

# CSR Report and Corporate Profile

CSR報告書・会社案内 2013

## Tokuyama Corporation

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# Next-Generation Clean Energy

In recent years, the Japanese government and industries nationwide have been striving to utilize hydrogen as a next-generation clean energy source to replace fossil fuels. Employed in the semiconductor and solar cell manufacturing processes, hydrogen is also used as a rocket fuel, including for the H-IIA, Japan's primary large-scale space launch vehicle. With applications as diverse as hydrogen fuel cells, the use of hydrogen as an energy source is anticipated to expand even further.

Taking the above into consideration, Tokuyama established Yamaguchi Liquid Hydrogen Corporation in tandem with Iwatani Corporation, a pioneering company in the hydrogen business. Yamaguchi Liquid Hydrogen enables the efficient transportation and storage of hydrogen by liquefying it at minus 253 degrees Celsius. Such liquefied hydrogen is made of high-quality hydrogen generated through a proprietary Tokuyama technology involving brine electrolysis using zero-gap electrolyzers, a process that simultaneously produces caustic soda, chlorine and hydrogen.

Seeing that liquid hydrogen is gaining ever greater significance as a source of clean energy, the Tokuyama Group will push forward with its efforts to exploit this beautiful next-generation energy source.



## Chemicals Business Division

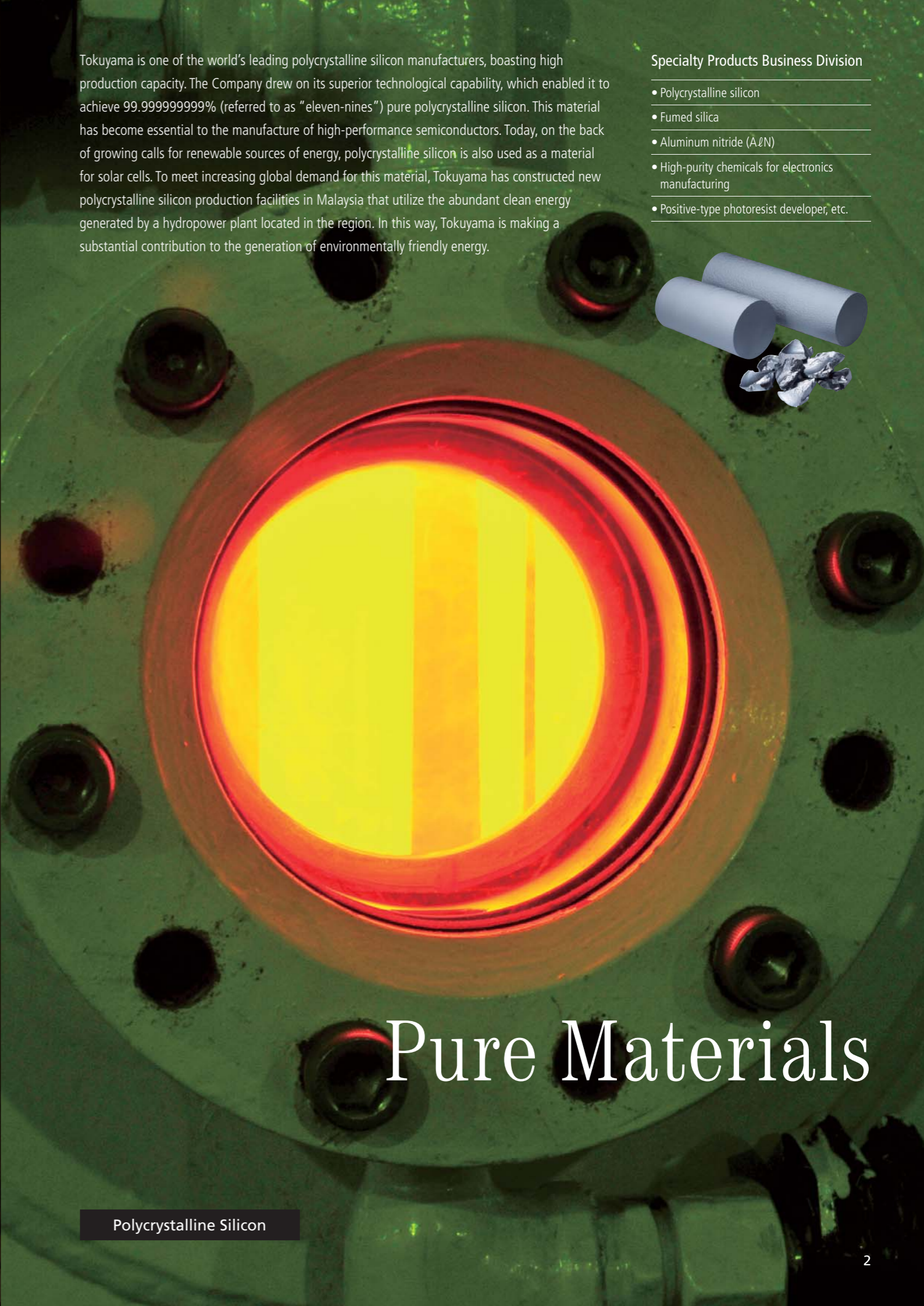
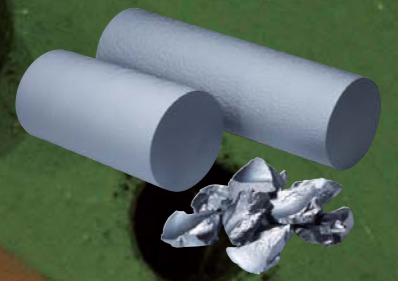
- Soda ash
- Calcium chloride
- Caustic soda
- Propylene oxide
- Chlorinated solvents (methylene chloride, etc.)
- Vinyl chloride monomer and resins
- Hydrogen
- Isopropyl alcohol for industrial use, etc.

Photo: ©JAXA

Tokuyama is one of the world's leading polycrystalline silicon manufacturers, boasting high production capacity. The Company drew on its superior technological capability, which enabled it to achieve 99.99999999% (referred to as "eleven-nines") pure polycrystalline silicon. This material has become essential to the manufacture of high-performance semiconductors. Today, on the back of growing calls for renewable sources of energy, polycrystalline silicon is also used as a material for solar cells. To meet increasing global demand for this material, Tokuyama has constructed new polycrystalline silicon production facilities in Malaysia that utilize the abundant clean energy generated by a hydropower plant located in the region. In this way, Tokuyama is making a substantial contribution to the generation of environmentally friendly energy.

## Specialty Products Business Division

- Polycrystalline silicon
- Fumed silica
- Aluminum nitride (AlN)
- High-purity chemicals for electronics manufacturing
- Positive-type photoresist developer, etc.



# Pure Materials

Polycrystalline Silicon

# Advancing Recycling

Plasterboard is a construction material used for such applications as the interior walls and ceilings of housing and buildings. Although a portion of plasterboard waste generated from the construction, demolition and remodeling of structures is recycled, most is disposed of in landfills, giving rise to considerable environmental concerns. In response, Tokuyama has devised a process for re-crystallizing particles of waste plaster into a form that is easy to handle and recycle. While previously, the waste plaster recycling rate could never surpass 10%, we have succeeded in raising the recycling rate substantially with this process. Moreover, Tokuyama established Tokuyama Chiyoda Gypsum Co., Ltd. jointly with the major plasterboard manufacturer Chiyoda Ute Co., Ltd. This joint venture began operation in March 2013. Tokuyama's technological innovation aimed at contributing to a recycling-oriented society is drawing great interest.



## Cement Business Division

- Various types of Portland cement
- Portland blast furnace slag cement
- Cement for dam construction
- Cement-type stabilizer
- Ready-mixed concrete
- Recycling and environment-related business
- Plaster sheet for inkjet printing "Fresco Giclee," etc.

## Life & Amenity Business Division

- Active pharmaceutical ingredients (API)
- Photochromic materials
- Hard coating solutions for plastic lenses
- Microporous films
- Polyolefin films
- Ion exchange membranes and electrolysers
- Reagents, analyzers and systems for clinical tests
- Sensing elements and devices
- Dental materials and equipment
- Plastic window sashes, etc.



Tokuyama's microporous film "Porum®" has been adopted as the backing sheets for disposable diapers, which make use of its unique ability to let air and moisture pass through it while confining water. Employing a proprietary biaxially-stretched tubular process, Tokuyama succeeded in creating a film with improved air and moisture permeability along with increased strength.

Tokuyama established a production base in Shanghai, China, in 2002, with an eye on the rapidly growing market for disposable diapers in that country. In December 2012, Tokuyama went on to kick off operations at a second Chinese production base in Tianjin. While enhancing productivity through the improvement of production methods, Tokuyama will continue to strengthen its supply structure with the aim of accommodating growing market needs backed by rapidly heightening demand for improved everyday hygiene among the Chinese populace.

# Comforting Technology

**Pursuing “Venture Spirit & Innovation” to Achieve Our Centennial Vision**

In 2018, Tokuyama Corporation will mark the centennial anniversary of its founding. The ideal that we aspire to under the Centennial Vision is for the Tokuyama Group to remain a “prominent manufacturer that is responsive to society and helps create a better future through the vitality of its human resources and the creativity of chemistry.” To realize this ideal, all of us throughout the Group are rallying our strengths in the pursuit of “Venture Spirit & Innovation,” the vision’s underlying principle.

We believe that no corporation can survive in the global market unless it continues to change. Tokuyama will no longer confine itself to operations that revolve around domestic demand. Rather, we will transform ourselves to win among global competition, establishing a business structure that allows us to secure profitability and achieve sustainable growth, even in a harsh operating environment.

**The Foundation of the Centennial Vision’s Basic Strategies—Human Resources and CSR**

With regard to the management of human resources, we believe that it is essential to offer our employees a vibrant and lively working environment that inspires devotion to duty. We also believe that our efforts to nurture human resources and assist their development will bolster the foundation of the Group’s operations, which, in turn, will allow us to achieve continuous business growth.

In the promotion of Corporate Social Responsibility (CSR) activities, we recognize employees as important stakeholders. In line with this recognition, we are facilitating the setting of career goals to ensure that all employees are motivated in their work while promoting their mental and physical health and the improvement of the work-life balance. By doing so, we are seeking to create a vibrant workplace that enables employees to put “Venture Spirit & Innovation” into practice.

**Proactively Promoting Environmental Management under the “Safety First” Basic Policy**

On the manufacturing front lines, a “safety first” basic policy underlies all our operations as we strive to thoroughly improve manufacturing processes and promote energy conservation in accordance with our goal of creating high-quality, highly efficient products. Through such initiatives, we endeavor to gain the confidence of society while continuing to grow in scale and enhance quality.

At the same time, we promote environmental management at each phase of operations, knowing that putting greater emphasis on environmentally conscious approaches will, in turn, enhance our corporate value and help secure continuous business expansion.

**Communication with Stakeholders Is Key to CSR Activities**

Looking ahead, we will continue to ask ourselves the same question, “What is our social responsibility?” Working diligently and constantly to find the right answers to this question, we will consistently promote CSR-oriented global corporate management.

We invite readers to provide us with feedback and welcome a frank exchange of views with them in connection with our activities and initiatives.

July 2013



*Kazuhisa Kogo*

Kazuhisa Kogo  
President



Toward Achieving the Centennial Vision  
**Pursuing Four Strategies under the Management Slogan “Venture Spirit & Innovation”**

In the *CSR Report 2011* and the *CSR Report 2012*, we discussed the Centennial Vision with a focus on three growth strategies: “Growing,” “Creating” and “Integrating.” In the *CSR Report and Corporate Profile 2013*, we have added another strategy, “Diversifying,” in order to include in the scope of this report the vital role our diverse human resources play in achieving the Centennial Vision.

# Growing

**Strengthen Strategically Growing Businesses (See page 9)**

Under its Centennial Vision, Tokuyama aims to strengthen strategically growing businesses, among which the mainstay is the polycrystalline silicon business. Developed as a material for electronic parts and components, particularly for semiconductor applications, polycrystalline silicon has driven the expansion of our Group operations. Recently, against a backdrop of rapid adoption of solar batteries as a means to curb global warming, polycrystalline silicon has grown into a sought-after material for solar panels and is quickly becoming indispensable to today’s society.

