

# Sumitomo Chemical Environment, Health & Safety Report 2002

Responsible Care Activities of Sumitomo Chemical Company, Limited



Responsible Care refers to voluntary activities conducted by companies in the areas of the environment, health, and safety throughout their products' entire life cycles. As of September 2002, there were Responsible Care associations in 47 countries.

**SUMITOMO CHEMICAL**

## Company Overview

Established in 1913, Sumitomo Chemical Company, Limited's origins date back to a copper mine in Besshi, Ehime Prefecture. Sulfur dioxide generated while smelting the copper produced at the mine was a major environmental problem at the time. To overcome the problem, a process was developed using the gas to manufacture calcium superphosphate, a fertilizer. Thus, Sumitomo Chemical started its business as a fertilizer producer. Since its beginnings, Sumitomo Chemical has responded to the needs of the times and has seriously addressed a broad spectrum of issues, including quality, safety, and the environment, while continuing to develop its presence globally in a wide range of businesses.

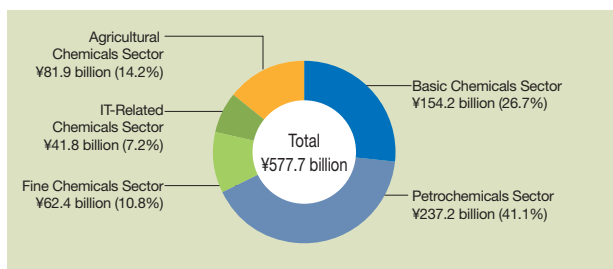
Founded: September 22, 1913  
 Commenced operations: October 4, 1915  
 Incorporated: June 1, 1925

### Non-Consolidated Data

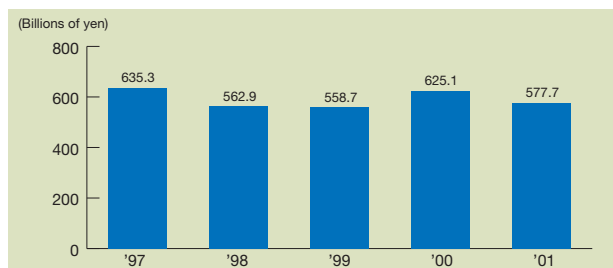
#### Fiscal 2001 Results

Capital: ¥ 89.6 billion  
 Net sales: ¥577.7 billion  
 Ordinary income: ¥ 30.5 billion  
 Capital investment: ¥ 47.8 billion  
 R&D investment: ¥ 32.4 billion  
 Number of employees: 5,378 (as of March 31, 2002)

Sales by Sector FY2001



Sales Trends



### Sumitomo Chemical's Main Products (on a consolidated basis)

Basic Chemicals Sector (Ehime Works)	Inorganics, composite fiber materials, methacrylate resins, alumina products, aluminum
Petrochemicals Sector (Chiba Works)	Plastics (polyethylene, polypropylene, etc.), plastics materials, synthetic rubber
Fine Chemicals Sector (Osaka Works)	Pesticide and pharmaceutical intermediate products, dyestuffs, processing resins
IT-Related Chemicals Sector (Osaka Works)	Semiconductor and liquid crystal materials (film for optical functions, photoresists, epoxy resins, high-purity gallium and other high-purity chemicals)
Agricultural Chemicals Sector (Oita, Misawa Works)	Pesticides, household and public hygiene insecticides, feed additives, fertilizers, animal health products
Pharmaceuticals Sector (Oita Works)	Pharmaceuticals, diagnostic reagents, health care products

The works mentioned in parentheses are the main production bases for the products.

### Consolidated Data

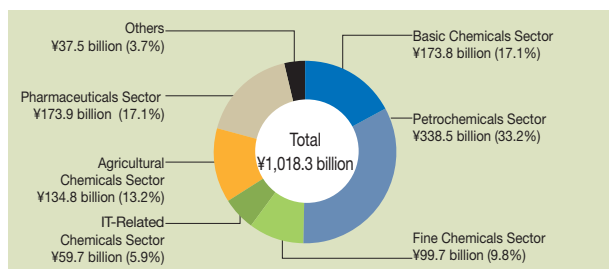
#### Subsidiaries and Affiliates:

Sumitomo Pharmaceuticals Co., Ltd., Koei Chemical Co., Ltd., Taoka Chemical Co., Ltd., The Polyolefin Company (Singapore) Pte. Ltd., Sumitomo Chemical America, Inc., Valent U.S.A. Corp., and others. Total: 102 companies (as of March 31, 2002)

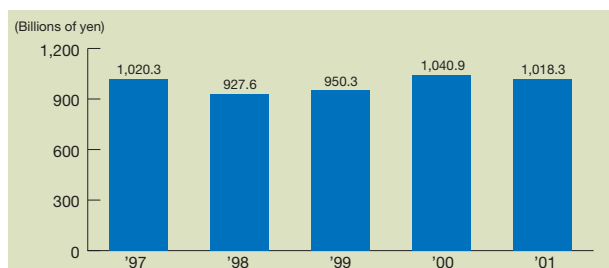
#### Fiscal 2001 Results

Net sales: ¥1,018.3 billion  
 Ordinary income: ¥ 67.0 billion  
 Capital investment: ¥ 72.9 billion  
 R&D investment: ¥ 66.6 billion  
 Number of employees: 17,016 (as of March 31, 2002)

Sales by Sector FY2001



Sales Trends



The main focus of this report is Sumitomo Chemical's environmental and safety activities during the fiscal year ended March 31, 2002.

Sumitomo Chemical's Responsible Care activities have been compiled in this report, prepared with reference to the Japanese Ministry of the Environment's Environmental Reporting Guidelines (Fiscal 2000 version) and Global Reporting Initiative (GRI)'s Sustainability Reporting Guidelines. The performance data included in this report reflect the aggregate performance of all of Sumitomo Chemical's domestic works—Ehime Works, Chiba Works, Osaka Works, Oita Works, and Misawa Works. Environmental accounting and some other measures being implemented apply also to our Group companies.

Sumitomo Chemical has been reporting extensively on its environmental and safety activities since fiscal 1997. Each year, the Company issues its *Environment, Health & Safety Report*, and the 2002 report is our fifth. (The 2003 report is scheduled to be issued in August.)

<b>Sumitomo Chemical's Environmental Management</b> .....	<b>2</b>	Sumitomo Chemical's Environmental Management	2
Message from the President.....	2		
Basic Policies for Responsible Care Activities .....	3		
Topics in Fiscal 2001.....	4		
Responsible Care Initiatives: Targets and Progress in Fiscal 2001 .....	6		
<b>Responsible Care Management</b> .....	<b>8</b>	Responsible Care Management	8
What Is Responsible Care? .....	8		
The Responsible Care Committee .....	8		
Responsible Care Rules and Regulations .....	8		
Responsible Care Audit System .....	9		
The PDCA Cycle of Responsible Care Activities .....	9		
Education and Training for Employees .....	10		
Management System Based on International Standards.....	10		
Research Initiatives Supporting Responsible Care Activities .....	11		
<b>Results of Responsible Care Activities</b> .....	<b>13</b>	Results of Responsible Care Activities	13
<b>Environmental Preservation Activities/</b>			
<b>Environmental Impact of Production Activities</b> .....	13		
Prevention of Global Warming.....	14		
Energy Saving.....	14		
Pollutant Release and Transfer Register (PRTR).....	15		
Prevention of Air and Water Pollution .....	16		
PCB Recovery, Storage, and Treatment .....	17		
Management of Specific Chlorofluorocarbons (CFCs).....	17		
Life Cycle Assessments (LCAs).....	17		
Green Purchasing .....	17		
Promoting the "3Rs".....	17		
Voluntary Control of Hazardous Air Pollutants .....	17		
Reducing Waste .....	19		
<b>Environmental Accounting</b> .....	20		
<b>Occupational Health and Safety</b> .....	21		
Safety Performance.....	21		
Safety-Oriented Corporate Culture.....	21		
Safety Award System .....	21		
Occupational Safety and Health Management System (OSHMS) .....	21		
<b>Process Safety and Disaster Prevention Management</b> .....	22	Developing New Technologies and Environment-Friendly Products	29
Process Safety Management .....	22		
Voluntary Safety Controls with High Standards .....	22		
Voluntary Process Safety Management			
for High-Pressure Gas Facilities.....	23		
Emergency Preparedness .....	23		
<b>Chemical Safety Activities</b> .....	24		
Chemical Safety Management.....	24		
Safety Data on Chemical Substances .....	24		
Material Safety Data Sheets (MSDSs) .....	24		
ICCA Program Concerning			
High Production Volume (HPV) Chemicals .....	24	International Expansion	33
Participation and Support for the Long-Range			
Research Initiative (LRI) .....	24		
<b>Product Quality Assurance Activities</b> .....	24		
<b>Safety in Logistics Operations</b> .....	25		
<b>Audit Results</b> .....	26		
Responsible Care Audit Results .....	26		
<b>Pilot Inspections</b> .....	26		
<b>Contributing to Responsible Care Activities</b>			
in the Chemical Industry.....	26		
<b>Communicating with Society</b> .....	27	Appendices	34
Participating in Malaria Prevention Offensive .....	27		
Working Closely with Local Communities .....	27		
Holding Regional Seminars on Responsible Care .....	28		
Volunteer Activities .....	28		
Sumitomo Chemical Home Page.....	28		
Awards .....	28		
<b>Developing New Technologies and Environment-Friendly Products</b> .....	<b>29</b>		
<b>International Expansion</b> .....	<b>33</b>		
<b>Appendices</b> .....	<b>34</b>		
Independent Review Report on the <i>Environment, Health &amp; Safety Report 2002</i> .....	34		
Reactions to the <i>Environment, Health &amp; Safety Report 2001</i> .....	35		
Domestic Facilities .....	36		

## Message from the President



### Growing in Harmony with the Global Environment

Today there is an increasingly greater awareness of the need to reorient from a lifestyle based on one-way disposal to one characterized by maximum reuse, recycling and renewal of natural resources. Issues of global significance such as population, food supply, energy and other resources, and environment, health and safety pose big challenges for the achievement of sustainable development.

As a member of the global chemical industry, Sumitomo Chemical sees it our responsibility to make utmost efforts in offering solutions to overcome these challenges. Sumitomo Chemical has long been an innovator, creating many products that are useful for our lives. I believe that this role of chemical companies will become even greater in the future and there will be ample opportunities before us. In our continued efforts to meet such global challenges, it will become more and more important for us to strengthen our activities of Responsible Care—the voluntary initiative of the global chemical industry to continuously improve their environment, health and safety performance.

Responsible Care constitutes a vital cornerstone of Sumitomo Chemical's corporate management. We promote it not just at our individual plants and laboratories but on the entire company level. Through its solid implementation, we endeavor to preserve the global environment, avoid accidents and injury, and make sure our products are safe. We will in this way fulfill our social responsibility, gain public trust, and strengthen our overall competitiveness.

As a corporate citizen committed to growing in harmony with the global environment, Sumitomo Chemical implements its Responsible Care activities extensively and proactively. Our

research scientists continue to work hard to develop new processes that require less raw materials and energy, capitalizing on the wealth of technical know-how and expertise that have been accumulated over many years of research and development activities. Efforts are also directed to cut emissions into air and water and reduce wastes, and to implement extensive risk management programs for our products and substances. Furthermore, we actively participate in the promotion of "Sustainable Chemistry" with the view to further reducing wastes and environmental risk. Our Responsible Care activities are carried out in accordance with the "Corporate Policy on Product Quality, Safety and the Environment." All employees who are engaged in various aspects of our operations—including R&D, production, logistics, marketing and sales—participate altogether in the spirit of self-discipline.

In addition, Sumitomo Chemical plays active roles in the various initiatives of the Japan Chemical Industry Association (JCIA) and the International Council of Chemical Associations (ICCA), promoting Responsible Care on global dimensions.

Highlights of Sumitomo Chemical's Responsible Care activities in fiscal 2001 include: development of and plant construction for new processes that reduce the environmental impact, new facilities for the treatment of exhaust gas and waste water, emissions reduction of substances targeted by the JCIA Voluntary Management Plan for Air Pollutants and the Law on Pollutant Release and Transfer Register (PRTR), and risk assessment toward further reduction of the same.

In the preparation of this year's report, we tried to be as specific and comprehensive as possible, drawing on the valuable feedback we received on our last year's report. As in last year, the report has been reviewed by an independent auditing firm for the sake of credibility and transparency.

This report is intended to provide an overview of Sumitomo Chemical's Responsible Care activities in fiscal 2001. In the following pages, you will be introduced to our views and positions on product quality, safety and the environment, as well as the specific steps we are taking in those regards. We look forward to receiving your candid comments.

米倉弘昌

Hiromasa Yonekura  
President

## Basic Policies for Responsible Care Activities

Sumitomo Chemical has established “Our Code of Conduct,” which is consistent with the Sumitomo business philosophy, and expects its employees to execute their daily tasks in conformance to the principles of this code. In April 1994, the Company devised its “Corporate Policy on Product Quality, Safety and the Environment.” The next year, in 1995, Sumitomo Chemical drew up its “Policy for Responsible Care Activities,” and each year the Company convenes a meeting of the Responsible Care Committee in accordance with these policies. Sumitomo Chemical adheres to the fiscal year plan set by the Responsible Care Committee and promotes Responsible Care activities throughout the Group. (Responsible Care is explained on page 8.)

### Our Code of Conduct

1. We will respect Sumitomo’s business philosophy and act as highly esteemed “good citizens.”
2. We will observe national and international laws and regulations and will carry out activities according to our corporate rules.
3. We will develop and supply useful, safe products and technologies that will contribute extensively to the progress of society.
4. We will take voluntary and active initiatives to achieve zero-accident and zero-injury operations and to preserve the global environment.
5. We will conduct business transactions based on fair and free competition.
6. We will endeavor to make our workplace sound and energetic, and every one of us will make efforts to become a professional who has advanced skills and expertise in his or her field of responsibility.
7. We will actively communicate with our various stakeholders, such as shareholders, customers, and regional communities.
8. We, as a corporate member of an international society, will esteem the culture and custom in each region around the world and contribute to the development of those regions.
9. We will strive for the sound development of our Company through business activities conducted in accordance with the guiding principles stipulated hereinabove.

June 29, 2000  
(Established April 1, 1994)

### Corporate Policy on Product Quality, Safety and the Environment

In conformity with the business philosophy of the Sumitomo Group, our Company fulfills its responsibility to develop, manufacture and supply a variety of products which satisfy the fundamental necessities of human life and contribute to the growth of society. Since its establishment, Sumitomo Chemical has managed its activities on the basic principles of (i) ensuring “customer satisfaction,” (ii) maintaining “zero-accident and zero-injury operations,” and (iii) promoting “co-prosperity with society.”

With due respect to these principles, our Company is determined to conduct all activities, including production, R&D, marketing and sales, and logistics, in accordance with the following policy related to product quality, safety, and the environment.

1. To supply high-quality products and services that satisfy customer needs and ensure safety in their use
2. To maintain zero-accident and zero-injury operations and the safety of neighboring communities and our employees
3. To ascertain the safety of raw materials, intermediates, and products, and prevent our employees, distributors, customers, and consumers from being exposed to any possible hazard
4. To assess and reduce environmental impact at all operational stages, from product development to disposal, and to exert all practical environmental protection measures

All sections and employees of our Company shall be fully aware of the significance of this policy and shall always strive to improve operational performance while, of course, abiding by all relevant laws, regulations, and standards.

米倉弘昌

Hiromasa Yonekura, President  
Sumitomo Chemical Company, Limited

### Policy for Responsible Care Activities

Established January 1995  
Responsible Care Committee

To implement the Corporate Policy on Product Quality, Safety and the Environment, the Company has determined specific objectives and methods as follows:

#### 1. Objectives

- 1) Stable operations without accidents or injuries, and a good working environment
- 2) Assessment and reduction of environmental load to maintain co-prosperity with society
- 3) Technological improvement to ensure environmental protection and safety throughout the life cycle of a product, thereby contributing to the growth of business

#### 2. Methods

- 1) To abide by regulations on the environment and safety at home and abroad, and improve environmental and safety management standards while abiding by international standards
- 2) To keep the Company well-organized, including in such areas as internal regulations, with clearly defined responsibilities of each section carried out in a timely manner
- 3) To promote the planning, implementation, and improvement of management of environment and safety through Responsible Care audits
- 4) To educate and train employees to better understand and implement Responsible Care activities
- 5) To develop technologies and products to reduce environmental impact at every stage of the product life cycle, from R&D, manufacture, and distribution to disposal, to satisfy social needs
- 6) To support the Responsible Care activities of affiliated companies, including those located overseas

In fiscal 2001, Sumitomo Chemical aggressively expanded its Responsible Care activities in many directions. The Company developed processes that reduce the burden on the environment and constructed facilities that incorporate new technologies; implemented self-regulatory steps to reduce emissions of hazardous air pollutants; established a business to support environmentally sound agricultural practices; and commenced operation of an Occupational Safety and Health Management System (OSHMS) at certain of its works.

## Environmental Impact Reduction

Using proprietary catalysts, Sumitomo Chemical has developed manufacturing processes that have a low environmental impact and has been constructing manufacturing facilities that incorporate these processes.

### Plant for Propylene Oxide Production with No By-Product

Sumitomo Chemical is constructing a plant to commercialize a new manufacturing process for propylene oxide—developed using high-performance proprietary catalysts—without generation of the by-product styrene monomer (SM). This new production method is noticeably superior to conventional technologies in terms of the environmental and economic advantages afforded. The Company intends to use this technology, which allows for the compactness of plant configuration, to expand operations globally. The new plant is scheduled for completion in December 2002.



### Using Gas-Phase Beckman Rearrangement for Caprolactam Production

Using a proprietary gas-phase Beckman rearrangement with a newly developed catalyst, Sumitomo Chemical has successfully developed a revolutionary process for the production of caprolactam, a raw material used to make nylon. Unlike conventional caprolactam production processes, this new technology produces caprolactam without generating ammonium sulfate as a by-product, by combining new processes from Sumitomo Chemical and the Italian petrochemical company EniChem. A new plant, scheduled for completion in March 2003, will be the first in the world to commercialize this new process.



### License for Oxidation Technology for Hydrochloric Acid

Sumitomo Chemical has developed a technology that facilitates chlorine recycling. The hydrochloric acid generated as a by-product in processes using chlorine as a raw material is oxidized, enabling recovery and re-use of the chlorine. Since its introduction in December 2001, this technology has been adopted by Japan's chemical manufacturers.



### New Process for Methionine Production

Sumitomo Chemical has secured the production technology for the feed additive LMA (liquid methionine analogue). Use of an environment-friendly production method that incorporates recycling reactions has resulted in improvements in product quality compared with conventional products.



