                                     <ul style="list-style-type: none"> <li>- Chemical oxygen demand (COD) amount increased by 6% over the targeted amount</li> <li>- Beat target for reducing nitrogen emissions by 37%</li> <li>- Beat target for reducing phosphorus emissions by 20%</li> </ul> </li> <li>- Pollutant release and transfer register (PRTR)                                     <ul style="list-style-type: none"> <li>- Beat target for reducing emissions of PRTR designated substances by 2%</li> </ul> </li> </ul> </li> <li>● Promoted energy conservation                             <ul style="list-style-type: none"> <li>- Reduced unit energy consumption by 20.6% compared to fiscal 1990</li> <li>- Maintained effective utilization of waste rate of 94%</li> </ul> </li> <li>● Maintained landfill to total waste rate of 1%</li> <li>● Continued to improve environmental management systems                             <ul style="list-style-type: none"> <li>- Reviewed/simplified documents and systems</li> </ul> </li> </ul>
Safety and accident prevention Occupational health and safety	<ul style="list-style-type: none"> <li>● Ensure no accidents or disasters occur</li> <li>● Enhance safety management systems</li> <li>● Promote risk management and hazard management</li> <li>● Promote physical and mental health</li> </ul>	<ul style="list-style-type: none"> <li>● Achieved another year free of facility accidents</li> <li>● Two accidents which did not require employees to miss work                             <ul style="list-style-type: none"> <li>One contractor accident not requiring anyone to miss work and one requiring a leave of absence</li> </ul> </li> <li>● Enhanced safety management systems                             <ul style="list-style-type: none"> <li>- Included near-miss reports in risk assessments</li> <li>- Improved safety management during changes</li> <li>- Utilized/shared safety-related information</li> </ul> </li> <li>● Promoted risk and hazard management                             <ul style="list-style-type: none"> <li>- Tested a BCP based on a major earthquake in the Tokyo metropolitan area</li> <li>- Examined disaster prevention measures for responding to an earthquake and tsunami at the Tokuyama Factory</li> <li>- Held comprehensive disaster prevention and safety activities</li> <li>- Conducted various kinds of drills</li> </ul> </li> <li>● Promoted physical and mental health                             <ul style="list-style-type: none"> <li>Implemented health management focusing on addressing mental health issues and lifestyle diseases</li> </ul> </li> </ul>
Chemical product safety	<ul style="list-style-type: none"> <li>● Ensure the safety of products</li> </ul>	<ul style="list-style-type: none"> <li>● Conducted inspections of products and labelling</li> <li>● Revised safety data sheets</li> <li>● Actively participated in the JIPS*</li> <li>● Complied with the Asian version of the Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)</li> </ul>
Build relations of trust with local communities and society	<ul style="list-style-type: none"> <li>● Participate in community events</li> <li>● Establish a good reputation in society</li> </ul>	<ul style="list-style-type: none"> <li>● Participated in community volunteer activities</li> <li>● Held dialogues with the community on Responsible Care</li> <li>● Held factory tours</li> </ul>
Promote Responsible Care to group companies	<ul style="list-style-type: none"> <li>● Expand the scope of Responsible Care activities</li> </ul>	<ul style="list-style-type: none"> <li>● Conducted safety, environment, and quality audits</li> <li>● Distributed information related to Responsible Care                             <ul style="list-style-type: none"> <li>- Provided monthly information via an online newsletter</li> </ul> </li> </ul>

\* The Japan Initiative of Product Stewardship is an initiative spearheaded by the Japan Chemical Industry Association with the aim of facilitating the independent management of chemicals. Its members collect and analyze information on the hazardous properties of chemical substances and products in order to carry out risk assessments incorporating data on their usage and applications, comparing levels of exposure and safety. The risk assessment results provide a basis for proper chemical substance management aimed at ensuring workers' occupational safety, protecting consumers, and reducing environmental impact. The outcomes of such management activities are then disclosed to the general public and suppliers across the supply chain.



## Forging Strong Ties with Local Communities while Building a Positive, Safe, Accident-free Workplace

Recognizing that safety is the basis for its business activities, Tokuyama practices safety as the first step to maintaining good relations with the communities in which it operates. Based on this approach, the Company carries out stringent accident prevention measures and occupational health and safety initiatives in its efforts to create a positive and safe work environment that is free of accidents.



A New Year's firefighting event on January 24, 2014

education and training, and utilizes systems for managing risks, changes, and crises as a means to raise the level of safety management and identify specific sources of risks.

### Disaster drills

Tokuyama conducts a variety of disaster drills, including general disaster drills together with Shunan City.

### Working to maintain workplace safety and ensure no accidents

In fiscal 2013, no facility accidents occurred at any of Tokuyama's worksites, including the Kashima Factory and Tsukuba Research Laboratory. Consequently, the Tokuyama Factory maintained its record of zero facility accidents for the sixth consecutive year. Accidents not requiring employees to miss work, however, occurred once at the Tokuyama Factory and once at the Kashima Factory. In addition, two accidents involving employees of contractors at the Tokuyama Factory occurred, with workers not having to miss work in one case, but taking a leave of absence in the other case. Looking ahead, Tokuyama will continue making steadfast efforts to ensure that no accidents or disasters happen at its worksites.