# Diversifying

**Vitalize Human Resources (See page 11)**

Tokuyama believes that its efforts to nurture human resources and assist their growth will bolster the Group’s foundation and, in turn, facilitate its continued expansion while enhancing corporate value over the long term. In line with this belief, we are promoting Diversity & Inclusion Management, an initiative aimed at creating a personnel system and corporate culture that welcome a workforce of diverse individuals while allowing all employees to realize their full potentials and feel rewarded.

# Creating

**Create New Businesses (See page 13)**

Tokuyama creates environmental technologies and products with an emphasis on social contribution and reducing environmental impact, even from the development stage. Focusing on the three growth fields of “information and electronics,” “environment and energy” and “life and healthcare,” Tokuyama is leveraging the inorganic chemical and crystal technologies that it has accumulated over the years to accelerate product development. As the latest accomplishment of its R&D activities, Tokuyama has succeeded in the development of a deep ultraviolet light emitting diode (DUV-LED). This innovative LED will contribute to the fields of medical care, water purification and food sanitation and is expected to be used as a substitute for mercury lamps, which have a significant negative impact on the environment.

# Integrating

**Bolster International Competitiveness (See page 15)**

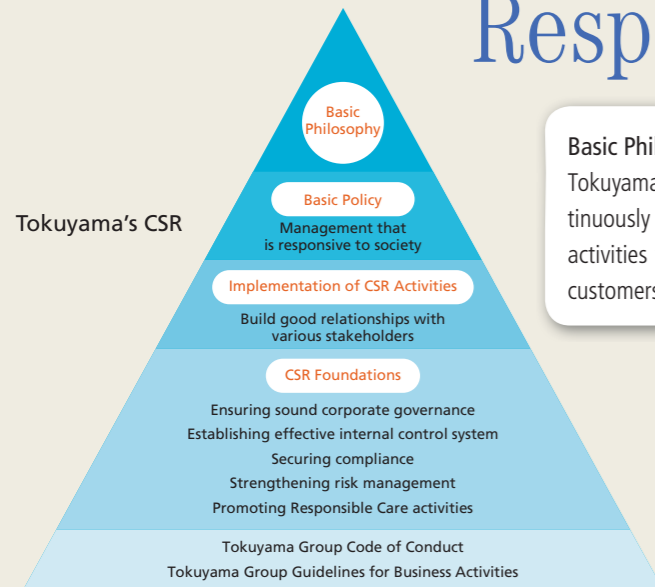
The unparalleled energy efficiency and superior technologies that we have nurtured at the frontlines of manufacturing operations have made our mainstay Tokuyama Factory internationally competitive. By stepping up the Group’s integrated manufacturing operations even further, Tokuyama is working to establish a highly profitable business structure. Simultaneously, we are pursuing global expansion, with the Tokuyama Factory bolstering our operations as a “Mother Factory.” Furthermore, we aim to make the Tokuyama Factory a manufacturing base that coexists and grows with local communities while establishing close communication with them.

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●The “Earth,” “Blessings” and “Life”: Keywords for Our Cover Art  
The artwork on the cover is designed to symbolize our responsibility to the blessings we receive from the Earth and the living beings it shelters while also representing our unshakable technological strengths and warmth and happiness in people’s lives. These designs allude to the Group’s relationship with the world, which is built through our pursuit of business and the provision of products. The background design expresses the energetic forward momentum driving changes in the world.

# Management That Is Responsive to Society



**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 promoting corporate activities that are evaluated highly by its various stakeholders, namely, shareholders, customers, employees, trading partners, communities and society as a whole.

## Accelerating Our CSR Initiatives

I recognize that the fulfillment of our Corporate Social Responsibility must involve the cultivation of harmonious relationships with our stakeholders. More specifically, we must always be aware of the social and environmental impact that each phase of our business operations exerts while maintaining complete accountability for our impact. Based on this premise, the Tokuyama Group is seeking to contribute to the creation and development of a sustainable future through its CSR activities.

Aiming to remain a "prominent manufacturer that is responsive to society," for many years the Tokuyama Group has been pursuing Responsible Care (RC) activities initially begun in the form of voluntary chemical substances management. Through our RC activities, we have also been promoting environmental management and achieved significant reductions in unit energy consumption as well as the commercialization of resource recycling utilizing our cement plant.

Recently, the Group has been accelerating the augmentation of its CSR foundations, aiming to enhance transparency and ethical standards. Moreover, we have been seeking to strengthen corporate governance through management structure reforms and to improve our internal control system, with a focus on compliance and risk management. Of course, we recognize that global CSR has become an essential issue as we expand our overseas operations.

Approaching 2018, the year in which Tokuyama Corporation will mark the centennial anniversary of its founding, the Tokuyama Group is evolving into something new. The underlying principle of Tokuyama's Centennial Vision is "Venture Spirit & Innovation." This principle has grown out of our belief that no corporation can survive unless it continues to change. Looking ahead, we will step up the promotion of our CSR activities in line with the basic philosophy of Tokuyama's CSR-oriented management.



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



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 promote 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.

## Basic Approach to Corporate Governance

Tokuyama believes that corporate governance is an important foundation for maximizing its corporate value. Tokuyama also believes that it must conduct daily inspections and take steps as necessary to ensure its corporate governance systems always function appropriately.

At the same time, Tokuyama is working consistently to strengthen its compliance with corporate ethics, laws and regulations as a means of enhancing its corporate value. Furthermore, we believe that we can gain the trust of stakeholders—including shareholders, customers, employees, trading partners and local communities—by accurately understanding our social responsibility and pursuing corporate management that is responsive to society.

## Corporate Governance Structure

### Board of Directors and Executive Officer System

Tokuyama's Board of Directors meets at least once a month to deliberate and make resolutions on important matters regarding business operations while supervising business operations.

To reinforce the supervisory function of the Board of Directors, the Company has appointed two external directors. Tokuyama also introduced an executive officer system in April 2011 with the aim of separating the supervisory and executive functions for business operations.

### Audit & Supervisory Board

The Company's Audit & Supervisory Board holds meetings to report, discuss and pass resolutions on important matters. Also, Audit & Supervisory Board members frequently attend Board of Directors meetings and various other key meetings and receive reports on the status of business operations, thereby overseeing the execution of duties by directors.

### Human Resources Committee

The Human Resources Committee consists of the chairman, representative directors and external directors. This committee holds discussions on such matters as the remuneration for directors and executive officers and the selection of director and executive officer candidates before Board of Directors meetings take place.

### Executive Committee

The Executive Committee consists of the president and executive officers selected by the president and serves as an advisory body to the president. Holding meetings twice a month to formulate management plans and important strategies, the committee also discusses and makes decisions on overall policies and schedules with regard to the implementation of such plans and strategies while providing the president with advice on the execution of business operations.

### Strategy Committee

The Strategy Committee is an advisory body to the president and consists of the president and executive officers selected by the president. This committee meets once a month to discuss important projects, deliberating on whether or not to green-light projects and the manner in which they should be implemented. Through these discussions, the committee helps the president determine the Company's policies for business operations.

### CSR Promotion Council

Chaired by the president, the CSR Promotion Council sets policies on CSR and lays out the goals of our CSR activities, facilitating the execution and attainment of all such activities and goals. The Council focuses on the strengthening of corporate governance and improvement of internal control systems, which together are the foundations of

CSR. It also discusses other important matters regarding internal control.

### Risk Management and Compliance Committee

Tokuyama's Risk Management and Compliance Committee—chaired by the director supervising the Corporate Social Responsibility Division—operates under the CSR Promotion Council. The Committee takes the initiative in promoting risk management and compliance, which are central to the development of effective internal control systems.

### Helpline Committee

The Helpline Committee is responsible for the administration of Tokuyama's helpline (whistle-blowing) system, which has been established for the purpose of enabling the internal reporting of legally questionable actions and behaviors by Group executives and employees.

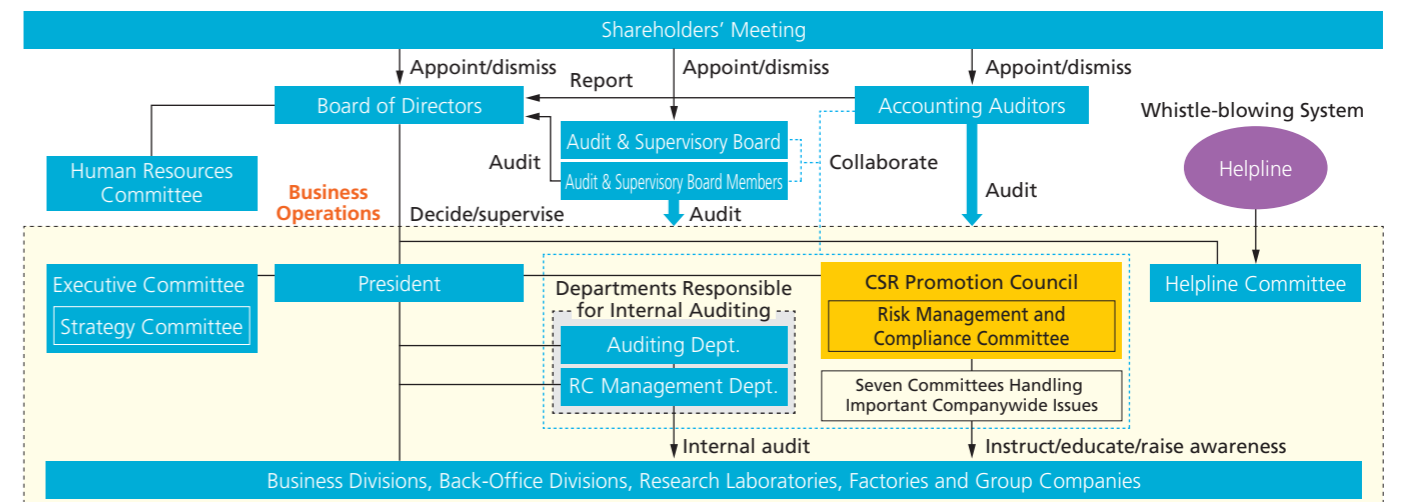
### Departments Responsible for Internal Auditing

Tokuyama has established the Auditing Department and the RC Management Department, which are responsible for internal auditing. These departments perform internal audits of individual divisions and departments of the Company as well as of Group companies.

### Risk Management and Compliance Promotion Systems

Under the CSR Promotion Council, we have established the following seven committees to handle Companywide (cross-divisional) issues, particularly those deemed important from the perspective of risk management and compliance, in areas coinciding with their mandates: 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



# Transforming Ourselves to Bring a Breath of Fresh Air

## Tokuyama Aggressively Expanding Growth Businesses

Under its Centennial Vision, Tokuyama aims to strengthen strategically growing businesses, among which the mainstay is the polycrystalline silicon business. Developed as a material for electronic parts and components, particularly for semiconductor applications, polycrystalline silicon has driven the expansion of our Group operations. Recently, against a backdrop of rapid adoption of solar batteries as a means to curb global warming, polycrystalline silicon has grown into a sought-after material for solar panels and is quickly becoming indispensable to today's society.

In addition to the area of electronic materials for semiconductors, Tokuyama is concentrating its management resources on the environment and energy field. In doing so, Tokuyama is striving to expand the polycrystalline silicon business globally, working to further strengthen its world-class competitiveness in this business.

## Overview of the Malaysia Project

In the Samalaju Industrial Park, which is situated in Sarawak, a state in the eastern region of Malaysia, Tokuyama Malaysia Sdn. Bhd. is currently constructing a factory for the manufacture of polycrystalline silicon. The groundbreaking ceremonies for first- and second-phase construction took place on February 16, 2011 and February 16, 2012, respectively. Construction of the factory is proceeding steadily along with the development of the area around the factory. Commercial operations at the first plant are scheduled to commence in September 2013. The cost of factory construction is estimated at approximately ¥180 billion in total, and Tokuyama Malaysia plans to employ 1,000 people for first-phase and second-phase operations. While a number of Asian companies are expanding into the Samalaju Industrial Park, which is growing into a huge factory complex, Tokuyama Malaysia is proud to be a "top runner" as the first company that has expanded into the park.

## Abundant Electricity and Human Resources

Based on long consideration, Tokuyama decided to establish this second polycrystalline silicon manufacturing base in addition to the one in Japan in light of diversifying risks and to respond to the expected medium- and long-term demand expansion for this material used in solar cells. Following a careful examination of locations, the Company selected the Samalaju Industrial Park in Malaysia.