Ehime Works



Chiba Works



## Self-Regulation of Hazardous Air Pollutants Cuts Emissions 56% (Compared with fiscal 1999)

Through the installation of equipment for recovering gas emissions and the construction of a wastewater incineration facility, Sumitomo Chemical has cut benzene and dichloromethane emissions into the air by 56% as of March 2002.

## Independent Review of Responsible Care Activities

To ensure the credibility and transparency of the *Environment, Health & Safety Report 2001*, Sumitomo Chemical had it reviewed by the independent agency Asahi & Co., and the Company underwent a pilot inspection conducted by the Japan Responsible Care Committee (JRCC), both in July 2001.

## Chiba Works Commences Operation of OSHMS (Occupational Safety and Health Management System)

Sumitomo Chemical aims to minimize potential dangers in the workplace by raising the know-how and expertise of our safety and health managers. The Company created the Occupational Safety and Health Management System with the objective of promoting organizational and systematic safety and health controls. This program was launched at our Chiba Works in April 2001, prior to introduction at other companies in Japan.

## New Business Supporting Environmentally Sound Agricultural Practices Commences Operation

In April 2001, Sumitomo Chemical established Nihon EcoAgro Co., Ltd., to support environmentally sound agricultural practices. The business commenced operation under the idea of "returning as much agricultural waste as possible to the Earth, preserving the natural environment." Nihon EcoAgro works with companies and organizations that discard large amounts of agricultural and other organic waste by collecting the waste and fermenting it together with Plant Growth Promoting Fungi (PGPF) to produce high-quality compost and organic fertilizer. Nihon EcoAgro supplies this compost to farmers throughout Japan.



Osaka Works



Oita Works



Misawa Works

## Responsible Care Initiatives: Targets and Progress in Fiscal 2001

To promote the strategic and effective implementation of Responsible Care activities, the whole Company is making concerted efforts to meet specific objectives concerning environmental preservation, process safety and disaster prevention, occupational health and safety, product stewardship, quality assurance, and audits.

In fiscal 2001, Pollutant Release and Transfer Register (PRTR) measures included the standardization of methods to calculate release and transfer volumes, as well as the development of a Companywide database. A network has also been created linking the Sumitomo Chemical head offices with all the Company's manufacturing works. Steps to reduce waste resulted in a 56% reduction in final waste disposal in fiscal 2001, compared with the level in fiscal 1990.

	Measures Taken	Target	
Environmental Preservation	Prevention of Global Warming	Lower CO <sub>2</sub> emissions to below the fiscal 1990 level by fiscal 2010	
	Energy Conservation	Improve the annual consumption per-unit rate by more than 1% on average	
	PRTR	Standardize methods for calculating release and transfer volumes	
		Develop a Companywide PRTR database	
		Promote PRTR risk management	
	Emissions Reduction of Voluntarily Controlled Hazardous Air Pollutants	Reduce the total emissions volume for targeted substances (nine substances) 75% from the fiscal 1999 level by fiscal 2003 (The second phase of the voluntary emission reduction plan)	
	Waste Reduction	Promote the "3Rs" (Reduce-Reuse-Recycle); reduce landfill volume in fiscal 2010 by 75% compared with the fiscal 1990 level	
		Promote the drafting of a plan for recycling by-products (sludge)	
	Prevention of Air Pollution, Water Contamination	Endeavor to continuously reduce emissions of nitrous oxides (NO <sub>x</sub> ), sulfur oxides (SO <sub>x</sub> ), soot and dust, chemical oxygen demand (COD), nitrogen, and phosphorous	
	PCB Recovery, Storage, and Treatment	Promote the appropriate recovery, storage, and treatment of PCBs	
Management of Specific CFCs	Systematically replace those refrigeration units that use specific CFCs used as refrigerants		
LCA (Life Cycle Assessment)	Prepare LCA inventory data for general-purpose products		
Environmental Accounting	Identify the appropriate environmental costs and promote effective environmental investments		
Process Safety and Disaster Prevention Management	Prevention of Accidents and Disasters	Achieve zero accidents and disasters	
	Promotion of Voluntary Process Safety Management	Acquire ministerial certificate of Approved Operator for Safety Self-Inspection of high-pressure gas facilities	
Occupational Safety and Health	Prevention of Occupational Accidents	Achieve zero accidents that result in lost workdays	
	Introduction of OSHMS (Occupational Safety and Health Management System)	Introduce OSHMS at all plants by fiscal 2003	
Product Stewardship	Safety Management of Chemical Substances	Expand MSDSs (Material Safety Data Sheets)	
		Maintain and expand internal operations of CHEMSAFE2 (Chemical Safety Database)	
		Implement HPV (High Production Volume) initiative and LRI (Long-Range Research Initiative)	
Quality Assurance	Strengthening of Quality Assurance System	Obtain certification for the 2000 ISO 9000 series	
		Develop QIS (customer Quality Information System)	
Auditing	Verification of Responsible Care Activities	Conduct audits of the Company's and Group affiliates' Responsible Care activities	
		Undergo a pilot verification by the JRCC (Japan Responsible Care Council)	



In addition, regarding quality assurance, the Company has developed QIS to process with increased speed and accuracy information (such as complaints and suggestions) pertaining to the quality of Sumitomo Chemical products.

In fiscal 2001, operations were audited at the Company's five works, one laboratory, four business divisions, and at 18 facilities operated by domestic and overseas Group companies. The auditing of 35 domestic Group companies, which began in fiscal 1999, was conducted over the course of three years and completed in fiscal 2001.

The following lists the Company's Responsible Care activities and targets achieved in fiscal 2001.



Target Achieved



Almost Achieved



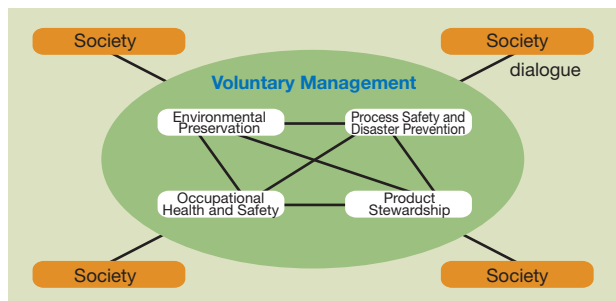
Yet to Be Achieved

Performance in Fiscal 2001		Rating	Page
	Reduced CO <sub>2</sub> emissions by 1% from the previous year; however, this level marked a 2.2% increase over the fiscal 1990 level.		14
	Using a unit energy consumption index of 100 for fiscal 1990, the figure for fiscal 2001 was 90.2 (compared with our target of 89.5). (This fell 2.9% due to a decrease in production volume.)		14
	Each plant completed standardization on an individual basis.		15
	Completed database creation and began operation on a network linking the head offices with all five works.		15
	Conducted risk assessments on principal substances and began studying a medium-term emissions reduction plan.		15
	In fiscal 2001—the first year of the three-year plan—the volume of emissions totaled 156 tons, a 56% reduction compared with fiscal 1999 (a 37% reduction compared with the previous fiscal year).		17~18
	Final disposal volume was 19,106 tons, a 56% reduction from fiscal 1990 (a 17% reduction compared with the previous fiscal year).		19
	We drafted a plan to reduce the amount of sludge generated in fiscal 2006 by 20% compared with the fiscal 2000 level and decrease the volume of disposal waste by 37%. In fiscal 2001, the amounts of sludge and landfill refuse generated declined 14% and 19%, respectively, compared with the previous fiscal year.		19
	The emissions values for each substance are regulated by law. We produced far less than both the legally mandated values and the values we agreed upon with local municipal governments, except for SO <sub>x</sub> emissions, which increased by 199 tons.		16
	Equipment (transformers and condensers) containing PCBs, which are specially controlled industrial waste in accordance with the Waste Disposal and Public Cleaning Law, is being kept in specially designated storage sites, where we are implementing strict and appropriate controls (a 42m <sup>3</sup> depository).		17
	We have devised a medium-to-long-term replacement plan for equipment using CFCs as refrigerants and are converting to CFC substitutes. In fiscal 2001, we replaced one device.		17
	Created LCA inventory data for products and provided product data to the industry association group for each product.		17
	Accurately identified the environmental costs and the effects of investments.		20
	Achieved zero accidents and zero disasters due to process safety.		22~23
	Acquired Ministry certificate for the hydrogen plant at the Ehime Works.		23
	With a track record of three accidents resulting in lost workdays, we failed to reach our target of zero accidents.		21
	The Chiba Works commenced operations in April, prior to other companies in Japan. The remaining works are in the process of installing the OSHMS.		21
	Completed MSDS production for restricted substances and have almost completed production for non-targeted substances.		24
	Have input 2,774 chemical substances into the CHEMSAFE2 database. Added another 60 substances in fiscal 2001.		24
	Of Sumitomo Chemical's 25 HPV substances, the Company assumed a leadership role in three of these substances and underwent an assessment by the OECD. Regarding the LRI on endocrine disrupters, we support the ICCA (International Council of Chemical Associations) through the JCIA (Japan Chemical Industry Association).		24
	ISO 9001: We have targeted the second half of fiscal 2002 for acquisition of the 2000 series of this certification and undertook the necessary preparations at each plant.		10
	Completed development of QIS and commenced operation in April 2002. Set up a system to electronically process information (complaints and suggestions) from customers concerning product quality—a process that was previously paper-based.		24~25
	Audited five works, one research laboratory, and four business divisions. Conducted audits of 18 facilities of domestic and overseas Group affiliates. The auditing of 35 domestic Group companies, which began in fiscal 1999, was completed in fiscal 2001.		26
	Underwent a pilot verification for the following three codes: Management Systems, Environmental Protection, and Process Safety and Disaster Prevention.		26

# Responsible Care Management

## What Is Responsible Care?

Responsible Care refers to voluntary activities by companies aimed at preserving the environment, safety, and health in all phases of the product life cycle, while deepening bonds of trust with society through dialogue. These activities can be broadly categorized into four areas: environmental preservation, process safety and disaster prevention, occupational health and safety, and product stewardship.



## The Responsible Care Committee

Sumitomo Chemical's Responsible Care Committee comprises the board members in charge of the Company's five business sectors and the Pharmaceuticals Business Planning & Coordination Office, the board members in charge of the administrative departments, and the heads of each of the five manufacturing works. The committee is responsible for implementing the "Corporate Policy on Product Quality, Safety and the

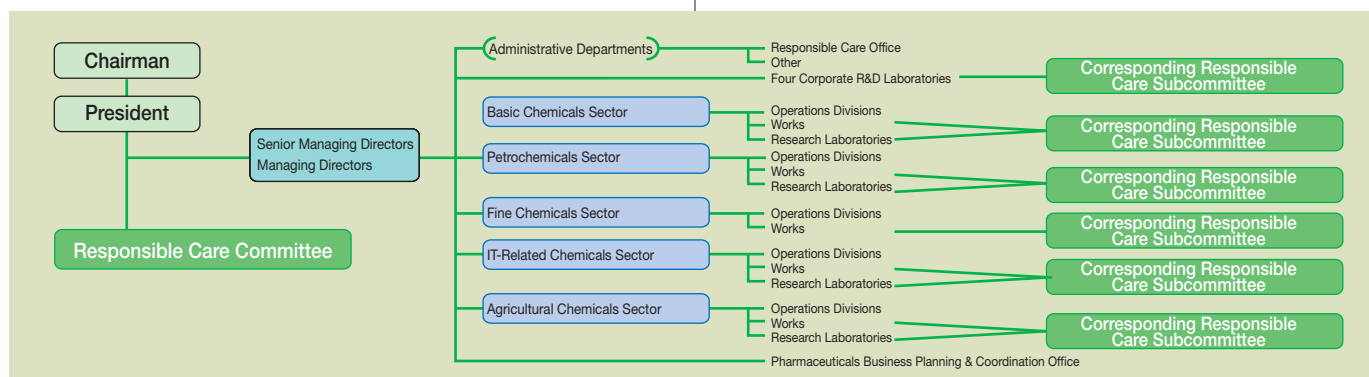


The Responsible Care Committee Meeting, March 1, 2002

Environment," making long-term plans, and conducting Responsible Care internal audits. Furthermore, to implement specific Responsible Care measures, committees have been set up at each of the Company's manufacturing works and research laboratories.

When necessary, a subcommittee of specialists convenes to implement the initiatives of the Responsible Care Committee.

## Sumitomo Chemical's Responsible Care Organization

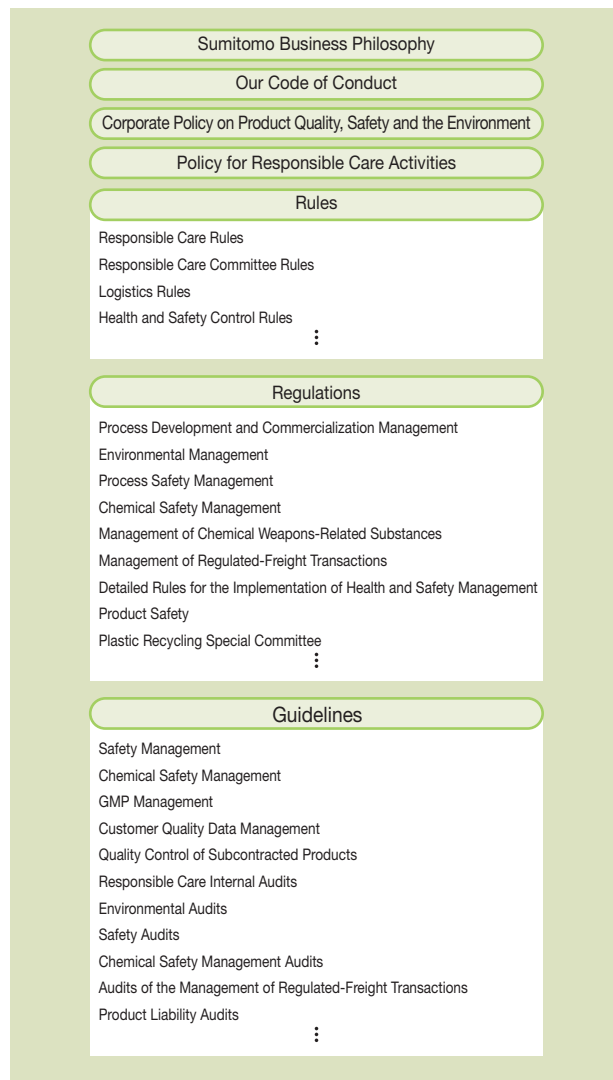


## Responsible Care Rules and Regulations

To make the "Corporate Policy on Product Quality, Safety and the Environment" even more tangible, the Company formulated the "Policy for Responsible Care Activities," clarifying specific objectives and methods to realize them.

In addition, the Company has systematically established various rules and regulations to promote Responsible Care.

### Responsible Care-Related Rules and Regulations



### Responsible Care Audit System

We conduct Responsible Care audits to ensure that Responsible Care activities are being implemented correctly. Responsible Care audits comprise specialized audits—namely Environment, Health & Safety (EH&S) audits—which are conducted by environment, safety, and product liability experts, and management audits, which are conducted from a managerial perspective by a special team headed by a member of the Responsible Care Committee.

[Responsible Care Internal Audits]

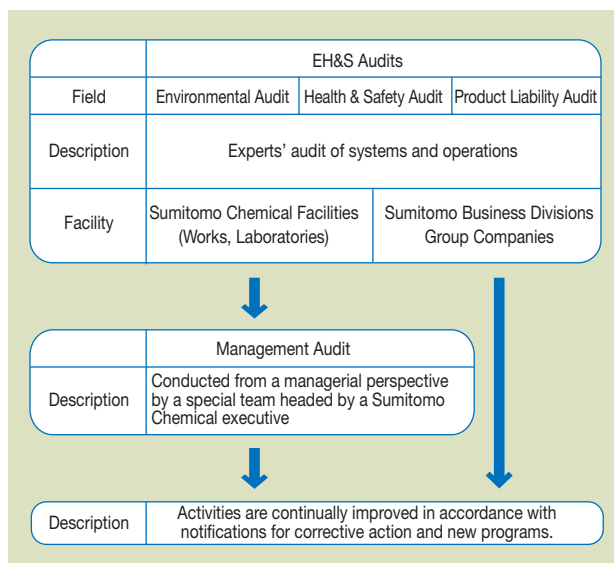
Each of the Company's works in five different regions and three R&D facilities is audited in two stages: EH&S audits and management audits.

In addition, EH&S audits are carried out in each of the Company's five business sectors and at a transfer terminal of the physical distribution system.

[Responsible Care Audits for Group Companies]

EH&S audits are carried out at domestic and overseas Group companies that are involved primarily in manufacturing.

#### Responsible Care Internal Audits



EH&S audit at The Polyolefin Company (Singapore) Pte. Ltd.

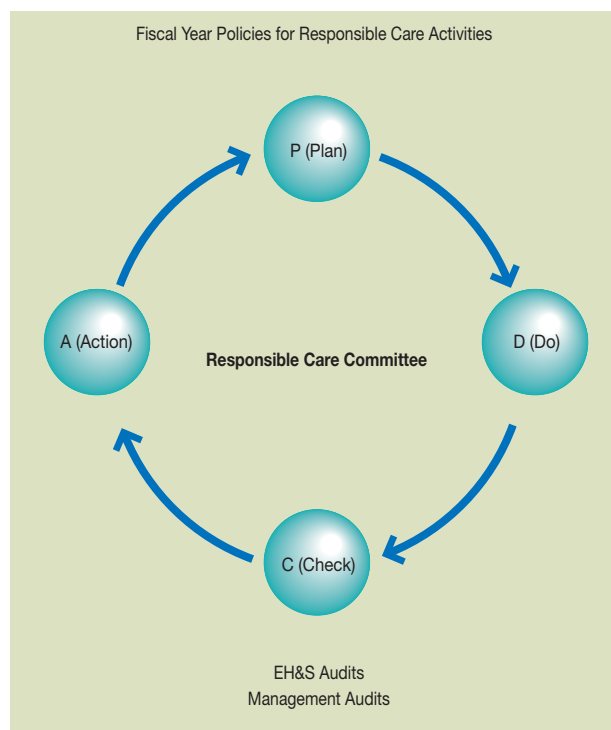
### The PDCA\* Cycle of Responsible Care Activities

The Responsible Care Committee sets the “Fiscal Year Policies for Responsible Care Activities” for the next fiscal year, based on the results of activities conducted as part of such policies as well as the results of the Responsible Care audits.

By completing the full PDCA cycle for Responsible Care activities, we are improving the level of such activities.

