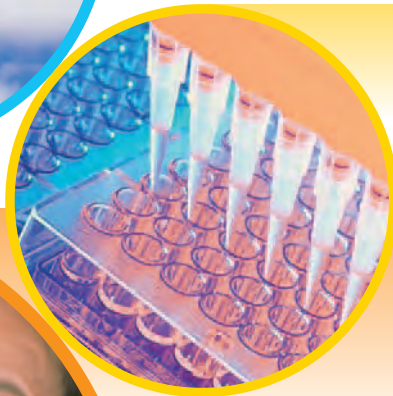


Kyowa Hakko Group Health, Safety, and the Environment/ Sustainability Report



2003



KYOWA

BIO-INNO

This name expresses the mission of the Kyowa Hakko Group, which is to maximize its corporate value through the creation of new value and growth in its four business areas, centering on pharmaceuticals and bio-products. These activities are based on application of life sciences and biotechnology even in the areas of chemicals and food.

Editorial Policy

The Kyowa Hakko Group's Health, Safety, and the Environment/Sustainability Report 2003 primarily outlines the performance during fiscal 2002 (April 2002–March 2003) of Kyowa Hakko Kogyo Co., Ltd., Kyowa Yuka Co., Ltd., Kyowa Medex Co., Ltd. and the Group's domestic consolidated production bases listed on Page 2. To reinforce the credibility of this year's report, the views of third parties have been included.

This report was produced according to the Environmental Reporting Guidelines of the Ministry of the Environment and Responsible Care codes. It is also based on the Sustainability Reporting Guidelines of the Global Reporting Initiative (GRI). In addition, the report covers aspects of our corporate social responsibility (CSR), including corporate ethics, social and community communications, voluntary initiatives by employees, and the usefulness of product technology.

Additionally, the report examines the environmental impact of each operation of the Kyowa Hakko Group from a Life Cycle Assessment (LCA) perspective, based on life cycles, material balances and environmental accounting data. It also describes approaches to the reduction of emissions.

To maintain continuity with previous reports, information about the three companies responsible for overseas production has been excluded from the domestic emission data. Information about these companies is included in this report as a separate item.

Areas and Period Covered by Report

The environmental impact data and other information included in this report refer to all production, research, and sales sites in Japan, as listed on Page 2, and to the three overseas production companies. The report does not include fiscal 2002 data for the liquor business, which was transferred to Asahi Breweries, Ltd. in September 2002.

The report covers fiscal 2002 (April 2002–March 2003) in relation to domestic operations, and calendar 2002 (January–December 2002) in relation to overseas operations. Some information, such as results, also refer to fiscal 2003 and calendar 2003. The information in this report has been simplified. More detailed data are available in the Internet version, which can be found at <http://www.kyowa.co.jp>.

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I see the first decade of the 21st century as a time when society is making serious efforts to meet the challenges of global environmental problems. Economic development in the 20th century was driven by mass-production and mass-consumption. The 21st century has inherited the negative legacy of that period as after-effects in the form of global environmental problems, including global warming caused by carbon dioxide and CFCs, and environmental contamination caused by non-degradable chemical residues. As a member of 21st-century society, any company must fulfill its social responsibilities by working to achieve sustainability.

The Kyowa Hakko Group has a corporate philosophy of contributing to the health and well-being of people worldwide through the creation of new value. It is fulfilling this commitment through wide-ranging activities in its core area of pharmaceuticals, and in the fields of bio-chemicals, food and chemicals. As one facet of management reforms, Kyowa Hakko plans to make a transition from its current in-house company system to a holding company system, centered on pharmaceuticals and bio-chemicals operations, by April 2005. In addition, in July 2003, we formed an advisory committee, which includes four outside advisors, to incorporate outside opinions into management process. In this way, we obtain advice from external, well-informed persons, with the aim of raising the strength of the management organization and further increasing management transparency and soundness. Starting with the 2002 edition, the Kyowa Hakko Group has decided to include information about the social aspects of its activities, in addition to descriptions of the efforts of the Kyowa Hakko Group to improve environmental and safety performance, in its *Health, Safety, and the Environment/Sustainability Report*.

In addition, the reports will clearly identify the environmental impact of production activities for the Group's various business operations. Kyowa Hakko is working through its Kyowa Eco-Project activities to reduce emissions of greenhouse gases and waste disposal at landfill sites to zero. The Kyowa Hakko Group is determined to fulfill its social responsibilities by setting common goals for these efforts, and by disclosing achievement ratios. We are striving to establish systems and make improvements in relation to the social aspects of our business activities.

I will conclude by describing the Kyowa Hakko Group's future approach to environmental matters.

We must begin every task by establishing a firm place on which to stand. As far as environmental protection is concerned, we have made major progress toward the reduction of waste disposal at landfill sites and adverse chemical substance emissions. The next focus will be on air pollution substances, such as SOx. We are determined to achieve our reduction targets through the implementation of our fuel conversion plan. Reform is an ongoing imperative for a business corporation, and all workers in the Kyowa Hakko Group will strive to realize our vision for the Kyowa Hakko Group through continued efforts to meet the expectations of our customers and society.

I look forward to your continuing guidance and support.

October 2003

A handwritten signature in black ink that reads "Yuzuru Matsuda". The signature is fluid and cursive.

Dr. Yuzuru Matsuda
President and Chief Operating Officer
Kyowa Hakko Kogyo Co., Ltd.