## Tokuyama's Commitment to Safety and Accident Prevention

### Comprehensive safety and accident-prevention measures

Tokuyama has set three principles for ensuring safety: fulfill the obligations of a good corporate citizen, give safety priority over all business activities, and ensure that everyone is aware of their responsibilities and acts accordingly. Based on these principles, the Company carries out exhaustive measures for ensuring safety in manufacturing activities and at its facilities. Specifically, worksites conduct safety patrol operations and *kiken yochi* hazard prediction activities, examine near-miss accidents, practice the 5S principles (a system in Japan for promoting sorting, setting in order, systematic cleaning, standardizing, and sustaining discipline), and use a point and call-out method for affirming onsite conditions. Furthermore, the Company provides safety

## Tokuyama's Commitment to Occupational Health and Safety

### Improving safety management systems

All of Tokuyama's worksites have adopted safety management systems, through which they conduct risk assessments covering operation, equipment, and processes, and continuously make improvements in order to completely eliminate potential risks. The Company also reviews its system for safety management during changes, examining it for completeness and whether evaluation standards are necessary for improvements. In light of serious accidents caused by explosions at other companies' chemical plants in recent years, Tokuyama has begun revising its risk assessment methods to take into consideration non-routine tasks (including unusual situations), since all of the recent explosions happened when the plants were not operating normally, such as during facility maintenance work or emergency shutdowns and startups.

### Helping contractors promote health and safety

Tokuyama and its contractors carry out joint-patrols at the contractors' worksites and actively engage in dialogue about safety in order to identify hazardous work conditions and devise measures to deal with them. In this way, employees and contractors work together to put forward safety management initiatives.

### Promoting sound physical and mental health

In an effort to improve working methods and facilities, Tokuyama takes measurements of working conditions at worksites where specified chemical substances and organic solvents are handled, and has its workplaces inspected by industrial physicians.

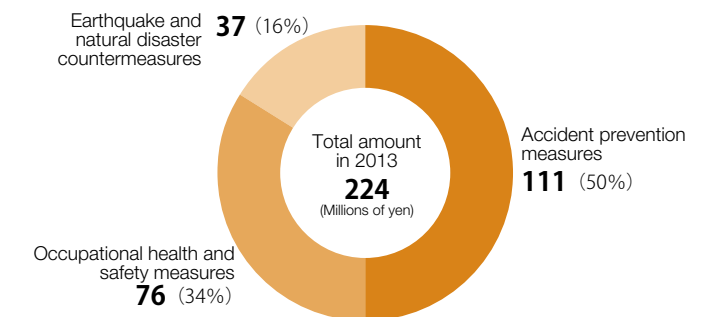
As a measure to combat lifestyle-related illness, Tokuyama provides its employees with one-on-one health counseling that incorporates the results of medical checkups. It also encourages employees who have not completed a full checkup to do so with written reminders, which resulted in 86.5% of such employees returning for a full checkup in fiscal 2013. The company-wide employee absenteeism rate, which



A safety audit at the Kashima Factory on November 14, 2013

had been rising in recent years, also decreased in fiscal 2013 to 5.3% from 5.5% in the previous fiscal year. In addition, Tokuyama has been enhancing its health management support system for personnel it transfers overseas through such steps as dispatching an industrial physician to Tokuyama Malaysia Sdn. Bhd.

### Expenditures for accident prevention and occupational health and safety



### Fiscal 2013 Company-wide Safety Management Policy

#### Basic Approach to Safety

Recognizing that safety is the basis for its business activities, Tokuyama practices safety as the first step toward maintaining good relations with the communities in which it operates.

#### Our Three Safety Principles

##### Safety for the community

We shall fulfill the obligations of a good corporate citizen.

##### Prioritizing safety

We shall give safety priority over all business activities.

##### Responsibility for safety

We shall ensure that everyone is aware of their responsibilities and acts accordingly.

#### Policy Objectives

The objectives of the Safety Management Policy are to nurture and enhance a workplace culture of safety in order to operate without any accidents or disasters, and to ensure the safety of facilities and people both onsite and in the community.

#### Key Action Items

##### Improve safety management systems

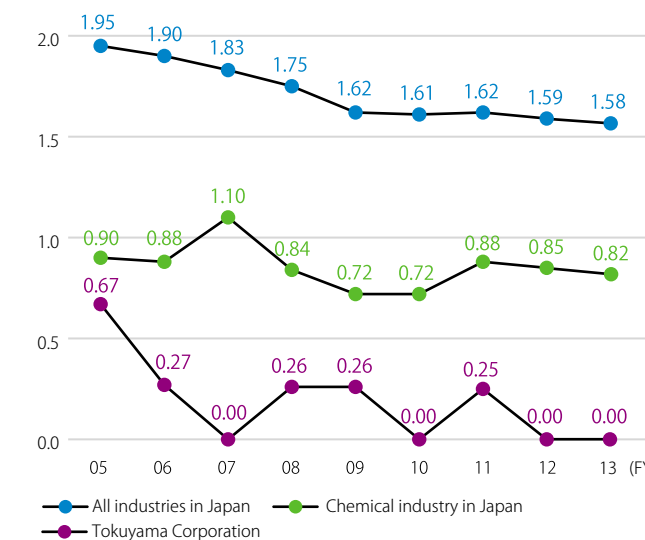
- Enhance risk assessments by reporting on near-miss accidents
- Enhance safety management during changes
- Utilize and share safety-related information

##### Make progress in risk management and hazard management

- Incorporate a business continuity plan (BCP) based on the scenario of a major earthquake in Tokyo
- Establish a company-wide BCP to respond to a major earthquake or tsunami at the Tokuyama Factory

