



Tosoh Corporation **RESPONSIBLE CARE REPORT 2004**

**Responsible Care Report 2004**

Tosoh Corporation

## **Tosoh's Mission:**

**Contribute to a better society through  
innovations in chemistry**



## Contents

2	Message from the Management
4	Environmental Protection
6	Responsible Care Management
12	Responsible Care Performance
20	Environment-Friendly Products and Technologies
23	Social Responsibilities
24	Total Focus on Safety and Disaster Prevention
26	Employee Support for Career Development
28	Maintaining a Close Relationship with Our Neighbors
30	Site Reports
32	Company Profile

## About This Responsible Care Report

This report includes information on Tosoh's activities in connection with environmental preservation, safety, quality and chemical safety. The report covers the period from April 2003 to March 2004, which is designated as fiscal year 2003. The next report is scheduled for publication in late 2005. Should you have any opinions or comments about the contents of this report, please complete the attached questionnaire form and send it to one of the Tosoh offices below.

- **Secretariat of the Responsible Care Committee**

(Environment, Safety & Quality Control Division)  
Address: 3-8-2 Shiba, Minato-ku, Tokyo 105-8623  
Tel: 03-5427-5127 Fax: 03-5427-5203

- **Nanyo Complex, Environment, Safety & Quality Control Division**

Address: 4560 Kaisei-cho, Shunan City, Yamaguchi Prefecture 746-8501  
Tel: 0834-63-9820 Fax: 0834-63-9936

- **Yokkaichi Complex, Environment, Safety & Quality Control Division**

Address: 1-8 Kasumi, Yokkaichi City, Mie Prefecture 510-8540  
Tel: 0593-64-1115 Fax: 0593-64-1184

# Message from the Management

Ever since its establishment in 1935, Tosoh Corporation has developed and enhanced technologies based on chemistry and pursued innovation with the aim of becoming a highly individual, diversified chemical company with a distinctive presence in the market.

Today, issues regarding health and the environment are being discussed the world over, and people are increasingly looking to chemistry for many of the solutions. Within this new focus, the role played by the chemical industry takes on added significance. Since 1995, we have engaged in Responsible Care activities as a pillar of management. These are voluntary activities to ensure environmental protection, safety and health throughout the entire lifecycle of products. In

1999, we issued the Basic Principles of the Environment, Safety and Health and Implementation Guidelines, clearly incorporating the concept of safety assurance into the previous Basic Principles of the Environment. On the basis of this ethos, we have engaged in business with environmental protection, safety assurance and health management as top management priorities. Furthermore, in April 2003 we established Compliance Implementation Guidelines to ensure rigorous compliance with laws and regulations within the Group.

Among our Responsible Care activities in fiscal 2003, we continued to reduce the environmental impact of our business activities by lowering emissions of substances designated under the Pollutant Release and Transfer Register Law (PRTR Law). In fiscal 2003, we reduced our total emissions of PRTR-designated substances to 70% of fiscal 1995 levels, and are on target to achieve our goal of a reduction of 75% or more by fiscal 2006. Similarly, we are making steady progress toward targeted reductions of the final disposal volume of industrial waste and unit energy consumption, the latter being an important measure to combat global warming.



By continuously seeking to improve our performance in keeping with the principles of self-determination and self-responsibility in Responsible Care activities, we aim to further strengthen the foundation of the Tosoh Group and push ahead with our goals of helping individuals to realize happiness and contributing to society through innovations in chemistry. As our corporate activities affect not only employees and shareholders, but also potentially people from all over the world, we welcome your suggestions regarding our efforts.

*Chairman & CEO:*

**MADOKA TASHIRO** (Left)



*President:*

**TAKASHI TSUCHIYA** (Right)



## Compliance

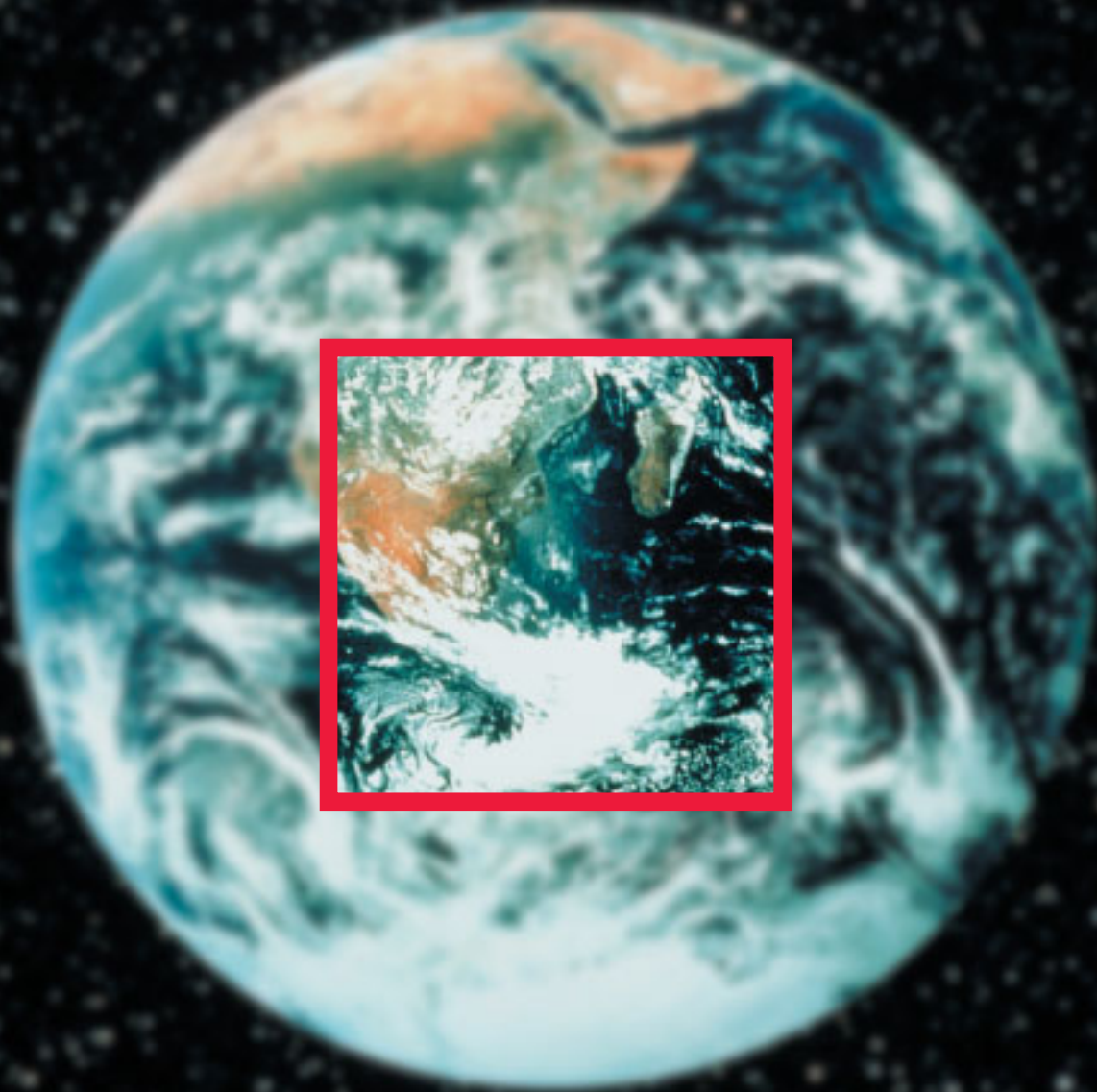
Companies are required to respect social norms and comply with laws and regulations in the pursuit of business activities. Tosoh is engaged in implementing measures to ensure compliance with the law. In April 2003, the Company instituted the Action Guidelines and in May 2003 established the Compliance Committee. In February 2004, it laid down the Compliance Regulations and, on the basis of the regulations, revised the Action Guidelines and reissued them as Compliance Implementation Guidelines. Tosoh distributes the Compliance Implementation Guidelines to all officers and employees and works to ensure that the guidelines are rigorously followed.

## What is Responsible Care?

The term “Responsible Care” (RC) refers to voluntary management activities by which chemical manufacturers implement and improve environmental protection and safety assurance measures over the entire lifecycle of products, from development and manufacturing to use and final disposal. These activities are divided into the categories of environmental preservation, process safety and disaster prevention, occupational safety and health, chemical and product safety and logistics safety. The results of the activities are publicly disclosed, and dialogue with the public is promoted. In Japan, Responsible Care is promoted by the Japan Responsible Care Council (JRCC), in which Tosoh has participated since its establishment. JRCC had 111 member companies as of March 2004 and RC activities are carried out in 47 countries around the world.



# Environmental Protection



*Through its corporate activities Tosoh moves ever closer to the marriage of economy and ecology—by developing valuable new uses for waste compounds,*



*by seeking greater efficiency and by helping mankind to pass on the Earth's abundance to future generations.*

# Implementing policies that establish strict environmental standards

## GLOBAL ENVIRONMENTAL INITIATIVES

### Basic Principles Regarding the Environment, Safety and Health

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

### Action Policies

#### 1. Basic Stance

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

#### 2. Environmental Protection Initiatives

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

#### 3. Safety Assurance Initiatives

- Preventing accidents and effectively responding to disaster through facility safety management
- Maintaining and managing emergency response capabilities through safety drills
- Eliminating accidents and disaster effects through analysis of case studies

#### 4. Product-related Environmental and Safety Assurance Initiatives

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

#### 5. Promotion of Good Communication

- Providing safety management-related information for products and chemical substances
- Enhancing public confidence through dialogue concerning all of our activities



**Responsible Care Promotion Structure**

Tosoh has established the Responsible Care (RC) Committee to promote Responsible Care activities. The director responsible for the Environment, Safety & Quality Control Division chairs the committee, and its members include general managers from the corporate Purchasing and Logistics Division, operating divisions, research centers and manufacturing complexes and offices. The RC Committee is responsible for formulating a Responsible Care activity plan and evaluating Responsible Care activities.