The Kyowa Hakko Group's Business Activities

Company Profile (On a consolidated basis)

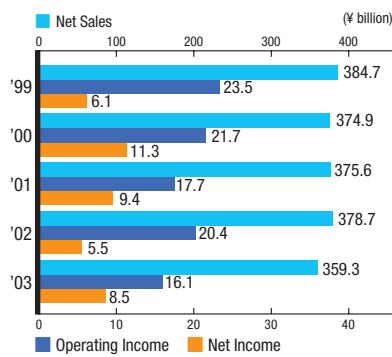
Corporate Name Kyowa Hakko Kogyo Co., Ltd.
Established July 1, 1949
Paid-in Capital ¥26,745 million
 (At March 31, 2003)
Representatives Chairman: Dr. Tadashi Hirata
 President: Dr. Yuzuru Matsuda
Home City 1-6-1 Ohtemachi, Chiyoda-ku,
 Tokyo 100-8185, Japan
 TEL: 81-3-3282-0007

Description

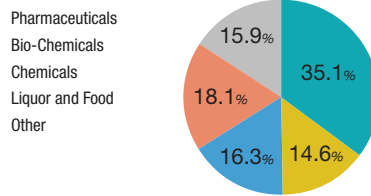
- Manufacture and sale of pharmaceuticals
- Manufacture and sale of amino acids and products for livestock farming and fisheries
- Manufacture and sale of chemicals
- Manufacture and sale of foods
- Manufacture and sale of alcohol, including alcohol for use in liquor production

Net Sales and Net Income

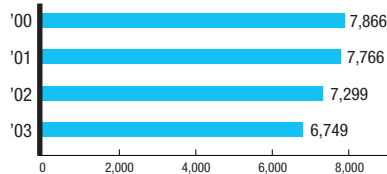
(Years ended March 31)



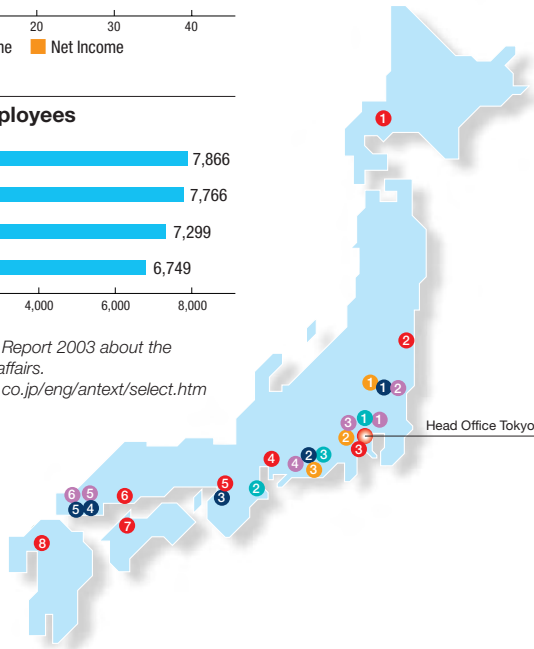
Fiscal 2002 Net Sales by Segment



Number of Employees



* Please see Annual Report 2003 about the details of financial affairs.
<http://www.kyowa.co.jp/eng/antext/select.htm>



Bases

Corporate Name
Plants•Kyowa Hakko
① Tsuchiura
② Fuji
③ Sakai
④ Hofu
⑤ Ube
Principal Consolidated Production Bases
① Kyowa Yuka Co., Ltd. (Chiba)
② Kyowa Yuka Co., Ltd. (Yokkaichi)
③ Kyowa Medex Co., Ltd. (Fuji)
Other Consolidated Production Bases
① Ohland Foods Co., Ltd. (Chiba)
② Ohland Foods Co., Ltd. (Tsuchiura)
③ Riken Kagaku Co., Ltd. (Itabashi)
④ Asahi Foods Products Co., Ltd. (Shizuoka)
⑤ Kyowa F.D. Foods Co., Ltd. (Hofu)
⑥ Kyowa Hifoods Co., Ltd. (Ube)
Research Establishments
① Tsukuba Research Laboratories
② Tokyo Research Laboratories
③ Pharmaceutical Research Institute
Head Office and Sales Bases
① Sapporo
② Tohoku
③ Tokyo
④ Nagoya
⑤ Osaka
⑥ Chugoku
⑦ Shikoku
⑧ Kyushu
Pharmaceutical Representative Offices
● 56 Nationwide
Overseas Production Bases
① BioKyowa Inc.
② Fermentaciones Mexicanas, S.A. de C.V. (FERMEX) (It ceased production at the end of July 2003.)
③ Agroferm Hungarian-Japanese Fermentation Industry Ltd. (AGROFERM)
Overseas R&D Bases
① Kyowa Pharmaceutical, Inc.
② Kyowa Hakko U.K. Ltd.
③ BioWa Inc.
Principal Overseas Sales Bases
① Kyowa Hakko U.S.A., Inc.
② Kyowa Hakko Europe GmbH
③ Kyowa Hakko U.K. Ltd.
④ Kyowa Italiana Farmaceutici S.r.l.
⑤ Kyowa Hakko (H.K.) Co., Ltd.
⑥ Kyowa Hakko Industry (Singapore) Pte. Ltd.
⑦ Kyowa Hakko (Thailand) Ltd.
⑧ Kyowa Hakko (Malaysia) Sdn. Bhd.
⑨ Kyowa Hakko Pharmaceutical (H.K.) Co., Ltd.

Summary of Report

In addition to the information provided in its previous reports, the Kyowa Hakko Group has sought to describe its corporate activities from a new perspective in the *Health, Safety, and the Environment/Sustainability Report 2003*. The main areas in which the content has been expanded are disclosure of information about the activities of the entire Kyowa Hakko Group, an emphasis on the social performance of business activities, the environment and safety as core management concerns, action plans and their achievement, and the assessment of business characteristics in relation to environmental impact.