\*PDCA: Plan, Do, Check, Action

#### The Responsible Care Management System

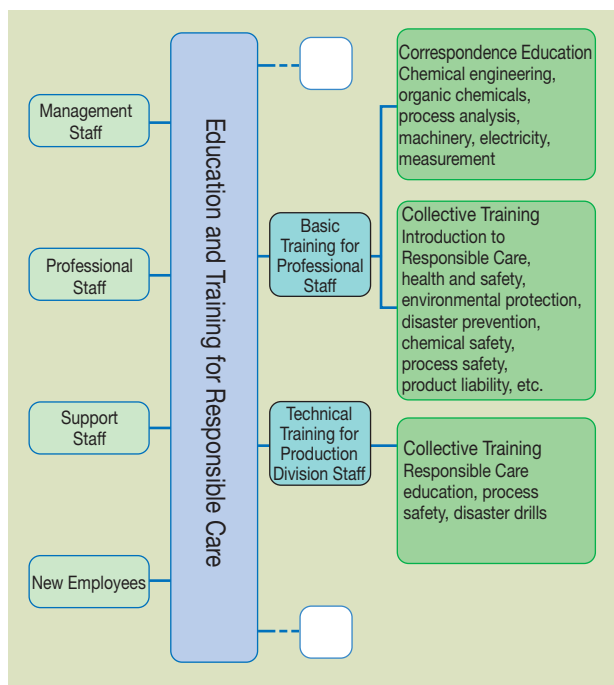


## Education and Training for Employees

Responsible Care education and training is conducted for all employees throughout Sumitomo Chemical.

Managers and staff engaged in manufacturing, logistics, marketing, sales, procurement, and R&D are provided with specialized training so that they may deepen their understanding of Responsible Care as professionals working at a chemical company. The training covers safety, health, environmental preservation, disaster prevention, chemical safety, regulated substances, quality assurance, and product safety and is based on our Responsible Care curriculum. In addition, for the supervisors of our manufacturing facilities, a special technical training course is available for all our production divisions. This training enables supervisors who are working on the front line of production to improve the technical skills their positions require. As part of this training, employees must take part in a variety of safety prevention and disaster drills, which cover explosion risk, static electricity, reactive chemical substances, risks associated with the mixing of chemicals, and disaster assessments. The training ranges from basic principles to practical applications of the material covered. The Companywide system for Responsible Care education is being centrally administrated by the Responsible Care Office (production technology section). Training is also provided to the employees of affiliated companies whenever necessary.

### Education and Training for Responsible Care



## Management System Based on International Standards



ISO 14001 certification for environmental management systems and ISO 9000-series certification for international product quality assurance, both issued by the International Standardization Organization, were obtained to effectively promote environmental protection and quality assurance activities in accordance with Sumitomo Chemical's "Corporate Policy on Product Quality, Safety and the Environment." From 1997 to 1999, all five works acquired ISO 14001 certification. This certification is renewed every three years.



Among Sumitomo Chemical Group affiliates, 12 domestic companies and two overseas companies had acquired ISO 14001 certification as of June 2002.

### Works and

Certification Number	Date of Certification
Ehime Works: JCQA-E-018	April 13, 1998
Chiba Works: KHK-97ER-04	June 26, 1997
Osaka Works: JQA-E-90072	November 28, 1997
Oita Works: JQA-E-90152	March 31, 1998
Misawa Works: JQA-EM0355	March 5, 1999

Sumitomo Chemical had received ISO 9002 certification for international product quality assurance at all five of its works as of the end of 1995. Since then, the certification has been renewed every three years.

### Works and

Certification Number	Date of Certification
Ehime Works: JCQA-0019	October 24, 1994
JCQA-0320	April 6, 1998
Chiba Works: JQA-0829	March 24, 1995
Osaka Works: JQA-0721	December 22, 1994
Oita Works: JQA-1069	December 8, 1995
Misawa Works: JQA-0752	December 28, 1994

The ISO 9000 series was substantially revised and subsequently issued in December 2000. To appropriately deal with the revised version of this international standard, Sumitomo Chemical further improved its product quality assurance activities. Preparations are under way for the transition to the 2000 version; the switchover to ISO 9001 (2000 version) is scheduled to be completed by all works by March 2003.

Sumitomo Chemical's domestic and overseas affiliated companies are also making active efforts to acquire or renew ISO 9000-series certification. As of June 2002, 21 domestic Group companies and seven overseas Group companies had acquired ISO 9000-series certification.

## Research Initiatives Supporting Responsible Care Activities

The promotion of Responsible Care requires a wide range of technical data, covering environmental protection, process safety and disaster prevention, occupational safety and health, and chemical safety, as well as product quality assurance.

Sumitomo Chemical's Responsible Care activities are scientifically supported by two world-class-level research laboratories equipped with advanced technology capabilities.

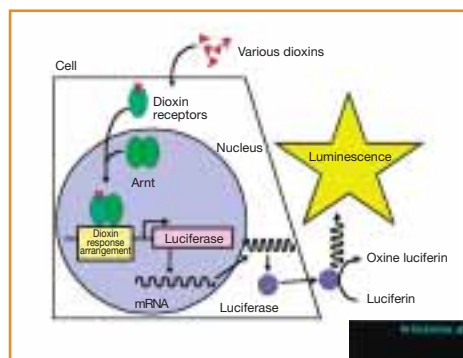
### The Environmental Health Science Laboratory (EHSL)

The EHSL's primary role is to conduct toxicological evaluations for the various items produced by Sumitomo Chemical Group companies. Sumitomo Chemical invests a considerable portion of research resources into toxicological evaluation research to ensure that its products meet high human health and environmental safety levels. The laboratory is one of the largest institutes in this field in Japan and has gained considerable know-how regarding toxicological evaluations based on its extensive experience. Making full use of the latest scientific knowledge and technologies, the Company's laboratory conducts sophisticated toxicological research that is carried out by many experts in diverse fields, ranging from genetics to the global environment. We are also concentrating on the development of next-generation technologies. Our most significant achievements include mechanistic studies on carcinogenicity based on toxicogenomics research, the establishment of rapid detection systems for dioxin derivatives and endocrine disruptors, and participation in government-led projects.

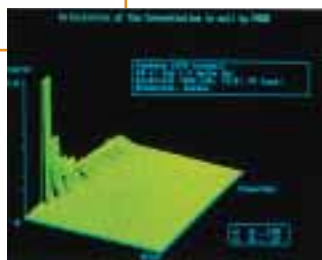
Furthermore, the EHSL has received GLP (Good Laboratory Practice) certification from the Ministry of Health, Labor and Welfare, the Ministry of Agriculture, Forestry and Fisheries, and the Ministry of the Economy, Trade and Industry.



The Environmental Health Science Laboratory



Example of luciferase assay



Example of environmental fate (simulation of soil transferability)

As the core laboratory supporting Responsible Care activities for chemical safety, the EHSL provides toxicological information and the results of risk assessments for each division of the Company and endeavors to ensure safety with regard to human health and the environment throughout our chemical products' entire life cycles, spanning development, use, and disposal. Recently, the laboratory introduced computer simulation models (used in the United States by the Environmental Protection Agency) for assessing the effects of PRTR-listed substances. These models enable the simulation of the air and water concentrations of substances emitted from our factories. In this way, the laboratory is supporting the safe management of production from a scientific viewpoint.

The following is a list of the EHSL's main areas of research.

### Tests and research on human health effects

- Acute toxicity, sub-acute toxicity, chronic toxicity, carcinogenicity
- Reproductive toxicity, developmental toxicity
- Irritation, sensitization, mutagenicity
- Pharmacology, toxicokinetics, metabolism
- Mechanistic studies on toxicity

### Tests and research on environmental effects

- Biodegradation, bioaccumulation, persistence in the environment
- Environmental fate (including metabolism in soil)
- Toxicity to environmental organisms (including wildlife)
- Mechanistic studies on environmental effects

### Toxicological information surveys and risk assessment on chemical products

- Toxicological evaluation reports
- Prediction for toxicological effects on human health and the environment (using a structure-activity relationship)
- Risk assessment for workers
- Risk assessment for consumers
- Risk assessment for the environment

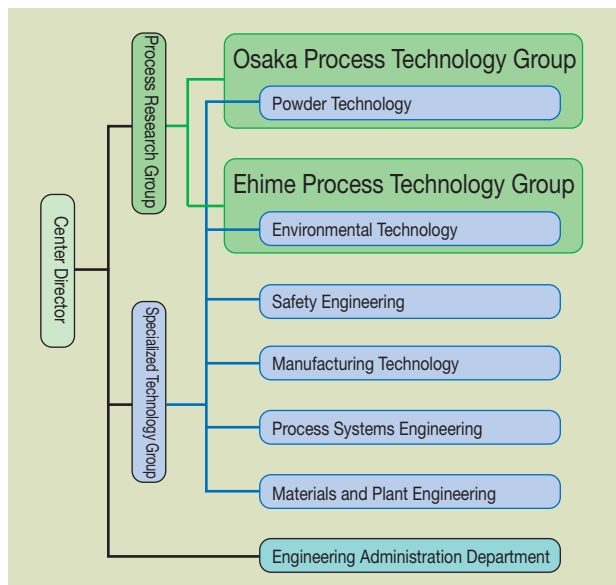
### Process & Production Technology Center (PPTC)

The PPTC conducts R&D on process development and innovative production technologies, serving as a bridge between basic research and manufacturing. Thorough study on a rational process is undertaken, using the latest scientific knowledge and production technologies. Then, the basic design and process scheme are established after experimentally operating a pilot plant. Also undertaken is the production of samples required for market development of new products, the strengthening of platform technologies, and safety engineering research to prevent accidents and disasters in factories.

As a provider of support in improving the productivity of the manufacturing divisions and modernizing production systems, the center uses computer simulations to research equipment selection and control, automation of materials handling, sensor technology, and the strengthening of production, fabrication, and assembly process technology.

The center also focuses on the study of wastewater and refuse processing technologies and the cultivation of employees engaged in production technology at manufacturing divisions.

## Organization of the Process and Production Technology Center



### Safety Engineering Laboratory

- Studying and assessing process safety, researching safety measures
- Measuring and evaluating material safety data
- Compiling a database on safety technologies
- Training for safety engineers



Safety Engineering Laboratory

The following is a list of the technologies employed to ensure the safety of our chemical processes.

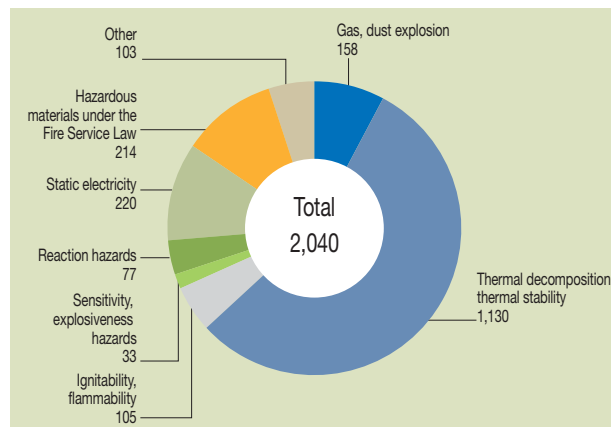
#### 1) Hazard Evaluation Technologies of Chemical Substances

To conduct a comprehensive evaluation of the fire and explosion hazards associated with chemical substances, the following Hazard Evaluation Tests are conducted.

- Computational hazard evaluation tests
- Gas, dust explosion evaluation tests
- Thermal decomposition, thermal stability evaluation tests
- Ignitability, flammability evaluation tests
- Sensitivity, explosiveness evaluation tests
- Reaction hazard evaluation tests
- Static electricity evaluation tests
- Classification of a hazardous material under the Fire Service Law

The number of requests for material safety data measurements in 2001 totaled 2,040 cases. The following is a tabulation by hazard evaluation technology.

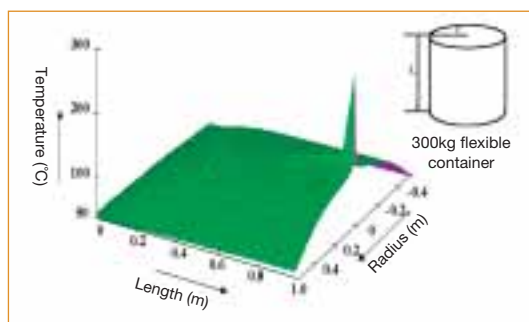
### Number of Requests for Material Safety Data Measurements (2001)



#### 2) Applied Safety Technologies for Equipment

The Safety Engineering Laboratory is developing the following technologies using material safety data from hazard evaluation tests of chemical substances to improve the safety of equipment.

- Optimizing reaction conditions
- Static electricity hazard evaluation
- Safety design (Vent sizing, suppression of and controls for runaway reactions)
- Scale-up effects (Dust explosions, reaction hazards, spontaneous ignition, etc.)
- Consequence analysis for leakage, fires, and explosions



Results of a simulation of the spontaneous ignition of powder inside a flexible container

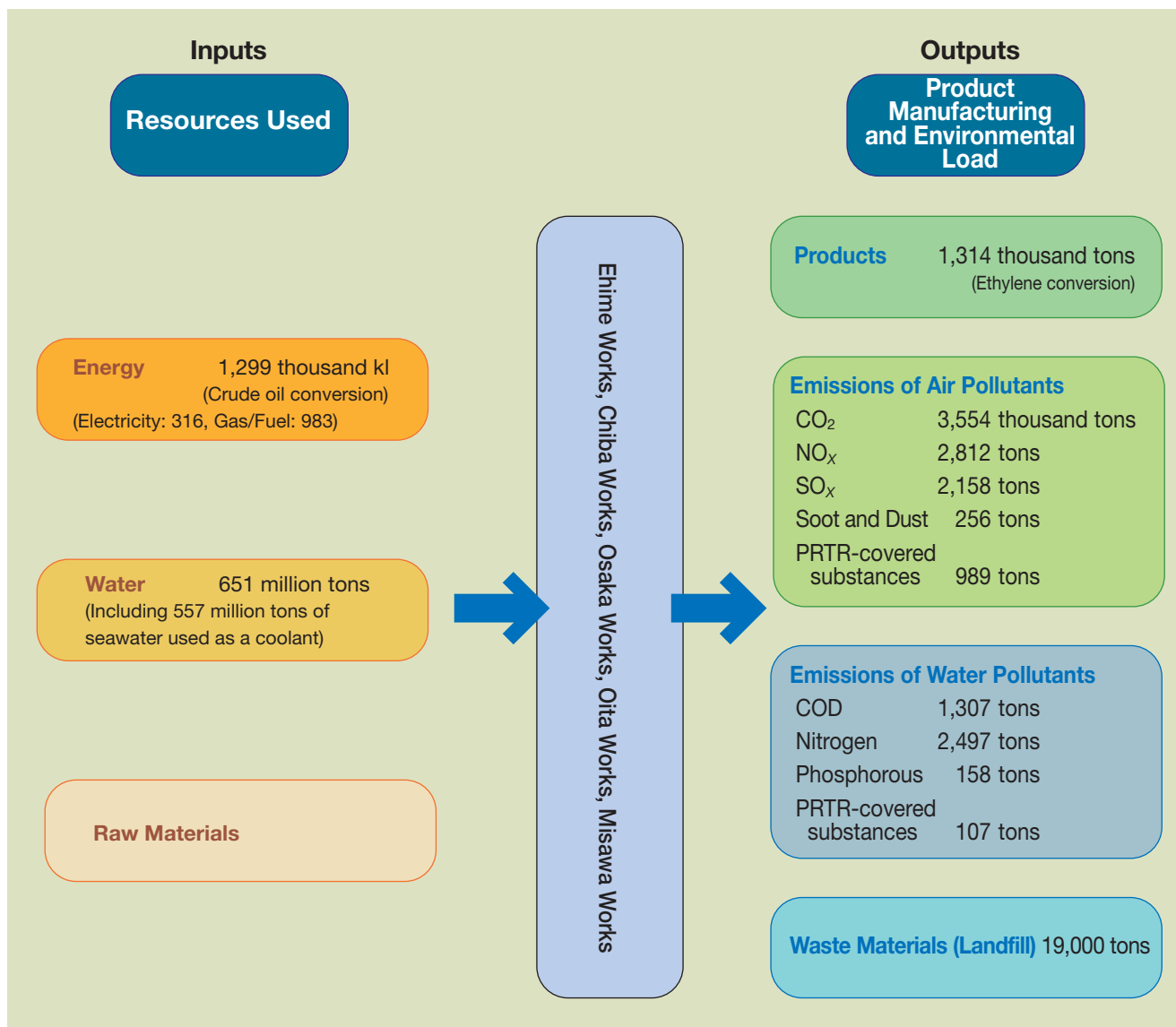
#### 3) Process Hazard Assessment Technologies

To ensure that potential hazards of processes are not overlooked, further study using the following technologies is being conducted.

- Relative hazard assessment
- Hazard and Operability studies (HAZOP)
- Failure Mode and Effects Analysis (FMEA)
- Fault Tree Analysis (FTA)
- Event Tree Analysis (ETA)
- Disaster simulation consequence analysis
- Risk assessment

## Environmental Preservation Activities / Environmental Impact of Production Activities

The following is an overview of the main inputs (resources used) and outputs (product manufacturing and environmental load) of Sumitomo Chemical's overall operational activities.



Oita Works

## Prevention of Global Warming

Sumitomo Chemical is implementing measures with the goal of achieving at least a 1% improvement in the energy consumption rate each year. Namely, by implementing thorough energy-saving measures, the Company is making efforts to curb CO<sub>2</sub> emissions, with the aim of achieving Japan Business Federation's voluntary action target of reducing the CO<sub>2</sub> emission level to below the fiscal 1990 level by fiscal 2010.

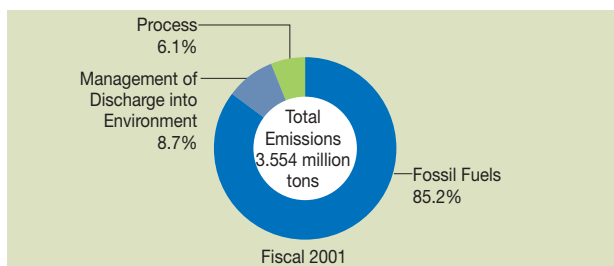
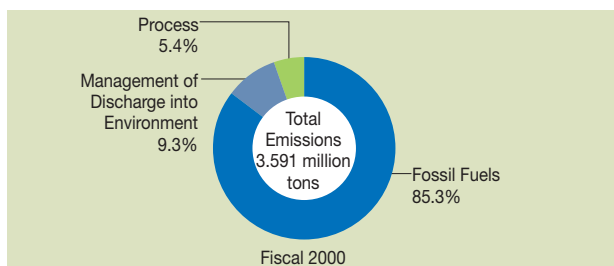
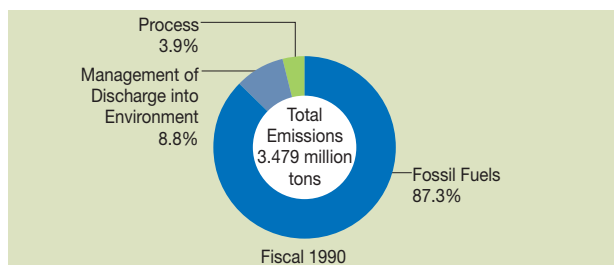
Sumitomo Chemical released 3.554 million tons of CO<sub>2</sub> emissions in fiscal 2001, a 1% decline from the previous year. This decline is attributable to the lower fuel consumption resulting from a drop in the production volume.