At Tosoh, Responsible Care follows a plan, do, check, act (PDCA) cycle that results in continuous improvement. The state of implementation of the Responsible Care activities plan formulated each year by the RC Committee is checked in Responsible Care audits. Action is taken to improve activities by reflecting the results of the audit in the following year's activity plan at company-wide environment, safety and quality control meetings in which the heads of environment, safety and quality control units participate. Each manufacturing complex and office convenes its own Responsible Care committee to promote practical Responsible Care at worksites.

**Responsible Care Activities**

Responsible Care activities fall under six categories: environmental preservation; process safety and disaster prevention; occupational safety and health; logistics safety; chemical and product safety; and dialogue with the public.

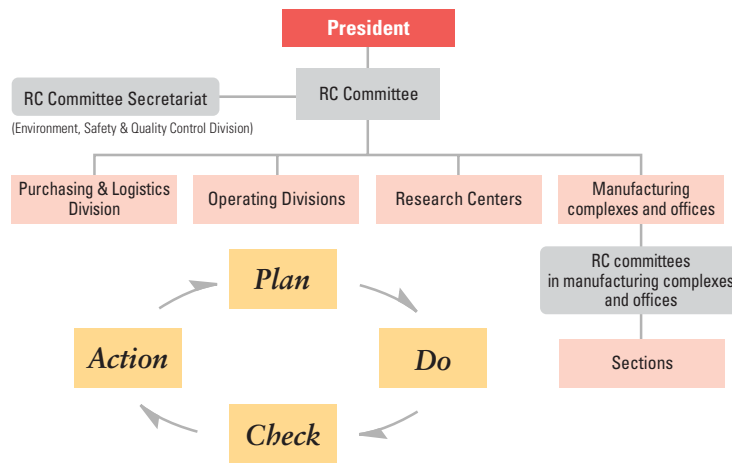
logistics safety; chemical and product safety; and dialogue with the public. Tosoh has added quality assurance as a seventh category. We place special emphasis on activities in the environmental preservation and quality assurance categories and engage in activities to acquire and maintain certification for the International Standard Organization's ISO 14001 environmental management system and ISO 9001 quality management system. We completed company-wide ISO 14001 certification in Japan in 1999.

**Responsible Care Audit**

Tosoh has adopted the Codes and Guidelines for the Implementation of Responsible

Care established by the Japan Responsible Care Council (JRCC). The chairman of the RC Committee conducts a Responsible Care Audit of activities in the six Responsible Care categories and of quality assurance for each manufacturing complex. The chairman reports the audit results to the RC Committee. The RC Committee decides a new Responsible Care activities policy for the next fiscal year that reflects the results of the Responsible Care Audit, reports the new policy to the President and obtains approval of the Board of Directors. Tosoh also audits environmental and safety activities at Tosoh Group affiliates.

**Responsible Care Promotion Structure**



**Responsible Care Audit**



# Always striving to improve our overall corporate stance

## ■ Goals, Results and Evaluation

	Medium-term to Long-term Goals	Goals for fiscal 2003	
<b>Basic Stance</b>	<b>Comply with laws and regulations</b>	Comply with laws and regulations	
<b>Environmental Preservation</b>	<b>Reduce emissions of substances designated under the PRTR Law*</b> Reduce total emissions of PRTR-designated substances by 75% from the fiscal 1995 level by fiscal 2006	Reduce total emissions of PRTR-designated substances by 70% from the fiscal 1995 level by the end of fiscal 2003	
	<b>Reduce final waste disposal volume</b> Reduce final waste disposal volume by 80% from the fiscal 1990 level by fiscal 2010	Reduce final waste disposal volume by 70% from the fiscal 1990 level by fiscal 2005	
	<b>Contribute to the prevention of global warming</b> Reduce unit energy consumption to 90% of the fiscal 1990 level or less by fiscal 2010	Reduce unit energy consumption to 90% of the fiscal 1990 level or less by fiscal 2010	
<b>Process Safety and Disaster Prevention, Occupational Safety and Health</b>	<b>Eliminate accidents and injuries</b>	Achieve zero incidence of occupational accidents Accidents <span style="float: right;">None</span> Occupational accidents resulting in death <span style="float: right;">None</span> Occupational accidents resulting in loss of workdays and those resulting in no loss of workdays <span style="float: right;">Below the prior year level</span>  Establish specific targets for creating an accident-free environment Review the Occupational Safety and Health Management System (OSHMS) implementation approach Provide safety management guidance and support to Group companies  Collect and analyze case examples of plant malfunctions and accidents	
	<b>Promote voluntary safety assurance activities</b>	Renew current voluntary safety certification and acquire additional certification Rigorously implement management systems and ensure compliance	
<b>Chemical and Product Safety, Logistics Safety</b>	<b>Take preventative measures to avoid product liability problems</b>	Continue Product Safety Committee meetings and consultation on quality matters	
	<b>Promote the High Production Volume Chemicals (HPV) Initiative and institute risk assessment measures</b>	Actively promote the ICCA HPV Initiative and engage in risk assessment of specified chemical substances	
	<b>Prepare Material Safety Data Sheets (MSDS)</b>	Comply with laws and regulations and enhance safety information provision by completely revising MSDS and issuing MSDS that comply with new JIS form (scheduled for completion in March 2004)	
<b>Dialogue with the Public</b>	<b>Promote communication with society</b>	Promote communication through JRCC dialogue meetings	

\* PRTR Law: Pollutant Release and Transfer Register Law

**Tosoh has examined the results of its Responsible Care activities for fiscal 2003 and identified issues to be addressed in preparation for additional accomplishments in fiscal 2004 and beyond.**

★★★: Achieved    ★★: Nearly achieved    ★: Not achieved

	Results in Fiscal 2003	Evaluation of Fiscal 2003 Results	Goals for Fiscal 2004	Reference Pages												
	<p>April 2003 The Action Guidelines were instituted.</p> <p>May 2003 The Compliance Committee was established.</p> <p>June 2003 The Yokkaichi Complex's certification as a high-pressure gas safety inspection agency was revoked.</p> <p>February 2004 The compliance regulations were laid down and the Action Guidelines were reissued as the Compliance Implementation Guidelines.</p>	★	<p>Ensure to comply with laws and regulations</p> <ul style="list-style-type: none"> <li>• Promote compliance education</li> <li>• Develop regulations and standards</li> <li>• Establish a compliance consultation center</li> </ul>	6-7												
	Total emissions of PRTR-designated substances were 833 tons in fiscal 2003, a reduction of 70% from the fiscal 1995 level.	★★★	Reduce total emissions of PRTR-designated substances by 75% from the fiscal 1995 level by fiscal 2006	14-17												
	Final waste disposal volume was 3,066 tons, a reduction of 78% from the fiscal 1990 level.	★★★	Reduce final waste disposal volume by 80% from the fiscal 1990 level by fiscal 2010													
	Per unit energy consumption in fiscal 2003 was 95.1% of the fiscal 1990 level.	★★	Reduce unit energy consumption to 90% of the fiscal 1990 level or less by fiscal 2010													
	<table border="0"> <tr> <td>Accidents</td> <td>Three (none in fiscal 2002)</td> </tr> <tr> <td>Occupational accidents resulting in death</td> <td>None (none in fiscal 2002)</td> </tr> <tr> <td>Occupational accidents resulting in loss of workdays</td> <td>None (four in fiscal 2002)</td> </tr> <tr> <td>Occupational accidents resulting in no loss of workdays</td> <td>Eight (three in fiscal 2002)</td> </tr> </table> <p>OSHMS is being implemented, with priority placed on risk assessment of chemical substances.</p> <p>The Company actively collected case examples and carried out analyses.</p>	Accidents	Three (none in fiscal 2002)	Occupational accidents resulting in death	None (none in fiscal 2002)	Occupational accidents resulting in loss of workdays	None (four in fiscal 2002)	Occupational accidents resulting in no loss of workdays	Eight (three in fiscal 2002)	★★	<p>Achieve zero incidence of occupational accidents</p> <table border="0"> <tr> <td>Accidents</td> <td>None</td> </tr> <tr> <td>Occupational accidents resulting in loss of workdays</td> <td>None</td> </tr> </table> <p>Strengthen security systems (counterterrorism measures, etc.)</p> <p>Improve implementation of the OSHMS</p> <ul style="list-style-type: none"> <li>• Enhance risk assessment</li> <li>• Utilize near-miss case examples</li> </ul>	Accidents	None	Occupational accidents resulting in loss of workdays	None	24-25
Accidents	Three (none in fiscal 2002)															
Occupational accidents resulting in death	None (none in fiscal 2002)															
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Occupational accidents resulting in no loss of workdays	Eight (three in fiscal 2002)															
Accidents	None															
Occupational accidents resulting in loss of workdays	None															
	The Yokkaichi Complex's certification as a high-pressure gas safety inspection agency was revoked.	★	<p>Nanyo Complex: Plan to renew the certification in September 2004</p> <p>Yokkaichi Complex: Restructure systems in order to reacquire certification</p>													
	48 Product Safety Committee meetings were conducted.	★★★	Ensure that evaluation items are implemented	18-19												
	Of the 27 substances for which Tosoh has registered to participate in the ICCA HPV Initiative, assessment has been completed for xylene, chlorine and other substances.	★★★	<p>Actively promote the ICCA HPV Initiative</p> <p>Review the substances for which Tosoh participates</p>													
	Work to revise MSDS and issue MSDS that comply with the new JIS form is under way.	★★	Complete the revision of MSDS and reissuance in the new JIS form (December 2004)													
	Tosoh participated in JRCC dialogue meetings in the Yamaguchi and Yokkaichi areas in November 2003.	★★★	Promote communication through JRCC dialogue meetings	28-29												

## Striving to document, and in so doing, to assess and improve our Responsible Care efforts

### Environmental Accounting

Until fiscal 2002, Tosoh applied its own rules for collecting data on capital investments and effects associated with the environment and safety. Environmental accounting for fiscal 2003 is based on the Environmental Accounting Guidelines estab-

lished by the Ministry of the Environment and the Japan Responsible Care Council (JRCC). Data collection for items not stipulated in the Environmental Accounting Guidelines is based on assumptions established by Tosoh.