There were many reasons for the selection of this site, such as the region's sufficient electricity supply capacity, which is a prerequisite for the manufacture of polycrystalline silicon, the abundance of water resources for industrial use and highly educated human resources. In addition, Tokuyama was able to secure preferential tax treatment and support for the acquisition of permits and licenses from the Malaysian federal government and the Sarawak state government. The Samalaju Industrial Park boasts an area of 8,000 hectares. Within this vast property, Tokuyama secured approximately 200 hectares for its factory sites with due consideration given to future extension. The first phase involves factory construction on a site totaling approximately 40 hectares. The 2,400-MW Bakun Dam hydropower plant—situated about 200 kilometers south of the factory site—supplies electricity to the factory.

In accordance with its clean energy policy, dubbed Sarawak Corridor of Renewable Energy (SCORE), the state of Sarawak is accelerating its economic growth and development while stepping up invitations to businesses to participate in renewable energy projects. The Samalaju Industrial Park has been designated as an economic development area under SCORE, and Tokuyama's polycrystalline silicon operations are the first investment project undertaken in this area.

The staff of Tokuyama Malaysia is now striving to practice "Venture Spirit & Innovation" in a bid to overcome a number of unprecedented challenges the company is confronting. In the following section, we introduce a Japanese expatriate and Malaysian staff members who are tackling such challenges as they work toward the success of the Malaysia Project.



Key to Blazing a New Trail Is a Willingness to Take on New Challenges

Masashi Shinagawa  
Engineer, Technical Coordination Section, Manufacturing Department

After I joined Tokuyama, I spent about two years in charge of dental material R&D. At Tokuyama Malaysia, I began my service at the Samalaju Technical Training Centre, where I taught new Malaysian recruits. Then, I moved to the Technical Coordination Section and now am involved in trial operations as we move toward the commencement of production at the earliest possible date.

In my daily operations, I engage with numerous Malaysian staff from such sections as the Manufacturing Department, the Logistics Service Department and the TMP Project Department. I admire that they listen so earnestly to my instructions and are capable of comprehending them quickly, despite my poor English speaking ability. I think such an earnest attitude and capability are rare to see among Japanese staff. Sometimes, I fail to come up with the appropriate English words when giving instructions and end up struggling to communicate using a kind of simplified English. However, they work hard to understand what I'm trying to tell them to do, for example, asking me back "Are you talking about the checking of parameter changes for... (e.g., such indexes as pressure and temperatures)?" Learning from their attitudes, I have been trying hard to understand what others are trying to say. I feel these efforts have made me quicker to grasp the point, that is, compared to just after I came to Tokuyama Malaysia.

Going to unknown places and taking on challenges in unknown fields can make you nervous and anxious. However, I believe that maintaining one's determination to dare to take on new challenges is key to blazing a new trail. It's been a long time since people began talking of the globalization of society. I believe that, therefore, all Tokuyama staff members should recognize that foreign language ability is not an extraordinary skill but a means of smoothing day-to-day business functions. In this light, all of us in the Group, not just expatriates, should be more serious about gaining a better understanding of others, just like the aforementioned Malaysian staff.



Working toward One Goal beyond Language and Cultural Differences

Benjamin Chin Ching Heng  
Executive, Manufacturing Section, Manufacturing Department

Beginning with land preparation, Tokuyama Malaysia is constructing sophisticated chemical plants here at the Samalaju Industrial Park. The workforce consists of people who speak different languages and have various cultural backgrounds involved in all stages of the Malaysia Project, which extends from construction to plant operations. We completed the first-phase construction and are expecting operational kickoff. It is not easy trying to maximize production while placing the utmost priority on occupational safety and environmental conservation. I recognize that, in order to fulfill these requirements simultaneously, it is essential to maintain close cooperation and communication between Japanese and Malaysian staff. With this in mind, I am striving to create a cooperative and vibrant workplace that motivates them and makes their jobs rewarding. I believe that not only the management team but also each Malaysian staff member at the manufacturing front line is playing a significant role toward ensuring that this company succeeds.

Noting that we are at a crucial stage of the project, as we anticipate the kickoff of commercial production, we are moving forward to success, working hand in hand to go beyond language and cultural differences.



Enhancing Skills through OJT as We Prepare for the Commencement of Production

Diana Aren Laing  
Executive, IT System Section, Logistics Service Department

In the past, IT was nothing more than one of my areas of interest, or at best, just a hobby, but now it has become an important part of my job. Although I used to know very little about this field, Tokuyama Malaysia has given me the opportunity to polish my IT skills. Being involved with the IT network and systems supporting the entire factory production system has really given me a deeper knowledge of IT. I have also gained an understanding of processes associated with polycrystalline silicon manufacturing and the shipment of this material. Going forward, I would like to increase my expertise in the IT field even further.

Right after I entered Tokuyama Malaysia, I found it difficult to understand the English spoken by Japanese staff and it took considerable effort simply to communicate with them. But now we manage to understand each other. We have been going through on-the-job training for the past couple of months and I hope that the training will increase our physical and mental strength and get us ready for the kickoff of production.



Devoting Our Best Efforts toward the Success of the Malaysia Project

Tan Shan Shan  
Manager, Corporate Strategy Section, Corporate Strategy Department

When I learned about Tokuyama Malaysia, there were only three Japanese staff working at the office located in Kuching. Today, this company has grown into an enterprise that employs more than 500 staff in total at its Head Office and factory. In my previous job at an accounting firm, I had worked with native English speakers. However, until I joined Tokuyama Malaysia, I had no experience in working with Japanese people, who do not speak English in their own country. Nevertheless, I find no difficulties in communicating with Japanese staff. All I have to do is to be attentive and confirm what is being discussed as I proceed with my work.

I am also excited to work at Tokuyama Malaysia because I can gain greater experience and knowledge by working with specialists in various fields, such as engineers.

As the commencement of commercial production approaches, I expect that our workload will increase even further. However, I am proud of being a part of the Tokuyama Group and determined to contribute to the success of the Malaysia Project. Working together with my colleagues, I will do my best while striving for work-life balance.

# Each One Is Essential— Creating a Workplace That Allows Employees to Remain Vigorous and Enthusiastic

## Stakeholder Dialogue

At certain times in their lives, such as when they marry, give birth or are faced with raising children, female workers can find themselves at critical decision points that may affect their career development. Tokuyama's female researchers are no exception. We hosted a dialogue inviting three such women and two other female staff members in positions of responsibility, encouraging them to discuss their struggles to strike a balance between work and family life as well as the times when they find their job particularly rewarding. (May 21, 2013 at the Tsukuba Research Laboratory)

### ● Is Tokuyama an Inspiring Workplace for Working Mothers?

**Takahashi (Facilitator):** I suppose that being a mother changed your working style. Could you share your experience with us, Ms. Ushioda and Ms. Sai?

**Ushioda:** I have a two year-old daughter. When I was single, I was able to devote all of my time to work. But now I have to put child rearing before everything else. For example, I have to pick up my daughter by six o'clock in the evening. As a result, my sense of time has changed a lot since my reinstatement. Also, I used to be really independent and driven to succeed on my own. Now, however, I have no hesitation in asking others for help.



**Akiko Takahashi**  
Assistant Manager, Administration Section,  
Tsukuba Research Laboratory  
Joined in 1996  
A mother of one boy and one girl

**Sai:** Since having my child, I've begun making sure that everything is ready a day before it is due "just in case," and always aim to finish work as early as possible. I feel that I have become much more efficient in the way I work. At the same time, I've begun feeling a much greater sense of responsibility for my junior colleagues, becoming more serious about teaching and taking care of them.

**Takahashi:** Ms. Dodomi, how is your work going as a young researcher?

**Dodomi:** First of all, I have to mention that there is absolutely no difference between male and female researchers in terms of workload. Although I often feel quite rewarded when I see products that I've developed being launched, I've always thought there can be no chance for me to have my own family as long as I am up to my neck in work. However, as I've been listening to my senior colleagues, who are able to keep working hard after getting married or having children, I have come to believe that it might be possible for me to juggle work and family life by changing my way of thinking.

**Takahashi:** Ms. Takeda, you must have considerable experience in raising children since you have a 12-year-old and a nine-year-old. Could you share that with us?

**Takeda:** As I listen to this discussion, I remember that, when my children were small, things never worked out the way it said in child-rearing books. Also, I could never keep to a schedule because of the children. As a result, I learned to



**Sei Sai**  
Tokuyama Dental Corporation  
Joined in 2007  
A mother of one boy; reinstated from childcare leave in February 2013

not panic when something happens at work. I became more flexible in how I figure out solutions. You know, children are prone to fevers when it is least convenient, aren't they?

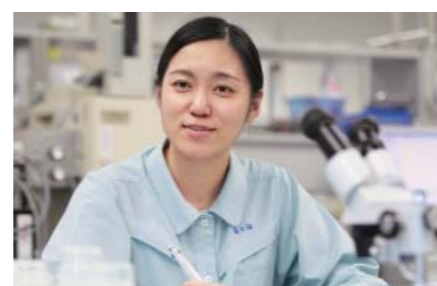
**Ushioda:** I agree that troubles never come one at a time. Fortunately, my supervisor and colleagues have been really considerate about my situation and they gladly exchange their work shifts with mine. Recently, I have also been setting things up so that I can work at home in case of emergencies.

**Takahashi:** A while back, one of my children was running a high fever when I was working on a project that I definitely wanted to complete on my own. I ended up deciding to take off from work and made a call to my supervisor. I was told, "Don't worry, we will take care of that project," and felt overwhelmed with gratitude. I am even more determined to reward my team by doing good work. After all, I suppose it is the understanding of and support from my supervisor and colleagues that allow me to strike a balance between work and family life.

**Takeda:** I believe such a warm and accommodating atmosphere prevailing among staff members is a remarkable feature of Tokuyama's corporate culture.

### ● Cooperation of Families Is Essential

**Takahashi:** Ms. Takeda, you transferred from the Tsukuba Research Laboratory to the Tokyo Head Office this spring. How did your family respond?



**Ayumi Dodomi**  
Tokuyama Dental Corporation  
Joined in 2006  
Striving toward the launch of new dental materials



**Takeda:** It was my eldest son who supported my transfer most. When I heard of the transfer, honestly speaking, I was troubled because commuting to Tokyo takes two hours each way. My 12 year-old son surprised me, however, volunteering himself to pick up his younger sister, who is still in elementary school and goes to an after-school day-care center. He told me, "That's my role as older brother." I also learned that my husband supported his initiative. I was surprised at how quickly he grew up and was filled with gratitude for the cooperation of my family.

**Sai:** As a matter of fact, my son is living in China with my parents.

**Everyone:** Really!?

**Sai:** Of course, I wish that we could all live together. However, I am also wondering seriously about what is the best thing for my son. For example, I'm worried about his education; even though I want him to be able to speak Chinese, I am also worried about whether or not he will



**Emi Ushioda**  
Assistant Manager, Specialty Products Development  
Department  
Joined in 1997  
A mother of one girl; reinstated from childcare leave in April 2012

be able to fit into Japanese society if I bring him to Japan. Although my son, husband and I are now living separately, I've never thought of resigning my position because my job developing dental materials is so stimulating. When products I've developed are highly evaluated by users, I feel glad and fulfilled, realizing that I am contributing to society.

**Dodomi:** It is always so nice and encouraging to hear of working women supported by people who always remain considerate of their situations. I also suppose that having a family might increase my sense of responsibility while ramping up my motivation to work.

**Sai:** In China, it is normal for working women to continue their careers after marriage. In contrast, I hear that many efficient female researchers in Japan have to resign their positions after getting married or giving birth. I've thought that this could also result in substantial loss for companies.



**Yasuko Takeda**  
Manager, Technology Strategic Planning Department,  
Tokyo Head Office  
Joined in 1996  
A mother of one boy and one girl; transferred to the Tokyo Head Office in April 2013

**Ushioda:** I think that the Tsukuba Research Laboratory is an accommodating environment for workers who are raising children. I'm also aware that my junior colleagues and my daughter see me as an example of a professional, so I feel I have to do my best as a researcher.