The Social Performance of Business Activities

Kyowa Hakko's Management Guidelines call for the clarification of its basic stance, and for an increased emphasis on the social performance of business activities.

- The Kyowa Hakko Group has made customer satisfaction the pivotal focus of its business activities.
- The Kyowa Hakko Group is working to enhance its information services in the area of pharmaceutical products.
- The Kyowa Hakko Group actively communicates with society and works with society to advance science.
- The Kyowa Hakko Group places a high importance on corporate ethics and the individuality of its highly motivated employees.
- The Kyowa Hakko Group's safety record is among the best of any manufacturer of organic chemical products.



P15

Environmental and Safety Activities Focus on Targets Based on Six Guidelines in the Guidelines for Action.

Reinforcement of Management Systems

- The President of Kyowa Hakko will lead environmental and safety management efforts from a corporate governance perspective.
- As part of efforts to improve the social performance of corporate activities, Kyowa Hakko is functioning by itself for enhanced guidance to the three principal companies*1 and other Kyowa Hakko Group members.
- The Kyowa Hakko Group has commenced activities targeted toward management integration in the area of environmental and safety activities.



P08

Continuing Performance Improvement

Environmental Consideration throughout Product Life Cycles

- The Kyowa Hakko Group is working to identify the environmental impact imposed by the activities of the Pharmaceuticals Company, Bio-Chemicals Company, Chemicals Company, and Food Company, and to ensure appropriate consideration for the environment and responses to future issues.



P10

Assessment

- The Kyowa Hakko Group has introduced risk-based environmental and safety assessment at each research and production intersection and is working to consolidate this approach.
- The Kyowa Hakko Group is expanding its green procurement of raw materials and bulk pharmaceuticals and aims to ensure that environmental impact and safety are fully considered in its supply processes.



P23

Product and Technology Development

- The Kyowa Hakko Group is actively developing environment-friendly products, new technology that responds to social needs, and technology to ensure food safety and quality.



P24

Product Safety and Effectiveness

- The Kyowa Hakko Group supports evidence-based medicine (EBM) to ensure that its pharmaceutical products are effective. It has introduced on-line information distribution.



P15

Energy-saving activities

Total energy consumption has been reduced by 5%. This is equivalent to 17,000 kiloliters of crude oil, or ¥450 million in value terms.



P29

CO₂ emissions

Emissions have increased by 0.5% compared with the 1990 level. The year-on-year decrease was a marginal 0.2%, since increased energy consumption resulting from production growth was offset by fuel conversion.



P30

Air pollutants

SO_x emissions increased by 4% year-on-year, indicating that problems still remain. The Kyowa Hakko Group will implement countermeasures for these issues.



P31

Prevention of water contamination

Nitrogen emissions have been reduced by 30% and phosphorus emissions by 31% from the previous year's levels, thanks to suppressed outputs and improved removal ratios.



P31

Zero emission activities

Final disposal at landfills amounted to 1,408 tons, a reduction of 28% from the previous year's level. The Hofu Plant and Fuji Plant have both attained zero emission status.



P32

Management of chemical substances

Emissions of the 12 adverse air pollutants have been reduced by 49% year-on-year. Restrictions on the use of chemical substances are being tightened.



P36

Third-Party Assessment

To ensure a high standard of transparency, experts from academia and non-governmental organizations have been invited to participate from the beginning of the preparation of this report.



P40

*1 Kyowa Hakko Kogyo Co., Ltd., Kyowa Yuka Co., Ltd., and Kyowa Medex Co., Ltd.

Corporate Philosophy

Kyowa Hakko will contribute to the health and well-being of people worldwide by creating new value in the pursuit of advancements in life sciences and technology. (Amended in 1999)

Management Guidelines for Social Responsibility

Kyowa Hakko has drafted seven management guidelines (effective March 1999) based on its Corporate Philosophy that bear on operations; its relationships with customers, shareholders, and employees as well as society; its corporate ethics; and the environment and safety. These policies are partially outlined in various sections, including our Social Performance Report (pp. 14–27).

Management Guidelines for Safety and the Environment

“Work to protect the environment and maintain safety and also provide products with consideration of the environment and safety.” (Introduced in March 1999)

Basic Policy on Health, Safety, the Environment, and Product Safety

Kyowa Hakko’s policy formulated at its establishment is to “contribute to the health and well-being of people worldwide by creating new value with the pursuit of advancements of life science and technology.” Based on this policy, we will exert ourselves to realize an affluent society by conducting business activities with scientific consideration for health, safety, the environment, and product safety throughout the whole life cycles of our products, from research and development through production, marketing, use, and disposal, as well as by making efforts to ensure the quality and safety of our products, taking the safety of consumers as a matter of the greatest importance.

Guidelines for Action

As our first rule, we should strictly control ourselves with profound respect for all living things and with modesty toward science, prove ourselves worthy of public confidence, and contribute to the growth of a healthy and affluent society. Therefore, we should advance our business activities under the following principles, with the protection of human beings and the environment, as well as the safety of consumers, as our first consideration.