### Scope of data collection:

Nanyo Complex, Nanyo Research Laboratory, Nanyo Technology Center, Yokkaichi Complex, Yokkaichi Research Laboratory, Tokyo Research Center, corporate headquarters

### Accounting period:

April 1, 2003 to March 31, 2004

### Environmental Protection Costs

(Billion yen)

Category	Description of principal activities	Investment		Cumulative 10-year investment	Fiscal 2003 costs
		Fiscal 2003	Fiscal 2002		
<b>Costs within the business area</b>		<b>0.56</b>	<b>1.12</b>	<b>24.58</b>	<b>7.71</b>
Pollution prevention costs	Flue gas desulfurization measures, installation of wastewater autoanalyzers, wastewater treatment	0.19	0.66	12.81	4.49
Global environment preservation costs	Renewal of power plant facilities	0.27	0.41	7.50	1.28
Resources recycling costs	Installation of industrial waste treatment facilities	0.09	0.05	4.27	1.94
Upstream and downstream costs	—	0	0	0	0
Administrative costs	Environmental management, environmental impact assessment, monitoring of environmental load, publication of environmental reports	0.01	0.38	1.05	0.54
Research and development costs	Development of environmental load reduction technology, development of environment-related products	0.18	0	0.74	0.99
Social activities costs	Greening, beautification and support for community environmental activities	0	0	0.01	0.14
Environmental damage costs	—	0	0	0	0
<b>Total</b>		<b>0.75</b>	<b>1.50</b>	<b>26.38</b>	<b>9.38</b>

### Measuring Our Impact

Since 1995, we have steadily reduced unit energy consumption to below fiscal 1990 levels. In this way, we are helping to solve global warming and environmental issues. The process is ongoing, and we are constantly seeking new goals and higher achievement.

### Environmental Protection Effects (Material Effects)

Description (unit)	Fiscal 2003	Fiscal 2002	Variation
Unit energy consumption index (with 1990 taken as 100)	95.1	96.5	(1.4)
SOx emissions (tons)	656	444	212
NOx emissions (tons)	10,086	10,217	(131)
COD emissions (tons)	955	889	66
Dust emissions (tons)	281	223	58
PRTR-designated substance emissions (tons)	833	890	(57)
Waste generation (1,000 tons)	606	612	(6)
Final waste disposal (1,000 tons)	3.1	4.7	(1.6)

### Rewarding Conservation

Tosoh's environmental activities on behalf of the Earth and stakeholders also contribute tangible economic benefits. In fiscal 2003, these efforts produced over ¥2.6 billion in sales, outsourcing revenues and cost savings. Revenue streams flow into the Company as a result of greater efficiencies in operations and reduced handling of materials formally treated as wastes.

### Investment in Environmental Preservation and Safety Assurance

Tosoh invested ¥26.4 billion in environmental protection and ¥6.8 billion in safety assurance during the ten-year period ending fiscal 2003. The chart to the right depicts the cumulative amount invested in environmental protection and safety assurance since fiscal 1994. The total amount invested in fiscal 2003 was ¥1.65 billion, of which ¥0.75 billion was investment in environmental conservation and ¥0.9 billion was investment in safety assur-

#### Environmental Protection Effects (Economic Effects)

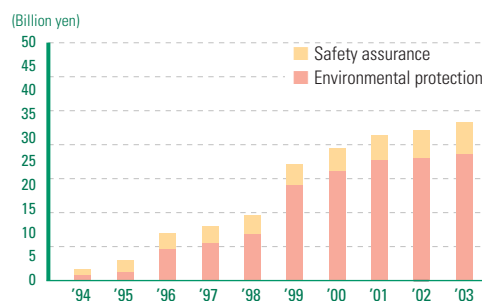
(Billion yen)

Description		Amount
Income	Revenues obtained from recycling waste or used products	0.52
	Cost reductions due to energy conservation	1.02
Cost savings	Reduction in waste treatment costs from resource conservation and recycling	1.14
	<b>Total</b>	<b>2.68</b>

Note: Income is the total of sales value and outsourcing revenues.

ance, including occupational safety and working environment improvement measures, earthquake countermeasures and safety facilities renewal.

#### Cumulative Amount of Investment in Environmental Protection and Safety Assurance



## Reducing Energy Consumption as a Core Operating Policy

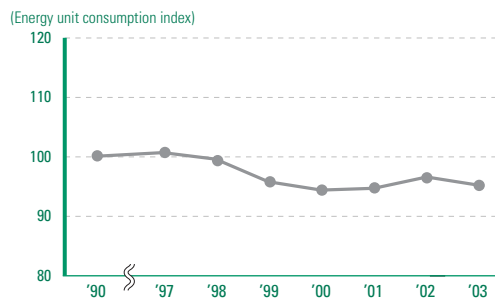
**Tosoh engages in wide-ranging activities to use energy resources efficiently, to help prevent global warming and protect the environment.**

### Measures for Environmental Preservation

#### Energy

Tosoh is actively engaged in energy conservation to achieve the 2010 target of a reduction of 10% or greater in per unit energy consumption from the 1990 level. This target was set as part of Nippon Keidanren's (Japan Business Federation) voluntary action program to prevent global warming and also adopted by the Japan Chemical Industry Association (JCIA).

#### Change in Per Unit Energy Consumption

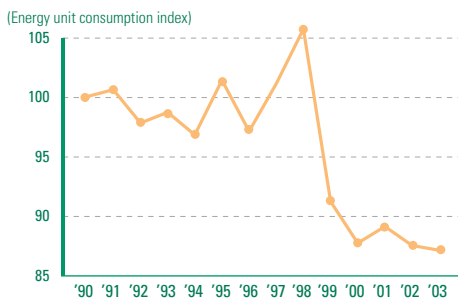




## The Nanyo Complex

At the Nanyo Complex Tosoh operates a vinyl chloride monomer (VCM) plant that supports the Company's core Vinyl Chain operations and an electrolysis plant that manufactures dichloroethane and caustic soda. In 1999 this complex implemented a change in manufacturing process at the electrolysis plant from the diaphragm process to the ion exchange membrane process. It has also achieved great improvement in energy efficiency through such means as the start of operation at the No. 2 VCM Plant, which uses state-of-the-art technologies.

### Nanyo VCM Plants

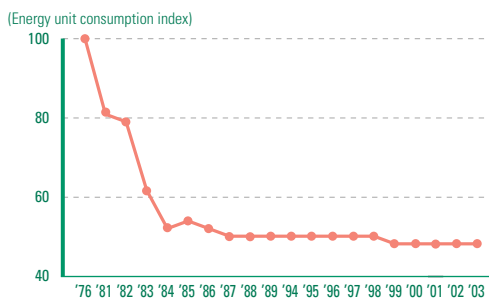


VCM plant at the Nanyo Complex

## The Yokkaichi Complex

The Yokkaichi Complex's electrolysis plant began operations in 1971. In 1976 the plant changed its manufacturing process to the diaphragm process and in 1984 changed to the ion exchange membrane process. Through these process changes and numerous energy reduction measures the plant has achieved tremendous improvement in energy efficiency. Currently the plant is striving for further improvements in energy efficiency for the electrolytic baths and ion exchange membranes it uses.

### The Yokkaichi Electrolysis Plant



Yokkaichi Complex Electrolysis Plant

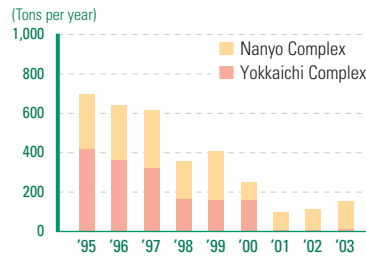
# Voluntarily Reducing Emissions of Hazardous Substances

For the sake of the environment, employees and surrounding communities, Tosoh is voluntarily reducing the overall discharge of hazardous substances.

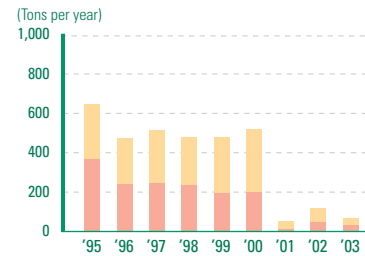
## Toxic Atmospheric Pollutants

Tosoh handles 5 of the 12 substances designated for voluntary control by the Japan Chemical Industry Association (JCIA). Emissions in fiscal 2003 were roughly the same level as in fiscal 2002. The Company will continue to engage in activities to reduce emissions in the coming years.