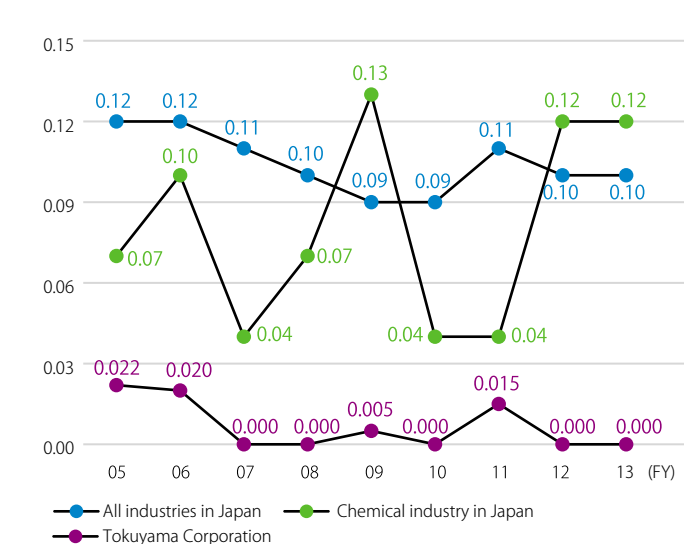
##### Promote sound physical and mental health

### Comparison of accident frequency rates \*1



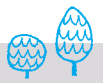
\*1 As an indicator of the frequency of industrial accidents, the accident frequency rate is calculated as the number of workers forced to miss work due to an industrial accident per one million cumulative working hours.

### Comparison of accident severity rates \*2



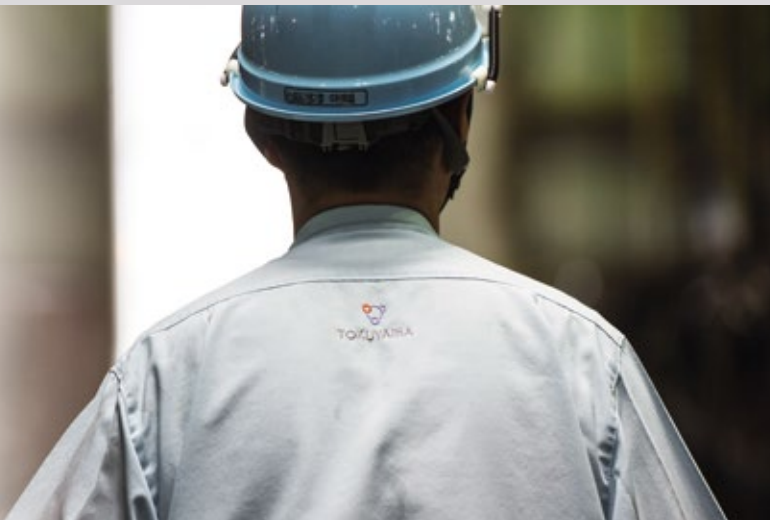
\*2 As an indicator of the magnitude of industrial accidents that have occurred, the accident severity rate is calculated as the number of lost work days due to industrial accidents per 1,000 cumulative working hours.





## Promoting Independent Learning and "Thinking Before Doing" to Improve Skills and Safety

Amid growing calls for greater safety and security in society, Tokuyama recognizes that raising the awareness of safety among its employees and equipping each of them with the skills needed to keep safe are essential to enhance the corporate value of the Tokuyama Group. Toward this end, the Company is providing an effective combination of both on-the-job and off-the-job training intended to encourage employees to appreciate their social obligation to proactively ensure safety.



### Safety Training Programs

#### » Encouraging self-initiative to improve employees' motivation

For Tokuyama to achieve sustainable growth, it is essential to cultivate human resources and enable workplaces to drive such growth going forward. With this in mind, the Company is working to develop its human resources by making the most of the individual talents of its diverse employees and helping each person improve and fully display his or her abilities, in order to improve motivation.

At the same time, Tokuyama is focusing on transferring technical skills and capabilities in order to ensure that its long tradition of craftsmanship as a chemical manufacturer is passed on to the next generation of workers. By encouraging employees to pursue independent study, take the initiative to put ideas into action, an experience the benefits of personal growth and improved performance, Tokuyama is aiming to develop more proactive and creative employees and workplaces.

#### » Employees improve skills and become more aware of safety at the Technical Education and Training Center

Tokuyama established its Technical Education and Training Center in 2007 for the purpose of raising the overall level of the capabilities and technologies it has built up over many years, and to transfer this expertise to young workers. The basic knowledge required at chemical plants, hands-on skills using the center's training equipment and other useful topics are all covered in training programs, which are provided to employees for the first 10 years after they enter the Company, or before they are promoted to factory foreman, as well as to workers hired at group companies.

Providing safety training is one of the key roles of the Center. It carries out practical training on handling dangers, particularly for new employees, by using facilities specially made for simulating dangerous situations, which would be difficult to teach onsite or demonstrate in on-the-job training. Trainees directly experience things like the force of a hammer falling from the second floor hitting their helmet, the impor-



Learning how to hang from a safety harness



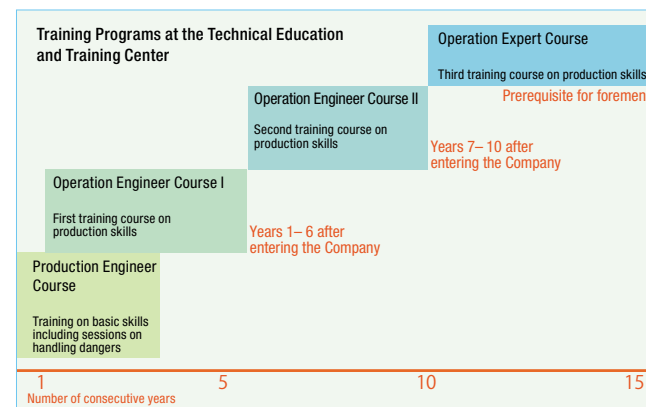
Using a ladder on the factory exterior



Experiencing improperly fastened scaffolding



Getting sprayed by a leaky pipe



tance of wearing a safety harness for preventing injury when falling, the feeling of losing one's footing on an improperly fastened scaffolding board, being sprayed with liquids like solvents from loosely fastened piping, and getting caught in moving machinery. In this way, the training curriculum has trainees actually experience unsafe conditions so that they properly learn correct procedures for ensuring safety and take the initiative in keeping the workplace safe.