Compared to fiscal 1990, the fiscal 2001 level of CO<sub>2</sub> emissions increased 2.2%. The Company is striving to realize its target through the rationalization of the manufacturing process and operational methods.

### Curbing Emissions of Other Greenhouse Gases

Using proprietary (platinum-rhodium) catalyst gauzes, we apply a non-selective catalytic reduction technology to gases, such as nitrous monoxide, that are formed as unwanted by-products in the oxidation of ammonia in the ammonia converter of nitric acid plants. Sumitomo Chemical has become the industry leader in terms of the nitrous monoxide emission factor (0.9 N<sub>2</sub>O/kg/nitric acid ton).

Sources of CO<sub>2</sub> Emissions



(Millions of tons)

Fiscal Years	Total Emissions	Fossil Fuels		Management of Discharge into Environment		Process
		Fuel Consumption	Purchased Electricity, Steam	Incineration	Wastewater	
1990	3,479	2,003	1,035	0,283	0,022	0,136
2000	3,591	1,903	1,161	0,312	0,020	0,195
2001	3,554	1,884	1,144	0,292	0,018	0,216

Notes: 1. Process refers to production process emissions other than energy consumption.  
2. We improved the accuracy of the data for fiscal 2000 and made necessary revisions.

## Energy Saving

Since the first oil shock in the fall of 1973, Sumitomo Chemical has been striving to become an energy-saving manufacturer. By strengthening energy management and actively investing in energy-saving equipment, the Company has been able to achieve significant results.

Sumitomo Chemical has steadily implemented energy-saving measures to prevent global warming and contribute to a recycling-based society. The Company considers among its top priorities achieving the target of improving its energy consumption rate by at least 1% per year.

Using fiscal 1990's energy consumption rate of 100 as an index, the fiscal 2001 target was 89.5, compared with the 90.2 actually achieved, for an achievement rate of 99.2%.

A decline in production due to a drop in sales volume as well as periodic repairs caused this figure to worsen 2.9% from the previous year's level.

The principal energy-saving measures for fiscal 2001 are listed below.

### Principal Energy-Saving Measures in Fiscal 2001

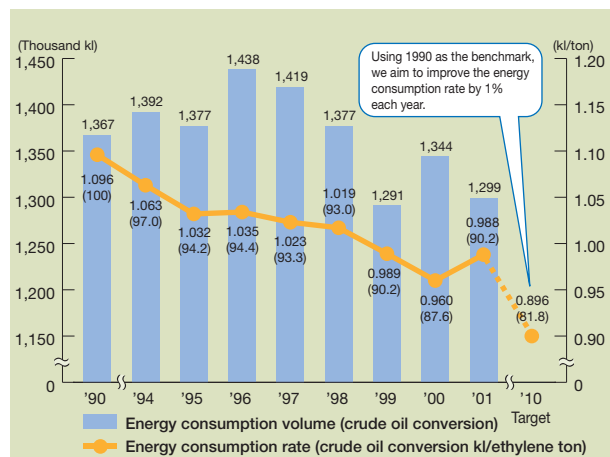
- Rationalized ethyl benzene process (crude oil conversion, 4,500 kl/year)
- Replaced methyl methacrylate freezers (crude oil conversion, 900 kl/year)
- Rationalized caprolactam process (crude oil conversion, 600 kl/year)

In fiscal 2002, we are planning the following measures and through their implementation we expect to improve the energy consumption rate by approximately 1% from the previous fiscal year.

### Principal Energy-Saving Measures in Fiscal 2002 (Targets)

- Change production method for polyethylene, polypropylene (crude oil conversion, 6,900 kl/year)
- Improve thermal recovery process for caprolactam (crude oil conversion, 3,300 kl/year)
- Expand installation of gas turbine cogeneration equipment (crude oil conversion, 3,300 kl/year)

Energy Consumption Volume and Energy Consumption Rate



Notes: 1. Due to improvements in the accuracy of the data, some figures have been revised.  
2. The numerical value appearing inside the parentheses is the index value (1990=100).



## Pollutant Release and Transfer Register (PRTR)

Since fiscal 1994, Sumitomo Chemical has conducted annual PRTR inspections to track the release and transfer of materials targeted by the Japan Chemical Industry Association (JCIA). In fiscal 2001, the Company surveyed all 480 chemical substances, including 354 class-one chemicals under the PRTR Law.

As a result of these inspections, Sumitomo Chemical found that it produced or used 131 (including 92 substances targeted under the PRTR Law) of the 480 targeted materials, and as of the end of fiscal 2001, the Company had released a total of 1,855 tons of such materials and transferred a total of 899 tons. The amount released declined 3.1% from the previous fiscal year.

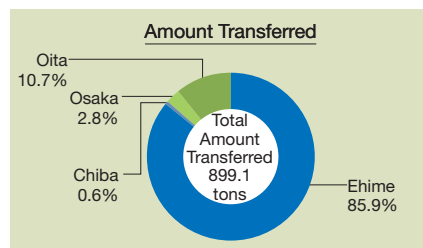
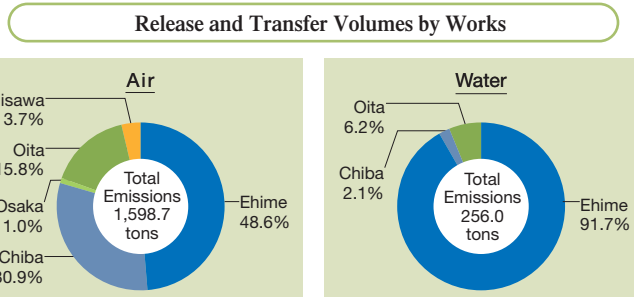
Release and transfer volumes of PRTR-targeted substances are shown in the diagram on the right.

### Risk Management of PRTR-Targeted Substances

Using methods such as human health risk assessments and simulations, overall risk assessments are being conducted for the 30 substances emitted in the largest volumes. Based on the results, emission reduction targets and reduction measures are being devised.

### Creation of a PRTR Database

Aiming to make the inspections more efficient, Sumitomo Chemical has developed an in-house PRTR database that enables the linkage of the head offices with all the Company's other facilities. This system began operation in April 2002.



Release and Transfer of PRTR-Targeted Substances in Fiscal 2001 (Tons)

	Amount Released			Amount Transferred		
	Air	Water	Subtotal	Sewerage	Waste	Subtotal
PRTR-targeted (92 substances)	988.6	107.4	1,096	19.0	836.0	855
JCIA-targeted (131 substances)	1,598.7	256.0	1,855	24.7	874.4	899

### List of PRTR-Targeted Chemicals Released and Transferred<sup>1</sup>

(Tons. However, dioxins use mg-TEQ)

PRTR-Targeted Substances	JCIA-Targeted Substances	Name of Chemical Compound	Amount Released					Amount Transferred		
			Air	Water	Soil (Excl. landfill)	Landfill	Total Amount Released	Sewerage <sup>3</sup>	Waste	Total Amount Transferred
○	○	Toluene	265.0	0.5	0.0	0.0	265.5	15.6	0.0	15.6
○	○	Vinyl acetate	250.1	0.4	0.0	0.0	250.5	0.0	0.0	0.0
○	○	Methyl isobutyl ketone	217.0	2.7	0.0	0.0	219.7	0.0	0.0	0.0
○	○	Cyclohexane	147.0	0.1	0.0	0.0	147.1	0.0	0.0	0.0
○	○	Styrene monomer	135.8	0.1	0.0	0.0	135.9	0.0	0.0	0.0
○	○	Acetone	65.8	14.4	0.0	0.0	80.2	0.0	0.0	0.0
○	○	Benzene	65.7	0.7	0.0	0.0	66.4	0.0	0.0	0.0
○	○	Methyl methacrylate	59.4	0.0	0.0	0.0	59.4	0.0	0.0	0.0
○	○	Hexane	49.6	0.0	0.0	0.0	49.6	0.0	0.0	0.0
○	○	Methyl alcohol	46.9	0.0	0.0	0.0	46.9	5.6	0.0	5.6
○	○	Dichloromethane	43.1	0.3	0.0	0.0	43.4	0.0	35.2	35.2
○	○	Dichloropentafluoropropane (HCFC-225)	30.8	0.0	0.0	0.0	30.8	0.0	192.6	192.6
○	○	Butyl alcohol	29.3	0.0	0.0	0.0	29.3	0.0	0.0	0.0
○	○	Acrylonitrile	26.9	0.0	0.0	0.0	26.9	0.0	0.0	0.0
○	○	Cholorbenzene	19.7	0.0	0.0	0.0	19.7	0.0	0.0	0.0
○	○	Chloroethane	12.3	0.0	0.0	0.0	12.3	0.0	0.0	0.0
○	○	Triethylamine	12.1	31.2	0.0	0.0	43.3	0.0	38.4	38.4
○	○	Xylene	11.1	0.0	0.0	0.0	11.1	0.0	0.0	0.0
○	○	Tetrahydrofuran	11.0	0.0	0.0	0.0	11.0	0.0	0.0	0.0
○	○	Ethyl acetate	10.6	0.0	0.0	0.0	10.6	0.0	0.0	0.0
○	○	Epichlorohydrin	10.5	0.3	0.0	0.0	10.8	0.0	0.0	0.0
○	○	1,2-dichloroethane	9.3	0.2	0.0	0.0	9.5	0.0	417.3	417.3
○	○	Trichlorotrifluoroethane (CFC-113)	5.4	0.0	0.0	0.0	5.4	0.0	34.0	34.0
○	○	Nitrobenzene	0.8	5.3	0.0	0.0	6.1	0.1	0.0	0.1
○	○	ε-Caprolactam	0.2	92.1	0.0	0.0	92.3	0.0	0.0	0.0
○	○	Vanadium pentoxide	0.2	0.0	0.0	0.0	0.2	0.0	4.8	4.8
○	○	Formaldehyde	0.1	0.0	0.0	0.0	0.1	2.2	0.0	2.2
○	○	Phenol	0.0	0.0	0.0	0.0	0.0	0.0	69.6	69.6
○	○	Molybdenum and its compounds	0.0	0.1	0.0	0.1	0.2	0.0	46.7	46.7
○	○	Phosphorus and its compounds	0.0	96.2	0.0	0.0	96.2	0.0	0.0	0.0
○	○	Adipic acid	0.0	2.9	0.0	0.0	2.9	0.0	0.0	0.0
○	○	Zinc's water soluble compounds	0.0	0.7	0.0	0.0	0.7	0.0	18.6	18.6
○	○	Nickel	0.0	0.0	0.0	0.0	0.0	0.0	9.3	9.3
○	○	Antimony and its compounds	0.0	0.0	0.0	0.0	0.0	0.0	6.3	6.3
○	○	Dioxins	(119.0)	(30.1)	(0.0)	(0.0)	(149.1)	(0.0)	(26.4)	(26.4)
Subtotal of the 35 above-listed substances			1,535.7	248.2	0.0	0.1	1,784.0	23.5	872.8	896.3
Total 131 substances used by Sumitomo Chemical (FY2001) <sup>4</sup>			1,598.7	256.0	0.0	0.1	1,854.8	24.7	874.4	899.1
Total 140 substances used by Sumitomo Chemical (FY2000)			1,783.2	129.9	0.0	0.0	1,913.1	71.2	756.9	828.1

Notes: 1. The list covers chemicals with production or use amounts exceeding five tons per year and dioxins, and uses the following standards by which to categorize them.

- Released into the Air: Amounts exceeding 10 tons
- Discharged into the Water: Amounts exceeding 2 tons
- Released into a Landfill: Total (one only)
- Transferred as Sewerage: Amounts exceeding 2 tons
- Transferred as Waste: Amounts exceeding 2 tons

2. The PRTR Law indicates the use of kilograms (rounded to one decimal point) for expressing weight but in this report the numerical values are expressed in tons (dioxins use mg-TEQ).

3. Releases as sewerage are classified as transfers, in accordance with the PRTR Law.

4. The fiscal 2000 total of 140 targeted chemicals inspected dropped to 131 in fiscal 2001 as a result of the discontinued use of nine substances.

## Prevention of Air and Water Pollution

Sumitomo Chemical is committed to reducing the amount of  $\text{SO}_x$ ,  $\text{NO}_x$ , and soot and dust released into the atmosphere and the amount of COD, nitrogen, and phosphorous released into waterways. In addition, the Company is making efforts to conserve water and preserve both the atmosphere and water resources.

In line with this commitment, Sumitomo Chemical has concluded cooperative agreements with municipalities at each of the manufacturing works to encourage the implementation of stricter environmental standards that go beyond the laws and regulations, and is bolstering efforts to reduce emissions.

In fiscal 2001, emission categories other than  $\text{SO}_x$  emissions were generally lower than the previous year's levels as a result of a lighter environmental load accompanying declines in production volume.

$\text{SO}_x$  emissions, which were at substantially lower levels than those specified in agreements signed with municipalities, rose above the previous year's level as a result of increased use of heavy oil with a high sulfur content.

### Wastewater Management Using Carp

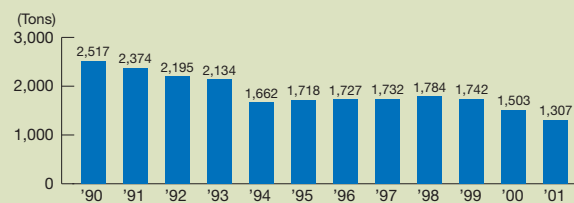
At the Misawa Works, wastewater that had undergone a series of processing treatments—primary processing (chemical processes), secondary processing (biological processes), and tertiary processing (sand filtering and activated carbon absorption)—was then tested in the breeding tanks of carp. Through the regular monitoring of the carp (swimming conditions, body weight, etc.), the safety of the wastewater was confirmed.



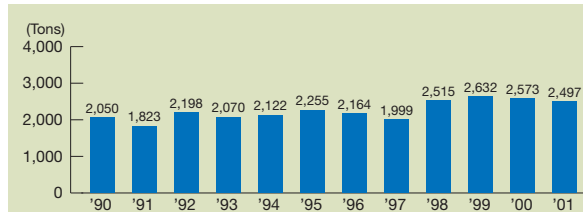
Monitoring of carp

## Water Pollutants

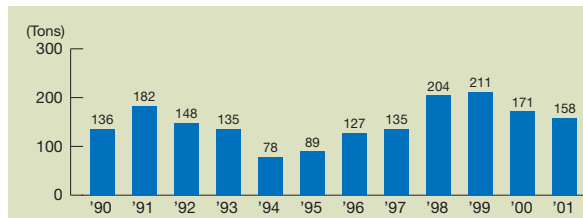
### COD Emissions



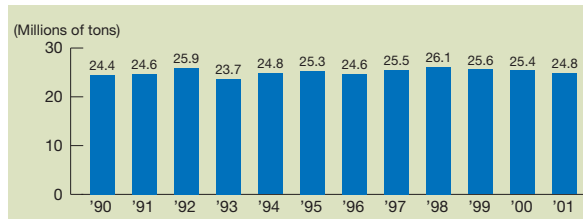
### Nitrogen Emissions



### Phosphorous Emissions

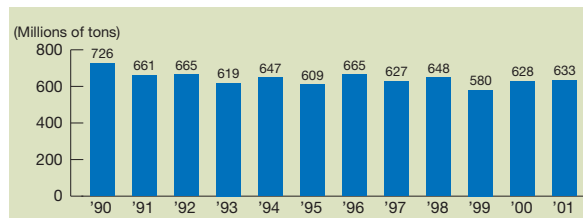


### Water Requiring Treatment\*



\* Water that is released from plants and undergoes activated sludge wastewater treatment, wastewater neutralization, or other treatment

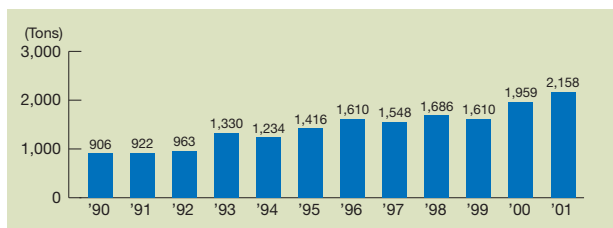
### Total Water Discharge\*\*



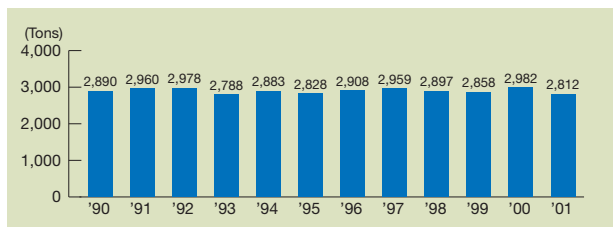
\*\* Including seawater used as a coolant

## Air Pollutants

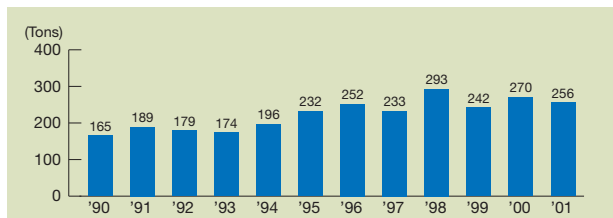
### $\text{SO}_x$ Emissions



### $\text{NO}_x$ Emissions



### Soot and Dust Emissions



### PCB Recovery, Storage, and Treatment

In accordance with the Law Concerning Special Measures against PCB Waste, Sumitomo Chemical is making a systematic effort to recover and store PCBs from such devices as condensers and transformers.

Treatment of stored PCBs is to be undertaken by the Japanese government's Japan Environment Corporation, which is preparing for the start-up of PCB waste treatment operations. Sumitomo Chemical will respond accordingly.

As industrial waste subject to special control, devices containing PCBs are stored in specified areas within the Company's waste storage facilities to ensure strict control and appropriate handling.

Number of PCB Containers	Total PCB Volume (l)
746 (Stored 703, in use 43)	42,108

Figures do not include the stabilizers in fluorescent lights or mercury lamps.

### Management of Specific Chlorofluorocarbons (CFCs)

Sumitomo Chemical currently uses specific CFCs such as trichlorofluoromethane (CFC-11) and dichlorodifluoromethane (CFC-12), which are highly destructive to the ozone layer, in cooling devices. However, the Company is conducting systematic replacements by switching over to hydrochlorofluorocarbons (HCFCs) and hydrofluorocarbons (HFCs). In fiscal 2001 we replaced one cooling device. We will continue the switchover to CFC substitutes as we systematically replace our cooling devices.

We are undertaking appropriate measures to ensure the proper disposal of both specific CFCs and CFC substitutes that remain in cooling devices at the time of replacement or disposal, in compliance with the Law Concerning the Recovery and Destruction of Fluorocarbons.