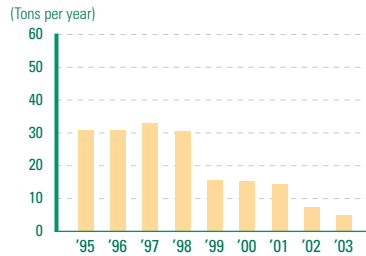
**Vinyl chloride monomer**



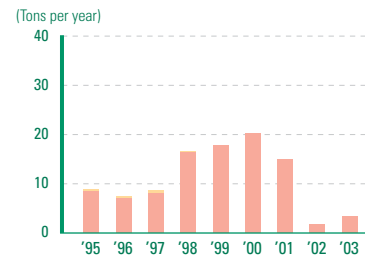
**1,2-dichloroethane**



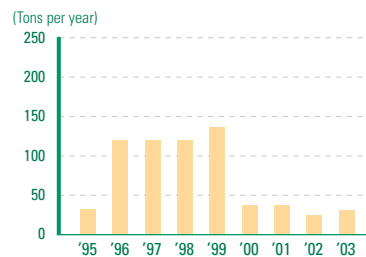
**1,3-butadiene**



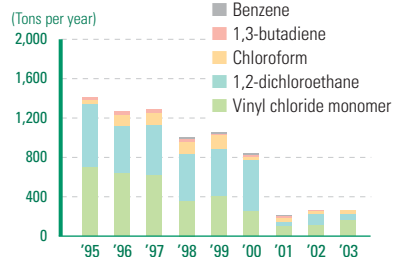
**Benzene**



**Chloroform**



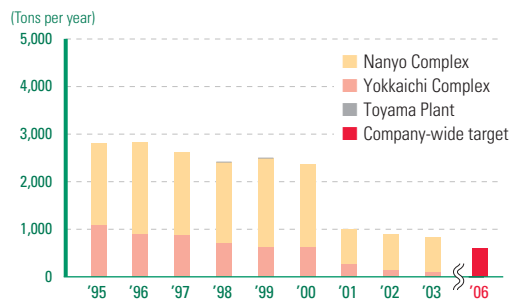
**Total emissions of 5 toxic air pollutants**



### Substances Designated Under the PRTR Law

In fiscal 2003, 49 of the substances Tosoh handled were substances subject to notification under the Pollutant Release and Transfer Register (PRTR) Law. Total emissions into the atmosphere and bodies of water in fiscal 2003 were 833 tons, a reduction of 6% from fiscal 2002. Tosoh has set a target of a 75% reduction from the fiscal 1995 level by the end of fiscal 2006. Efforts to date have resulted in a 70% reduction.

Emissions of Substances Designated under the PRTR Law



## What is the PRTR Law?

The PRTR (Pollutant Release and Transfer Register) law requires businesses handling designated chemical substances to report on emissions into the environment of 354 Class 1 specific chemical substances and publish MSDS (refer to P. 19). This law was announced in July 1999. Emissions data has been published since fiscal 2002 on the Ministry of the Environment's website. This system began to be introduced in Europe and North America around the 1970s and has been implemented by many countries since the Earth Summit in 1992.

**Atmospheric emissions rose in fiscal 2003. Additional measures are being taken to reduce emissions in fiscal 2004.**

**Atmospheric Pollutants**

Tosoh removes SO<sub>x</sub> (sulfur oxides) and NO<sub>x</sub> (nitrogen oxides) in smoke from boilers using desulfurization equipment and denitration equipment and removes dust using electrostatic precipitators. Although in fiscal 2003 emissions trended upward, the Company will continue to implement measures to reduce emissions of atmospheric pollutants.

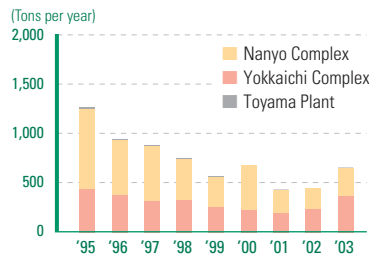
**Water**

Tosoh promotes the effective utilization of water resources by recycling the industrial water used for cooling.

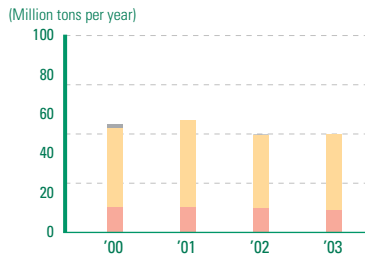
**Waste**

Tosoh has set a target of 80% reduction in the volume of final waste disposal from the fiscal 1990 level by fiscal 2010. Efforts to date have resulted in a 78% reduction. In addition to working to reduce internal industrial waste, Tosoh contributes to the creation of a recycling society by actively accepting waste from outside the Company for effective utilization at its cement plant and halogen recycling facility.

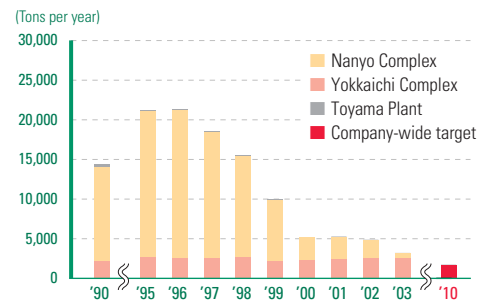
**SO<sub>x</sub>**



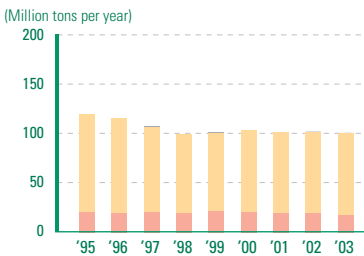
**Water consumption**



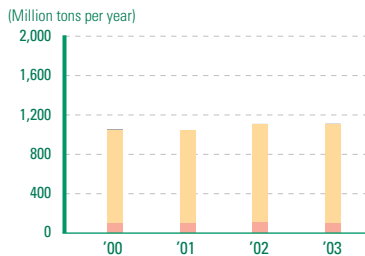
**Final waste disposal**



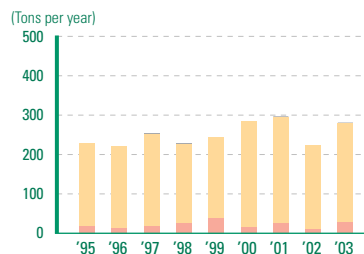
**NO<sub>x</sub>**



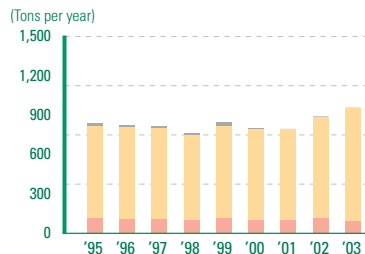
**Wastewater volume**



**Dust**



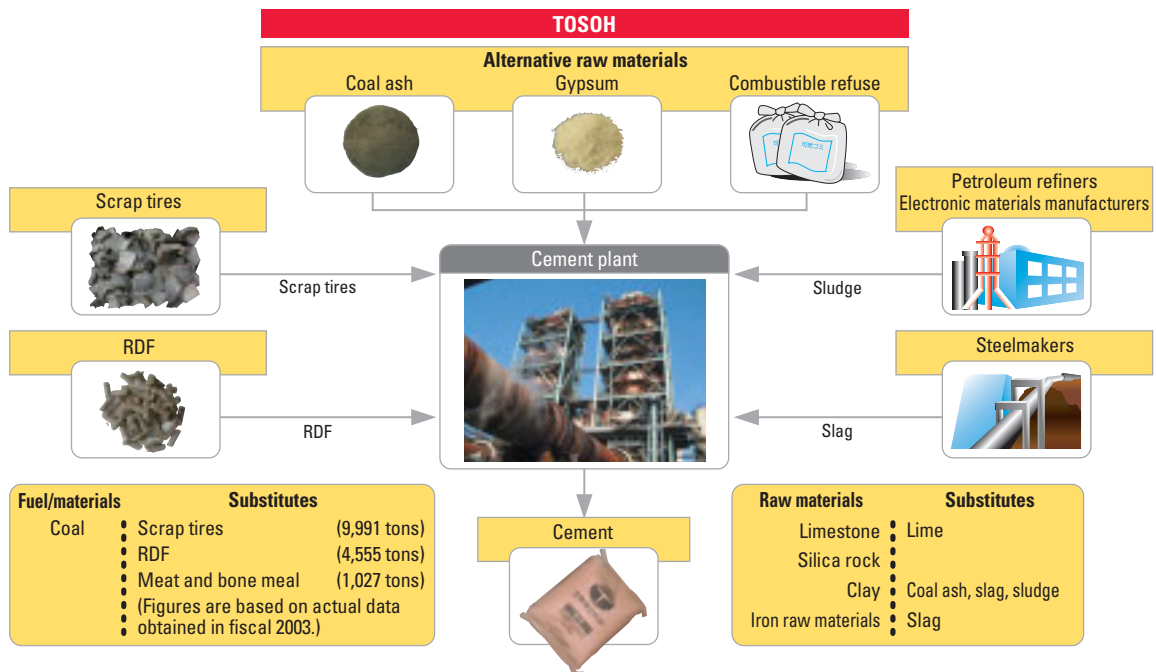
**COD**



## Recycling Facilities

### Cement Plant

Limestone, silica rock, clay, iron raw materials and gypsum are used as raw materials in cement production. Tosoh makes effective use of substitutes for the raw materials and fuel conventionally used in cement production. These substitutes include internally generated byproducts coal ash and gypsum as well as materials obtained externally, such as slag, sludge, scrap tires and meat and bone meal (a measure to assist national initiatives to prevent BSE). The cement plant also plays a beneficial role by burning combustible waste.



### Refuse-Derived Fuel

Refuse-derived fuel (RDF) is fuel produced by solidifying waste generated by households. RDF offers calorific value and combustibility comparable to that of coal. Tosoh cooperates with the environmental administration of Shunan City, Yamaguchi Prefecture, by using all RDF produced at the city's Phoenix fuel production facility as fuel for its cement plant.



The RDF facility in Shunan City  
The Phoenix is a mythical bird that symbolizes rebirth and new life.

### Halogen Recycling Facilities

Tosoh operates a dedicated facility for recycling chlorine and bromine from various types of waste liquids generated internally as well as from waste liquids recovered from manufacturers of pharmaceuticals, agricultural chemicals and chemicals. The chlorine and bromine recovered are used as materials in vinyl chloride monomer and flame retardants, and the heat released in the recycling process is used to generate steam.



# Chemical and Product Safety, Logistics Safety

**Prior to manufacture and at each stage thereafter, including transport, Tosoh seeks to minimize environmental impact and ensures proper handling and emergency response procedures are known and followed.**

## Development and Manufacturing

Before Tosoh manufactures and sells a new product, the toxicity of the substance itself is assessed, and the specifications and capacity of the plant in which it will be manufactured are also evaluated. Then, from the perspective of product liability, it implements a product safety audit to look at user safety. With these steps Tosoh works to assure careful consideration of the implications for the environment, safety and health.