### Handing Down Tokuyama's Tradition of Safety

#### » Equipping workers with the skills and knowledge required to prevent accidents and stay safe

While Tokuyama strives to transfer skills and capabilities related to manufacturing to new workers, the Company also seeks to pass down its tradition of giving first priority to safety and its techniques and know-how for avoiding risks.

At Tokuyama's production plants, safety meetings are held every day before work begins to provide opportunities for each production line team to discuss *kiken yochi* hazard prediction measures and useful examples of near-miss accidents and actual cases of accidents. In this way, the meetings facilitate communication among experienced and young workers while raising awareness of hazards.

Many types of operations are handled on production lines, so it is not easy for new and younger workers to learn precise procedures. Therefore, younger workers are paired up with skilled personnel and they repeatedly carry out work together. This ensures that younger workers learn and master practical skills, including techniques and pointers that are difficult to teach outside of the shop floor, methods for checking safety, and the importance of following proper sequences of procedures and their effect on the processes that follow.

A relatively long time of one and a half to two years is needed for new workers to learn operations. Therefore, Tokuyama employs various methods designed to speed up the process of transferring the technical skills required for its original manufacturing techniques.

#### » Transferring Tokuyama's tradition of safety to Tokuyama Malaysia

Tokuyama is proactively extending its safety activities to Tokuyama Malaysia Sdn. Bhd., which employs about 500 people at its head office and factories, collectively situated on a vast plot of some 2 million m<sup>2</sup>. Aiming to achieve the same level of safe and reliable operations as at its factories in Japan, Tokuyama is working hard to educate and train local Malaysian workers and combine their skills with Japanese staff stationed onsite so that the Company's tradition of giving first priority to safety becomes rooted at Tokuyama Malaysia.



### Making a habit of "thinking before doing" to keep from forgetting

**Toyohiko Nagamura** (photo above, left)  
Chemicals Manufacturing Department No. 2

Since memorizing every single work procedure is difficult, we have to assume that people will forget some things. Therefore, it is essential to think before doing. Certain work procedures are specially thought out to ensure that no mistakes are made, so I try to fully explain their importance to other workers.

**Norio Nakamura** (photo above, right)  
Chemicals Manufacturing Department No. 2

I start work after checking the details of the day's production operations in advance. I take notes at the production line and go over everything several times afterwards to make sure I understand. I have only been assigned for one week, so I try to think on my own, ask questions about what I don't understand, and do things over and over to improve my skills.

### Unifying the team to improve awareness of hazards and hand down skills and knowledge

**Masakazu Matsumura**

Foreman, Chemicals Manufacturing Department No. 2



It is important to fully hand down the skills and knowledge needed for preventing accidents or disasters from happening. To make sure that new employees and young workers are attuned to dangerous situations, I am trying to make everyone in my work team aware of hazards. As a foreman, I need to keep the team unified, so I pay attention to the interactions between young and experienced workers to make sure they are communicating effectively.



**Misnah binti Lamat**  
Executive, STTC, TMSB Samalaju Factory,  
Samalaju Industry Park, Bintulu,  
Sarawak, in Malaysia

### Establishing safety awareness for trainees at STTC, TMSB Samalaju Factory, Samalaju Industry Park, Bintulu, Sarawak, in Malaysia

At the Samalaju Technical Training Centre (STTC), we provide a safety training course to new hires, based on the management policy, "Safety Is Our First Priority". Any wrong move can lead a person to disaster, so everyone is taught to instill and apply safety practices like *Hiyarihatto*, *Kiken Yochi* Training and using Personal Protective Equipment. To establish a good work environment and to boost staff morale, 5S is also important for safety in the workplace.

The training includes case studies in global safety incidents and group activities to highlight mishaps if safety is ignored. The trainees are encouraged to cultivate safety

habits at all times. Safety is as simple as A, B, C (Always Be Careful), but it takes constant attention. Trainees give group presentations on how to spot dangers, take early precautionary steps and eliminate accidents.

The trainees are very dedicated to the daily 5S, on-time assignment submission, making good scores and sharing safety work experiences. However, their English is not that good and they are not used to taking notes. I believe that this safety training course is greatly contributing to minimizing errors, accidents and disasters and helping to achieve a high-class safety working standard. "Goannzenni!"



## Implementing Environmental Management to Reduce Environmental Impact

For Tokuyama, the pursuit of proactive initiatives to protect the earth's environment is an important part of its corporate social responsibilities. Accordingly, the Company practices environmental management that takes into account the natural environment in all business activities.