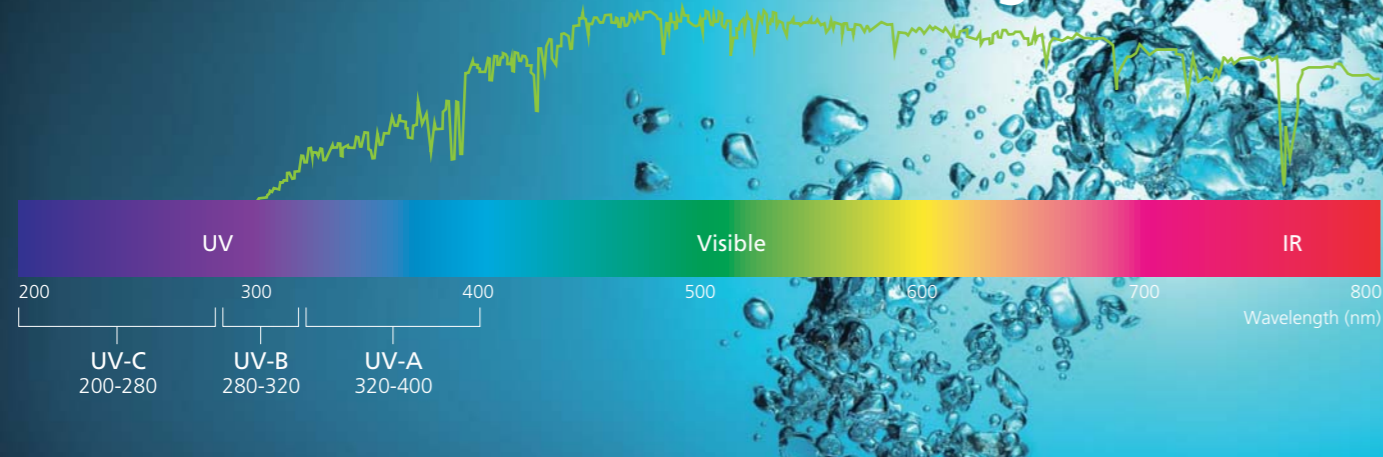
**Takahashi:** In conclusion, we expect that Tokuyama will continue to capitalize on the advantages of its corporate culture to realize diversified working styles. This will, in turn, help facilitate the nurturing and securing of enthusiastic human resources. Thank you for participating in this dialogue.

In 2012, Tokuyama was awarded the Kurumin mark, a symbol that represents excellence in efforts to support child rearing, by Yamaguchi Prefectural Labor Department of the Ministry of Health, Labour and Welfare.



The "Kurumin" Mark  
The Certification for Companies That Support  
Next-Generation Parenting

# Cutting-Edge Technologies That Contribute to Environmental Conservation and Human Wellbeing



## Tokuyama Creating New Technologies and Businesses

As it works to create environmental technologies and eco-friendly products, Tokuyama emphasizes social contributions and environmental impact reduction efforts, even from the development stage.

Researchers today are under increasing pressure to quickly develop innovative technologies and new materials that meet the rapidly changing needs of society. Our R&D mission is to contribute to the healthy development of society by delivering such innovative technologies and new materials through continuous inquiry and ceaseless effort.

Focusing on three growth fields, namely, “information and electronics,” “environment and energy” and “life and healthcare,” we are leveraging the inorganic chemical and crystal technologies that we have accumulated over the years to accelerate product development.

As the latest accomplishment of our R&D activities, we are proceeding with the development of a high-performance deep ultraviolet light emitting diode (DUV-LED).

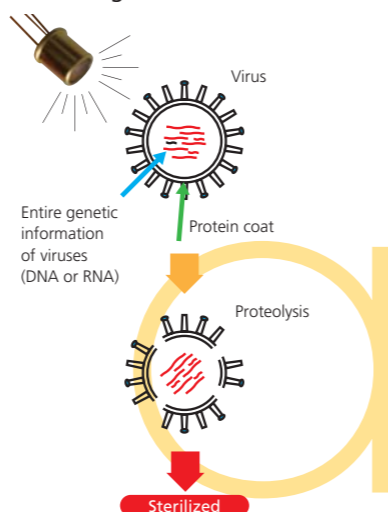
## What Is Deep Ultraviolet Light?

Constituting a part of the solar spectrum, ultraviolet (UV) light has a shorter wavelength than blue light and is well known as being the cause of sunburn and other skin problems. Deep ultraviolet (DUV) light has an even shorter wavelength and is not contained in the solar spectrum. (See the spectrum diagram shown above.) DUV light also exerts a strong sterilization ability, destroying the nucleic acids—DNA and RNA—of germs and viruses. Since DNA has an absorption peak in the 260nm range, devices generating light in this range are the best suited for sterilization applications. Conventionally, mercury lamps have been used for such applications, especially in the fields of medical care, water purification and food sanitation, due to their ability to emit DUV light in the 254nm range. However, the use of mercury lamps poses several problems in terms of environmental impact, not the least of which is that they contain mercury, an environmental load substance. They also have a short life of approximately 2,000 hours, and require a high operating voltage. In recent years, on the back of the growing trend toward mercury-free products and heightening energy-conservation requirements, the possibility of DUV-LEDs has prompted their development as a substitute for mercury lamps.

## Tokuyama Succeeds in Developing a Deep Ultraviolet LED

In response, development efforts aimed at creating DUV-LEDs have been pursued all around the world. In order to realize an LED with such superior performance, developers had to overcome two technological challenges: how to produce high-quality single crystal aluminum nitride (AlN); and how to optimize LED structures that emit DUV light. Since AlN is a key material that enhances the efficiency of DUV light generation, the quality of AlN crystals had to be improved. Employing its proprietary crystal growing technology, Tokuyama succeeded in developing a DUV-LED boasting a world-leading output capacity.

## Virus Sterilization Using Deep Ultraviolet Light



To Commercialize a Deep Ultraviolet LED

Toru Kinoshita

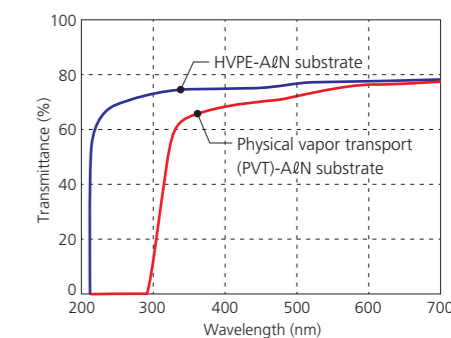
Assistant Manager, Corporate Development Department

Invented at the beginning of the 20th century, mercury lamps are a mainstay sterilization device in a variety of fields, including medical care and water purification, making significant contributions to public hygiene. However, mercury lamps also exert a high environmental impact. In addition to containing mercury, which is toxic, these lamps have only a short life while consuming a substantial amount of electricity. In recent years, calls for the development of convenient and highly efficient light sources for sterilization applications have been increasing, especially given the increasing threat of highly pathogenic avian influenzas and noroviruses. Reflecting this, vigorous development activities aimed at creating DUV-LEDs to replace mercury lamps have been undertaken all around the world.

To overcome technological problems that DUV-LED developers previously confronted, Tokuyama devised an innovative process using its proprietary hydride vapor phase epitaxy (HVPE) method, thereby succeeding in producing high-quality AlN single-crystal substrates that boast low-defect density and superior ultraviolet light transmittance. Our prototype DUV-LED, which has been created on these substrates, is capable of generating wavelengths in the 260nm range, ideal DUV light for sterilization applications. Upon the verification of the world-leading output capacity marked by this prototype, we went on to announce its development to the general public.

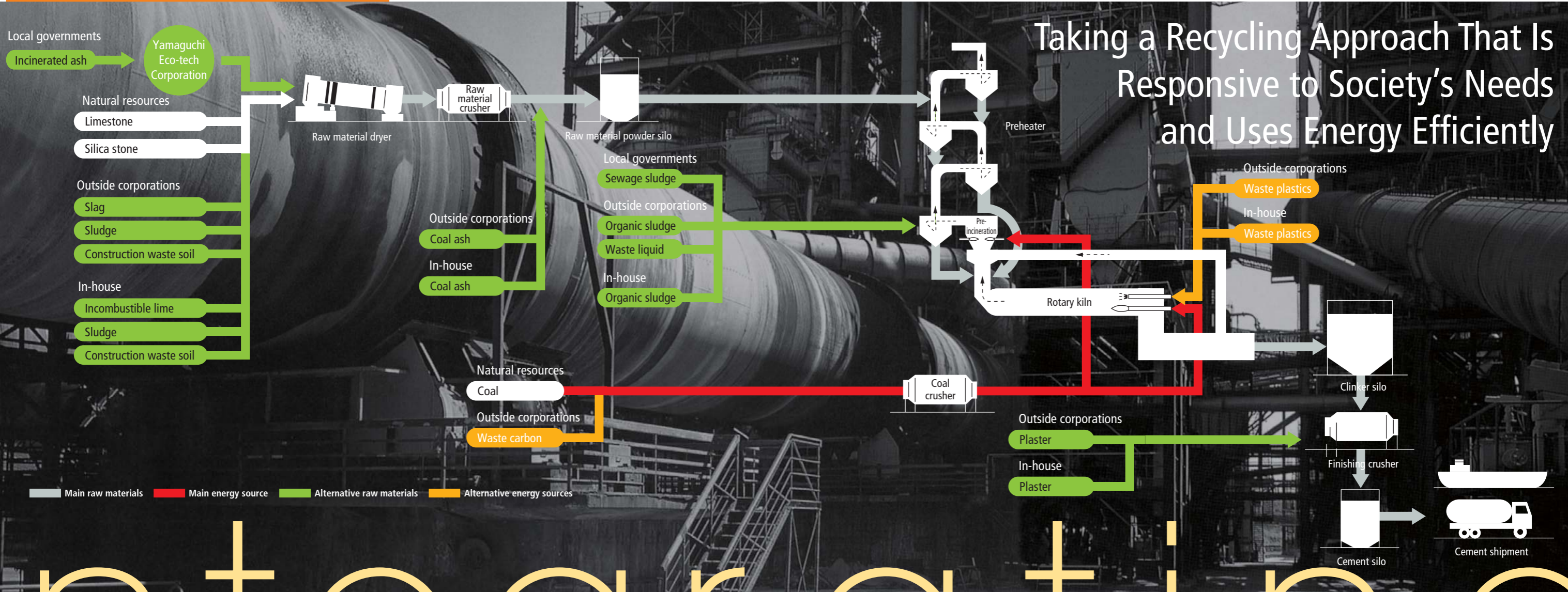
The mission of our research team is to contribute to the improvement of public hygiene and the reduction of environmental impact by commercializing the DUV-LED and thereby helping people enjoy safer and cleaner living environments. To this end, we are devoting ourselves to research and development activities aimed at realizing an LED that has a longer life and also consumes less electricity.

## Comparison of AlN Substrates' Light Transmittance by Production Method (Thickness: 114μm; Polish: both surfaces)





The Nanyo Plant's Cement Production Recycling System



As a "Mother Factory" of the Tokuyama Group, the sources of competitiveness of our Tokuyama Factory are the unparalleled energy efficiency and superior technologies that we have nurtured at the frontlines of manufacturing operations. With an eye to responding to environmental concerns, the Tokuyama Factory is solidifying its foundation as the Group's "Mother Factory," striving to reduce unit energy consumption while enhancing productivity and efficiency.

The Nanyo Plant, a cement production base within the Tokuyama Factory, has been promoting the reuse of incombustible lime from the Company's soda ash plant as well as coal ash from the in-house power plant as alternative raw materials for cement production. Also, the Nanyo Plant proactively accepts a significant volume of waste from local

communities and outside corporations, promoting a recycling approach that is responsive to the needs of society.



**Nurturing a Business That Plays a Key Role in the Development of a Recycling-Oriented Society**

Naoya Maeda  
 Manager, Manufacturing Section,  
 Cement Manufacturing Department

Through a firing process involving extremely high temperatures, our rotary cement kilns produce clinker, which constitutes an intermediate product used in cement manufacturing. As the temperature inside the rotary kilns reaches 1,800 degrees Celsius, the kilns completely burn the waste used as an energy source, leaving only ash that is then itself used in cement. Because of this, these cement kilns have two remarkable features: they can accept a wide range of materials as long as they contain main ingredients of cement; and they generate no secondary waste, such as burnt residue, unlike typical incinerators. As a result, our recent cement manufacturing business is not only producing materials for concrete, it is playing a key role in a nascent recycling-oriented society by treating and changing a variety of waste and by-products into cement.