Tosoh cooperates with the High Production Volume (HPV)\* (see p.19) Initiative and the Long-Range Research Initiative (LRI) through its membership in the Japan Chemical Industry Association (JCIA). Tosoh has registered 27 substances it manufactures under the HPV Initiative and completed assessment of 12 substances as of April 2004.

## Transport

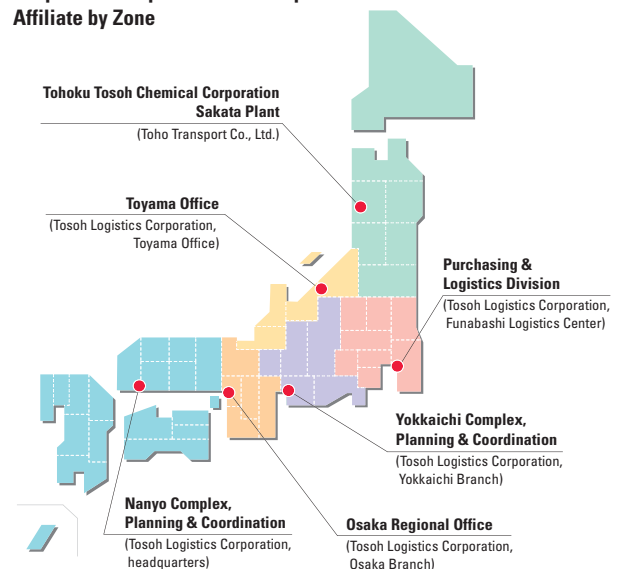
Tosoh prepares “Yellow Cards” (emergency contact information cards) to ensure safety during the transport of chemical substances and an appropriate response in the event of accident and requires transport companies to carry the cards during transport. The cards contain manufacturer contact information as well as concise information on emergency measures, applicable laws and ordinances and hazards and toxicity. To ensure a prompt response if an accident occurs, we have divided Japan into six zones and set up a response base for each zone. The responsible department or Group affiliate in each zone maintains emergency equipment (including protective and recovery equipment) and responds and provides technical support in times of accident.



Yellow card  
(emergency contact information card)

Evaluation	Activities	No. of cases conducted in fiscal 2003
Substance evaluations	Submission of notices to the regulatory authorities as stipulated under the Law Concerning the Examination and Regulation of Manufacture, etc. of Chemical Substances and the Industrial Safety and Health Law	36
Manufacturing plant evaluations	Verification of design, inspection at the time of installation, confirmation of operation and verification of performance	58
Product safety reviews	Holding of Product Safety Committee meetings concerning the market introduction of new products, the introduction of new product applications and the formulation and revision of warning documents	48

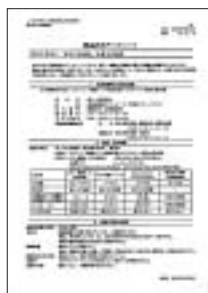
### Responsible Department or Group Affiliate by Zone





## Use

When a business handles chemicals, it is necessary to ascertain the ingredients, properties and methods of handling of the substances themselves, as well as the products that contain them. Material Safety Data Sheets (MSDS) are documents that contain information concerning chemical substances. The law mandates the provision of MSDS to users at the time of product shipment. Tosoh prepares MSDS and provides information concerning all products, not only those for which provision is mandated by law.



Required items for MSDS

## Disposal

Tosoh is committed to reducing waste. When the Company commissions an industrial waste disposal contractor, it issues an industrial waste control manifest. Upon completion of the waste disposal, the contractor fills in the manifest and sends a copy to the commissioning entity. This system makes it possible to confirm that waste has been properly disposed of.




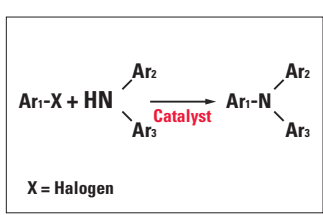

Waste disposal manifest

## What is HPV?

HPV stands for “high production volume” chemicals. The Organization for Economic Cooperation and Development (OECD) has launched an international project to acquire data and assess the toxicity of HPV substances. Priority is being given to substances for which basic safety data are not yet available. The chemical industry, under the leadership of the International Council of Chemical Association (ICCA), is cooperating actively in this project.

**Tosoh develops a vast range of environment-friendly products and technologies that contribute to environmental protection.**

PRODUCTS AND TECHNOLOGIES AT TOSOH CORPORATION		
<p><b>Vinyl Chloride Resin</b></p>		<p>Vinyl chloride is used in a variety of products, from water supply and sewage pipes to plastic greenhouses and medical devices. Because approximately 60% of vinyl chloride consists of salt, the amount of petroleum resources used in its manufacture and processing is low compared with other types of plastic. The use of vinyl chloride thus contributes to the conservation of energy resources.</p>
<p><b>Chlorine</b></p>		<p>Used to disinfect and sterilize drinking water and a variety of other substances, chlorine is indispensable to human health and public sanitation.</p>
<p><b>Calcium Hypochlorite</b></p>		<p>Used as a disinfectant to disinfect or sterilize the water in swimming pools or the effluent from septic tanks, Calcium Hypochlorite plays an important role in protecting human health and preserving the environment.</p>
<p><b>Polyaluminum Chloride (PAC)</b></p>	<p>Polyaluminum chloride (PAC) coagulates the impurities that cause turbidity and discoloration of water and is highly beneficial to the environment. It is used as a coagulant in the treatment of public water supplies, industrial water and household wastewater.</p>	
<p><b>Caustic Soda</b></p>	<p>An alkaline chemical used in the neutralization of acid liquid waste and the absorption of acid gas, caustic soda is beneficial for preventing pollution and protecting the natural environment. It is also used as a raw water-refining agent in water supply treatment and as a neutralizer in food additives.</p>	
<p><b>Sodium Bicarbonate</b></p>	<p>Sodium bicarbonate is well known for its usefulness in various aspects of daily life, including dishwashing, house cleaning and deodorizing. This environment-friendly substance is also used in the treatment of exhaust gas.</p>	
<p><b>Scientific Instrument (Ion Chromatograph IC-2001)</b></p>		<p>The Ion Chromatograph IC-2001 is used to measure trace amount of anions and cations in purified water, wastewater and rainwater. It is used for environmental analysis as well as for analysis in a number of fields, including the food, pharmaceuticals, water sanitation and electronics industries.</p>
<p><b>Analytical Instrument (High Performance Liquid Chromatograph 8020 series)</b></p>		<p>High Performance Liquid Chromatograph 8020 series is an analytical instrument used for separation analysis of trace substances in liquids and for the partial collection and preparative purification of target ingredients. This system is used in a number of fields, including research and development, quality control and health management. It makes an especially important contribution to public welfare in environmental analysis, where it is used in the analysis of formaldehyde, one of the substances suspected of causing "sick house syndrome."</p>

<b>Chloroprene Rubber Latex GFL Series</b>	<p>GFL series chloroprene rubber latex is a raw material used in the production of adhesive agents. This environment-friendly product series helps curb the emission of volatile organic compounds (VOC) because water can be substituted for the organic solvents used as media in adhesives.</p>	
<b>Polyolefin Adhesive Polymer Melthene®</b>	<p>Melthene® is an environment-friendly polyolefin adhesive polymer that does not emit VOC. This is achieved because Melthene does not require any solvents in manufacturing. The adhesive strength of Melthene is variable, making this polymer suitable for use as a bond for a variety of materials: for instance, as a sealant for the lids of yogurt containers.</p>	
<b>Heavy Metal Treatment Agents</b>	<p>At waste disposal facilities it is necessary to prevent elution into the environment of the heavy metals contained in the fly ash and combustion ash generated during incineration. Tosoh drew on molecular technology accumulated over the years to develop TS-275, a high performance heavy-metal treatment agent. In addition to offering heavy-metal elution control properties, TS-275 sharply reduces the volume of carbon disulfide generated during the treatment of fly ash, a problem associated with conventional treatment agents. The Company also developed TX-10, an agent that renders heavy-metal ions in wastewater insoluble, thus contributing greatly to the purification of wastewater.</p>	
<b>Amine Catalysts</b>	<p>Amine catalysts are indispensable in the manufacture of the polyurethane used in automobile interiors and many other applications. Tosoh has developed numerous environment-friendly amine catalysts, including catalysts that do not use organic tin compounds or other heavy metal compounds, reactive catalysts that promote emissions-free production by suppressing catalyst vaporization and eliminating emissions into the environment and catalysts suited to formulations that have very little effect on the ozone layer.</p>	
<b>Hydrocarbon Cleaning Agent (HC Series)</b>		<p>HC series hydrocarbon cleaning agents are used in the metalworking, precision instruments and electronics fields for degreasing and cleaning parts. These environment-friendly non-aqueous cleaners use neither chlorofluorocarbons nor ethane.</p>
<b>Triarylamine Technology</b>	 <p>X = Halogen</p>	<p>Triarylamine is used as hole transport materials in the organic electroluminescent (EL) displays currently attracting attention as next-generation flat panel displays. The conventional method of synthesizing triarylamine, which involved the use of large quantities of copper, placed a heavy load on the environment. Tosoh developed an organometallic complex catalyst (a palladium catalyst) that offers high reactivity and selectivity and established a new method of synthesizing triarylamine. Because this method generates little waste, it is attracting attention as an environment-friendly technique.</p>
<b>Zeolites</b>	<p>Tosoh is currently developing zeolites that will help clean the environment by efficiently absorbing hydrocarbons in automobile exhaust and other substances. These Zeolites offer potential benefits in applications other than for use as automotive catalysts: demand is expected for a broad range of applications, including the collection of volatile organic compounds (VOCs) from factory exhaust.</p>	
<b>Zirconia (Yttria-stabilized zirconia)</b>		<p>Zirconia (YSZ) exhibits superior mechanical properties, such as high strength and flexibility, and represents a technological breakthrough in surpassing the strength limitations of traditional fine ceramics. In addition, oxygen-ion conductivity means that YSZ can be used in a wide range of eco-friendly products, such as solid oxide fuel, and oxygen NOx sensors in the automotive field.</p>