- 1) Along with the establishment of the basic policies and control systems for health, safety, the environment, and product safety as our highest principles in the management of Kyowa Hakko, we strive to enhance our employees’ consciousness of health, safety, the environment, and product safety by making these principles generally known to them and to advance our activities under these principles from a global standpoint.
- 2) We observe international regulations, as well as domestic laws, rules, regulations, and agreements relevant to health, safety, the environment, and product safety, in cooperation with relevant foreign and domestic agencies and organizations and make efforts to raise our level of control over these principles by observing our self-imposed control standards and utilizing auditing systems.
- 3) Together with our efforts to ensure the safety of our business activities and to reduce negative impact on the environment, we strive to ensure the quality of health, safety, the environment, and product safety throughout the whole life cycles of our products by engaging in overseeing the purchase of raw materials; the production, transportation, and sale of products; and the use and disposal of products by our consumers.
- 4) We carry out assessments of health, safety, the environment, and product safety prior to the development of new technologies and products, the transfer of technologies, and the start of novel businesses. These assessments enable us to ensure our products meet the highest standards with respect to such technologies throughout the whole life cycles of such products commencing in the planning stage.
- 5) We contribute to health, safety, the environment, and product safety on a global scale by working actively toward the development of “earth-friendly” technologies and products as well as toward the development of energy-conservation and resource-conservation technologies.
- 6) We concentrate our efforts on research and development to keep abreast of scientific progress, and we strive to strictly assure the usefulness and safety of our products.

See overleaf

(Introduced in January 1996)

Declaration of the Basic Policies for Health, Safety, the Environment, and Product Safety

We declare that, in accordance with the “Basic Policies for Health, Safety, the Environment, and Product Safety,” we will carry out Responsible Care (RC)* activities extensively to preserve health, safety, and the environment as well as step up quality assurance to ensure the safety of consumers in our daily business activities.

*Responsible Care (RC) is a set of self-management principles according to which business operators engaged in the manufacture or handling of chemical substances make a commitment to following stringent management guidelines. These guidelines are aimed at preserving the environment and ensuring safety at all stages of chemical substance life cycles, from development and manufacturing to distribution, use, final consumption, and disposal. RC also calls for the implementation of measures to make improvements in areas related to health, safety, and the environment based on the principle of individual responsibility.



Responsible Care
(Introduced in April 1996)

Environment and Safety Profile

Action Plans and Performance

The table below lists action plans and targets based on six guidelines for action relating to the environment, safety, and product safety (Page 5), together with outcomes and assessments for fiscal 2002. Progress on CO₂ emissions fell slightly short of the target of 100.5% of the 1990 level. However, a small year-on-year reduction of 0.2% was achieved, despite increased energy consumption resulting from higher production of chemicals and other items. This reflects a rise in the use of natural gas as a percentage of total energy consumption. In the table, '⊙' indicates that a target has been achieved, and '○' that there was improvement even though a target was not met.

Guideline for Action	Initiative		Target	
Guideline for Action 1) Expand the application of environmental management systems	• Establishment of ISO 14001 environmental management system	Three principal companies	Certification acquired by all 8 plants	
		Consolidated subsidiaries	Establishment of ISO 14001 system by fiscal 2004	
	• Integration of ISO 14001 and Occupational Safety and Health Management System (OSHMS)	Three principal companies	Establishment of integrated management system by 2003	
Guideline for Action 2) Continuously improve performance	• Audits of consolidated and non-consolidated subsidiaries		Engage in audits of 85% of Group companies annually	
		[Production and R&D]		
		• Kyowa Eco-Project (KEP) → P 29	Unit energy consumption	Reduction of unit energy consumption by 1% or more per annum
			CO ₂ emissions	Reduction of CO ₂ emissions to fiscal 1990 levels or lower by fiscal 2010
	Volume of waste materials		50% reduction in fiscal 2004 from fiscal 1998 levels	
	Volume of waste disposal at landfill sites		Achievement of zero emissions by 2007 Target: 250 tons	
	• Emissions of adverse air pollutants		97% reduction in fiscal 2004 from fiscal 1996 levels	
	• Atmosphere	SO _x emissions	2,595 tons*3	
		NO _x emissions	803 tons*3	
		Dust emissions	342 tons*3	
	• Water quality	Fresh water usage volume	—	
		COD levels	1,530 tons*4	
		Nitrogen levels	1,521 tons*4	
		Phosphorous levels	86 tons*4	
	• Disasters, accidents		Record no labor/work or environment- or safety-related accidents	
• Distribution environment and safety		Rationalization of distribution, assurance of environmental and safety in distribution		
• System for environment-related information		Dedicated use for reduction of environmental impact		
[Administration]				
• Green Office Plan (GOP) → P 29		Reduction of at least 1% per annum in power consumption		
		Reduction of at least 5% per annum in copy paper use		
		Promotion of green purchasing		
Guideline for Action 3) Consider the environment throughout the entire product life cycle	• LCA/Material balance		Transparency in material balance at each in-house company	
	• Green procurement (GP) → P 29		Implementation of environmental consideration inquiries at business partner companies	
	• Packaging materials		Establish Guidelines for Environment-supportive Packaging Materials	
Guideline for Action 4) Upgrade environmental and safety assessments	• Thorough environmental, safety and product safety assessments		Thorough environmental and safety assessment, risk management	
Guideline for Action 5) Develop new products and technologies	• Environment-conscious technology and product development		Realization of development of technologies, products	
Guideline for Action 6) Provide safe and useful products	• Assurance of consumer safety and product user-friendliness		Enhanced disclosure of product information Comprehensive product information and disclosure	

*1 Index based on production value that compares unit emissions with domestic average as follows:

- CO₂, Air-pollution, waste index = [Total emissions by the Kyowa Hakkō Group / Total emissions in Japan] / [Total production value by the Kyowa Hakkō Group / Japan's net domestic product]
- CO₂ emissions: Carbon dioxide emissions in fiscal 2000 (*White Paper on the Environment in Japan, 2003*)
- SO_x, NO_x, dust emissions volume: Emissions in fiscal 1999, based on survey of fixed sources affecting the atmospheric environment (*White Paper on the Environment in Japan, 2003*)
- Waste emissions volume, landfill volume: Industrial waste volume, treatment status in fiscal 2000 (January 24, 2003, report from the Ministry of the Environment)
- Net domestic product: Statistical data (Economic and Social Research Institute, Cabinet Office, Government of Japan)
- Water pollution index = [Total emissions by the Kyowa Hakkō Group / Total emissions into closed bodies of water] / [Total production value of Kyowa Hakkō Group / Net domestic product of prefectures surrounding closed bodies of water]

Since fiscal 2001, the Kyowa Hakko Group has used an indicator calculated by comparing environmental emissions per unit based on the value of production with national averages for Japan. The purpose of this approach is to clarify future reduction goals. An indicator value of 1.0 is equivalent to emissions based on the national average production value standard.

The Kyowa Hakko Group regards the improvement of energy efficiency and air and water quality as important priorities and will continue to implement these various activities.

Fiscal 2002 Performance (Status of Progress)			Evaluation*2	Page	Medium-Term Target, New Target	
8 plants certified			◎	8	Implementation of environmental activities assessment	
System under development			○	8	Maintain same target	
Environment and safety management systems developed, activities based on risk management initiated			◎	8	Introduction and implementation of environmental and safety management system	
Engaged in audits of 95% of companies, began audits of overseas companies			◎	9	Implementation of safety and environmental activities assessments in 2004	
	Index 2001	Index 2002*1				
5.0% improvement from fiscal 2001 levels		—	—	◎	29	Average reduction in unit energy consumption of 1% or higher
709,000 tons, 0.5% accession from fiscal 1990 levels		0.88	1.0	×	30	Achieve fiscal 2010 CO ₂ emissions on par with fiscal 1990 levels
194,000 tons, 39% reduction from fiscal 1998 levels		0.75	0.85	◎	32, 33	Implementation of point-of-release measures
1,408 tons, 28% reduction from the previous year's levels		0.057	0.056	◎		Achievement of zero emissions by fiscal 2007 Target: 500 tons in 2004, 250 tons in 2007
9.5 tons, 97.7% reduction from fiscal 1996 levels		—	—	◎	36	97% reduction by fiscal 2004 from 1996 levels
1,228 tons, 4% accession from the previous year's levels		2.6	3.5	◎	31	Formulation of medium-range plan targeted toward radical reduction, continuing reduction efforts
655 tons, 7% accession from the previous year's levels		1.0	1.4	◎		Improve maintenance of facilities, ongoing reductions
29 tons, 27% accession from the previous year's levels		0.60	0.68	◎		Improve maintenance of facilities, ongoing reductions
54.80 million tons, 9% reduction from the previous year's levels		3.3	3.7	◎	31	Ongoing rationalization of water use
1,064 tons, 14% reduction from the previous year's levels		2.9	3.0	◎	31	Source solutions
564 tons, 30% reduction from the previous year's levels		2.2	1.8	◎		Source solutions
23.1 tons, 31% reduction from the previous year's levels		1.2	1.0	◎		Source solutions
Recorded no labor/work accidents with absence at 3 principal companies, 1 accident at consolidated subsidiaries, and no environment or safety-related accidents		—	—	○	22	No labor/work accidents, no environmental or safety related-companies, accidents
Reduced fuel usage at 3% by rationalizing distribution Energy-saving benefits of chemical transportation by Eco-tanker verified		—	—	◎	30, 38	Rationalization of distribution, ensure environmental safety in distribution
Reduction activities based on sharing of energy and waste information		—	—	◎	29	Dedicated use as a means of reducing environmental impact
1.3% reduction from the previous year's levels				◎	29	1% reduction in electricity use per year
7.7% reduction from the previous year's levels				◎		5% reduction in copy paper use per year
Green purchasing of 70% of copy paper and office supplies				◎		Promotion of green purchasing
Evaluations carried out in cooperation with government research institute, disclosed in this report				◎	10, 11	Ongoing business assessments through LCA/material balance assessments
Thorough environmental management assessment at business partner companies Reinforcement of chemical management policy				○	29	Improve environment-related activities with business partners Preferential use of environment-supportive raw materials
Resource savings of 30 tons/year through elimination of exterior packaging for pharmaceuticals				◎	33	Continuance of activities (thorough guidelines, promotion of streamlined packaging)
Risk management rules reviewed, thorough environment and safety risk assessments, responses to soil contamination risks				◎	23, 38	Thorough risk management
Development of wastewater treatment and energy conservation technology, development of world's first mycotoxin analysis technology, cooperation with government on Bovine Spongiform Encephalopathies analysis equipment				◎	24~27 30, 31	Development of environmental business outside of Company
Commencement of major post-launch clinical trial of antihypertensive drug, provision of information about correct use of pharmaceuticals, cooperation in OECD/HPV (chemicals safety) initiatives				◎	15, 16, 23	Continuance of activities

COD, nitrogen, phosphorous: Volume occurring in fiscal 2000 in regions targeted by water regulations (Fiscal 2002 Environmental Statistics Book, edited by the Ministry of the Environment)
Net domestic product of prefectures surrounding closed bodies of water: Fiscal 1999 Prefectural Economic Accounts (Economic and Social Research Institute, Cabinet Office, Government of Japan)