### Life Cycle Assessments (LCAs)

To participate in our customers' product LCAs and also to provide support for national projects led by the Ministry of Economy, Trade and Industry, a detailed compilation of LCA inventory data for materials used in Sumitomo Chemical's products is being undertaken. In the future, further expansion of the scope of data is planned.

By adding the environmental impact assessment derived from the LCA to the economic impact assessment, we are trying to incorporate this data as an important decision-making tool at the product development stage. In this way, we are striving to find practical applications for product LCAs.

### Green Purchasing

Sumitomo Chemical is actively promoting green purchasing (giving priority to products with lower environmental impact) in ordering office supplies and office equipment. The Company is planning for the expansion of green purchasing to include raw materials and other equipment.

### Promoting the "3Rs"

As part of increased efforts to incorporate the 3Rs—Reduce, Reuse, and Recycle—into every aspect of its operations, Sumitomo Chemical is actively participating in industry initiatives, led by the JCIA. An example of industry organization activities was the "Technology Development for the Treatment of Used Plastic from Electric and Electronic Machinery" initiative held by the Plastic Waste Management Institute in fiscal 2001.

### Voluntary Control of Hazardous Air Pollutants

The Japanese government has emphasized the need to reduce air pollutants and has attached special importance to 22 substances. Twelve of these substances have been selected by the JCIA for an industry-wide voluntary emission reduction program. Sumitomo Chemical, which currently releases nine of the 12 targeted substances into the environment, is implementing its second emission reduction plan, with the goal of achieving by fiscal 2003 a 75% reduction in emissions compared with the level in fiscal 1999.

In fiscal 2001, overall emissions totaled 156 tons, down 56% compared with fiscal 1999.

#### (1) 1,2-Dichloroethane

This is being used as a solvent in the production of intermediates for pharmaceuticals and plant protection chemicals. In fiscal 2001, emissions were cut 24% from the previous year due to its replacement on one production line. A total conversion to a replacement substance is being planned.

#### (2) Benzene

In December 2001, we installed an activated carbon absorption tower in our nitrobenzene production plant and reduced emissions 31% from the previous fiscal year. In fiscal 2002, we expect to reduce emissions 97% from the fiscal 1999 level.

#### (3) Dichloromethane

In fiscal 2001, a process was started for incinerating wastewater containing dichloromethane used in production of pharmaceuticals, and emissions were lowered 37% from the previous year. In May 2002, exhaust-gas recovery equipment was installed in a production plant for pharmaceutical intermediates. In fiscal 2003, emissions are expected to be reduced 48% from the fiscal 1999 level.

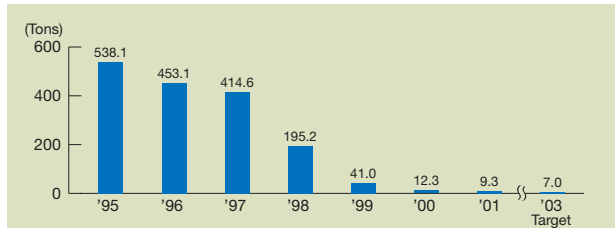
#### (4) Acrylonitrile

In fiscal 2003, equipment to recover the exhaust gas released from shipment tanks will be installed, and in fiscal 2004 emissions are expected to be reduced by 35% from the fiscal 1999 level.

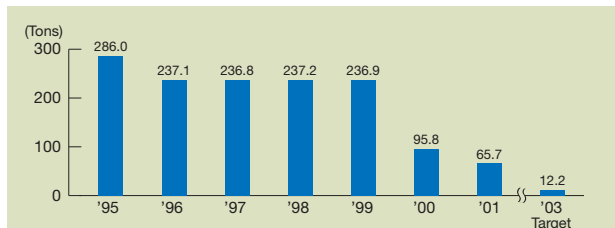
#### (5) 1,3-Butadiene

Through the production outsourcing of rubber products containing this substance, a substantial reduction in emissions is expected during fiscal 2003.

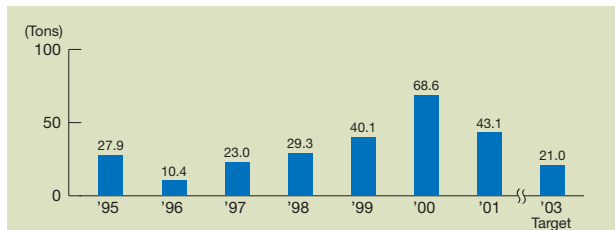
### 1,2-Dichloroethane



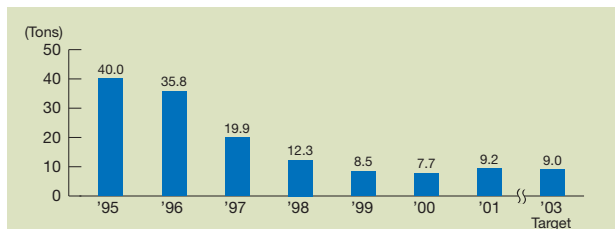
### Benzene



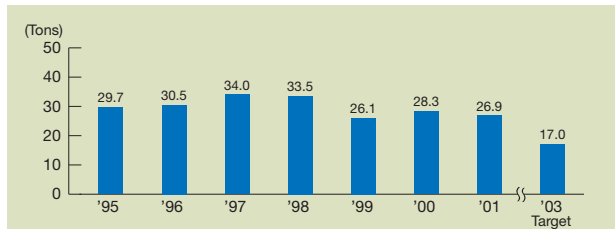
### Dichloromethane



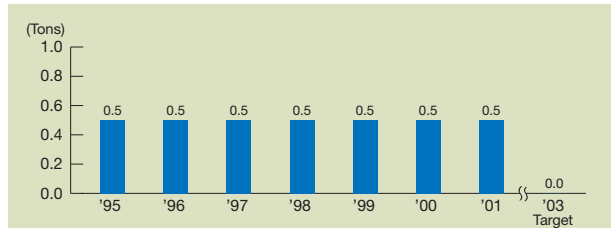
### Vinyl Chloride Monomer



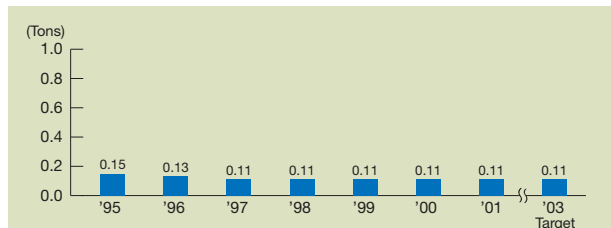
### Acrylonitrile



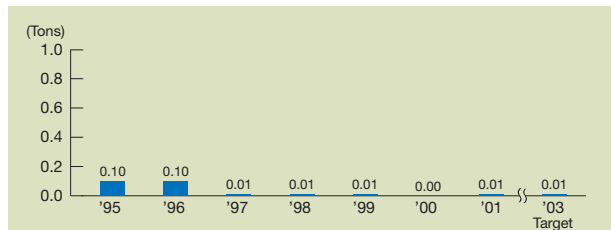
### 1,3-Butadiene



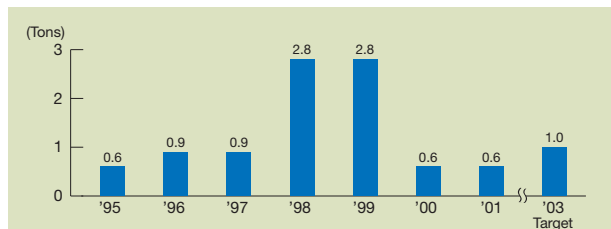
### Formaldehyde



### Chloroform



### Acetaldehyde



- Notes:
1. The target substances' emissions data during fiscal 1995-2001 have been partially revised as a result of more precise measurements.
  2. Ethylene oxide was under the management of another company, and therefore has been excluded as a target substance.
  3. Fiscal 2003 targets were set in fiscal 2000.

## Reducing Waste

In addition to climatic change, pressing concerns include waste materials management, materials recycling, the shortage of landfill sites, illegal dumping, dioxins from incineration facilities, and waste recycling.

Sumitomo Chemical is undertaking the following measures for appropriately managing waste.

### 1) Reducing the Amount of Waste Generated

#### Product manufacturing process

- Improvement of product yields, achieving higher levels of raw materials purification
- Substitution of neutralizing agents, bleaching agents, filtration agents, catalytic agents, and processing agents for gas emissions, and reducing usage volumes
- Improvement of equipment and operating conditions

#### Wastewater treatment process

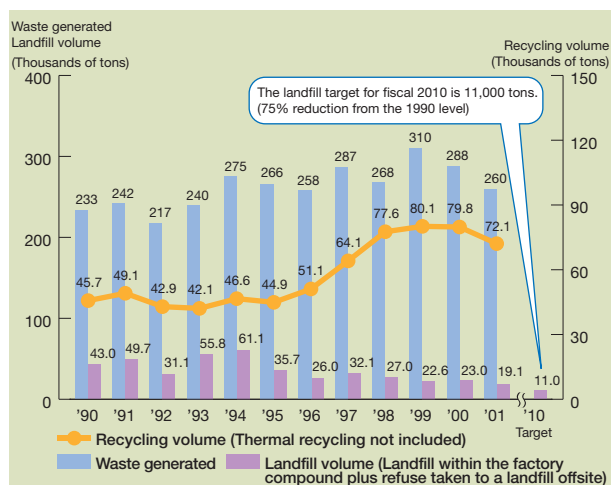
- Improvement of wastewater processing
- Reduction of activated sludge generated through wet oxidation
- Biodegradation of organic sludge
- Reduction of the water content of sludge

Due to a decline in production volumes, the amount of waste generated in fiscal 2001 fell 28,000 tons (9.7%) from the previous fiscal year. Compared with the amount of waste generated, the recycling rate, at 27.8%, was on par with that of the previous fiscal year. The landfill ratio decreased from 8.0% to 7.3%.

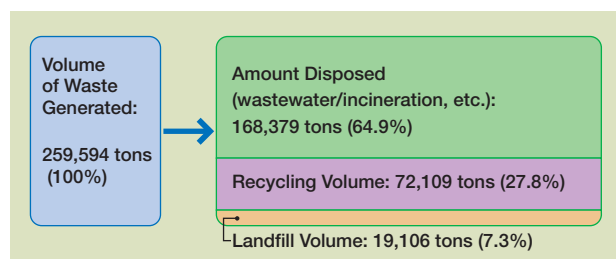
### 2) Waste Recycling

Sumitomo Chemical intends to reduce landfill waste in fiscal 2010 by 75% from the fiscal 1990 level. To achieve this target, the Company is making efforts to find effective uses for the

Trends in Waste Generated, Landfill, and Recycling Volumes



Waste Management Situation in Fiscal 2001



waste. The ashes of incinerated sludge are being considered as a raw material for cement and in soil intended for farming. The Misawa Works achieved its target of zero landfill volume in fiscal 1993, and the Osaka Works was able to realize an 81% reduction in landfill compared with the fiscal 1990 level.

### 3) Measures to Prevent Illegal Dumping

Regarding the outsourcing of landfill to offsite waste handlers, we are strengthening the manifest management and making periodic inspections of our commissioned landfill operations.

### 4) Dioxin Emission Countermeasures for Incineration Facilities

In accordance with the incinerator furnace structure and maintenance control standards specified in Japan's Waste Disposal and Public Cleaning Law, substantial revisions were made to three furnaces, including a fluidized floor furnace and a rotary kiln.

#### Chiba Works

- Installed a cooling device for released gas (temperature-reduction tower) in a fluidized floor furnace

#### Ehime Works

- As a countermeasure for oxygen enrichment, undertook work in a fluidized floor furnace
- Installed internal temperature controls for a rotary kiln's deodorizing furnace

### 5) Systematic Approach to Curbing Sludge Generation

Systematic measures have been undertaken in accordance with the Law for the Promotion of Utilization of Recyclable Resources (the revised recycling law) enacted in April 2001.

Sumitomo Chemical has been studying how to curb the generation of sludge, which accounts for the majority of refuse for final disposal, and has been implementing various measures. The Company is considering implementing the following measures by fiscal 2006.

#### To curb sludge generation

- Improving the dephosphorization of wastewater
- Increasing product yield
- Biodegrading organic sludge

#### Recycling of resources

- Recycling by-products as a material for cement
- Reusing materials as compost for farming

In June 2002, our "Plan to Control the Generation of By-Products" was drafted and submitted to the Japanese government. The goal is to reduce the amount of sludge (excluding bauxite residue\*) generated in fiscal 2006 by 20% compared to the fiscal 2000 level and decrease the amount of landfill refuse 37%.

In fiscal 2001, the amounts of sludge and landfill refuse generated declined 14% and 19%, respectively.

#### \*Bauxite residue

Red bauxite, which is natural bauxite from which the aluminum has been extracted, exists in nature and is composed of mineral constituents and saltwater.

Sumitomo Chemical is conducting sea-dumping disposal, which was allowed by the amendment of Japan's domestic law, which coincided with the 1993 amendment of the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter 1972 (London Convention). At present, the Company has not yet established an adequate usage method to allow for practical application, and this is also due to the large restraints on landfill dumping. As for sea-dumping disposal, analytical tests recognized by law have proven such a method of disposal to be safe.

The Company will continue to study ways to reduce the amount disposed through sea-dumping, while promoting both a reduction in the amount of red bauxite generated and effective uses of the substance. The details concerning the industry's efforts were announced at the 25th London Convention Scientific Conference held in May 2002. Sumitomo Chemical is conducting an environmental analysis of the ocean in cooperation with other companies in the chemical industry, and plans to release those results soon.

## Environmental Accounting

In line with its environmental accounting program, which was introduced in fiscal 2000, Sumitomo Chemical is continuously gathering and evaluating data on environment-related expenses, investments, and economic results.

### [Environmental Accounting Objectives]

- 1) Improve environmental protection efficiency by numerically analyzing environmental activities
- 2) Decision making based on a long-term environmental perspective
- 3) Improve enterprise transparency through the disclosure of information

### [Items Related to Environmental Accounting]

- 1) Scope: Sumitomo Chemical and 17 domestic and overseas Group companies
- 2) Period under review: Fiscal 2001 (April 1, 2001, to March 31, 2002)
- 3) Classification: Ministry of Environment guidelines are followed in principle
- 4) Independent review: A review is conducted by Asahi & Co.
- 5) Tabulations are made on a consolidated basis: Principal 17 consolidated affiliates (14 domestic, 3 overseas)

### [Environmental Accounting Results]

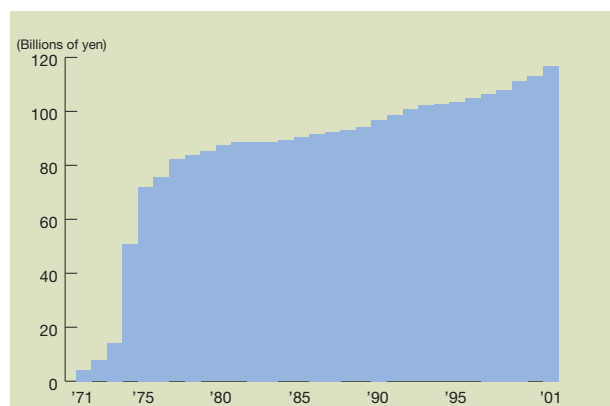
Sumitomo Chemical's environmental accounting in fiscal 2001 shows investments of ¥1.5 billion, expenses of ¥14.5 billion, and economic effects of ¥2.8 billion. The direct economic effects from environmental measures are mainly the results of energy conservation, resource conservation, and recycling, the computation of which has been limited to that which can be reliably calculated.

In comparison to fiscal 2000, investments declined ¥600 million and expenses rose ¥1.7 billion. In particular, the cost of environmental damage increased from zero in fiscal 2000 to ¥1.6 billion in fiscal 2001. This is due primarily to soil survey and cleanup costs.

In contrast, the economic effects, compared to fiscal 2000, comprised a ¥300 million increase resulting from energy conservation, a ¥400 million increase through resource conservation, and a ¥100 million decline in recycling activities, for a total increase of ¥600 million. (The investment figures include the amount spent on safety measures.)

In fiscal 2001, environmental investments totaled ¥1.5 billion and safety-related (including disaster prevention) investments totaled ¥2.5 billion, bringing the overall total to ¥4 billion. From 1971 to 2001, the Company invested a total of ¥116.8 billion in environmental protection and safety control measures. Of this, 74% went to environmental investments and 26% to safety control measures.

Cumulative Environmental and Safety-Related Investments Since 1971



## Environmental Costs

(Billions of yen)

	Main Implementation	Fiscal 2001				Fiscal 2000			
		Parent-only Basis		Consolidated		Parent-only Basis		Consolidated	
		Investment	Expense	Investment	Expense	Investment	Expense	Investment	Expense
Business Area Costs		0.7	8.7	1.3	12.7	1.4	8.6	1.9	12.5
Breakdown	Pollution prevention costs	(0.3)	(5.4)	(0.7)	(8.4)	(0.6)	(5.4)	(1.0)	(8.3)
	Global environment costs	(0.1)	(0.4)	(0.1)	(0.4)	(0.0)	(0.3)	(0.0)	(0.4)
	Resource circulation costs	(0.3)	(2.9)	(0.5)	(3.9)	(0.8)	(2.9)	(0.9)	(3.8)
Up/Downstream Costs	Green purchasing, recycling and recovery procedures for products, remaking into products, undertaking appropriate treatments, recycling costs associated with containers and packaging, environment-friendly products and services	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0
Management Activity Costs	Costs associated with environmental education, environmental management systems, and monitoring and measuring the environmental impact of business activities and products; environmental organization operation	0.0	0.6	0.0	0.8	0.0	0.5	0.0	0.8
R&D Costs	Development of products contributing to environmental protection, research of energy-conservation processes	0.8	3.1	0.8	3.2	0.7	3.2	0.7	3.3
Social Activity Costs	Environmental policies relating to protecting the natural environment and enhancing its scenic beauty and greenery, supporting community initiatives aimed at environmental protection, supporting environmental conservation groups, environment-related paid contributions and surcharges	0.0	0.5	0.0	0.9	0.0	0.5	0.0	0.9
Environmental Damage Costs	Environmental rehabilitation of contaminated environments and other environmental damage, reserve fund to cover environmental rehabilitation	0.0	1.6	0.0	1.6	0.0	0.0	0.0	0.0
Total		1.5	14.5	2.2	19.3	2.1	12.8	2.6	17.5

## Economic Effects

(Billions of yen)

Results	Fiscal 2001		Fiscal 2000	
	Parent-only Basis	Consolidated	Parent-only Basis	Consolidated
Expense reductions due to energy conservation	0.5	0.6	0.2	0.4
Expense reductions due to resource conservation	1.0	1.0	0.6	0.6
Expense reductions due to recycling activities	1.3	1.6	1.4	1.4
Total	2.8	3.2	2.2	2.4

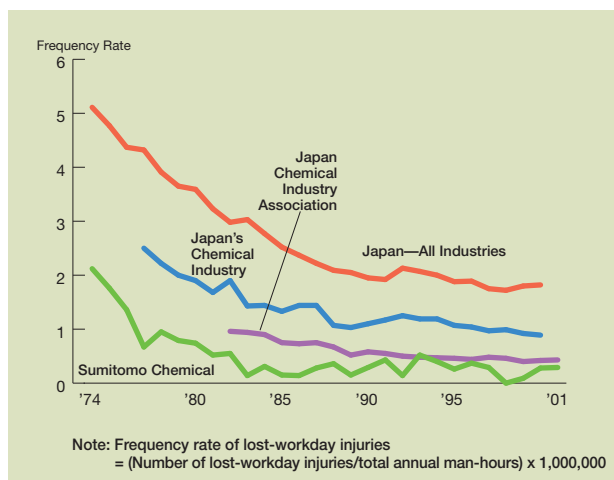
## Occupational Health and Safety

Sumitomo Chemical is implementing a variety of initiatives under the basic philosophy "Putting Safety First and Foremost."