Looking to the future, continuing to play such a role will be increasingly essential for Tokuyama in terms of social contribution, particularly in light of the ongoing trend of decline in domestic cement demand. My aims as an engineer working in cement production are to develop technologies that enhance the utilization efficiency of waste and to conduct meticulous operational management aimed at realizing optimized production, thereby ensuring steady cement production and waste treatment.

The cement industry is a key industry that bolsters infrastructure development. As our centennial approaches, we will devote our best efforts to strengthening the capability of our cement manufacturing front lines, aiming to develop this business into a strong foundation that plays a quiet but significant role supporting the Company's operations.



## What Is Responsible Care?

Responsible Care (RC) refers to the voluntary management activities of companies that manufacture and handle chemical substances to protect the environment and maintain the safety and health of members of the public and employees in all processes covering the development, manufacturing, distribution, use, final consumption and disposal of chemical substances. Also, RC activities involve the publication of the results of the activities and the promotion of dialogues and communication with society. The RC concept originated in Canada in 1985, and it is now in place in 52 countries around the world. In Japan, the Japan Responsible Care Council (JRCC)\* was established in 1995 within the Japan Chemical Industry Association (JCIA). It had 104 corporate members as of April 2013, Tokuyama being one of the founding members. We actively promote RC activities as the basis of our environmental management and CSR activities.

\*Currently, the JCIA Responsible Care Committee

## CSR Activities Centered on RC Activities

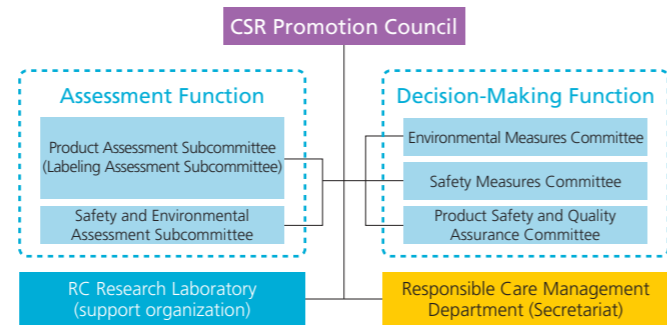
RC activities constitute one of core initiatives in Tokuyama's CSR activities. A Companywide promotion structure has been established to soundly operate various management systems. In this way, we continue to improve our environmental, safety, and quality management systems.

## RC Promotion Structure

Under the CSR Promotion Council chaired by the president and consisting of members of the Executive Committee, the Company has established the Environmental Measures Committee, Safety Measures Committee and Product Safety and Quality Assurance Committee as decision-making bodies. Also, the Company has established several subcommittees—such as the Product Assessment Subcommittee—which provide various assessment

functions. All these committees and subcommittees promote specific initiatives in their respective areas of responsibility.

## RC Promotion Structure



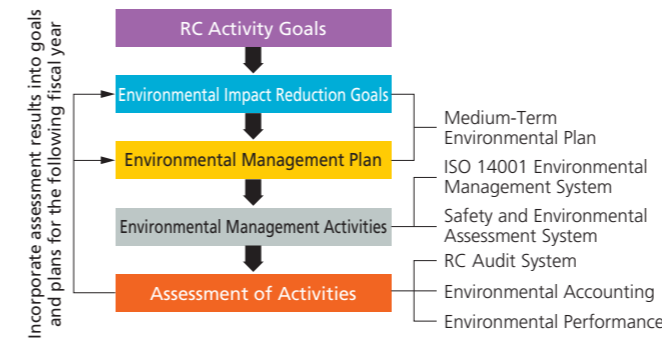
This laboratory checks the safety of chemicals and assesses their environmental impact using simulations. It also carries out environmental measurements, working environment measurements and ultra-trace analysis of substances under regulation and chemical pollutants.

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

## RC Activity Evaluation and Management System

Tokuyama periodically adopts a new medium-term plan in the area of Responsible Care and determines its policies and targets for each fiscal year to achieve said plan. Under these policies, the individual departments create specific plans and engage in their activities. The results of these activities are assessed at the end of each fiscal year so that the plans for the following fiscal year will reflect the findings. Tokuyama formulated a new four-year plan starting in fiscal 2011. Activities under the plan are now in progress.

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



## Operation of Management Systems

### ISO 14001 Environmental Management System

The Tokuyama Factory and the Kashima Factory have already acquired ISO 14001 certification. ISO 14001 is an international standard for environmental management systems. In line with the Companywide environmental policy, each factory sets out an environmental policy and the specific goals to be achieved in areas covering environmental impact reduction, energy conservation, waste reduction and resource recycling.

At the Company's head office, branch offices and research laboratories, activities are under way based on their respective policies and goals set out according to the scale of their operations, covering energy conservation, waste reduction, resource recycling and other activities.

### ISO 9001 Quality Management System

Tokuyama has also acquired ISO 9001 certification for its quality management system. Since fiscal 2002, this system has been operated as a system covering sales, development and all other divisions of the Company.

### Occupational Health and Safety Management System

In accordance with the Japan Chemical Industry Association (JCIA) New Occupational Health and Safety Guidelines, Tokuyama has built and promoted occupational health and safety management systems at individual factories and offices. In fiscal 2005, the Tokuyama Factory upgraded its system into a comprehensive safety management system covering various safety-related activities.

## Assessment Systems

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

### Safety and Environmental Assessment

Prior to installing, expanding or modifying any facility, we conduct safety and environmental assessments. We check the safety design of equipment, the safety level of the materials handled, compliance with the laws and regulations and the impact on the environment, thereby ensuring that our facilities are safe, easy to operate, easy to maintain, and accident- and disaster-resistant. The assessments apply to three stages: Basic Plan Assessment, Design Assessment and Pre-Operational Assessment. At these stages, assessments are conducted to verify that the facilities have a safety and environment-oriented design, that they have been built to the design requirements and that they are ready for operation.

### Product Assessment and Labeling Assessment

To ensure product safety, Tokuyama conducts a product safety assessment at each stage, from research and development to commercialization. We

assess the risk evaluation and examine compliance with the statutory requirements from a wide range of perspectives, including the safety of the chemical substances involved, the environmental impact and the effect on human health. We also assess the labeling to ensure that the product information in catalogs, manuals on safe handling, safety data sheets (SDSs)\* and other types of labeling contain no deficiencies in relation to the instructions and/or warnings and that there are no inappropriate statements.

\* A safety data sheet is a document that deals with the hazard and toxicity of a chemical substance. It is prepared to ensure the safe handling of a particular substance and provides information on the name of the substance, safety measures, the action to be taken in the event of an emergency and so forth.

## RC Promotion Structure and Operation of Management Systems

### Auditing Systems

Tokuyama has an auditing system aimed at verifying that individual factories and offices engage in appropriate activities in line with Companywide policies.

### Safety and Environmental Audit

Tokuyama conducts safety and environmental audits on a yearly basis to verify the appropriateness of its accident/disaster prevention measures and management activities in relation to environmental conservation. The auditing team is headed by the director who chairs the Safety Measures Committee and the Environmental Measures Committee, and the team conducts audits of all factories, laboratories and offices, organizations designated for inspection under the High Pressure Gas Safety Act, the Purchasing & Logistics Department and the Health Management Center. The results of the audits are compiled in reports and distributed to all departments concerned. They are also presented to the president.

### Third-Party Audit

Tokuyama undergoes ISO 9001 and ISO 14001 examinations conducted by accreditation organizations. The latest examination for maintenance of the ISO 9001 certification took place in April 2013. The examination resulted in two observations (audit findings referred to as "opportunities for improvement") and the Company took such steps as the revision of in-house operating standards in response. Also, the Tokuyama Factory and the Kashima Factory have undergone examinations for maintenance of the ISO 14001 certification in October and December 2012, respectively. As a result, five observations were made, including a minor nonconformity and four "opportunities for improvement." The factories implemented remedial measures based on these findings by once again disseminating appropriate management procedures throughout the organization.

### Internal Audit

Tokuyama conducts internal audits on a regular basis in accordance with the ISO 9001 and ISO 14001 standards and with the occupational health and safety management system. The progress of action plans and the status of system operations are audited. If a problem is found, it is notified to related parties, and corrective actions are instituted.

## Education and Training

Employee education related to overall Responsible Care activities is provided for all members within the framework of level-specific group education.

Practical education and training in relation to environmental management, safety management, occupational health and safety, and quality management are offered as part of actual management activities.

## 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

- 1 **Promote environmental protection**
  - Implement an ISO 14001-based Environmental Management System and reduce environmental impact
- 2 **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

**Environmental Management**

The Tokuyama Factory and the Kashima Factory have formulated specific education and training plans in accordance with the ISO 14001 environmental manual. They offer education on the importance of environmental conservation and compliance with relevant laws and regulations to employees and contracted workers alike. The scope of the plans for fiscal 2012 covered approximately 3,800 employees and contracted workers and all have undergone prescribed education programs. Also, 15 internal auditors participated in training sessions aimed at enhancing their auditing skills.

**Safety Management and Occupational Health and Safety**

The Company offers hazard prediction training; hands-on experience training; pre-work hazard prediction activities; safety regulation education; internal special education on electricity, oxygen deficiency, waste incinerators and other areas; foreman education; troubleshooting training; training on the use of fire prevention and extinguishing systems; evacuation drills; general disaster drills; traffic safety education; and training on aid activities following external accidents and disaster prevention.

**Quality Management**

Each workplace provides its own ISO-related instruction. Twenty-five key personnel at different workplaces have completed the ISO 9001 internal auditor development course.

**Business Continuity Initiatives and BCPs**

Business Continuity Plans (BCPs) refer to action plans prepared by enterprises with the aim of mitigating the impact of disasters, accidents and other emergency events on their core operations and ensuring the earliest recovery and resumption of operations if these events caused their disruption.

The Tokuyama Group has formulated a BCP that postulates a near-future scenario in which a major earthquake has occurred directly below the Tokyo metropolitan area. The Group is also drawing up BCPs to counter such events as a major earthquake along the Nankai trough and new influenza pandemics.

As a part of these initiatives, in fiscal 2012 the Group implemented an emergency first response drill aimed at testing its BCP, assuming that the abovementioned earthquake hit the Tokyo metropolitan area during working hours.

The drill involved the Tokuyama Factory, the Kashima Factory, the Tsukuba Research Laboratory and 11 Group companies located in the area. We rehearsed the launch of the Crisis Countermeasure Headquarters at the Tokyo Head Office, which simultaneously accompanies the establishment of the Tokuyama Support Headquarters at the Tokuyama Factory, the confirmation of the safety of officers and employees, the collection and sharing of information on the damage sustained, the distribution of aid supplies and information disclosure using the Company's website.