• Fresh water usage volume index = [Kyowa Hakko Group's total usage volume / Japan's total usage volume] / [Kyowa Hakko Group's total production value / Japan's net domestic product]
Fresh water usage volume: Fiscal 1999 domestic non-commercial water + industrial water fresh water replacement volume
(Data: Water Resources Department, Ministry of Land, Infrastructure and Transport)

*2 Evaluation ◎: Achieved target, ○: Improved, but did not achieve target, ×: Target not reached

*3 The target is 50% below the legally required level

*4 The target is 50% below the agreed-upon level

Environmental and Safety Management System and Organization

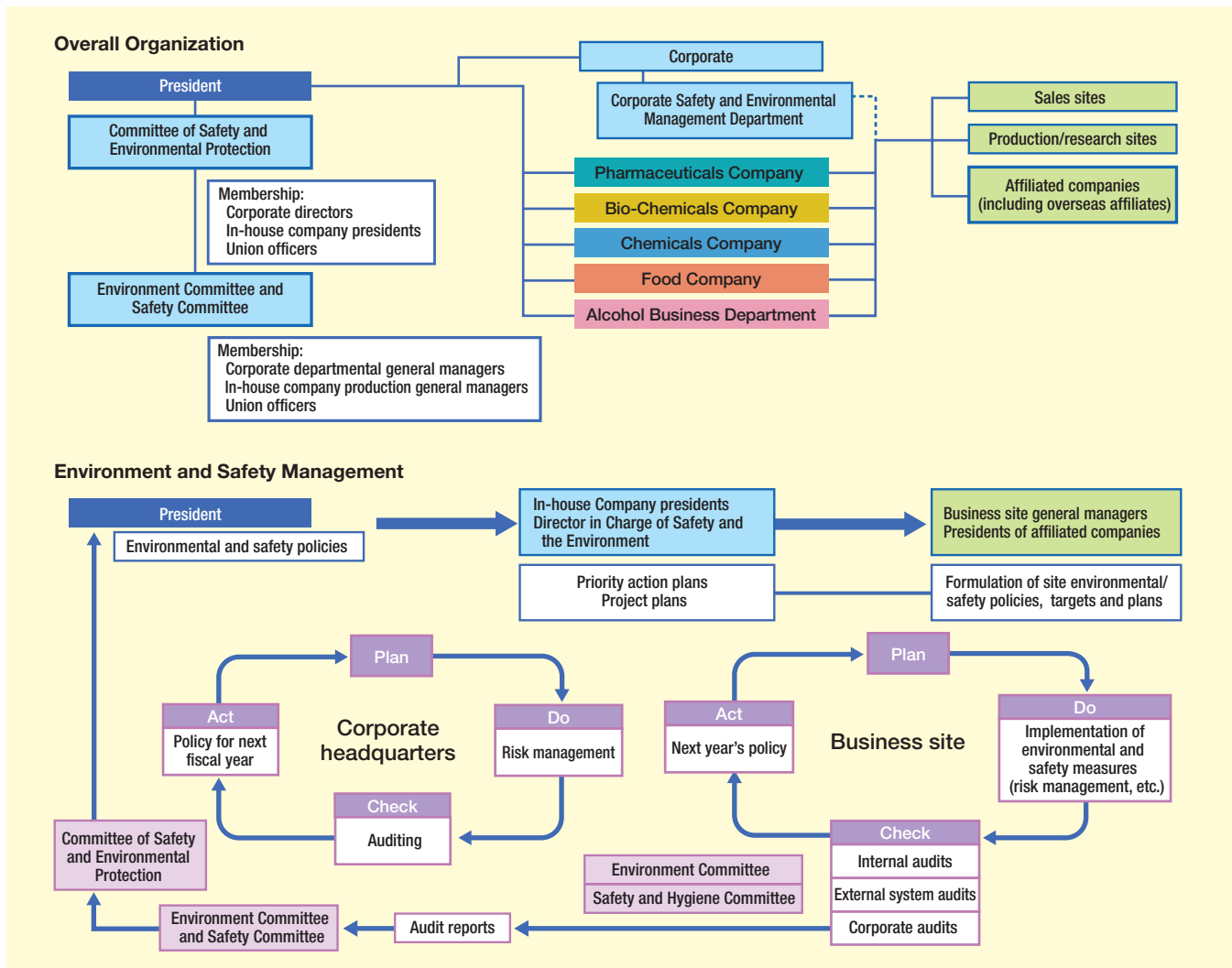
The Kyowa Hakko Group has developed an ISO management system under environmental and safety policies established by the president and senior management. Environmental and safety activities are continually being improved through repetitions of the plan-do-check-act (PDCA) cycle.

- All eight plants operated by Kyowa Hakko Kogyo Co., Ltd., Kyowa Yuka Co., Ltd., and Kyowa Medex Co., Ltd. have been accredited under the ISO 14001 certification. Affiliates*1 are currently establishing systems with a view to implementation in 2004.
- There were four complaints in fiscal 2002, down from 13 in the previous year. The aim is to reduce the number of complaints to zero.

The Kyowa Hakko Group is continuously working to achieve improvements in environmental protection, health, safety, security, accident prevention, and product safety. It has integrated ISO 14001 systems with Occupational Safety and Health Management Systems (OSHMS) to create environmental and safety management systems. Activities under these systems are based on risk management.

Environmental and safety policies established by top management provide the framework for policies, environmental and

safety targets and plans established and implemented by business site managers and presidents of affiliates. Outcomes are audited by the General Manager in charge of the environmental and safety of each in-house company, and by the General Manager of the Corporate Safety and Environmental Management Department. The results are systematically corrected and reflected in environment and safety policies for the next fiscal year.