PRODUCTS AND TECHNOLOGIES AT GROUP COMPANIES		
<p><b>Advanced Wastewater Treatment Facility</b></p> <p>Organo Corporation</p>		<p>Organo's wastewater-treatment technologies transform wastewater into water that can be returned to ecosystems, resuscitating babbling brooks and aquatic life and contributing to environmental remediation and the maintenance of a safe, comfortable living environment. Technologies for treating wastewater in large cities and rural areas alike and removing nitrogen and phosphorous from water resources play an important role in creating the infrastructure for a society that enriches people's lives.</p>
<p><b>Groundwater and Soil Decontamination</b></p> <p>Eco-Techno Corporation</p>		<p>Increased public concern about the environment has brought greater awareness of the importance of groundwater and soil remediation. Eco-Techno Corporation utilizes sophisticated groundwater and soil remediation technologies proprietary to Tosoh and Organo to operate an environmental remediation business. To preserve a healthy natural environment, the company provides integrated services spanning everything from environmental surveys to decontamination and monitoring.</p>
<p><b>Keeping Water in Our Environment Clean</b></p> <p>Kasumi Kyodo Jigyo Co., Ltd.</p>		<p>Kasumi Kyodo Jigyo engages in the centralized treatment of wastewater discharged from plants in industrial complexes. The company takes advantage of innovative technologies and a wealth of experience to purify wastewater using the stepped aeration activated sludge method.</p>
<p><b>Environmental Analysis</b></p> <p>Tosoh Analysis and Research Center Co., Ltd.</p>		<p>Tosoh Analysis and Research Center leverages separation analysis technology Tosoh has accumulated over the years to perform water and air quality analysis that satisfies user-needs.</p>
<p><b>Ultrawide Liner Sheet</b></p> <p>Tosoh Nikkemi Corporation</p>		<p>Because this ultra-wide liner sheeting has very few seams and is easy to position, it significantly reduces the risk of hazardous substance leaks compared with ordinary water-impermeable sheeting. For this reason, it is widely used at household-waste and industrial-waste landfills.</p>
<p><b>Silica for Fuel-efficient Tires</b></p> <p>Tosoh Silica Corporation</p>		<p>Adding silica to tires reduces rolling resistance of the tires, which can result in a 5-6% reduction in fuel consumption.</p>
<p><b>Artificial Plastic Wood</b></p> <p>Tosoh Nikkemi Corporation</p>		<p>Tosoh Nikkemi Corporation recycles waste plastic into artificial wood. This versatile material is widely used for facilities at parks, lakes and other outdoor recreation areas.</p>
<p><b>Flooring Materials</b></p> <p>Lonseal Corporation</p>		<p>Lonseal Corporation contributes to the realization of a recycling society by converting used vinyl sheeting collected from farms and pulverized construction materials into flooring materials.</p>



# Social Responsibilities

*How long could a company exist without honoring the society it serves? Tosoh instills respect for society, its needs and its laws in every employee. As a responsible corporate citizen, the safety of employees and the communities surrounding each of*



*our operations takes precedent over all other concerns. We actively participate in community life and contribute to improving the welfare of our neighbors.*

# Total Focus on Safety and Disaster Prevention

## Occupational Safety and Health

Tosoh takes vigorous measures to prevent occupational injuries with the objective of eliminating industrial accidents and injuries. We strive to prevent occupational injuries by implementing the Occupational Safety and Health Management System (OSHMS), including risk assessment and the analysis and utilization of case examples of close calls.

### Analysis and Utilization of Case Examples of Close Calls

Tosoh has created a database of close call case examples and previous accidents and occupational injuries from inside and outside the Group, for which they carefully analyze the data and apply the results in implementing safety measures avoiding the occurrence of similar accidents

or injuries. By reporting and sharing experiences of close calls, employees of the Tosoh Group and partner companies raise safety consciousness among workers and contribute to reducing the incidence of occupational injuries.

### Safety Mate Activities

To reduce the incidence of unsafe acts and human error and enable colleagues to assist one another mentally, workers at the Nanyo Complex engage in "Safety Mate" activities. Workers form Safety Mate groups consisting of three members without regard to rank or position. The group members support one another through periodic discussion and

exchange sessions and other activities they themselves propose in addition to everyday interaction. The Nanyo Complex completely eliminated occupational accidents in fiscal 2003, the year Safety Mate activities began.

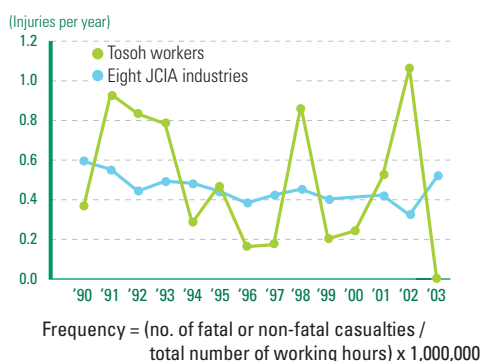


Safety Mate Activities

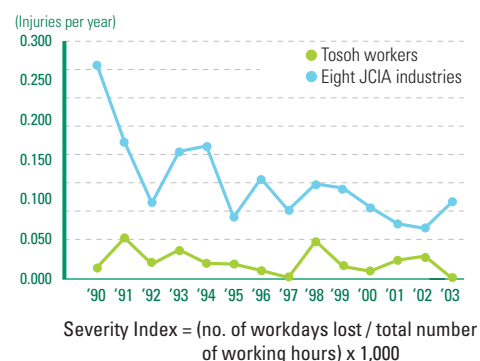
### Occupational Injury Frequency and Severity

Tosoh engages in safety assurance measures aimed at eliminating industrial accidents and injuries. No accident involving loss of workdays occurred in fiscal 2003. Tosoh will continue to engage in even more effective safety activities in order to maintain accident-free and injury-free workplaces.

#### Frequency Comparison



#### Severity Index Comparison





## Process Safety and Disaster Prevention

Tosoh is enhancing employee education to ensure plant safety and prevent operation errors as a process security and disaster prevention measure.

- Equipment safety assurance: plant maintenance by means of safety assessments at the time of equipment installation, safety inspections before operation, probabilistic safety assessment (PSA) and risk-based inspection (RBI)
- Safe operation measures: operator training by introducing operation simulation equipment, reviews of operation manuals as necessary

### Implementation of Probabilistic Safety Assessment

Probabilistic Safety Assessment (PSA) is a technique for calculating the probability of accidents or disasters occurring in plant processes in line with the development of equipment malfunction on the basis of the malfunction rate for individual plant assets. Tosoh has been developing the PSA technique at the Nanyo Complex since 1992 and introduced risk analysis software in 2001. Quantitatively ascertaining risk within the plant makes it possible to devise appropriate risk avoidance measures, and Tosoh is deploying this risk assessment technique at its plants, focusing on high-pressure gas plants including the Yokkaichi Complex, with the aim of further enhancing safety and security.

### The Development and Introduction of Risk-Based Inspection of Plants

Risk-based inspection (RBI) is a technique for calculating risk

defined as the mathematical product of the incidence of damage and the consequences of damage and devising the most effective plant inspection plans from the standpoint of safety and economy. At a time when deregulation has provided impetus for independent safety assurance based on self-responsibility, RBI has attracted attention in recent years as a method of efficiently maintaining equipment while ensuring the reliability and safety of equipment.

In fiscal 2002 Tosoh developed and began operation of an evaluation system incorporating knowledge concerning independent materials assessments and is effectively applying the system to increase plant safety and security.

### High-Pressure Gas Control Self-Inspection Certification System

The High Pressure Gas Control Law provides for a self-inspection system by which The Ministry of Economy, Trade and Industry (METI) evaluates the operating management and safety systems of high-pressure gas works, confirms the adequacy of the standards governing operation management and facilities management, confirms safety management techniques and safety systems and certifies operators to perform self-inspections of high-pressure gas facilities instead of the prefectures.

The Tosoh Nanyo Complex is certified under the high-pressure gas control self-inspection certification system and conducts safety

inspections of its own high-pressure gas plants. The Nanyo Complex first obtained certification in 1987 (under the former law) and by March 2004 had obtained certification at a total of 12 facilities (under the new law).

In June 2003, the Yokkaichi Complex had its self-inspection certification revoked. Through this incident Tosoh caused great inconvenience to the local community, business partners and the regulatory authorities. Tosoh is determined to return to the basics of safety assurance, devise measures to ensure compliance with the law and strive to once again earn public trust.

### Disaster Prevention Training and Presentations on Safety Activities and Responsible Care Activities

Tosoh promotes safety education and strengthens disaster preparedness at its manufacturing complexes and research facilities by conducting periodic disaster prevention training and by holding presentations on safety activities and Responsible Care activities.



Disaster Prevention Training



Presentations on Safety Activities

# Support for Employee Career Development

## Developing Employee Potential

### The Tosoh Personal Development System

One of the management goals of the Tosoh Group is to ensure that every employee has the opportunity to use his or her skills and knowledge to their full potential. This is also an integral part of the corporate image and philosophy of the Tosoh Group.

Respect for individuality is a fundamental principle of the Tosoh Group's human resource development activities. The Group has developed structured educational programs to support employees who are eager to build their potential, and it is continually expanding and enhancing those programs.

### Structured Improvement Programs Spanning

Ability improvement activities cover mainly the three areas of development interviews, education and training (career education, specialist education, international education) and support for personal development.

Under the development interview system, employees meet with their supervisors to set professional goals for on-the-job training (OJT). The interview process also includes a review of progress toward goals, to ensure that professional development leads to tangible results.