The Crisis Countermeasure Headquarters launched at the Tokyo Head Office: Discussing emergency response with the Tokuyama Support Headquarters through teleconference

Distributing aid supplies

**Fiscal 2012 RC Activities: Priority Issues and Results**

Category	Priority Issues	Results
Management	<ul style="list-style-type: none"> <li>Review by top management</li> </ul>	<ul style="list-style-type: none"> <li>CSR Promotion Council</li> <li>Safety, environment and quality audit</li> </ul>
Environmental conservation	<ul style="list-style-type: none"> <li>Reduction in environmental impact (air, water quality, etc.)</li> <li>Reduction in the emission of PRTR substances and hazardous air pollutants</li> <li>Decrease in unit energy consumption</li> <li>Promotion of zero-emission activities</li> <li>Steady operation of the environmental management system</li> </ul>	<ul style="list-style-type: none"> <li>Reduction in the emission of SOx and NOx</li> <li>Ongoing efforts aimed at reducing soot emissions</li> <li>Increase in the emission of PRTR substances</li> <li>Promotion of energy conservation</li> <li>Reduction of 21.8% in unit energy consumption compared with fiscal 1990 level</li> <li>Facilitation of the use of waste as raw materials and fuel for cement production</li> <li>Maintenance of zero-emission rate at 99.9%</li> </ul>
Process safety	<ul style="list-style-type: none"> <li>Zero accidents</li> <li>Promotion of risk management</li> <li>Promotion of independent safety management</li> </ul>	<ul style="list-style-type: none"> <li>Proper operation of the safety management system</li> <li>All-inclusive safety and disaster prevention activities</li> <li>Implementation of various types of training and drills</li> </ul>
Occupational health and safety	<ul style="list-style-type: none"> <li>Zero disasters</li> </ul>	<ul style="list-style-type: none"> <li>Efforts to maintain zero-disaster status</li> <li>Promotion of risk assessment</li> </ul>
Chemical product safety	<ul style="list-style-type: none"> <li>Securing product safety</li> </ul>	<ul style="list-style-type: none"> <li>Implementation of product assessment and labeling assessment</li> <li>Improvement of SDSs</li> <li>Participation in JIPS*</li> </ul>
Cultivation of a relationship of trust with society and local communities	<ul style="list-style-type: none"> <li>Participation in community activities</li> <li>Harmonious coexistence with society and local communities</li> </ul>	<ul style="list-style-type: none"> <li>Participation in community volunteer activities</li> <li>Holding of RC Community Dialogues (regional, organized by each factory)</li> <li>Provision of factory tours</li> </ul>
Promotion of RC activities at Group companies	<ul style="list-style-type: none"> <li>Expansion of RC activities</li> </ul>	<ul style="list-style-type: none"> <li>Safety, quality and environmental audits</li> <li>Encouragement of ISO certification acquisition</li> <li>Sharing of RC-related information</li> </ul>

\* The Japan Initiative of Product Stewardship: An initiative spearheaded by JCIA with the aim of facilitating the independent management of chemicals. Participating companies and other related enterprises and organizations that handle chemicals collect and analyze information on the hazardous properties of chemical substances and products to carry out risk assessment based on comparisons between exposure when chemicals are used and the no-effect level (the level at which there is no effect), taking into account the use applications of these substances and products. The risk assessment results are utilized for appropriate chemical substance management aimed at ensuring workers' occupational safety, protecting consumers and reducing environmental impact. The outcome of such management activities is disclosed to the supply chain and to the general public.

Tokuyama believes that safety is an essential part of business activities and that ensuring safety is the first step in achieving coexistence with society. In taking this stance on safety, Tokuyama thoroughly conducts process safety and disaster prevention activities as well as occupational health and safety efforts. By doing so, the Company endeavors to prevent accidents and disasters while striving to provide a favorable working environment.

**Commitment to Safety and Disaster Prevention**

**All-Inclusive Safety and Disaster Prevention Activities**

Tokuyama has three safety principles. According to these principles, safety is, in the first instance, a social responsibility to be met as a corporate citizen. Second, safety is given priority over all other business activities; and third, security can be achieved by the fact that all staff members have a responsible attitude and engage in responsible activities.

In line with these principles, we make painstaking efforts to ensure the safety of facilities and processes. Specifically, we continually strive to improve our level of security control, identify the sources of hazards and enrich our security education and training. Accordingly, we promote such efforts as safety patrol operations, Kiken Yochi (KY) hazard prediction activities, Hiyari Hatto accident prevention activities, the five-S activities aimed at ensuring the five-S's that refer to Seiri (tidy), Seiton (organized), Seiketsu (clean), Seiso (cleaning) and Shitsuke (disciplined) at the workplace, as well as the practice of pointing and calling a name out loud. In addition to these basic activities, we operate and continuously improve risk management and crisis management systems.

**Disaster Drills**

Tokuyama conducts a variety of disaster drills, including general disaster drills in tandem with the Shunan City Government.

**Efforts to Maintain Safety Performance and Stay Accident-Free**

The Tokuyama Factory maintained its zero-disaster record in fiscal 2012 for the fifth consecutive year. The Kashima Factory and the Tsukuba Research Laboratory also saw no disasters in fiscal 2012. Moreover, we recorded no on-the-job accidents affecting Tokuyama employees. However, the Tokuyama Factory experienced four accidents involving contractors' employees. One of these accidents forced a worker to take a leave of absence, while the other three required no time off to be taken. Looking ahead, we will continue our efforts to achieve zero-accident and zero-disaster status.

**Commitment to Occupational Health and Safety**

**Strengthening the Safety Management System**

With the aim of completely removing potential risk factors, each factory and laboratory adopted Safety Management Systems and is continuously improving these systems through risk assessments of work practices, facilities and processes. Also, discussions are now under way to formulate improved systems for the measurement of the effects brought by changes in safety management methods.

**Helping Contractors Promote Safety and Health Activities**

By holding active dialogues on safety, Tokuyama and its contractors share their wisdom and eliminate potential risks associated with work in the field, thereby collaboratively promoting safety management activities. In these ways, Tokuyama is striving to safeguard all personnel working at its plants from accidents and disasters.

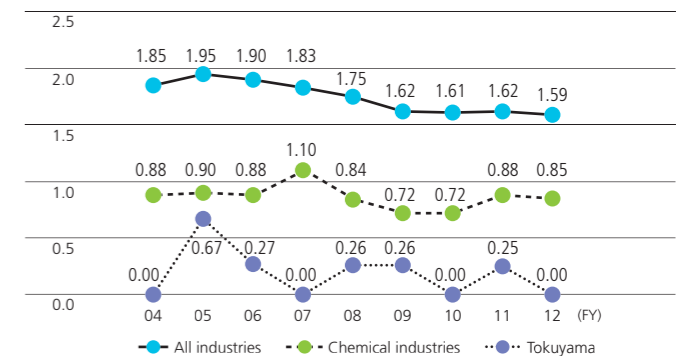
**Promoting Mental and Physical Health**

We implement such steps as taking measurements at worksites where specified chemical substances and organic solvents are handled. Our industrial doctor inspects these worksites and we take other steps to improve facilities and working methods.

To combat lifestyle related diseases, we provided health guidance through face-to-face counseling based on the results of health checkups and issued written notifications to encourage those who failed to undergo a recommended complete checkup to do so. Consequently, the ratio of those who underwent such recommended checkups significantly improved to 85.5% from 69.3% in the previous fiscal year. Although Tokuyama has seen an upward trend in employee absenteeism in recent years, the rate for fiscal 2012 decreased from 5.8% to 5.5% on a Companywide basis.

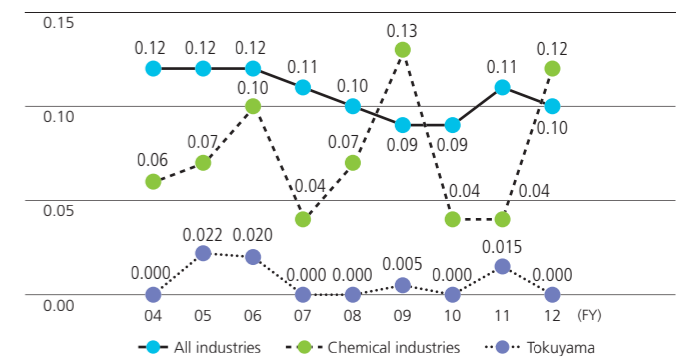
We are also working to strengthen our structure for assisting in the health management of expatriates through such steps as dispatching an industrial doctor to our locations overseas (Malaysia and Shanghai).

**Trend in the Accident Frequency Rate\*1**



\*1 The accident frequency rate refers to the number of workers forced into absence through industrial accidents per one million cumulative working hours. This reflects the frequency at which industrial accidents occur.

**Trend in the Accident Severity Rate\*2**



\*2 The accident severity rate refers to the number of lost work days per one thousand cumulative working hours. This reflects the magnitude of industrial accidents that have taken place.

Fiscal 2012 Investment in Process Safety, Disaster Prevention and Occupational Health and Safety Countermeasures	Amount (millions of yen)	Ratio (%)
Countermeasures against explosions, fire and leakage	386	60
Countermeasures to improve occupational safety and work environment	236	37
Countermeasures against earthquakes and other natural disasters	17	3
<b>Total</b>	<b>639</b>	<b>100</b>

# Performance for Fiscal 2012

## Protecting the Global Environment

One of our most important corporate social responsibilities is to actively protect the global environment. Tokuyama practices environmental management with an emphasis on environmental perspectives in all of its business activities.

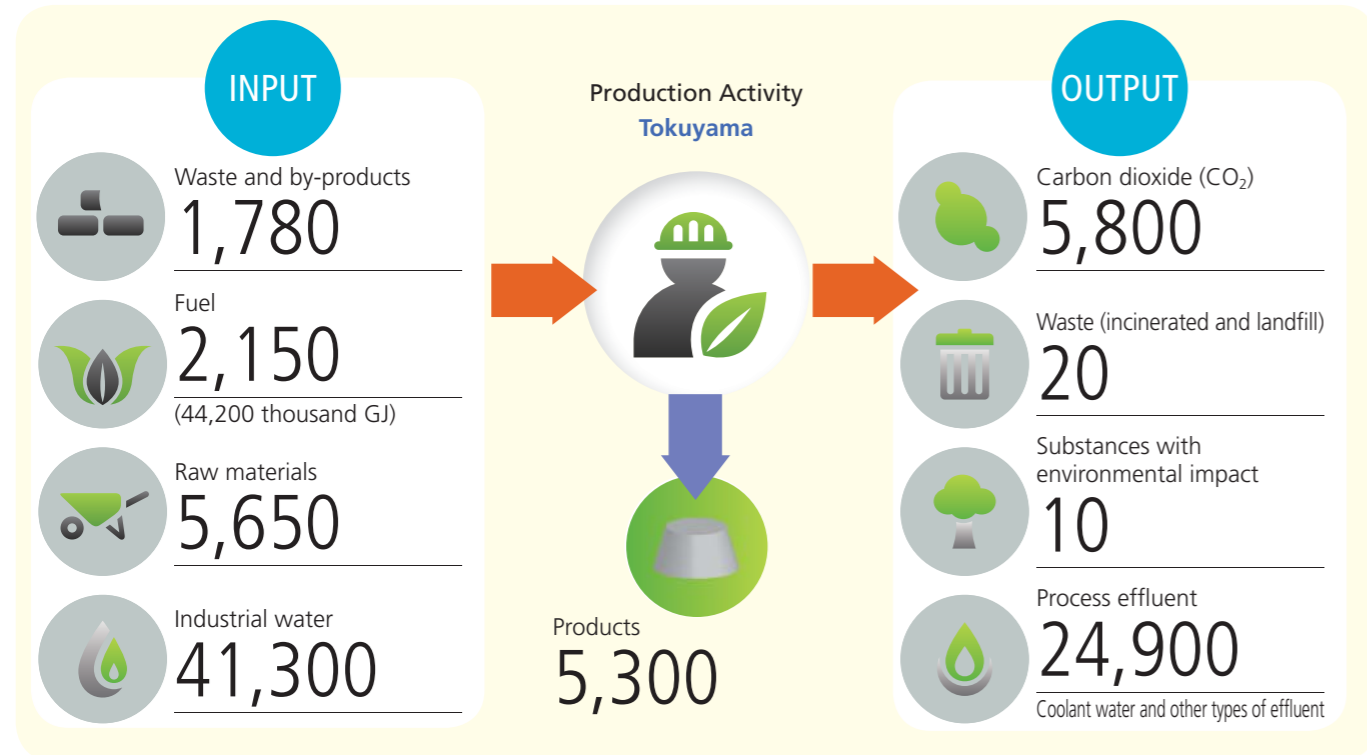
## Tokuyama's Environmental Performance for Fiscal 2012

Tokuyama strives to obtain accurate data on the input and output of materials and substances in its business activities and reduce the environmental impact of these activities to meet its environmental targets.

Among its fiscal 2012 targets for environment impact reduction, the Company failed to achieve its soot and dust-emission reduction target due to the increased utilization of facilities subject to environmental regulations. We also failed to meet targets for the reduction of PRTR substance emissions and unit energy consumption index because of a decline in the Tokuyama Factory's overall facility utilization rate. On the other hand, we achieved our waste reduction target by pursuing proactive recycling efforts internally and externally.