*1 Consolidated and non-consolidated subsidiaries are referred to collectively as "affiliates."

Projects of the Kyowa Hakko Group

Activity	Kyowa Eco-Project (KEP)	Green Office Plan (GOP)	Green Procurement (GP)
Content	<ul style="list-style-type: none"> Promotion of energy and resource conservation Pursuit of zero emissions Improvement of environmental efficiency 	<ul style="list-style-type: none"> Consideration for the environment in administrative operations: power saving, green purchasing, and use of recycled copy paper 	<ul style="list-style-type: none"> Preferential use of environment-supportive raw materials, etc.
Target	<ul style="list-style-type: none"> Improvement of unit energy consumption by at least 1% per annum Achievement of zero emissions by 2007 Effective use of environmental expenditure 	<ul style="list-style-type: none"> Reduction of copy paper use by at least 5% per annum Reduction of power use by at least 1% per annum 	<ul style="list-style-type: none"> Preferential use of environment-supportive raw materials

Outcomes are shown on Page 29.

Environmental and Safety Auditing

Environmental and safety auditing for the Kyowa Hakko Group is carried out by Kyowa Hakko head office. In addition to these internal audits, there are also system audits under the ISO 14001 standard by an external organization, as well as internal audits conducted at individual business sites.

Environmental and Safety Audits by Kyowa Hakko Group Head Office

Scope of audits	<ul style="list-style-type: none"> All Kyowa Hakko Group business sites 15 consolidated and non-consolidated subsidiaries
Head office audit items	<ul style="list-style-type: none"> Management systems Policies, fiscal year policies, project progress Management of site facilities
Audit personnel	<ul style="list-style-type: none"> Environmental and safety executives, qualified ISO inspectors, corporate and company environmental and safety officers, union representatives
Frequency of audit	<ul style="list-style-type: none"> Business sites of three main Kyowa Hakko Group companies: annually Consolidated and non-consolidated subsidiaries: once or twice every two years Overseas subsidiaries: once every three years

In fiscal 2002, audits were carried out at all sites and 95% of affiliates. The main aspects covered were as follows.

Environmental Audit Results

- Review of energy sources
- Reinforcements of waste countermeasures with a view to achieving zero emissions
- Improved management of wastewater treatment
- Promotion of environmental consideration based on local conditions
- Thorough risk management for joint-use wastewater treatment facilities
- Reinforcement of management systems

Safety Audit Results

- Reinforcement of safety countermeasures for confined spaces work operations
- Reinforcement of safety management for chemicals and hazardous substances
- Reinforcement of traffic safety policy management
- Clarification of safety responsibilities during construction
- Promotion of facility safety based on comprehensive machinery safety standards
- Improvement of creation and revision procedures for standard operating procedures (SOPs)



An article in *Kyowa People*, the in-house magazine of the Kyowa Hakko Group, concerning Green Office Plan activities at sales bases

Complaints

In fiscal 2002, the Kyowa Hakko Group received a total of four complaints (13 in fiscal 2001), of which two were about noise, one about odors and one about another matter. These complaints indicate that the Group is causing inconvenience to those living near its plants. Prompt action was taken in response to each of the complaints, and steps were taken to prevent recurrences. The Kyowa Hakko Group is making further efforts to prevent problems with the aim of reducing complaints to zero.

Details of Complaints

Noise	<ul style="list-style-type: none"> Noise caused by regulator fault (Fuji) Noise from air compressors (Tsuchiura)
Odor	<ul style="list-style-type: none"> Odor from production site (Sakai)
Other	<ul style="list-style-type: none"> Black smoke from incinerator (Fuji)

Safety and Environmental Education

To protect the environment, ensure safety and health, and prevent accidents, the Kyowa Hakko Group has established Safety and Environmental Education and Training Standards as a framework for systematic environmental and safety education activities. Programs include management training, education for on-site managers, education for new and transferred employees, skill improvement education, accident prevention education, education for on-site suppliers and contractors, and ISO 14001 education.

Content of Environmental and Safety Education

Educational Classification	Participants	Environment		Safety and Security		Chemical substances	
		Content	Method	Content	Method	Content	Method
Management education (including head office education)	Managers	Corporate and site management policies concerning the environment and safety, RC implementation plans, annual environmental and safety policies					A
		Corporate management and environmental protection	A,C	Corporate management and safety and health	A,C	General management of chemical substances	A
		Current information	A,C	Obligation to ensure safety	A	Current information	A,C
Site leaders education	Chiefs	Corporate and site management policies concerning the environment and safety, RC implementation plans					A
		Related laws (environmental)	A,C	Related laws (including 4 security laws)	A,C	Related laws (chemical substances)	A
		Environmental assessment methods	A,C	Safety assessment methods	A,C	Chemical substances risk management (appropriate chemical management methods)	A,C
				Foreperson education	A,C		
		Intrinsic safety education	A,C				
Employees education	Forepersons	Environmental risk of operation	B	Raising safety awareness	A,C	Hazards and toxicity of chemicals	A
		Emergency actions	A,B	Emergency actions	A,B	Emergency actions	A,B
		Raising environmental awareness	A,B	KYT methods, traffic safety	A,B	MSDS utilization methods	A,B
New or transferred employees education	New and transferred employees	Textbooks for new employees (newly compiled)	A	Scope for textbooks for new employee education	A	Same as left As for safety education	A
		Worksite environmental protection rules	B	Workplace safety and health precautions	A	Hazards and toxicity of chemicals, appropriate handling (including MSDS)	A,B
Technical education at factory	Persons who require education for operational purposes	Environmental protection technology (air, water, odors, etc.)	A,C	Special education (Industrial Safety and Health Law)	C	Fires and explosions	A,C
		Energy conservation technology	A,C	Education for gaining qualifications	C	Dust explosions, static	A,C
		Waste management, recycling technology	A,C	Maintenance education (High Pressure Gas Safety Law)	C	Electricity explosions, etc.	A,C
		Environmental auditing methods	A,C	Facility-related education (electrical, measurement, maintenance, equipment)	A,B,C		
Emergency drills	As required under site regulations	Matters stipulated in site regulations					A,B
On-site contractors education	Suppliers Affiliated companies	Education concerning precautions when entering or leaving sites, education concerning environmental and safety rules to be observed strictly on-site					A