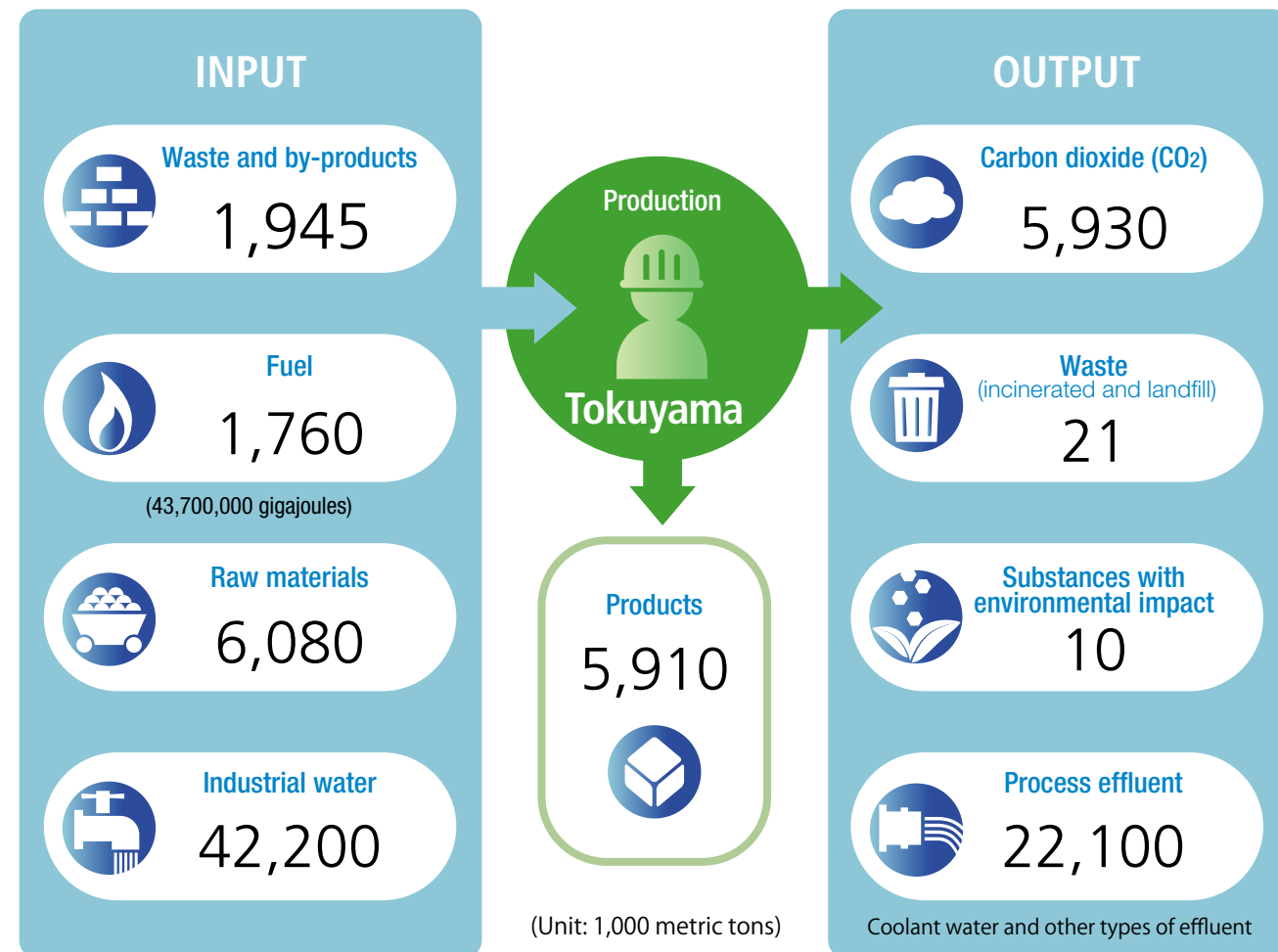
### Performance in Fiscal 2013

Tokuyama works to accurately determine the input and output of materials for production, and regularly sets new targets aimed at reducing environmental impact.

Among its targets for reducing environmental impact in fiscal 2013, Tokuyama did not meet its target for reducing energy consumption on a per-unit basis due to a decrease in the overall operating rate of its factories. It also fell short of its target for reducing chemical oxygen demand (COD) in water, owing to a greater burden on its treatment facilities resulting from the increased operating rate of related facilities. However, Tokuyama achieved its other water quality targets for reducing nitrogen and phosphorous. It also met targets for reducing soot and substances designated by the Pollutant Release and Transfer Register (PRTR), as well as targets for recycling and reducing emissions of waste to virtually zero.

Tokuyama is in the process of reviewing and examining its numerical targets, looking to set goals for performance data beginning in fiscal 2015. Tokuyama's targets in the past have been more ambitious than those set in regulations and other standards. So, making these targeted amounts even more ambitious will not be easy. Moreover, these targets are greatly affected by the operating rates of facilities, which, in turn, depend on changes in business conditions. This partially impairs the function of the targets as reliable indicators. At the same time, the Company plans to study items that should be disclosed as key performance indicators in the future.

Flow of Materials in Business Activities



Note: All amounts are for Tokuyama Corporation on a non-consolidated basis in fiscal 2013

### Environmental Accounting

Tokuyama has been carrying out environmental accounting since fiscal 2000 in order to accurately determine and analyze the investment amounts and costs associated with its environmental conservation activities, thereby providing a sound basis for making environmental investments.

#### » Environmental costs

Of Tokuyama's total environmental investment in fiscal 2013, 57% was intended for resource recycling, followed by 28% for pollution control, 11% for global environmental conservation, and 4% for management activities. The main investments were intended to improve the performance of neutralizing facilities, as well as to upgrade equipment and install facilities. Meanwhile, among environmental costs in fiscal 2013, 70% of the total was generated by pollution control, 17% by resource recycling, and 6% by global environmental conservation.

#### » Economic Benefits of Environmental

Economic benefits are determined by calculating only monetary gains on the reduction of energy consumption, the sale of valuable waste, the reduction in waste disposal costs through waste recycling, and the reduction in raw material and fuel costs through waste recycling. In fiscal 2013, these economic benefits totaled almost ¥1.7 billion, a slight decrease of ¥25 million compared to the previous fiscal year.