### Safety Performance

There were three accidents that resulted in lost workdays in fiscal 2001. Regrettably, Sumitomo Chemical was unable to achieve its target of zero accidents. The frequency rate of lost-workday injuries was 0.29, which is nearly on par with last year's rate of 0.28.

### Trends in the Frequency Rate of Lost-Workday Injuries



### Safety-Oriented Corporate Culture

#### ■ Moving from Zero Accidents to Zero Dangers

To shift our thinking and actions from zero accidents to zero dangers, various guidelines have been devised and training is being conducted for all Sumitomo Chemical employees. These guidelines, posted on the Company's intranet and available for all to see at anytime, are also being used by Sumitomo Chemical Group companies.

- Guidelines for preventing accidents involving getting caught or entangled in machinery (April 1998)
- Guidelines for preventing accidents involving human error (April 2002)
- Guidelines for site-specific risk assessments (July 2002)

#### ■ Accident Prevention through Case Studies

All information pertaining to accidents that happen at each works or laboratory has been made available companywide as part of efforts to ensure that similar accidents do not happen. Regarding more severe accidents, we undertake a companywide "Zero Accident Patrol" to prevent a recurrence of similar accidents. Information is also provided to Sumitomo Chemical Group companies to raise awareness regarding accident prevention.

#### ■ Examination of Previous Accidents

A variety of committees, such as the Works Managers' Committee, the Environmental Health and Safety Supervisors' Committee, and the Safety Guidance Research Committee, are convened periodically to publicize the details of previous accidents to prevent similar accidents from occurring.

#### Safety Award System

The President's Safety Award system has been established to honor the employees at our works and research laboratories, as well as employees of contractor companies that operate within our compounds. This award acknowledges individual facilities for their superior efforts concerning safety activities.



Osaka Works

Thanks to these various measures, accidents, viewed over the long term, are on the decline. However, the Company's target of zero accidents has yet to be achieved, and a variety of activities are being conducted to realize this goal.

#### Occupational Safety and Health Management System (OSHMS)

OSHMS is a mechanism that goes through the PDCA (Plan-Do-Check-Act) cycle and voluntarily and continuously conducts occupational health and safety management. This system aims to minimize the potential risks of work-related accidents at each plant, promote improved health for workers, ensure a comfortable working environment, and contribute to improved safety and health standards.

Our Chiba Works pioneered the creation of OSHMS, which commenced operation in April 2001.

#### ■ Actively Promoting Good Health

At Sumitomo Chemical, health checkups are conducted periodically, following a list drawn up voluntarily, to encourage employees to actively promote good health. Using checkup results, a physician provides private consultations at each works and research laboratory, and the Company sponsors various activities that include walking, mountain climbing, and golf.

Occupational health and safety is ensured through the implementation of OSHMS and other initiatives. Establishment of OSHMS at other works and research laboratories is expected during fiscal 2003.



Ehime Works' physician and clinic staff

## Process Safety and Disaster Prevention Management

The foremost task in accident and disaster prevention management is to establish a safety process to prevent accidents and disasters before they happen. To this end, Sumitomo Chemical has introduced the thorough implementation of process hazard analyses and self-regulated safety management beyond legal requirements.

### Process Safety Management

Sumitomo Chemical undertakes safety assessments at each stage of development, from process R&D to plant design, construction, operation, maintenance, and dismantling, in an effort to reduce the environmental burden and achieve zero-accident and zero-injury operations. In the R&D and commercialization stages, the following safety assessments are conducted.

In R&D, all kinds of data on chemical substances are collected and evaluated to select safer chemical substances as raw materials or auxiliary raw materials that will result in the realization of safer chemical processes as well as the creation of safe products. At the same time, equipment and materials used at chemical plants are studied and evaluated, with the most appropriate materials selected for use. These assessments are verified through small and medium-sized experiments, and the suitability of each process is confirmed.

Next, plant design and construction are undertaken. Design is undertaken in compliance with technology standards stipulated by laws and regulations. In addition, process hazard assessments are conducted, and from the perspective of self-regulation, safety measures of high standard are incorporated into the plant's design and construction. All features of process and safety precautions are incorporated in an operation manual, and operators undergo thorough education and training.

Once construction of the plant is completed, the equipment is inspected and adjustments are made to operations. Confirmations are made to ensure that the installed equipment is sound and that manuals and employee training have been completed. Afterward, trial production is undertaken to check that the entire chemical process can be commissioned safely.

After confirming that the plant operates soundly and safely, the Company starts commercial operations and conducts equipment and safety control to ensure that overall operational safety is maintained at all times.

At Sumitomo Chemical, periodic process hazard assessments are conducted after the commencement of operations as well as

when changes are implemented, as part of efforts to identify potential hazards and employ safety precautions.

### Voluntary Safety Controls with High Standards

Sumitomo Chemical is proactively promoting environment and safety initiatives. The Company practices self-regulation to reduce the environmental impact and achieve zero accidents and zero injuries. Furthermore, to ensure a higher level of compliance with these initiatives, the following management systems and support tools have been introduced.

#### (1) Process & Production Technology Center

The Process & Production Technology Center, which includes the Safety Engineering Laboratory and the Materials and Plant Engineering Group, supports process safety and disaster prevention management. (For details, see pages 11-12.)

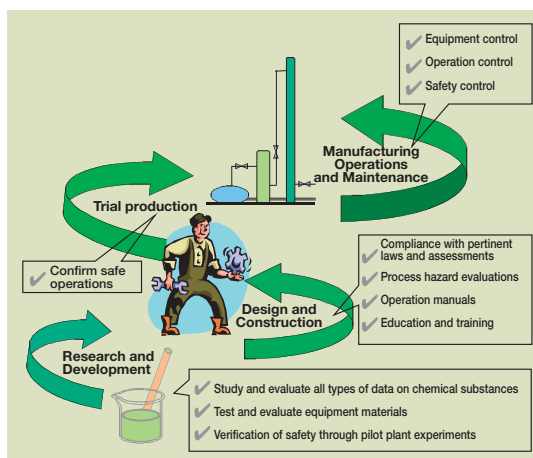
#### (2) Management of Process Hazard Analysis

The Process Safety Review Committee convenes at every stage of the R&D and commercialization processes to deliberate process hazard assessments as stipulated by Process Development and Commercialization Regulations and Safety Management Guidelines. This committee is run by the people responsible at each stage of the process, for example, at the R&D stage, the person who heads the laboratory and from the commercialization stage, the plant's environment and safety director. As shown in the diagram below, in both the R&D and commercialization stages, nothing is forwarded to the next stage unless it has been proven to satisfy safety requirements.

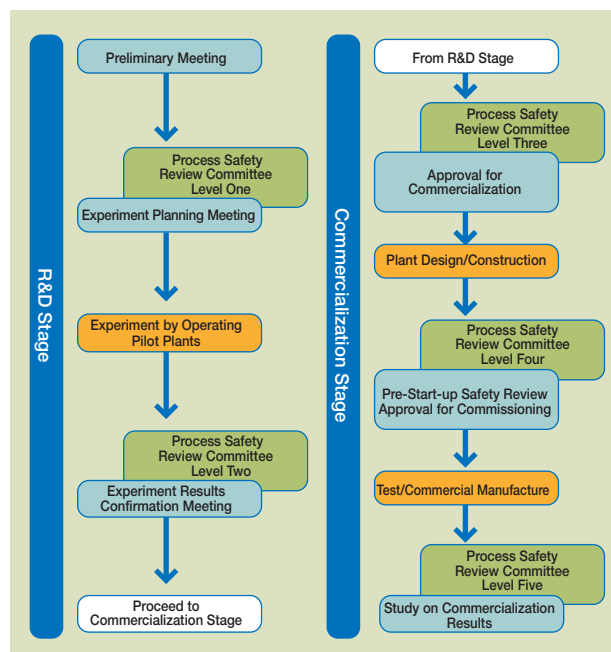
#### (3) Safety and Disaster Prevention Guidelines

Safety management criteria have been stipulated in the Safety Management Procedures regarding the content of process hazard assessments, which are conducted at every stage. To ensure the

### Process Safety Management



### Risk Assessment from R&D to Commercialization





adequate implementation of process hazard assessments, the Company has compiled safety and disaster prevention guidelines, which are used not only as educational materials but also as a guidebook for conducting the assessments.

- ① Guidelines for applying disaster prevention assessments
- ② Guidelines on safety countermeasures for static electricity
- ③ Guidelines on chemical compatibility
- ④ Guidelines for chemical process safety
- ⑤ Chemical plant safety checklist
- ⑥ DCS safety checklist

The safety and disaster prevention guidelines are distributed to each section (or office), and all but the guidelines on chemical compatibility have been made available as electronic files on the Company's intranet and can be accessed from anywhere in the Company.



Safety and disaster prevention guidelines

#### (4) Risk Assessment Software

In the case of process hazard assessments, consequences of various accident scenarios are simulated and then safety measures are confirmed and the siting of facilities decided.

At Sumitomo Chemical, the consequence simulation software TRACE (provided by U.S.-based SAFER Systems LLC) is run on the Company's intranet and can be used in every works. The "Effects" and "Damage" software products (made by the Dutch company TNO) are being used as required. In addition, the introduction of tools for conducting quantitative risk assessments is being planned.

#### (5) Information Systems and Databases

The conducting of process hazard assessments necessitates the use of many kinds of safety data and accident-related data. Sumitomo Chemical has created the following databases and operates an information system that makes this data accessible from terminals linked via the intranet.

- ① Process Safety-Related Data (Information on accidents, accident investigation reports, technical information on accident prevention)

Accident- and process safety-related data in the public domain is obtained from domestic and foreign sources, and a summary is prepared. This information is then input into a database. As of April 2002, the number of process safety-related entries exceeded 13,000 items. After conducting a search for a summary, the original report can be retrieved and the document can be printed out at specially designated terminals located within each plant or laboratory.

- Technical information
  - on accident/disaster prevention: 9,237 entries
- Accident investigation reports/results: 1,517 entries
- Information on accidents: 13,169 entries

This process safety-related data is used in process hazard assessments and case studies to prevent the occurrence of similar accidents. Accident-related information is also made available to external parties through our affiliated companies.

#### ② Chemical Compatibility Data

When two or more types of chemical substances come into contact, there is always the possibility that the resultant blend will pose more danger than the original substances. A chemical plant uses a variety of chemicals, and therefore caution is imperative in their handling to ensure that dangerous properties do not arise through the mixing of different chemicals.

This database includes public domain data that has appeared in documents, as well as the Company's own assessment data. When implementing process changes or process hazard assessments, this database is utilized in the preliminary search for hazard data on mixing and blending chemical substances for a given process.

#### Voluntary Process Safety Management for High-Pressure Gas Facilities

Twenty-two of Sumitomo Chemical's facilities have acquired the qualification of Approved Operator for Safety Self-Inspection, in adherence to the High-Pressure Gas Safety Law, and conduct safe and stable operations. The Chiba Works obtained this certification early, and the works continually renews its registration. In fiscal 2001, the Ehime Works' hydrogen plant also acquired the certification.

Through this certification system, the Company's superior levels of technology and management are recognized, and hence, the implementation of safety self-inspections in lieu of a competent authority's safety inspections has been approved. The ministerial authorization process involves a preliminary audit by an inspection team, comprised of academics and other experts. The Company's voluntary process safety management mentioned heretofore has been assessed in the audit as meeting high standards.

Works	District Name	Certification Date	No. of Facilities Certified
Ehime	Niihama	Feb. 2002	1
Chiba	Anesaki	May 1999	8
	Sodegaura	Sept. 1999	13

#### Emergency Preparedness

Sumitomo Chemical is making utmost efforts to prevent the occurrence of accidents and disasters. Emergency procedures are implemented immediately at the first sign of an accident. Furthermore, to prevent accidents and to minimize their impact should one occur, every variety of sensor has been installed to detect any process-related abnormalities and a process computer monitors operations to confirm that each process is being conducted safely.

A manual has been created to ensure that proper response can be made in the event of an emergency and that information will be conveyed swiftly to the appropriate authorities. Also, plans are drawn up yearly, and the education and training of employees responsible for such operations are conducted systematically.

Each works maintains fire engines and fire hydrants, and keeps on hand large-scale fire pumps and stocks of fire-extinguishing chemical agents. In the event of a fire, a system has been created for promptly dispatching employees to fight the fire until the arrival of public fire fighters. Sumitomo Chemical's self-managed fire brigades regularly conduct drills with public fire fighters and the fire-fighting squads of neighboring companies (under joint disaster prevention arrangements) to ensure smooth cooperation in the event of such an accident.

## Chemical Safety Activities

### Chemical Safety Management

Sumitomo Chemical has been improving chemical safety management through its Toxicity Assessment System for Chemical Substances (TASCS), which was set up to compile safety information and promote risk assessment related to chemical substances.

### Safety Data on Chemical Substances

To facilitate and expedite the transfer of information within the Company, the compiled and analyzed data on products, intermediates, and raw materials is stored in a product safety database called CHEMSAFE2 (Chemical Safety Database). In fiscal 2001, 60 new items of data were entered into the database, bringing the total number of entries to 2,774. It is also used as the database for Material Safety Data Sheets (MSDSs) to provide safety information to customers and ensure the safety of both the workplace and community. This database allows for the automatic creation of an MSDS prototype and the compilation of data in a prescribed format.

#### An Overview of CHEMSAFE2 Data

1. Substance-related data
2. Laws and regulations
3. Data on physical and chemical properties
4. Hazards posed by fires and explosions
5. Dangers relating to the cracking of chemical compounds
6. Dangers of chemical reactions
7. Details regarding chemical handling
  - Fire-fighting agents, fire-fighting techniques, emergency measures, steps to be taken in event of leakages, exposure-prevention measures (equipment countermeasures, protective equipment), and precautions regarding handling, storage, transportation, and disposal
8. Health considerations
9. Environmental impact
10. Data entry, renewal, and data confirmation log
11. Manufacturers' data
12. List of citations

### Material Safety Data Sheets (MSDSs)

Making MSDSs available became required by the Industrial Safety and Health Law in 2000, and again in 2001 per the PRTR Law and Poisonous and Deleterious Substances Control Law. Sumitomo Chemical creates and distributes MSDSs to concerned parties for a variety of chemical substances, not only substances designated by law. Although the MSDSs are prepared following JCIA guidelines, we plan to gradually switch over to an ISO-certified format.

### ICCA Program Concerning High Production Volume (HPV) Chemicals

At the October 1998 general meeting of the International Council of Chemical Associations (ICCA), in order to help the

Organization for Economic Cooperation and Development (OECD) HPV program, the industry as a whole created a working list (a priority substances list) of 1,000 HPV chemicals and formally decided to collect hazard data and voluntarily arrange for OECD experts to conduct assessments of this data by 2004.

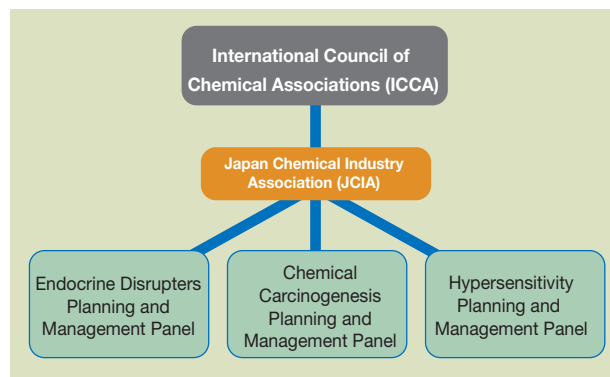
Of Sumitomo Chemical's 25 HPV substances, the Company has announced that it will assume a leadership role for three substances. In January 2001, the Company participated in what was the industry's first OECD assessment conference, and Sumitomo Chemical's substances underwent an assessment. This work is being continued through active participation in this program as a member of the chemical industry consortium and also as a sponsor.

### Participation and Support for the Long-Range Research Initiative (LRI)

The ICCA is promoting, through its LRI program, responses to unresolved problems concerning chemical safety, such as the issue of endocrine disrupters, as well as the development of safety assessment technologies.

The JCIA is promoting activities with both the European and American chemical industry associations, and Sumitomo Chemical is also an active participant and supporter of the LRI program.

#### Long-Range Research Initiative (LRI)



LRI Research Fields (JCIA)

## Product Quality Assurance Activities

Sumitomo Chemical has set conduct guidelines that guarantee product safety and quality as well as prompt, reliable product delivery, and made these specific objectives and priorities known to all business divisions and all employees through the issuance of the Company's "Corporate Policy on Product Quality, Safety and the Environment."

As part of the responsibilities of top management, the Company established the Responsible Care Committee, which systematically undertakes various activities.

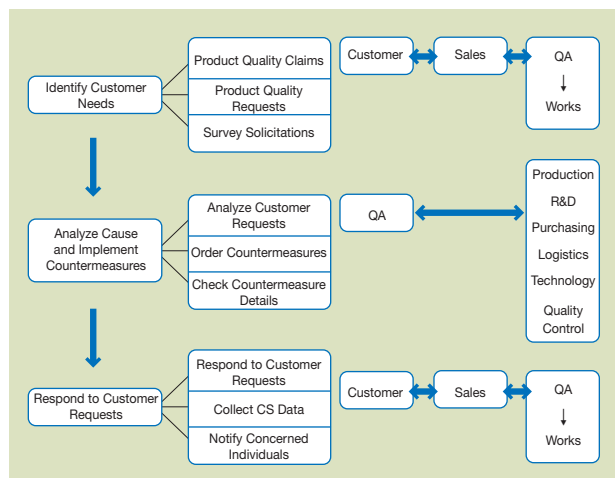
### Measures to Promote Customer Satisfaction

Sumitomo Chemicals has received ISO 9002 certification for international product quality assurance at all five of its works

and conducts quality control in accordance with this system. Consequently, the Company has seen a steady decline in customer complaints year after year. Sumitomo Chemical is making great efforts to further increase customer satisfaction and reduce the incidences of customer complaints.