In the education and training

category, career education is designed to provide intensive training in the skills that employees need to acquire as they advance to different levels within the organization. For example, there are programs for new employees and middle-ranked employees.

Specialist educational programs include technical training in fields required for specific sites, such as electrical or mechanical engineering, as well as courses designed to develop expertise in such areas as accounting, finance, legal affairs, and patents.

Development of human resources with an international perspective is crucial for Tosoh because of its expanding overseas activities. There is a study abroad system under which several employees attend half-yearly pro-

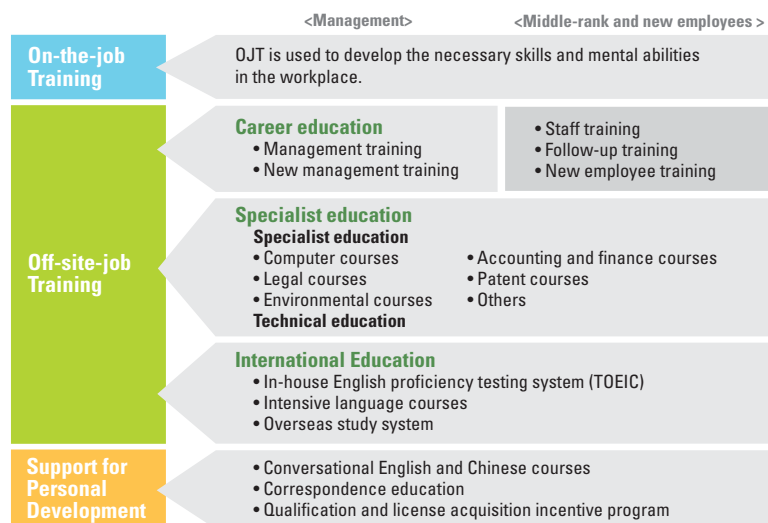
grams at universities in the United States. Other programs include in-house English proficiency testing and intensive language courses.

The Tosoh Group also actively supports the personal development efforts of its employees. For example, those who gain specific qualifications and licenses receive cash incentives, and employees who complete correspondence courses are eligible for 50% subsidization of course fees. Other support includes the provision of courses in conversational English and Chinese.

### Environmental Education

All Tosoh employees participate in ongoing environmental education at their work sites.

Regardless of the department to which they are assigned, employees are provided with wide-ranging educational pro-



grams, including career education and courses in environmental technology, and courses related to ISO certification. These programs are designed to raise environmental awareness while allowing individual employees to gain expertise so

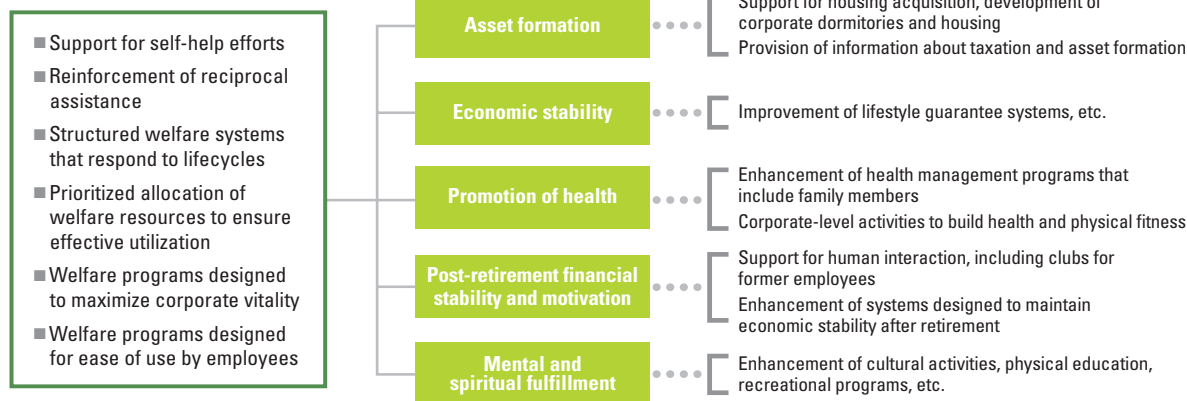
that they can play an active role in environmental management.

### Tosoh's Comprehensive Welfare Vision

The Tosoh Group's comprehensive welfare vision is guided by the basic principle that employees

should receive comprehensive support at all stages from entering the company to retirement. In this way, the company assists employees to enjoy not only economic well-being, but also stability, good health as well as mental and spiritual fulfillment in their lives.

#### Comprehensive Welfare Vision



## Comprehensive Support for Physical and Mental Well-Being

### Health-Promotion Committees

Tosoh has established Health-Promotion Committees in its head office and all work sites. These committees are made up of representatives from the Human Resources Division and the Environment, Safety & Quality Control Division, Health Insurance Union, and the labor unions.

For the individual employee, the benefits of good health include a safe working life and greater happiness in family and social life. Employee health also contributes to productivity and improved financial stability for health insurance systems. The Health Promotion Committees have gone beyond conventional health management concepts, such as early detection and treatment of disease. Their activities also encompass disease prevention and dynamic and organized support for the development of physical and mental health.

For example, specific numerical targets, such as increases in the number of people “who feel well,” “who can exercise self-control over their diet,” and “who exercise once or twice a week,” are set each year at work sites. Initiatives leading to the achievement of these targets include the “Walking 10,000” program, an in-house campaign to encourage people to walk at least 10,000 steps every day. There are also fitness assessments covering six items, including muscular strength, agility and cardiopulmonary endurance, as well as marathon races that promote smoking cessation.

Mental health checks are implemented so that employees can monitor their own well-being. Additionally, education programs offer opportunities to acquire accurate knowledge concerning mental health and learn ways to deal with stress.

# Developing Closer Relationships with Our Neighbors

**Tosoh gives back to the communities that support our operations around the world through greening improvement efforts, promotion of sports and other activities to enliven and enrich those around us.**

## 1 Mie 21st Century Leading Industrial Exhibition

The Mie 21st Century Leading Industrial Exhibition, an event to showcase companies and new technologies and products from Mie Prefecture, was held in May 2003. As a member of the Vinyl Environmental Council, Tosoh exhibited at the event and introduced its vinyl recycling business. Tosoh affiliate Tosoh Analysis and Research Center exhibited a panel display of its analysis technologies.

## 2 International Center for Environmental Technology Transfer (not pictured)

Each year Tosoh actively cooperates with the International Center for Environmental Technology Transfer (ICETT) by accepting ICETT trainees for corporate internships, thus contributing to the development of environmental technologies in Asia, South America and other regions.

## 3 Regional Dialogues on Responsible Care

Tosoh participated in regional dialogues on Responsible Care, events that deepen relationships with local residents and governments of various areas by focusing on introductions of case

examples of environmental and safety initiatives from JRCC member companies. In November 2003 regional dialogues were held in the Shunan City area, where the Nanyo Complex is located, and the Yokkaichi City area, where the Yokkaichi Complex is located.

## 4 Plant Tours

Each year Tosoh's Nanyo and Yokkaichi Complexes conduct plant tours for numerous visitors, including local elementary school students and Tosoh stakeholders.

## 5 Summer Holiday Children's Chemistry Experiment Show

In August 2003, the Summer Holiday Children's Chemistry Experiment Show was held at the National Museum of Emerging Science and Innovation in Odaiba, Tokyo. The show featured various hands-on programs for elementary and junior high school students, and Tosoh operated a program for the children to make their own coasters using ethylene-vinyl acetate copolymer (EVA) beads made of polyethylene.

## 6 Forest Preservation Volunteer Activities

In September 2003, 33 Tosoh volunteers participated in



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Creating Forests That Conserve Water—The Town, Forest and Water Society, an activity to maintain and increase the water retention capability of the forest that is the source of water for the Shunan industrial zone, site of the Nanyo Complex. Tosoh has participated in this activity each year since its inception in 1997.

#### 7 Workplace Experience Program

In November 2003, junior high school students who live in the vicinity came to the Nanyo Complex for a workplace experience program. After receiving safety education and a plant tour, the students gained hands-on experience in inspecting equipment and filling in inspection records.

#### 8 Yamaguchi Iki-iki Eco Fair

In October 2003, the Yamaguchi Iki-iki Eco Fair was held as an event to commemorate the Japan Expo Yamaguchi exposition held in 2001. Tosoh exhibited at the fair on the theme of recycling, introducing technologies such as Tosoh Group affiliate Eco-Techno Corporation's soil improvement technologies.

#### 9 "My Nanyo" Cleanup

Each year the Nanyo Complex conducts a street cleanup campaign in the vicinity of the complex. Many workers and their families participate in this activity to beautify the surroundings.

#### 10 The Eighth Tosoh Cup Youth Soccer Tournament

Tosoh holds on its grounds a championship tournament for youth soccer teams that prevail in elimination matches held in various districts in the east of Yamaguchi Prefecture, deepening friendship with area residents.

#### 11 Sun Festa Shin-Nanyo

Each year Tosoh actively participates in the summer festival held in the Shin-Nanyo area of Shunan City, site of the Nanyo Complex. In 2003 an enthusiastic crowd of about 60,000 people enjoyed festivities such as traditional *momii drum* performances and a fireworks display.

#### 12 Donations to Tsukushien

In November 2003, the Saturday Club, made up of top managers of the Nanyo Complex, donated ¥200,000 to Tsukushien, a social welfare corporation in the Nanyo area. This is an annual event, and 2003 marked the twenty-fifth year for the donation.



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# Responsible Care from the Plant Perspective

**Our performance as a company is only as valid as the commitment and accomplishments of each individual site.**

## Nanyo Complex

- **Address:** 4560 Kaisei-cho, Shunan City, Yamaguchi Prefecture 746-8501
- **Principal products:** Caustic soda, chlorides, vinyl chloride monomer, PVC paste, cement, polyethylene, polychloroprene rubber, specialty products
- **Senior Managing Director of Tosoh Corporation**  
**Director of Nanyo Complex Operations:** Yukihiro Tsutsumi

### COMMENTS

The Tosoh Nanyo Complex is situated in the city of Shunan, Yamaguchi Prefecture, in the westernmost part of Honshu. The Nanyo Complex is a core element of the Shunan Area Petrochemical Complex and has played an important role in the operation of the industrial complex since its establishment.