Environmental Preservation Costs

Category	Major Activities	Amount Invested (¥ million)	Costs (¥ million)
Costs in Business Areas	Pollution Control	238	4,639
	Global Environmental Conservation	95	395
	Resource Recycling	485	1,126
Upstream and Downstream Costs		0	1
Management Activity Costs	Environmental analysis equipment, etc.	32	267
Research and Development Costs		0	0
Social Activity Costs	Greenery development, production of CSR report	0	69
Costs for Environmental Damage	Imposition, management of a former mining site	0	144
<b>Total</b>		<b>850</b>	<b>6,642</b>

Economic Benefits in Fiscal 2013

Category	Material Benefit (1,000 metric tons)	Economic Benefit (¥ million)
Gains on Reduction in Energy Consumption	-	196
Gains on Sale of Valuable Waste	74	200
Gains on Reduction in Waste Disposal Costs through Waste Recycling	295	759
Gains on Reduction in Raw Material and Fuel Costs through Waste Recycling	296	534
<b>Total</b>	-	<b>1,689</b>

### Measures to Help Combat Global Warming

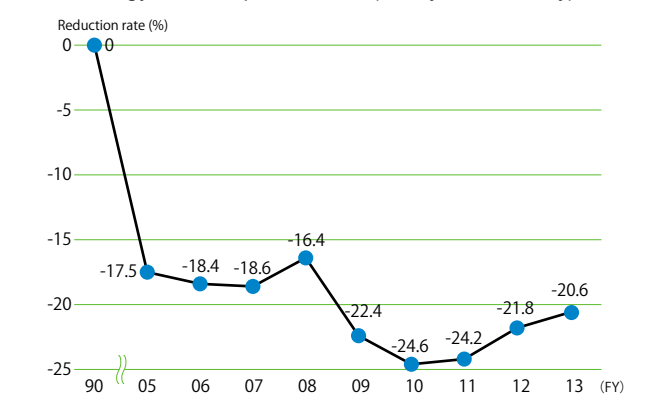
It is extremely important that every company take measures to curb global warming. With this in mind, Tokuyama is making steady progress in conserving energy throughout its business activities, and supporting efforts by employees to save energy at home.

#### » Promoting energy conservation

Tokuyama consumes a vast amount of energy to manufacture its core products such as caustic soda, cement, and polycrystalline silicon. It also emits carbon dioxide (CO<sub>2</sub>), one of the greenhouse gases, primarily in its burning of fossil fuels and decarboxylation of limestone, which is used as a raw material for cement production.

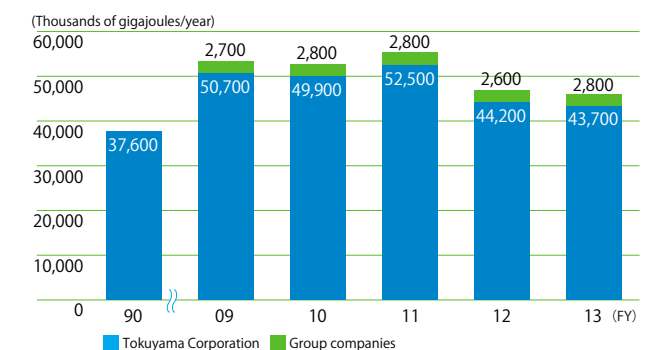
Recognizing the grave importance of combating global warming, Tokuyama is working to keep its CO<sub>2</sub> emissions in check by implementing energy conservation measures. The Tokuyama Factory, which accounts for more than 99% of the Company's total energy consumption, proceeded with switch from burning coal to alternative fuels, and made improvements designed to save energy in fiscal 2013. The factory has reduced energy consumption on a per-unit basis by 20.6% compared to the fiscal 1990 level; however, this was mainly due to a decrease in its operating rate. Having taken into account the business environment in which it operates, Tokuyama has set a target for reducing per-unit energy consumption by 3.0% compared to the fiscal 2005 level, effective from fiscal 2014 through to fiscal 2020.

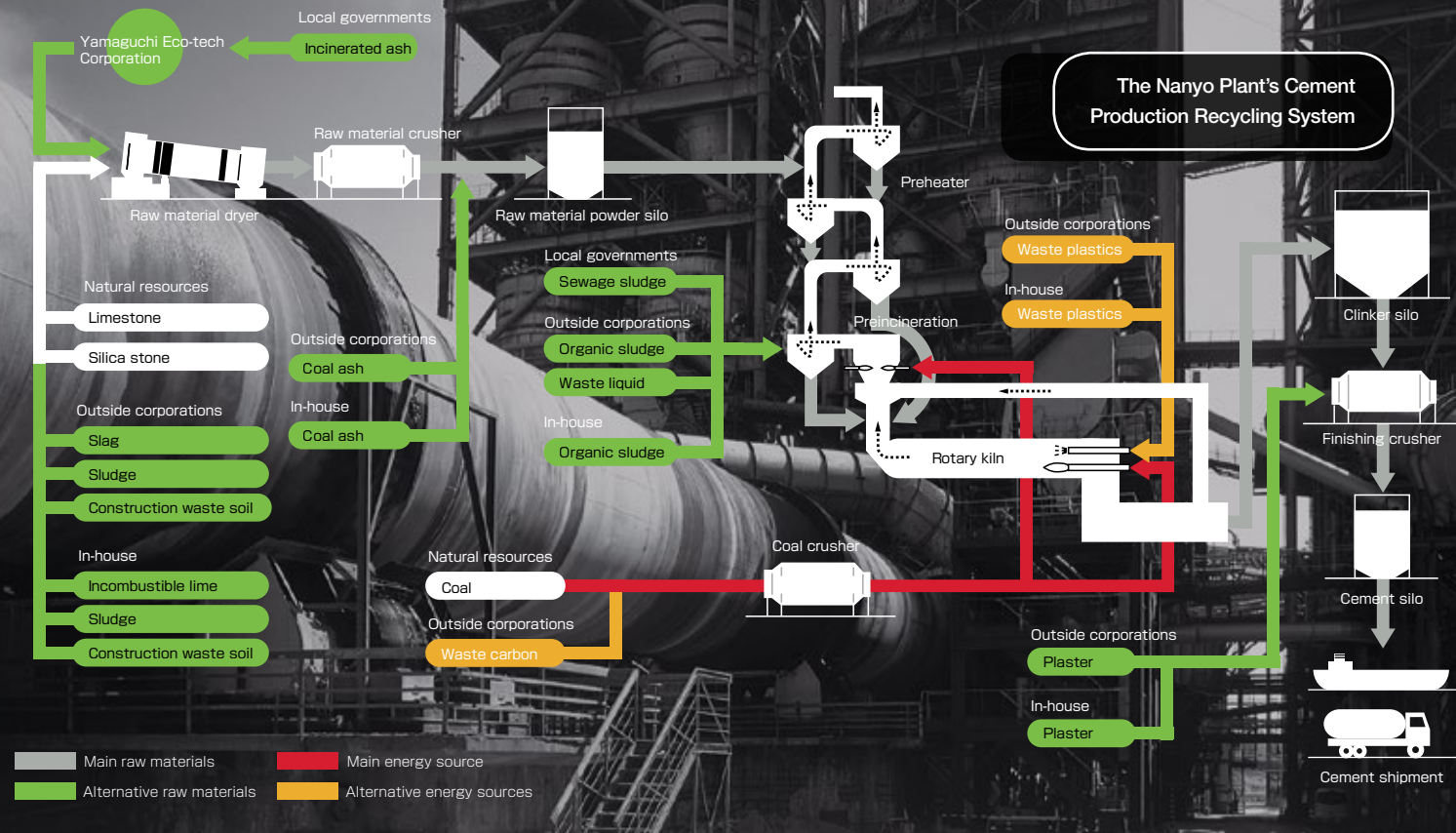
Unit Energy Consumption Index\* (Tokuyama Factory)