With the aim of further improving customer satisfaction, Sumitomo Chemical has switched from a paper-based to an electronic system to process customer complaints and requests more quickly and effectively. As a result, the Company has been able to incorporate more fully customers' feedback in its quality assurance activities.

### Customer Quality Information Flowchart



Notes: 1. CS data refers to data indicating customers' level of satisfaction with the Company.  
2. QA: Works Quality Assurance Division

### Product Quality Audits by Customers

In fiscal 2001, Sumitomo Chemical underwent 50 audits by its customers. The Company received passing marks for product quality management and assurance, and was given awards by some of its customers.

### Product Safety Measures

Ensuring the safety of the products provided to our customers is one of the Company's top priorities; Sumitomo Chemical recognizes that in terms of its responsibility to society, the operation of a sound business is vitally important.

Even before the introduction of the Product Liability Law, Sumitomo Chemical, recognizing the importance of product safety activities, worked to promote the systematic implementation of measures to ensure product safety during every phase of the product life cycle, including development, production, and sales.

The Company places special importance on the implementation of the following measures.

- The drafting of Company regulations that ensure systematic implementation of product safety activities
- Education that communicates the importance of product safety activities and how to carry out such activities
- Providing customers with product manuals, warning labels, and MSDSs to ensure the safe handling of products
- Risk assessments and reduction measures for new products that take into consideration the impact on human health and the environment
- Quality controls sufficient to ensure safety
- Participation in the industry's product safety activities

### Safety in Logistics Operations

Under the motto "Putting Safety First and Foremost," the Logistics Division has devised Division Policies for Responsible Care Activities and Product Quality Control. The division as a whole, including concerned logistics companies, is engaged in activities related to safety and the environment as well as quality control. Specific measures implemented by the division are as follows.

1. Safety Measures during Transport
  - Devised transportation safety rules and standards to be implemented in close cooperation with shipping companies
  - Thoroughly inform shipping companies on relevant laws and regulations using a database of laws and regulations
  - The Sumika Logistics Council strives to share know-how among shipping companies and improve management.
2. Preparing Emergency Procedures for Responding to Accidents
  - Established a widespread regional rescue system between works
  - Implementing emergency drills with shipping companies
  - Making sure that Yellow Cards (instruction cards for emergency response) are being carried by personnel as required
3. Environmental Safety Considerations for Transportation
  - Increase the percentage of shipments made in bulk/large vessels
  - Promoting a modal-shift to railways and ocean shipping
  - Exhaust gas inspections to monitor environmental measures being implemented by logistics companies, and consciousness-raising activities
4. Improving Controls on Logistics Quality
  - Promoting the acquisition of ISO 9001 certification

Sumika Logistics (West) Co., Ltd., acquired ISO 9001 certification in June 2001, and Sumika Logistics (East) Co., Ltd. in June 2002.

Sumitomo Chemical is developing logistics systems for reduced environmental impact through efficiently sharing shipping resources with other companies and the use of flexible containers, standardization of pallets, and recycling of other packaging materials.

### Information System for Environment-Related Laws and Regulations

Sumitomo Chemical has established a system to ensure that its shipping companies are complying with the laws and regulations governing the handling of chemical products. The system automatically notifies the shipping companies of all pertinent laws and ordinances by printing them on invoices, shipping orders, bills of clearance, and other receipts.

### The Sumika Logistics Council

The Sumika Logistics Council is comprised of the 32 Japanese shipping companies with which Sumitomo Chemical conducts the most business. The council maintains a nationwide network, with regional meetings convened in eight regions. Various activities aimed at ensuring logistics-related health and safety considerations, environmental safety, and the quality of logistics are being promoted jointly by all the council's corporate members, who are striving to share know-how and improve management.



## Audit Results

In fiscal 2001, the Company conducted audits at five works (including some laboratories within the works compounds), one laboratory, four business divisions, and 18 facilities of its domestic and overseas Group affiliates. Audits of our domestic Group affiliates (35 companies) were conducted during a three-year period, between fiscal 1999 and fiscal 2001.

### Past Three Years' Responsible Care Audit Results

Facilities	Fiscal 1999	Fiscal 2000	Fiscal 2001
Works*1	5	4	5
Laboratories	0	2	1
Business Divisions	4	4	4
Group Companies (Japan)	5	22	16
Group Companies (Overseas)	0	0	2
Group Companies (Overseas)	0	1*2	1*2

\*1 Including laboratories within works compounds

\*2 Pre-operation safety inspections

### Responsible Care Audit Results

Having now completed its seventh round of Responsible Care audits, Sumitomo Chemical is pleased to report that there are increasingly fewer areas for improvement being pointed out and many more mentions of the excellent initiatives being undertaken.

### Fiscal 2001 Environment, Health & Safety Audits

Facilities	Good	Needs Improvement	Needs to be Examined
5 Works, 1 Laboratory	235	103	93
4 Business Divisions	45	20	6

It has been a relatively short time since the introduction of Responsible Care measures at Group companies, and the Sumitomo Chemical Responsible Care audits showed that a portion of these companies and plants were still in the system-creation phase.

On the other hand, some companies and plants are making the shift to worldwide standards, having obtained ISO 9002 and ISO 14001 certification and GMP compliance. Consequently, in terms of the progress being made by Group affiliates, a substantial gap can be seen among the companies. In the future, the companies and facilities that were slow to introduce the Responsible Care system are expected to realize rapid progress, as a result of their own efforts and with Sumitomo Chemical's support. The questionnaire results below suggest that improvements are being realized.

### Responsible Care Self-Audits by Group Companies

Survey Year	Lowest Score	Highest Score	Average
Fiscal 1999-2000	1.5	4.0	2.9
Fiscal 2001	2.2	4.4	3.4

## Pilot Inspections

By evaluating objectively the contents of corporate Responsible Care activities and their results, the JRCC attempts to raise the quality of Responsible Care activities. The JRCC launched the Responsible Care Inspection System to publicize the details of corporate Responsible Care activities with the aim of improving their credibility. With the launch of this system, the JRCC undertook pilot inspections of companies' actual Responsible Care activities.

In June 2001, Sumitomo Chemical underwent inspections in three areas: management system, environmental protection, and process safety and disaster prevention.



## Contributing to Responsible Care Activities in the Chemical Industry

As a member of the global chemical industry, Sumitomo Chemical is actively undertaking Responsible Care activities and contributing to the advancement of Japan's chemical industry through the JCIA and numerous other chemical industry-affiliated associations and groups.

Sumitomo Chemical is also engaged in research on chemical product safety through such international forums as the ICCA and the OECD.

## Communicating with Society

Sumitomo Chemical actively promotes the advancement of local communities through offering social action programs, working closely with members of these communities, and making efforts to increase communication.

### Participating in Malaria Prevention Offensive

Sumitomo Chemical has decided to take part in the “Roll Back Malaria Campaign” being promoted by the World Health Organization (WHO). This program aims to reduce the number of people afflicted with malaria 50% by 2010. Each year, 300 million people are infected and one million people die from malaria. The Company plans to supply *Olyset* mosquito nets, which contain a Sumitomo Chemical insect repellent.



An *Olyset* mosquito net is displayed during a World Bank exchange program.

### Working Closely with Local Communities

Sumitomo Chemical's works conduct their operations upholding the belief that the Company's mission is to develop along with the local communities. In this spirit, Sumitomo Chemical undertakes a variety of activities as a member of the local communities in which it operates.

### Direct Communication with Local Residents

At the Chiba Works, prior to temporary halts in production for periodic inspections, explanatory meetings are held for residents' association board members and other representatives of the community. The Company takes such opportunities to explain the environmental activities being undertaken by the Chiba Works and Sumitomo Chemical as a whole.

### Works Tours

Sumitomo Chemical offers tours of its manufacturing facilities for local residents, introduces its main products, and explains the environmental, health, and safety measures being implemented.



Works tour for a residents' association (Misawa Works)



Summer works tour for elementary school students (Ehime Works)

At the Ehime Works, every summer the Company conducts factory tours for elementary school students.

### Events Sponsorship

The Misawa Works aims to promote friendship with local residents under the slogan “Collectively and in Harmony with the Local Community; in Peaceful Coexistence with Nature.” To foster closer ties with the local community, Misawa Works hosts a variety of sports competitions, and employees participated in the planting of seedlings in Misawa City as part of an urban greenification campaign.



Little league baseball tournament (Misawa Works)



Little league soccer tournament (Oita Works)



Performance at a year-end charity show (Oita Works)

### Ichihara Young Inventors Club

The Chiba Works offers programs for elementary and junior high school students that allow them to take part in industrial arts projects and scientific experiments. These projects, aimed at fostering creativity, are offered in collaboration with the Japan Institute of Invention and Innovation and the boards of education of the cities of Ichihara and Sodegaura.



Ichihara Young Inventors Club (Chiba Works)

### PR Publications

A PR newspaper is produced by every works, with the aim of fostering communication with members of the local communities in which they operate. The Osaka Works' *Haru Hi-no-de* and Oita Works' *Tsurusaki* newspapers are published regularly, featuring articles on the facilities' operations and Responsible Care activities.



### Holding Regional Seminars on Responsible Care

Sumitomo Chemical is actively participating in the planning of Responsible Care activities promoted by the corporate members of the JRCC. Sumitomo Chemical holds explanatory meetings for local communities, where information is exchanged with relevant regulatory authorities, schools, and municipalities, to further their understanding regarding the Company's activities and to communicate the spirit of Responsible Care.

### Volunteer Activities

Each manufacturing facility conducts a variety of volunteer activities, such as cleaning the roads around the works. Each year, the Oita Works sponsors the "Oita International Wheelchair Marathon" and customarily cleans the roads around the Works that serve as part of the course.



Volunteer activity (Oita Works)

### Sumitomo Chemical Home Page

The Company has set up a website (<http://www.sumitomo-chem.co.jp>) introducing Sumitomo Chemical's business operations and Responsible Care activities. With the aim of fueling young people's interest in chemistry, as well as their hopes and dreams, a special feature entitled "Junior Chemistry Dream World" is presented on the home page.



Junior Chemistry Dream World home page (Japanese only)  
(<http://www.sumitomo-chem.co.jp/junior/>)

## Awards

### Fiscal 2001 Awards

- May 23 JCIA's "Recognition of a Zero Accidents Facility"  
(Ehime Works, Oita Works, Misawa Works, Tsukuba Research Laboratory, Takarazuka Research Laboratory, Environmental Health Science Laboratory)
- May 23 JCIA's Safety Commendation Award for Efforts  
(Misawa Works)
- May 29 Japan Phosphatic & Compound Fertilizers Manufacturer Association's Occupational Safety Award for 2000  
(Sumika Agrotech Co., Ltd., Ehime Fertilizer Works)
- Sept. 4 Osaka Governor's Award  
(Excellent company for employment of the disabled)
- Oct. 1 Health, Labor and Welfare Minister's Award Outstanding Excellence Award (Ehime Works, in recognition of its superior ability to create a comfortable workplace)
- Oct. 1 Osaka Labor Standards Agency Director's Recognition of Efforts Award (Osaka Works)
- Oct. 3 Health, Labor and Welfare Minister's Award Occupational Hygiene Promotion Award (Ehime Works, Environment and Safety Division, Mr. Shigeyuki Usui)
- Oct. 17 Fiscal 2001 Green Cross Award (Industrial Safety Related)  
(Responsible Care Office, Mr. Isao Hirata)

### Awards for Overseas Group Companies

- Dongwoo Fine-Chemi Co., Ltd., of Korea received an award from the Korea Industrial Safety Association recognizing the achievement of zero accidents, after the company met its target for the fifth time on August 11, marking a total of 1,710 consecutive days without any accidents.
- Petrochemical Corporation of Singapore Pte Ltd. (PCS) received an award for Responsible Care Management from the Singapore Chemical Industry Council. PCS won the Gold Prize in the category of pollution prevention activities.



A representative of PCS receives Gold Prize for pollution prevention activities.

## Sustainable Chemistry

The ideas of “sustainable chemistry” and “green chemistry” have become familiar throughout the world. These terms refer not only to lower consumption of energy and resources, but also to the chemical technologies that reduce or eliminate the output and use of raw materials, chemical products, and/or by-products that are harmful to the environment and human health.

Sumitomo Chemical has vigorously engaged in introducing sustainable chemistry into its operations. The Company has undertaken the development of energy-efficient and resource-saving processes to control CO<sub>2</sub> emissions and other materials that contribute to global warming. At the same time, the Company is actively working to develop low-environmental-impact processes to continuously lessen environmental impact on air and water.

### Low Environmental Impact Process Development

Sumitomo Chemical has actively developed manufacturing processes that have a low environmental impact not only by cleaning and recovering emissions, but also by manufacturing without releasing hazardous material.

#### ■ Revolutionary New Process for Propylene Oxide Production

Using high-performance catalysts developed in-house, Sumitomo Chemical has developed a compact process to manufacture propylene oxide that generates no styrene monomers, conserves energy and resources, and has strong market potential.

#### ■ Gas-Phase Technology for Caprolactam Production

Using proprietary catalysts, Sumitomo Chemical has developed a new production process for caprolactam. Unlike conventional processes, this new technology produces caprolactam without generating ammonium sulfate as a by-product, by combining new processes from Sumitomo Chemical and the Italian petrochemical company EniChem. Thus, it helps conserve energy and resources and is environment-friendly.

#### ■ Oxidation Technology for Hydrochloric Acid

Sumitomo Chemical’s oxidation technology for hydrochloric acid, created using catalysts developed in-house, is highly efficient.

By employing this technology, it is possible to recover the chlorine from hydrochloric acid generated as a by-product in manufacturing processes for such products as isocyanate vinyl chloride monomer, epichlorohydrin, and others in which chlorine is one of the raw materials. Thus, this technology is expected to facilitate chlorine recycling and substantially reduce environmental impact.

#### ■ New Process for Methionine

This new process has a low burden on the environment by using a technology that prevents the accumulation of impurities during recycling and controls crystalline forms produced by reactive crystallization accompanying gas absorption.

#### ■ Direct Oxidation Process for Methyl Methacrylate (MMA)

Monomer, the Raw Material for Methacrylic Resin  
A manufacturing process that conserves resources and generates fewer by-products

#### ■ Hydroperoxide Process for Resorcinol, an Adhesive for Rubber

A manufacturing process that conserves resources and produces fewer waste materials

#### ■ Water-Based Solvent Process for Household Insecticides

A process that does not use organic solvents

#### ■ Geometrical Isomer Control Technology, Asymmetrical Polymer Process

A manufacturing process that allows for efficiency in the production of plant growth regulators

#### ■ New Process for Fatty Acid Methyl Ester

A new manufacturing process for fatty acid methyl ester that uses methanol in a supercritical state

#### ■ Technology for the High-Density Cultivation of Nitrifying Bacteria



Pilot facility for testing technology for high-density cultivation of nitrifying bacteria

Sumitomo Chemical has developed a technology to achieve high-density cultivation of nitrifying bacteria, for a stable and effective biological nitrification treatment for wastewater. Further tests are being conducted with an eye toward practical application of a technology that allows for the simultaneous treatment of wastewater that contains ammonia and organic effluent.

Sumitomo Chemical has already yielded significant results by applying this process to the manufacture of active ingredients for household insecticides.

### Energy-Saving Processes and Products

Sumitomo Chemical has developed many manufacturing processes over the years. The Company has excellent processes for manufacturing isobutylene, gas-phase polypropylene, and gas-phase linear low-density polyethylene, all of which improve energy and resource consumption and contribute to reduced CO<sub>2</sub> emissions. In addition, the Company has been working to develop a bioreactor that enables the replacement of traditional chemical reactions requiring higher temperatures and pressures. Sumitomo Chemical has already yielded significant results by



Gas-phase polypropylene manufacturing facility

applying this process to the manufacture of active ingredients for household insecticides.

#### ■ Isobutylene Manufacturing Technology

#### ■ Gas-Phase Polypropylene Manufacturing Technology

#### ■ Gas-Phase Linear Low-Density Polyethylene Manufacturing Technology

#### ■ Bioreactors

### Lightweight Materials Contribute to Reductions in Exhaust Gas

The conversion to lightweight materials in the automobile industry has led to improved fuel consumption and reduced emissions of CO<sub>2</sub>, NO<sub>x</sub>, and SO<sub>x</sub>. Making full use of the Company’s comprehensive technological capabilities, Sumitomo Chemical is



Automobile-related parts

undertaking the development of high-performance plastics such as polymer alloys as well as carbon fiber, alumina fiber, fiber-reinforced composite materials, and other lightweight materials.

## Water Purification and Water Protection Products

### Water Treatment Agents

#### ■ *Sumifloc* Organic Polymer Flocculant

*Sumifloc* is widely used as a flocculant sedimentation treatment for many types of wastewater.

#### ■ Aluminum Sulfate Inorganic Flocculant

This product is used to purify water supplies and treat sewage and wastewater from factories.

#### ■ *Sumix* Inorganic Flocculant

*Sumix* aluminum polychloride has superior flocculation capabilities that make it particularly effective in purifying water at temperatures at or under 5°C, very hard water, highly turbid water, and alkaline water.

#### ■ Sodium Aluminate Inorganic Flocculant

Sodium aluminate is an auxiliary precipitate water treatment that, when combined with aluminum sulfate, increases water purification capability.

#### ■ *Duolite* Ion-Exchange Resins

*Duolite ES-371 N* ion-exchange resin has been widely acclaimed for its effectiveness with respect to the removal of boron from water at large-scale effluent treatment facilities.



Agents for water purification

### Dyestuffs

#### ■ *Sumifix HF* New Environment-Friendly Dye Series

*Sumifix HF*, a new reactive dye series with high fixation, was developed to achieve a high color yield with minimum dyeing auxiliaries, thus reducing the amount of colored water and inorganic salts in effluent from dyeing factories.

#### ■ *Sumifix WF* Reactive Dyes for Wool

Acid-mordant dyes and metal-complex acid dyes, which contain heavy metals harmful to the environment and people's health, have traditionally been used for wool dyeing. Sumitomo Chemical developed *Sumifix WF*, a new reactive dye series that is heavy-metal-free, yet suitable for wool dyeing.



Environment-friendly dyes

## Agricultural and Greenification Products

### ■ Agricultural and Household Pesticides

Agricultural chemicals and fertilizers are essential for growing crops and cultivating and protecting forests. For example, the Food and Agricultural Organization (FAO) confirmed the safety and effectiveness of the Company's insecticide *Sumithion* when it was used against a plague of desert locusts that hit Africa in 1998. In addition, the World Health Organization (WHO) has also confirmed that *Sumithion* is a safe and effective means of exterminating malaria-carrying mosquitoes.