The Nanyo Complex pipes the chlorine, hydrogen, caustic soda and other materials it manufactures to other companies in the industrial complex and also provides them utilities such as electricity and steam.

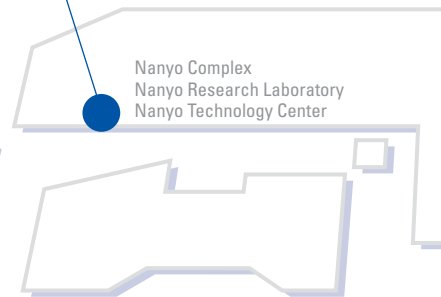
Since its establishment in 1935, the Nanyo Complex has produced cement, polyethylene, synthetic rubber and specialty products, with an emphasis on chlor-alkali products, such as caustic soda and vinyl chloride monomers.

World-class infrastructure supports the competitiveness of the Nanyo Complex, which boasts the largest site in Japan for a single manufacturing plant,

power generation capacity to rival an electric power company and dockage to accommodate large vessels.

The Nanyo Complex has Japan's only bromine recycling facility as well as a chlorine recycling facility and cement plant and efficiently utilizes as recyclable resources waste generated within Tosoh and brought in from outside the Group.

At the same time, the Nanyo Complex is situated within the Setonaikai National Park and actively engages in measures to abate environmental load, reduce waste and cultivate green space to protect the beautiful natural surroundings.



## History of Responsible Care Initiatives

- 1990** • The Environmental Committee is established.
- 1991** • The chlorine recycling system goes into operation.
- 1992** • Basic Principles of the Environment and Implementation Guidelines for Environmental Conservation and Safety Assurance are established.
- 1993** • The Nanyo Complex acquires ISO 9001/2 certification.
- 1994** • The Tokyo Research Center acquires ISO 9001/2 certification.
- 1995** • The Japan Responsible Care Council (JRCC) is established, and Tosoh Corporation becomes a founding member.



## Yokkaichi Complex

- **Address:** 1-8 Kasumi, Yokkaichi City, Mie Prefecture 510-8540
- **Principal products:** Ethylene, propylene, cumene, polyethylene, PPS resins, petroleum resins, vinyl chloride monomers, PVC resins, caustic soda, chlorides
- **Managing Director of Tosoh Corporation**  
**Director of Yokkaichi Complex Operations:** Hideo Yamasaki

### COMMENTS

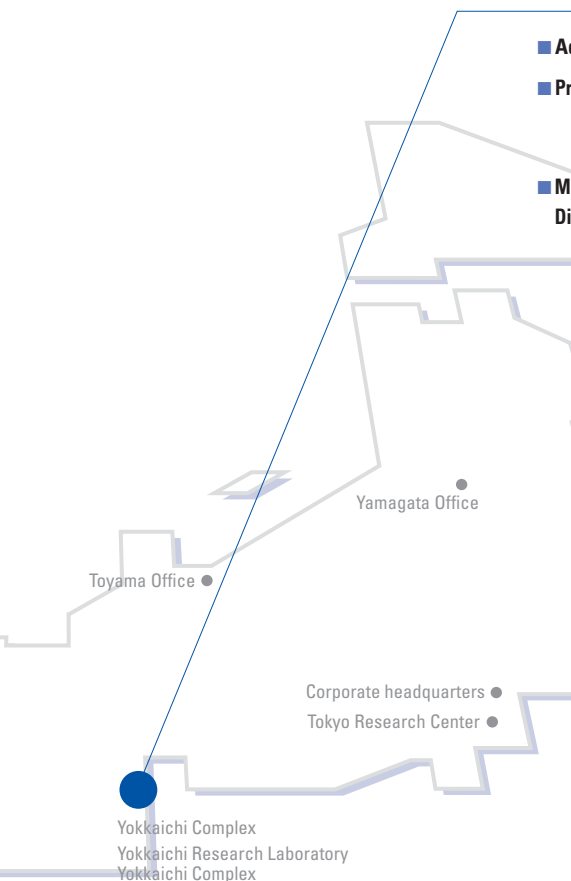
The Kasumi Industrial Complex, site of the Tosoh Yokkaichi Complex, is located on an artificial island that juts into Ise Bay. Following careful consideration of environmental protection, the island was created in 1970. In site planning the highest priority was placed on pollution and disaster prevention, harmony with the local community and various plant location requirements such as transport and ease of access. A canal separates the site of the industrial complex from residential areas by more than 200 meters. The total area of the industrial complex is 3.83 million square meters, the equivalent to 82 Tokyo Domes.

The Yokkaichi Complex occupies 1.14 million square meters, about one-third of the total area of the industrial complex. It maintains an integrated production system that includes a power generation plant that serves as an energy supply base and the only ethylene center in the Chubu region. It produces products rang-



ing from basic materials to vinyl chloride monomer and PVC resins.

The term “chemistry island” is an apt description of the Yokkaichi Complex. The Yokkaichi Complex engages in pollution and disaster prevention planning and rigorously engages in pollution and disaster prevention education and training. It maintains chemical fire engines and other disaster prevention equipment to provide against unforeseeable disasters, strives to ensure process safety and disaster prevention and actively engages in Responsible Care activities.



- |      |  |
|------|--|
| 1995 | <ul style="list-style-type: none"> <li>• The Yokkaichi Complex acquires ISO 9001 and 9002 certification.</li> <li>• The Environmental Committee is reorganized as the Responsible Care Committee.</li> </ul>   |
| 1996 | <ul style="list-style-type: none"> <li>• The bromine recycling system goes into operation.</li> </ul>  |
| 1998 | <ul style="list-style-type: none"> <li>• The Nanyo Complex acquires ISO 14001 certification.</li> </ul>  |
| 1999 | <ul style="list-style-type: none"> <li>• Basic Principles of the Environment, Safety and Health and Implementation Guidelines are revised.</li> <li>• The Yokkaichi Complex acquires ISO 14001 certification.</li> <li>• The Phoenix refuse-derived fuel (RDF) production facility begins operation in Shunan City, Yamaguchi Prefecture.</li> </ul> |
| 2002 | <ul style="list-style-type: none"> <li>• A third-party inspection is conducted by JRCC Responsible Care Verification Center.</li> <li>• The Scientific Instruments Division and Tosoh Group companies acquire ISO 13485 certification.</li> </ul>  |

## Company Profile

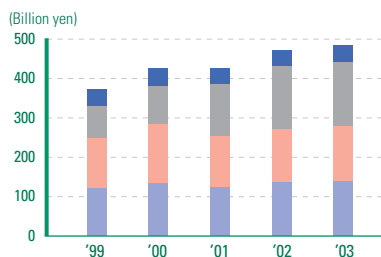
<b>Company name:</b>	Tosoh Corporation
<b>Date of establishment:</b>	February 11, 1935
<b>Head office:</b>	3-8-2 Shiba, Minato-ku, Tokyo 105-8623
<b>Registered head office:</b>	Kaisei-cho 4560, Shunan City, Yamaguchi Prefecture 746-8501
<b>Paid-in capital:</b>	¥40.6 billion (as of March 31, 2004)
<b>Sales:</b>	¥484.4 billion (consolidated) ¥313.2 billion (non-consolidated) (For the fiscal year ended March 31, 2004)
<b>Principal places of business:</b>	Nanyo Complex, Yokkaichi Complex, Toyama Office, Yamagata Office, Tokyo Research Center, Nanyo Research Laboratory, Nanyo Technology Center, Yokkaichi Research Laboratory

### ■ BUSINESS AREA

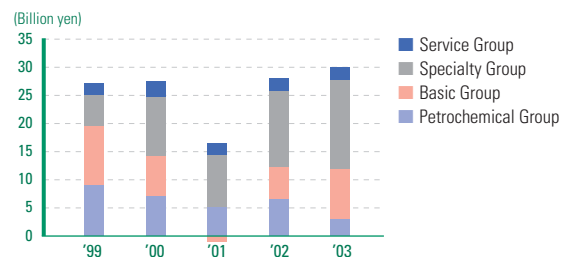
<b>Petrochemical Group:</b>	Olefins, Polymers
<b>Basic Group:</b>	Chlor-Alkali, Cement
<b>Specialty Group:</b>	Organic Chemicals, Specialty Materials, Electronic Materials Scientific Instruments, Eco-Business Operations
<b>Service Group</b>	

### ■ SCALE OF BUSINESS RESULTS

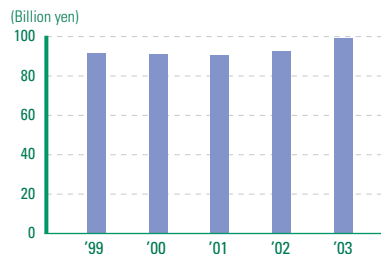
Consolidated Net Sales by Segment Group



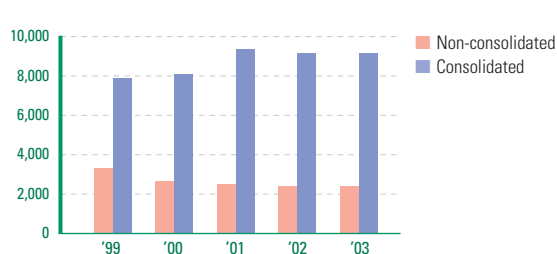
Consolidated Operating Income by Segment Group



Shareholders' Equity



Number of Employees







TOSOH

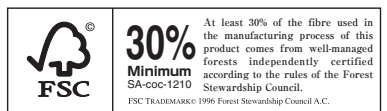
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# TOSOH CORPORATION

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