\* The unit energy consumption index is calculated using a method recommended by the Japan Chemical Industry Association (JCIA).

Energy Consumption





Company Outline

**Company name:** Tokuyama Corporation

**Location:** **Tokyo Head Office**  
Kasumigaseki Common Gate West Tower, 2-1,  
Kasumigaseki 3-chome, Chiyoda-ku, Tokyo 100-8983, Japan  
Tel: +81-3-6205-4800 Fax: +81-3-6205-4886

**Tokuyama Factory**  
1-1, Mikage-cho, Shunan-shi, Yamaguchi 745-8648,  
Japan (Registered address)  
Tel: +81-834-34-2000 Fax: +81-834-33-3790

**Other facilities in Japan**  
Kashima Factory, Tsukuba Research Laboratory,  
Osaka Branch, Takamatsu Branch, Hiroshima Branch,  
Fukuoka Branch, Sendai Office and Nagoya Office6

**President:** Kazuhisa Kogo

**Established:** February 16, 1918

**Capital:** ¥53,458 million (as of March 31, 2014)

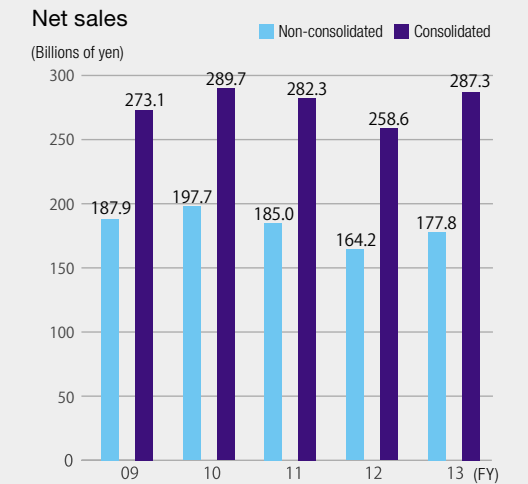
**Number of employees:** 5,756 (consolidated basis; including 1,341 working overseas);  
2,041 (non-consolidated basis) (as of March 31, 2014)