## Flow of Materials in Business Activities

(Unit: 1,000 metric tons)



## Fiscal 2012 Results of Environmental Preservation Activities (Tokuyama Factory)

Rating: ○: Satisfied; ×: Not satisfied

Category	Items	Fiscal 2012 Target	Fiscal 2012 Result	Rating	Fiscal 2013 Target	
Environmental Impact Reduction	Atmosphere	Soot and Dust (Compared to the average emission from fiscal 2008 to 2010)	±0%	+27%	×	Emissions target reset to 200 metric tons per year, about 30% higher than the fiscal 2012 target, to reflect the expected facility utilization rate and individual facility characteristics
	Water Quality	COD (Compared to the fiscal 2010)	±0%	-5%	○	±0%
		Nitrogen (Compared to the fiscal 2010)	±0%	-15%	○	±0%
		Phosphorus (Compared to the average emission from fiscal 2008 to 2010)	±0%	-9%	○	±0%
	PRTR	PRTR (Compared to the average emission from fiscal 2008 to 2010)	±0%	+14%	×	-14%
Energy Conservation	Unit Energy Consumption Index (Compared to the fiscal 1990)	24% lower than the fiscal 1990 level	22% lower than the fiscal 1990 level	×	24% lower than the fiscal 1990 level	
Global Environment Conservation	Recycling	Rate of Effective Waste Utilization	Maintain at 94%	94.8%	○	Maintain at 94%
Waste Reduction	Zero Emission	Zero-Emission Rate	Maintain at 99.9%	99.9%	○	Maintain at 99.9%

In fiscal 2012, Tokuyama met its targets for water pollutant reductions (COD, nitrogen and phosphorus), recycling and zero emissions.

## Environmental Accounting

To accurately grasp and analyze the amounts of investments and costs associated with environmental preservation activities and improve the effectiveness of environmental investment, Tokuyama has implemented environmental accounting since fiscal 2000.

## Environmental Costs

Of Tokuyama's total environmental investment during fiscal 2012, investments related to pollution control, resource recycling and global environmental conservation accounted for 71%, 19% and 7%, respectively. At the same time, investments related to management activities accounted for 2%. Costs related to pollution control, resource recycling and global environmental conservation accounted for 69%, 14% and 10%, respectively, of the Company's total environmental costs for the same period.

Major environmental investments in fiscal 2012 included the replacement and reinforcement of neutralizing facilities; the construction of storage facilities for polluted soil accepted from outside corporations, which accompanied the installation of strengthened soil contamination countermeasures; and other steps to promote waste treatment.

## Environmental Preservation Costs

Category	Major Activities	Amount Invested (¥ million)	Costs (¥ million)
Costs in the Business Areas	Pollution Control	Replacement of electric dust collectors and neutralizing facilities, etc.	861 / 4,776
	Global Environmental Conservation	Improvement of facilities for the effective utilization of coal	88 / 680
	Resource Recycling	Efficient use of resources	235 / 990
Upstream and Downstream Costs		0	2
Management Activity Costs	Environmental analysis equipment, etc.	20	271
Research and Development Costs		0	0
Social Activity Costs	Greenery development, production of CSR report	1	68
Costs for Environmental Damage	Imposition, management of a former mining site	0	158
Total		1,206	6,945

## Economic Benefits

To analyze the economic benefits, we calculate nothing but the real benefits of gains on reduction in energy consumption, gains on sale of valuable waste, gains on reduction in waste disposal costs through waste recycling, and gains on reduction in raw material and fuel costs through waste recycling.

In fiscal 2012, Tokuyama achieved economic benefits totaling approximately ¥1.7 billion, up about ¥30 million from fiscal 2011.

## Economic Benefits in Fiscal 2012

Category	Material Benefit (1,000 metric tons)	Economic Benefit (¥ million)
Gains on Reduction in Energy Consumption		177
Gains on Sale of Valuable Waste	72	298
Gains on Reduction in Waste Disposal Costs through Waste Recycling	283	727
Gains on Reduction in Raw Material and Fuel Costs through Waste Recycling	284	512
Total		1,714

## Commitment to the Prevention of Global Warming

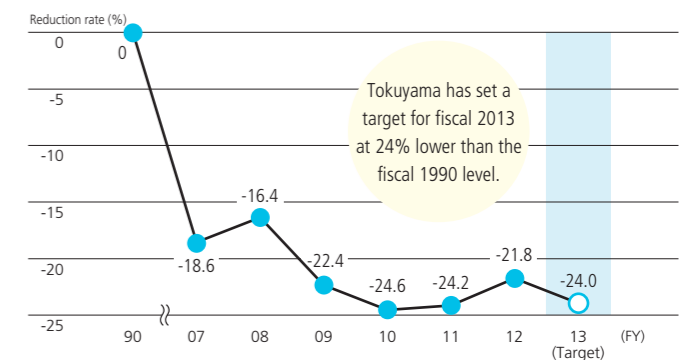
Prevention of global warming is key to the future of the human race. Tokuyama is making steady energy conservation achievements in its business activities while supporting energy conservation in employee households.

## Promotion of Energy Conservation

Tokuyama consumes a huge amount of energy in manufacturing its core products, such as caustic soda, cement and polycrystalline silicon. Carbon dioxide, one of the greenhouse gases, is generated chiefly by burning fossil fuels and also by the decarboxylation of limestone used as a raw material in cement production.

Aware of the high priority of preventing global warming, the Company is conducting energy conservation activities to reduce carbon dioxide emissions. The Tokuyama Factory is responsible for more than 99% of the Company's energy consumption. Taking this fact into consideration, in fiscal 2012 the Tokuyama Factory undertook the switchover from coal to alternative fuels as well as the acceleration of energy-saving activities. However, the unit energy consumption index of the Tokuyama Factory has been reduced no more than 22% (with unit energy consumption in fiscal 1990 set as 0) due to a decrease in the factory's overall facility utilization rate.

## Unit Energy Consumption Index\* (Tokuyama Factory)



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

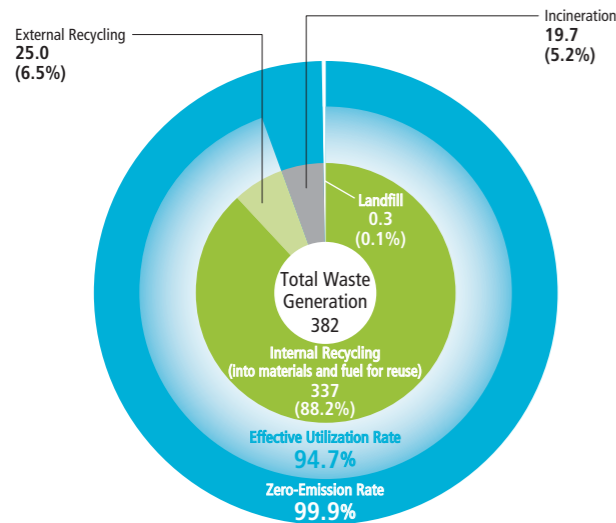
**Reducing Waste and Promoting Recycling**

As a result of its exhaustive efforts to reduce and recycle waste, Tokuyama maintained the effective waste utilization rate at 94% and the zero-emission rate at 99.9% in fiscal 2012.

**Waste Management**

In fiscal 2012, Tokuyama generated 382 thousand metric tons of waste. The Company actively recycled this waste internally and externally, mainly reusing it as raw materials and fuel for cement production at the Tokuyama Factory. Packing materials, pallets and other wood waste were crushed into woodchips so that they could be effectively used as fuel for cement, we kept on target, maintaining an effective waste utilization rate of 94%. We stepped up our activities for reusing and reducing waste and, accordingly, maintained our high landfill zero-emission rate at 99.9%.

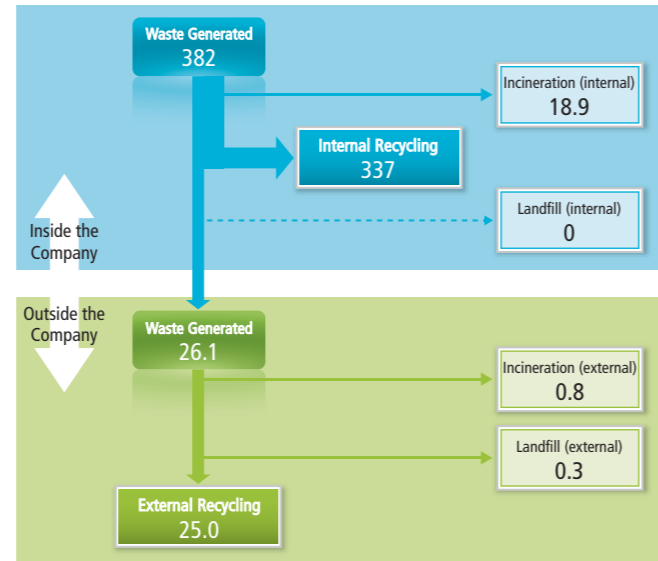
**Breakdown of Industrial Waste by Treatment for Fiscal 2012**  
(Unit: 1,000 metric tons)



$$\text{Effective Utilization Rate (\%)} = \frac{\text{Recycling Volume (internal and external)}}{\text{Total Waste Generation}} \times 100$$

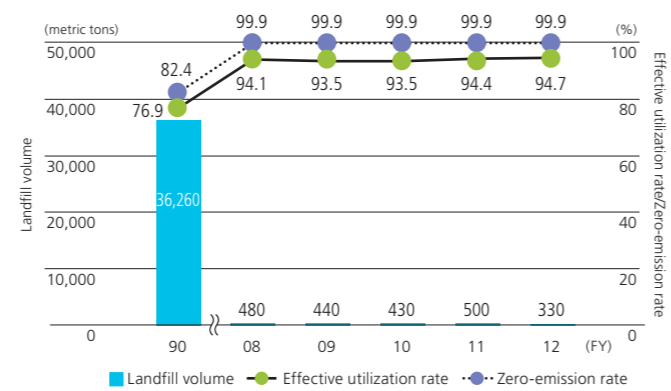
$$\text{Zero-Emission Rate (\%)} = \left[ 1 - \frac{\text{Landfill Volume (internal and external)}}{\text{Total Waste Generation}} \right] \times 100$$

**Flow of Industrial Waste Treatment**



\* Figures are for fiscal 2012 and in units of 1,000 metric tons.

**Landfill Volume, Zero-Emission Rate and Effective Utilization Rate**



**Management and Treatment of PCB Waste**

The Tokuyama Group has 78 transformers and capacitors containing polychlorinated biphenyl (PCB).\* The Group has already stopped using them. In compliance with the Special Measures Law for the Proper Treatment of Polychlorinated Biphenyl Waste, they are retained and managed in an appropriate manner. In accordance with the plan of the Japanese government, wide-area PCB treatment facilities are being constructed at various locations in Japan, and some of these facilities have started operation. Taking advantage of the early registration program, the Tokuyama Group finished its registration to the Japan Environmental Safety Corporation (JESCO) in December 2005 and commenced disposal in fiscal 2009. In June 2013, the Tokuyama Factory began to transfer PCB waste that it has retained to the abovementioned treatment facility, starting full-scale disposal of such waste.

\* PCB is an organic chlorinated compound that emits dioxins when burned at a low temperature. Chemically stable and excelling in thermal resistance, chemical resistance, insulation and other electric characteristics, it was formerly used in many different electric products, including transformers and capacitors. However, it has been banned from production or utilization since 1972 because of its hazardousness to humans. Transformers, capacitors and other PCB-containing products that have already been distributed have to be retained at business establishments.

The Tokuyama Science Foundation was established on September 19, 1988, to commemorate the 70th anniversary of Tokuyama's founding. The mission of the foundation is to offer financial support for research into new materials and related subjects in science and technology, and to raise awareness of science and technology, thereby enabling socioeconomic development and the improvement of people's lives.

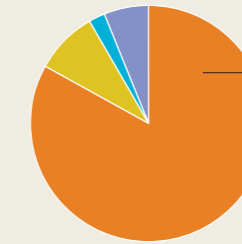
The foundation has to date offered a cumulative total of ¥853 million for 753 projects. Many who enjoyed support from the foundation as youths are today leading professors at universities nationwide.



All the recipients of research grants in fiscal 2011



\*12 Ehime Chemistry Show (the Exciting World of Chemistry)



Cumulative total financial support from fiscal 1988 to fiscal 2012: ¥853 million

Research grants: ¥709 million to 364 recipients

The foundation offers research grants to young researchers aged 45 or younger at universities and research institutions in Japan. After the financial support period, a research presentation meeting takes place with the participation of all recipients.

Financial support for international exchange: ¥72 million to 274 recipients

The foundation subsidizes the participation of young researchers aged 45 or younger at universities and research institutions in Japan at overseas meetings. After returning to Japan, the recipients are required to submit reports on the results.