In addition to the development of agricultural pesticides, the Company has recently been considering a new pest-control method known as Integrated Pest-control Management (IPM), which uses various natural insect predators and other biological pest-control agents to reduce the amount and frequency of pesticide use.

Sumitomo Chemical is focusing on the development of various new products that will be suitable for IPM use.

#### ■ *Oristar-A* Biological Pest Control

Sumitomo Chemical has been cultivating a natural insect predator, *Orius sauteri*, to control the population density of thrips, a persistent insect pest that feeds on fruit, vegetables, and flowering plants. However, this method is rather ineffective during late autumn and early spring, when *Orius sauteri* are reproductively dormant. To overcome this difficulty, the Company has singled out strains of *Orius strigicollis* that are least likely to become reproductively dormant and is marketing them as *Oristar-A*.

#### ■ *Florbac DF*—A New Pesticide for Gardening Use

*Florbac* is a Bt (*Bacillus thuringiensis*) formulation that makes use of the insecticidal activity of Bt—a naturally occurring soil bacterium—but is highly safe for use in the proximity of humans and other mammals, fish, and birds. Bt formulations are widely accepted as insecticides that can be used in organic farming and

find extensive application in vegetable farming as basic insecticidal formulations for eradicating harmful insects.

#### ■ *Lano Tape* New Chemical Pesticide Formulation

*Lano*, an insect growth hormone, is the active ingredient in Sumitomo Chemical's pest-control tape. Developed as a special pesticide formulation technology to control whiteflies, *Lano Tape* saves labor, is effective for long periods of time, and can contribute to IPM.

#### ■ Coated Seeds<sup>1</sup>

Coated seeds are good for use in automated sowing, offering increased efficiency in large farms. The use of coated tree seeds is a possible means of preventing the desertification of rain forest areas.

#### ■ Coated Fertilizers: *SR Coat*, *Super SR Coat*

The use of coated fertilizers—fertilizers coated with resin—increases efficiency and reduces the burden on the environment because such fertilizers need be applied less frequently and in lower quantities than conventional fertilizers.

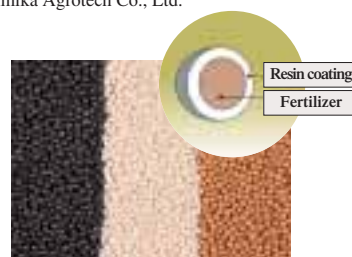
#### ■ *Sumidrip*, *Sumisansui*<sup>1</sup> Irrigation System Products

The Company's products for use in irrigation systems—including *Sumidrip*, an irrigation hose, and *Sumisansui*, a sprinkler—are used to greenify dry land.

<sup>1</sup> Marketed by the Company's subsidiary Sumika Agrotech Co., Ltd.



*Lano Tape*



Environment-friendly coated fertilizers



## Recycling-Related Products

### ■ *Katawork*<sup>2</sup> Polypropylene Panel

A polypropylene panel for molding concrete that acts as a substitute for commonly used plywood from the South Pacific, *Katawork* is excellent for use in construction and economical. *Katawork* is an environmentally sound product that can be recycled.

■ *Sumitomo TPE* Polyolefinic Thermoplastic Elastomer  
*Sumitomo TPE* polyolefinic thermoplastic elastomer, a polyolefinic specialty resin, is currently experiencing a rapid increase in demand from such industries as automotive manufacturers for vehicle interior parts.

Demand is expected to expand in other areas, as this plastic is recyclable and easy to dispose of by incineration.

■ *Klinate*<sup>1</sup>, *Klinalpha*<sup>1</sup> Polyolefin Agricultural Films  
*Klinate* and *Klinalpha* are special polyolefin films for agricultural use. After use, they can serve as fuel material or easily be recycled to make resins.

■ *Sumitomo Press Mold (SPM)* Technology  
*SPM* technology, a skin material and core resin lamination molding system, is attracting attention in Japan and overseas because it synthesizes recyclable plastic that is lightweight, solvent-free, and environment-friendly.

■ Plastic Compatibilizer *IGETABOND*  
*IGETABOND* has made a significant contribution to the manufacture of a wide range of polymer alloys. In addition, it is being promoted as a compatibilizer for the recycling of PET (polyethylene terephthalate) bottles and polyethylene bottle caps.

### ■ Paint-Removal Technology

Sumitomo Chemical has developed paint-removal technology that is considered a key process in the recycling of used car bumpers.

■ *Sumipex Extra* MMA Resin  
Sumitomo Chemical's technology has enabled MMA (methyl methacrylate) resin, known for its high luster and weatherability, to be used for large-scale blow and foam molding. It is expected that *Sumipex Extra*'s range of applications will expand as a result of its recyclability.

■ *Sumirez Resin* Paper-Strengthening Finishing Resin  
Paper recycling is increasing as pulp and paper companies make efforts to reduce the use of forestry resources. *Sumirez Resin*, which increases the strength of recycled paper, has a wide range of applications. In addition, the SPI series offers formalin-free paper-coating chemicals that improve printing quality and contribute to the production of safer materials for use in paper products.



*Katawork* polypropylene molding panels contribute to environmental conservation.



*IGETABOND* facilitates the recycling of PET bottles.

<sup>2</sup> Marketed by the Company's subsidiary Sumika Plastech Co., Ltd.

## Home and Office Products

■ *Suiaru-Power*<sup>3</sup> Dioxin-Absorbent Film  
Sumitomo Chemical has developed *Suiaru-Power* dioxin-absorbent film, a new complex resin film that absorbs heavy metals and such poisonous gases as the dioxins produced at garbage incineration facilities.

Garbage bags made from the film have been approved by local government bodies. In addition, the development of other product applications, such as kitchen-use water drainage garbage bags<sup>4</sup> and functional papers<sup>5</sup>, is under way.

■ *Sevix* Gas Barrier Film  
This gas barrier film effectively shuts out oxygen and is widely used for wrapping and preserving food. *Sevix* has won wide acclaim because it emits no chlorine gas during the disposal process.

■ *Sumikaflex* Ecological Wallpaper Binding Agent  
Demand has emerged for water-based paint compounds that are easy on the environment and comparable in quality to the best products currently available. Sumitomo Chemical is meeting this demand with *Sumikaflex*, an ethylene emulsion wallpaper binder.

■ *Sumibox-Patacon*<sup>2</sup> Foldable Box  
The *Sumibox-Patacon* is one in a lineup of light, foldable boxes made from polypropylene. It has a broad range of uses, including separating and collecting items in the home or office.

### ■ *Suply* Polypropylene Double-Wall Sheet and *Sumipanel*<sup>2</sup> Thick Hollow Panel

Polypropylene sheets and panels are lighter in weight and have more resistance to water and weather than wood- and paper-based products; they also enable the recycling of resins and contribute to forestry resource protection. Demand for these products has been increasing.

■ *Sumithermal*<sup>2</sup> Floor-Heating System  
The *Sumithermal* system stores the surplus electricity made available by reduced demand at night and releases it during the day to power a floor-heating system, smoothing out the peaks in the daily demand for electrical power.

The residential heating system *Sumithermal LUNAKIT* was developed jointly with the Kansai Electric Power Co., Inc.

<sup>2</sup> Marketed by the Company's subsidiary Sumika Plastech Co., Ltd.

<sup>3</sup> Marketed by NIHON GREENPACKS Co., Ltd.

<sup>4</sup> Marketed by Hakugen Co., Ltd.

<sup>5</sup> Marketed by The Pack Corporation



Dioxin-absorbent film used in garbage bags



The *Sumibox-Patacon*, useful for the separate collection of recyclable items

■ *Esprene VH-SPO* Synthetic Rubber with Enhanced Workability

With low hardness and excellent workability, this environment-friendly synthetic rubber can even be made into hoses and tubes, which are difficult to produce with conventional synthetic rubber.

■ *Excellen FX* Environment-Friendly, High-Capability Plastomer  
Sumitomo Chemical's proprietary technologies have enabled the production of *Excellen FX*, an innovative, high-quality metalocene polyolefin plastomer with excellent characteristics. Compared with conventional olefin resins, *Excellen FX* has superior flexibility and strength, is environment-friendly, and has a broad range of applications in a variety of fields.

■ *Sumikasuper*, *Sumikaexcel* Super Engineering Plastics  
*Sumikasuper*, an aromatic polyester, and *Sumikaexcel*, a polyether sulfone, have self-extinguishing properties enabling them to serve as flame retardants without halogen additives, which can release dioxins. These products are used widely in the electronics and electrical industries, which require the highest level (UL Standard V-O) fire retardant available.

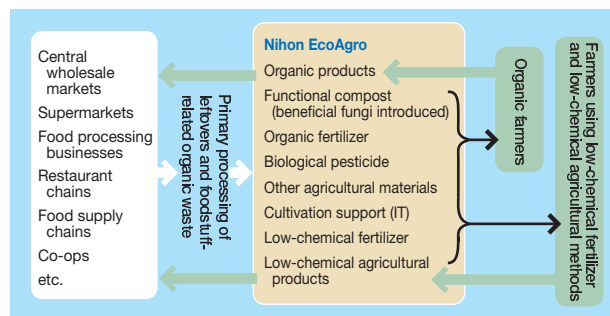


Super engineering plastics

## Supporting Environment-Friendly Agriculture

Sumitomo Chemical established Nihon EcoAgro Company, Ltd., in April 2001. This new company acquires raw materials—for the purpose of producing highly functional compost and organic fertilizers—through contracts with such companies and organizations as central wholesale markets, food processing companies, supermarkets, restaurant chains, and consumer cooperative organizations, which must daily dispose of large amounts of leftover food and foodstuff-related organic waste. By adding growth-promoting fungi to organic waste-based compost, Nihon EcoAgro makes compost that is supplied to farmers throughout Japan to promote organic farming. Such farmers have a strong desire to find new routes for selling their products, while supermarkets and restaurant chains are seeking suppliers who can assure ample and stable supplies of high-quality products grown organically or in conditions that use a lesser amount of chemical fertilizers and pesticides. In this way, Nihon EcoAgro acts as a go-between for agricultural producers and their customers.

### Outline of Nihon EcoAgro's Business Activities



Harvesting greenhouse oranges



Sumitomo Chemical is expanding operations on a global scale. The Company intends to promote Responsible Care at the international level, while complying with the environmental standards of each country.

Sumitomo Chemical's energy-saving, resource-conserving process technologies are making significant contributions at overseas plants. For example, the Company's direct oxidation process for MMA monomer production and gas-phase technology for polypropylene manufacturing are being used in petroleum, acrylic acid, and MMA operations in Singapore, as well as in polypropylene operations in North America.

At an agrochemical products manufacturing plant in India, established in April 2000, Sumitomo Chemical undertook a safety inspection in accordance with a safety management checklist. Operations began only after the safety of the plant had been confirmed. Furthermore, accompanying the completion of the plant's expansion in February 2002, another safety inspection was implemented prior to commencing operations.



Safety inspections being conducted in India (SC Enviro Agro India Pvt. Ltd.)



A petrochemical operation in Singapore (PCS)



A polypropylene operation in North America (Phillips Sumika Polypropylene Co.)

Independent Review Report on the *Environment, Health & Safety Report 2002*

Independent Review Report on the "Environment, Health & Safety Report 2002  
Responsible Care Activities of Sumitomo Chemical Company, Limited "

To the Board of Directors of Sumitomo Chemical Company, Limited

1. Purpose and Scope of our Review

We have reviewed the "Environment, Health & Safety Report 2002 Responsible Care Activities of Sumitomo Chemical Company, Limited" (the "EHS Report") of Sumitomo Chemical Company, Limited (the "Company") for the year ended March 31, 2002. The review consisted of performing certain procedures as described below in relation to the collection, compilation and calculation of the information included in the EHS Report. As this is the second year of our review, any indicators for years prior to the year ended March 31, 2001 were not subject to these procedures.

Our work does not constitute an audit or examination. We therefore do not express an opinion on the accuracy or completeness of the indicators or data bases used to compile the information or the representations made by the Company in the EHS Report.

2. Procedures Performed

We have performed the following review procedures agreed to by the Company's management;

- ① Obtained the responsible care (the "RC") information supporting the RC performance indicators and the environmental accounting indicators for the purpose of understanding the processes and the procedures of the Company for collecting the data information used to compile the EHS Report.
- ② With respect to the RC performance indicators and the environmental accounting indicators in the EHS Report, tested mathematical accuracy of the indicators on a sample basis and compared them on a sample basis with the supporting data compiled from the information collected by the Company.
- ③ With respect to the descriptive information in the EHS Report other than the indicators referred to in the above procedures, interviewed the Company's responsible personnel, made on-site inspections of a factory and a subsidiary, and compared such descriptive information with the data collected by the Company or the data found in certain published materials.

3. Results of the Procedures Performed

As a result of the procedures performed;

- ① We are not aware of any material modifications that should be made to the RC performance indicators, or the environmental accounting indicators in the EHS Report in order for them to comply with the Company's policies and procedures for gathering and reporting such information.
- ② We are not aware of any material modifications that should be made to the descriptive information other than the indicators in the EHS Report to be consistent with the information the Company collected and other information we obtained.

*Asahi & Co.*  
Asahi & Co.

Osaka, Japan  
July 31, 2002

Asahi & Co., acting in co-operation with member firms of KPMG International

## Reactions to the *Environment, Health & Safety Report 2001*

The *Environment, Health & Safety Report 2001*, issued in August 2001, was distributed to our clients, shareholders and investors, local residents, local governing bodies, affiliated companies, schools, and other stakeholders. As of March 31, 2002, we issued 4,500 copies in Japanese and 1,200 copies in English. This report also appears on the Sumitomo Chemical home page (<http://www.sumitomo-chem.co.jp/>).

### Questionnaire Results

We would like to share some of the responses to last year's questionnaire regarding the *Environment, Health & Safety Report 2001*.

- Concise and easy to understand
- Well summarized and communicates with enthusiasm the environmental preservation measures being taken
- Well-balanced layout of text, photos, graphs, and easy to understand
- It is unclear whether the appeal is being made visually or through text, and therefore it misses the mark
- Well done, but I had to read it several times to understand the contents
- Has a ways to go before reaching the level of environmental reports of leading overseas companies

We have tried to incorporate respondents' feedback in the preparation of this year's report. Among the comments received, much interest was expressed regarding "Responsible Care Management" and "Environment-Friendly Products and Processes." Regarding the Responsible Care data, the majority of respondents cited as most interesting the sections on "Energy-Saving Initiatives" and the "Voluntary Environmental Action Plan."

### Submission for the Environmental Report Grand Prize

We have submitted our environmental report with the hopes of winning the fifth Environmental Report Grand Prize, sponsored by the Global Environmental Forum and the National Association for the Promotion of Environmental Conservation. The main features and strengths of the Company's *Environment, Health & Safety Report 2001* as well as its evaluation are explained below.

### ● The Features and Strengths of Our Environmental Report and Action Plan

Sumitomo Chemical issued its *Environment, Health & Safety Report 2001* using the Ministry of the Environment's guidelines and incorporating environmental accounting. To ensure the credibility and transparency of the contents of this report, we have undergone inspections by an external organization. The Company, as a global citizen, has made Responsible Care activities an important management priority. In accordance with our "Corporate Policy on Product Quality, Safety and the Environment," we devised Sumitomo Chemical's Policy for Responsible Care Activities and Voluntary Environment Action Plan, and are promoting activities that emphasize a responsibility to the environment, health, and safety. We have set concrete numerical targets for energy conservation and the reduction of industrial waste, and are developing and/or improving energy-saving processes. In this report, the Company introduced initiatives in manufacturing process development designed to reduce the burden on the environment. Sumitomo Chemical's five manufacturing plants have all acquired ISO 14001 certification and are striving to improve the PDCA cycle.

### ● Evaluation

The Company's Responsible Care system and activities are explained in great detail. The explanation of the Company's views on sustainable chemistry and the Responsible Care considerations made at every stage—from development to product disposal—are interesting. However, the explanation of environmental impact performance does not provide sufficient enough data and does not adequately address the variable factors. Furthermore, there is no LCA analysis regarding the burden the Company's activities place on the environment. Also, more needs to be said about risk communication relating to chemical substances.

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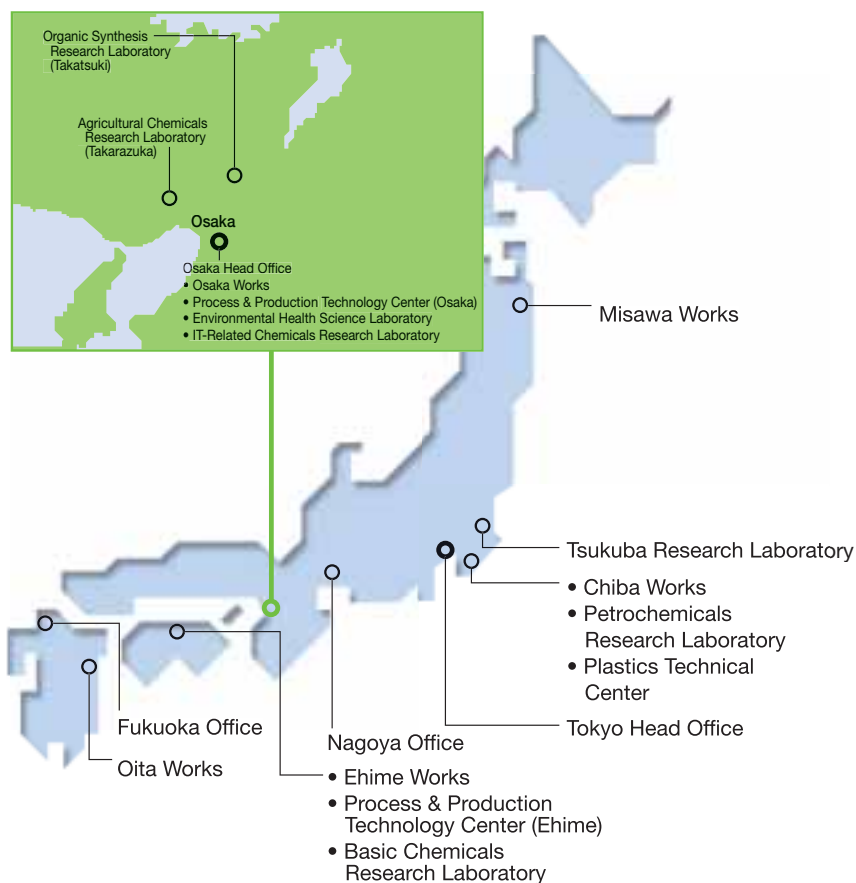
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Responsible Care

Sumitomo Chemical Company, Limited, as a "Responsible Care" Company, voluntarily implements policies that give consideration to safety, health and the environment, from chemical product development to disposal. The Responsible Care mark may only be used by those companies that are members of the Japan Responsible Care Council.

Published: December 2002

0212-IB-3000

This report has been printed in Japan on 100% recycled paper using environment-friendly soybean-oil ink.



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