**Number of Group companies:** 87 (as of March 31, 2014)

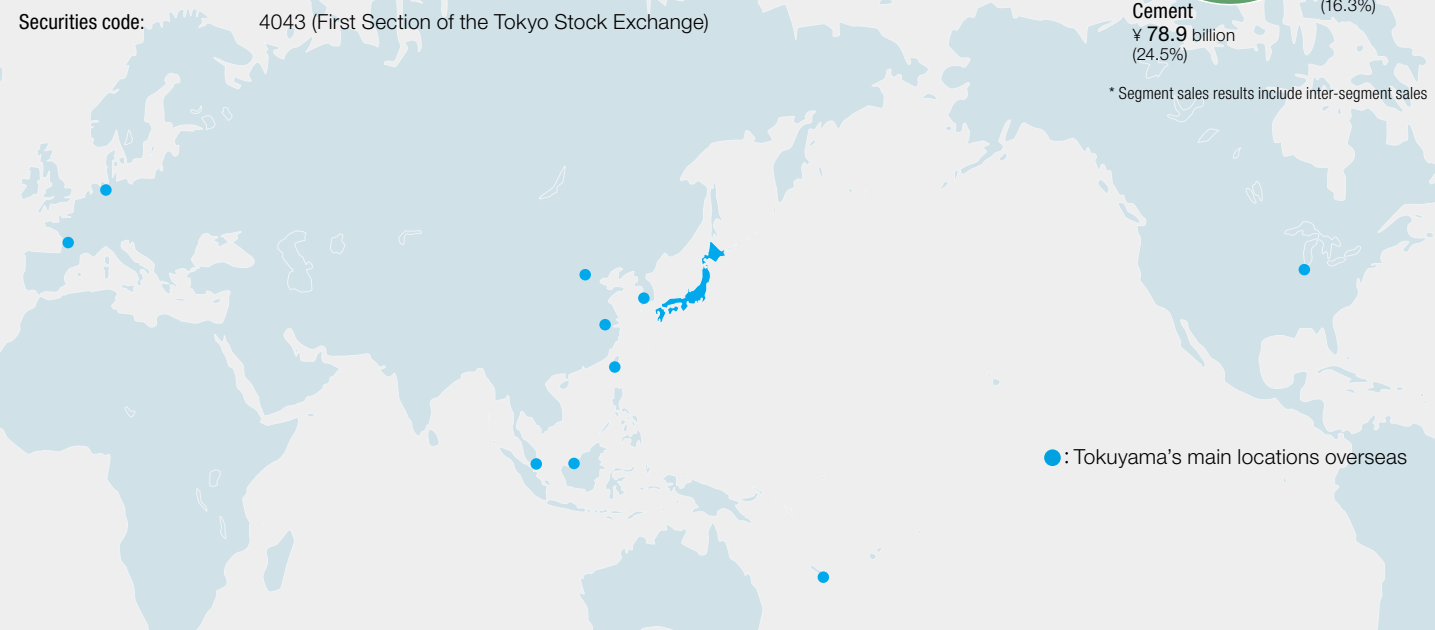
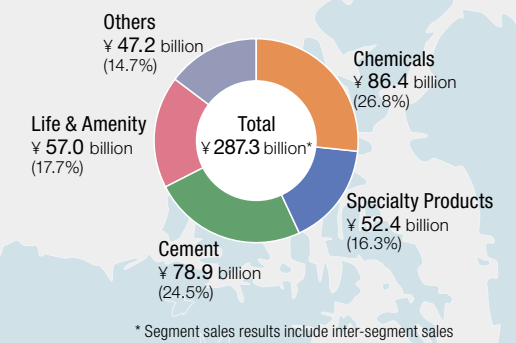
**Main businesses:** Manufacture and sale of the following chemicals and products  
**Chemicals:** Soda ash, chlor-alkali, vinyl chloride and new organic chemicals  
**Specialty Products:** Polycrystalline silicon, fumed silica, high-purity chemicals for electronics manufacturing and aluminum nitride  
**Cement:** Cement, recycling and environment-related business  
**Life & Amenity:** Fine chemicals, microporous films, synthetic resins, ion exchange membranes and dental materials

**Securities code:** 4043 (First Section of the Tokyo Stock Exchange)

Financial Highlights



Fiscal 2013 Sales by Business Segment



Third-Party Opinion



A Review of Tokuyama's CSR Report and Corporate Profile 2014  
Eriko Nashioka

Representative Director, Institute for Environmental Management Accounting, Certified Public Accountant and Certified Tax Accountant, and part-time lecturer in environmental accounting and environmental auditing for the Faculty of Commerce, Doshisha University.  
The content of the third-party opinion is available on the Company's website in the "Third-Party Opinion" section in the online version of the CSR report, accessible via the URL shown below or the QR code shown at right.



[http://www.tokuyama.co.jp/eng/csr/report/pdf/2014csr\\_report\\_e\\_20.pdf](http://www.tokuyama.co.jp/eng/csr/report/pdf/2014csr_report_e_20.pdf)

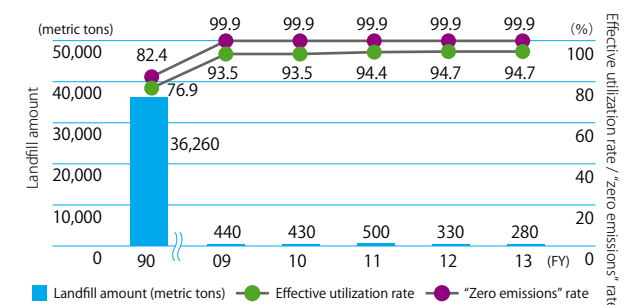
Recycling and Reducing Waste

Tokuyama makes exhaustive efforts to reduce and recycle the waste it generates. As a result, the Company maintained a 94.7% effective utilization rate of waste and again hit its "zero emissions" target of 99.9% in fiscal 2013.

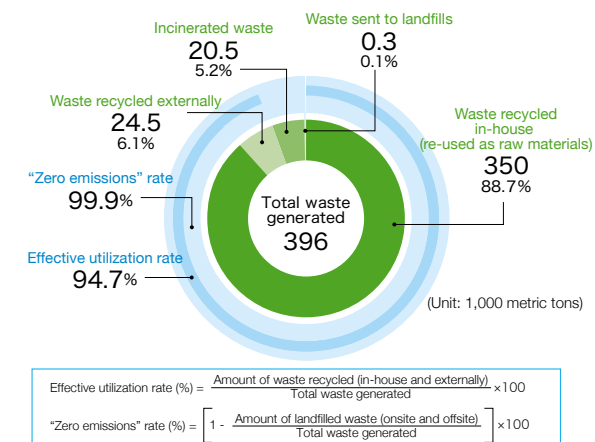
Waste Management

Tokuyama generated a total of 396,000 metric tons of waste in fiscal 2013. It actively worked to recycle this waste both in and outside the Company, mainly by re-using waste matter as raw materials and fuel for cement at the Tokuyama Factory. In addition, packing materials, pallets and other wood waste were crushed and then used as fuel for power plants. Through its diligent efforts to recycle waste as raw material for cement, Tokuyama achieved an effective utilization rate of 94.7%, on par with the previous fiscal year. Moreover, owing to progress made in reusing waste and reducing the amount generated, the Company again achieved its "zero emissions" target of 99.9% in fiscal 2013.

Amount of Waste Sent to Landfills and Rate of Effective Utilization



Breakdown of Industrial Waste Treatment in Fiscal 2013



Flow of Industrial Waste Treatment