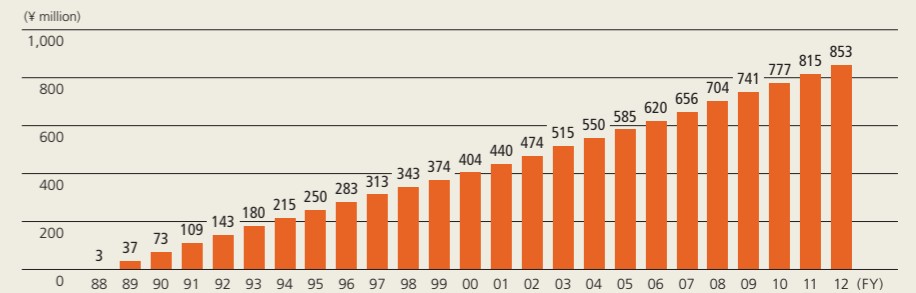
Financial support for international symposia: ¥21 million to 47 projects

The foundation provides financial support for the operations of international conferences to enable researchers to exchange information with peers overseas.

Grants for campaigns on science and technology: ¥51 million to 68 projects

The foundation backs campaigns that present the excitement and wonders of science and technology to children. The Chugoku/Shikoku Branch of the Chemical Society of Japan plays a central role in organizing a series of exhibitions titled "An Exciting World of Chemistry" in the summer vacation season. In Yamaguchi Prefecture, there are "invention clubs" for boys and girls operating in seven cities and towns.

**Cumulative Total of Grants and Financial Support**



**Editorial Policy**

**Editorial Policy**

- The *CSR Report and Corporate Profile 2013* has been compiled with the aim of providing our stakeholders with a comprehensive picture of our CSR initiatives and business activities in an easily understood format. This integrated report consists of a print edition and a web edition in PDF format. Please also visit our website\* to see the web edition for more detailed information, especially numerical data, and other articles that could not be featured in the print edition because of space limitations.  
\*www.tokuyama.co.jp/eng/csr/report/
- As with the 2012 edition, Tokuyama asked Ms. Eriko Nashioka of the Institute for Environmental Management Accounting to offer independent comments on this integrated report. The purpose of the independent comments is to continuously seek feedback and ratings that help the Company to fulfill its social responsibility. Details of Ms. Nashioka's comments are available on page 25 of this document.
- This integrated report has been prepared based on the Environmental Reporting Guidelines (Fiscal 2007 edition) published by the Ministry of the Environment.

For inquiries, please contact:

Corporate Social Responsibility Division

**Tokuyama Corporation**

Kasumigaseki Common Gate West Tower, 2-1, Kasumigaseki 3-chome, Chiyoda-ku, Tokyo 100-8983, Japan

Tel: +81-3-6205-4835 Fax: +81-3-6205-4882

**Scope of the Report**

Period: All performance data is for fiscal 2012, from April 1, 2012 to March 31, 2013. Certain activities undertaken after April 1, 2013 are included.  
Companies: Tokuyama Corporation (Environmental performance data is for the Tokuyama Factory and the Kashima Factory.); certain environmental performance data includes total values for 11 major production companies within the Tokuyama Group (see the web edition in PDF format).  
Region: Activities in Japan (including some overseas Group companies)  
Date of issue: November 2013

**The Scope of Reporting Covered by Print and Web Editions**



A Review of Tokuyama's CSR Report and Corporate Profile 2013



Eriko Nashioka

Representative Director of the Institute for Environmental Management Accounting, Certified Public Accountant and Certified Tax Accountant  
Part-time lecturer in environmental accounting and environmental auditing for the Faculty of Commerce of Doshisha University

A Flexible Approach to Achieving the Centennial Vision

As it looks forward to marking the centennial of its founding in 2018, Tokuyama has been promoting business activities under the three growth strategies "Growing," "Creating" and "Integrating" established in 2011. Tokuyama went on to add "Diversifying" to this list in 2013, a fourth strategy that bolsters the other three, aimed at facilitating the Company's growth. I find it highly praiseworthy that Tokuyama has clearly stated its intention to place the utmost emphasis on human resources in order to achieve business expansion. Because Tokuyama is willing to take a flexible approach to achieving its Centennial Vision, I have growing expectations as to what Tokuyama will look like when it celebrates the centennial anniversary five years from now.

Human Resources as Business Foundation

The new, fourth strategy, "Diversifying," is based on Tokuyama's recognition that its efforts to nurture human resources and assist in their development will bolster its business foundation. To showcase initiatives under this strategy, the special features of this report cover the nurturing of human resources in Malaysia and a dialogue among female employees in Japan. These articles communicate the status of Tokuyama's personnel administration based on a personnel system designed to treat all employees with

respect regardless their race or gender. As I read the articles, I came to understand that "Diversifying," Tokuyama's fourth strategy aimed at vitalizing its human resources, is not mere sloganeering but an actual practice that is yielding actual achievements.

Every year since it began factory construction in Malaysia, Tokuyama has reported on the exchange of personnel between Japan and Malaysia and the nurturing of human resources. It has been pleasing to see that staff members from both countries are gaining greater mutual understanding, which, in turn, has helped Japanese staff's painstaking efforts to train local employees. Anticipating the commencement of the first plant's operations in September 2013, I expect Tokuyama's human resources to achieve success in Malaysia.

Also, the dialogue among the female employees presents examples of working styles suited to female researchers. I took this dialogue as a demonstration of Tokuyama's efforts to address social issues and a management approach that puts emphasis on human resources. Japan has been facing population decline in recent years and it was reassuring to learn that Tokuyama is promptly responding to this trend through the provision of workplaces that welcome diverse human resources.

Integration of CSR Report and Corporate Profile

In 2013, Tokuyama combined its CSR Report and Corporate Profile while separately preparing print and web editions, implementing reforms in information disclosure. In light of the promotion of CSR-oriented corporate management, it was a good idea to integrate the CSR Report and Corporate Profile. While this integration made some data available only on Tokuyama's website, the print edition became easier to read as it is able to place greater focus on key performance indicators (KPIs), providing a snapshot of the Company's operating status rather than in-depth detail. However, the presentation of the KPIs is somewhat disorganized, and I expect that the Company will be looking to incorporate the opinions of stakeholders in order to determine which KPIs to track and disclose. I hope that future efforts will help facilitate stakeholders' understanding of the status of Tokuyama's initiatives as it approaches its centennial and inspire them to support the Company as it strives to achieve the Centennial Vision.

In Response to Third-Party Comments



Our efforts to nurture globally capable human resources featured in the CSR Report 2012 were highly evaluated, and as we compiled this latest report, we wished to retain this emphasis by introducing the views of employees actively working in Malaysia. We hope readers were able to see that a new corporate culture is being created through cross-cultural exchange.

Also, to facilitate readers' understanding of "human resource-based management," a priority issue with us, the report presents a dialogue featuring female researchers. In addition, we are glad to learn that the integration of the CSR Report and Corporate Profile and the issuance of a web edition featuring detailed data have been favorably evaluated by Ms. Nashioka for their aim of improving information disclosure. Her words of encouragement are appreciated by the staff who spearheaded the preparation of this report.

In fiscal 2012, Tokuyama Corporation experienced its hardest ever year in terms of performance. In response, Tokuyama formulated plans to improve profitability and is rallying its entire strength to implement them. However, our goal of achieving the Centennial Vision remains unchanged, despite the severe operating conditions. Based upon Ms. Nashioka's suggestion, we will devise ways to provide stakeholders with more quantitative information on the progress of our efforts toward the Centennial Vision. At the same time, we will strive to prepare a more reader-friendly CSR Report and Corporate Profile.

Masao Fukuoka

Executive Officer, General Manager of the Corporate Social Responsibility Division

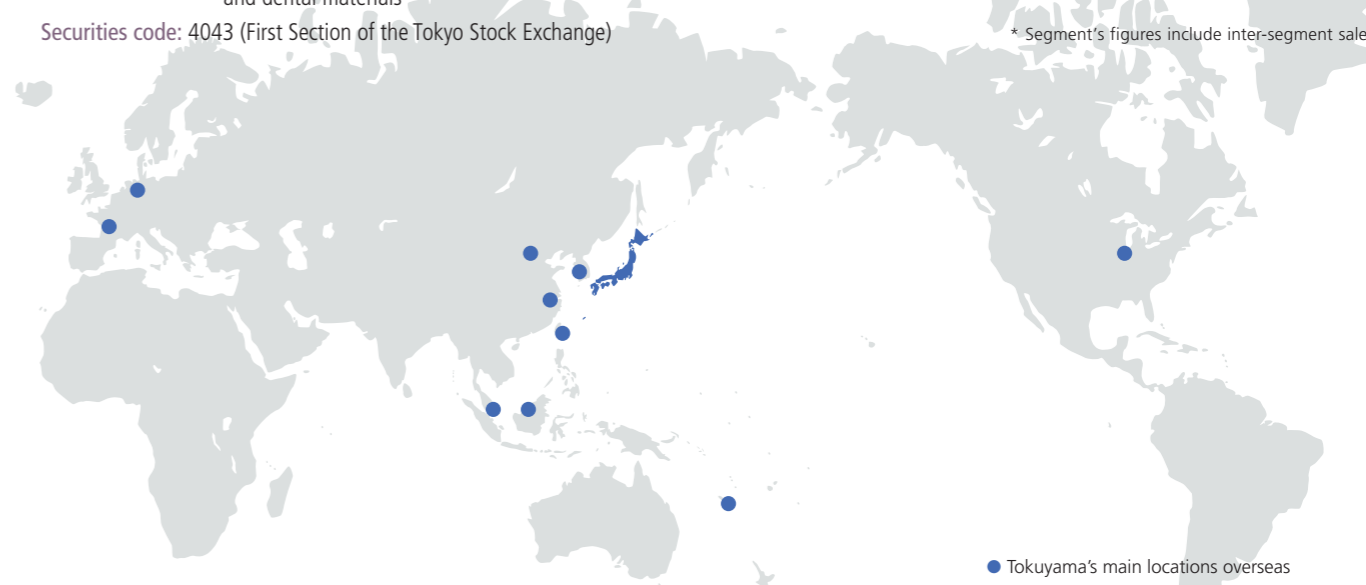
Company Outline

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 Office

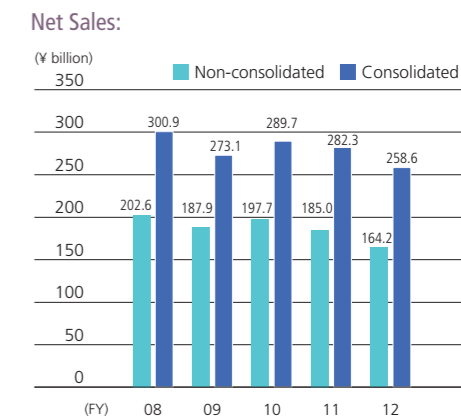
President: Kazuhisa Kogo  
Established: February 16, 1918  
Capital: ¥53,458 million (as of March 31, 2013)  
Number of employees: 5,651 (consolidated basis; including 1,164 working overseas); 2,122 (non-consolidated basis) (as of March 31, 2013)

Number of Group companies: 84 (as of March 31, 2013)  
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

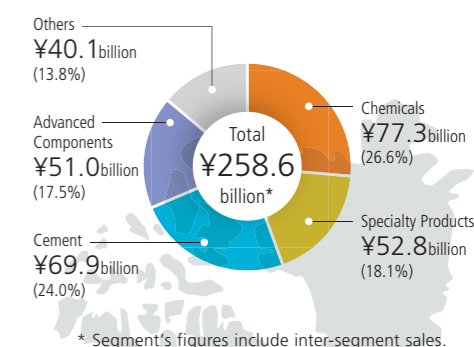
Securities code: 4043 (First Section of the Tokyo Stock Exchange)



Financial Highlights



Sales Breakdown by Segment (Fiscal 2012):



\* Segment's figures include inter-segment sales.

"Tokuyama's Manufacturing Roots"

In 1918, Tokuyama Corporation (Nihon Soda Kogyo Co., Ltd. at that time) was established in Tokuyama-cho (today's Shunan City), Yamaguchi Prefecture, to undertake the domestic production of soda ash—a basic and essential material for the development of Japanese industries. While retaining its headquarters in its place of origin, Tokuyama has since entered the fields of cement, petrochemicals and electronic materials. Today, the scope of its Group operations extends to medical care and environmental businesses and is expanding globally.



A photo of the Company's soda ash plant (1918)