★1 A: Corporate and company group education, B: On-site education, C: Off-site education Inclusion of two or more methods indicates that the most appropriate will be chosen.

Material Balance/Environmental Accounting by Individual Kyowa Hakko In-House Companies

The material balance/environmental accounting of the three main Kyowa Hakko Group companies are summarized here on an in-house company basis. While there has been some variation in resource efficiency statistics for each in-house company, the trends are the same as in the previous year. The figures show that all in-house companies have achieved year-on-year improvements in their unit emission levels. The addition of 460,000 tons of CO₂ emissions resulting from the production of raw materials and fuel brought the estimated total CO₂ emissions for Kyowa Hakko to approximately 1,160,000 tons.

Resource Efficiency, Unit Emissions for Kyowa Hakko In-House Companies

The resource efficiency of each in-house company is expressed in terms raw materials, fuel, packaging materials and fresh water used per unit of production quantities and production value. Trends for each in-house company were similar to those in the previous year.

The figures for the entire Kyowa Hakko Group have been affected by the transfer of the liquor business.

All in-house companies have improved their CO₂ emissions, final disposal quantities at landfills, water quality impact, and atmospheric impact. However, the atmospheric impact remains an issue.

Analyses Based on Life-Cycle Assessment

CO₂ emissions from internal and external business activities of the Kyowa Hakko Group are estimated at 1,160,000 tons. Raw-material and fuel-production CO₂ was included, using statistics from the LCA database*1. Little CO₂ is emitted during the production of the mainly agricultural raw materials used by Bio-Chemical Company and Food Company. The statistics showed low environmental impact by these two in-house companies. The lifecycle inventory data cover 75% of materials by weight. Efforts will be made to improve this ratio.

*1 LCA Experimental Open Data Base (August 4, 2003), Japan Environmental Management Association for Industry
Introduction to LCA—Environment Load of 4,000 Social Stocks (Environmental Management Association for Industry, 1998)

Resource Efficiency by In-House Company

↗ Moderate deterioration
 → About the same
 ↘ Moderate improvement
 ↓ Improvement

		Pharma-ceuticals	Bio-Chemicals	Chemicals	Food	Kyowa Hakko
Resource Efficiency*3	tons/¥100 million sales	1.9 ↗	340 ↗	1,000 ↘	240 ↘	360 ↗
	tons/tons of production	3.3 ↗	1.8 ↘	0.49 ↘	0.99 →	0.57 ↗
Fuel Efficiency*4	kℓ/¥100 million sales	19 ↗	240 ↘	350 ↘	59 →	150 ↗
	kℓ/tons of production	33 ↗	1.3 ↘	0.17 ↘	0.18 ↘	0.24 →
Packaging Materials Efficiency	tons/¥100 million sales	1.0 ↓	3.5 ↘	2.8 ↗	9.3 ↘	2.4 ↓
	tons/tons of production	1.7 ↓	0.02 ↓	0.001 →	0.04 →	0.004 ↓
Fresh Water Resource Efficiency	1,000 kℓ/¥100 million sales	4.0 ↗	120 ↘	10 ↘	16 ↗	26 ↘
	1,000 kℓ/tons of production	7,200 ↗	640 ↓	5.0 ↘	67 ↗	42 ↘

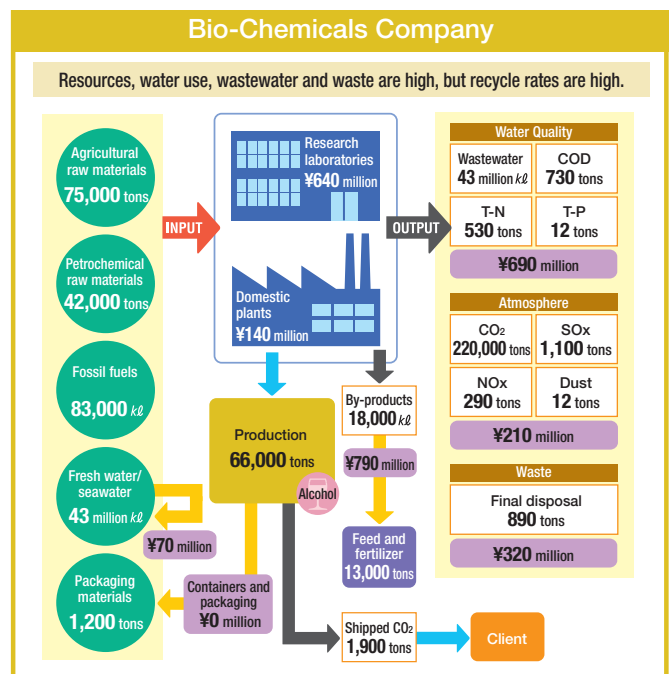
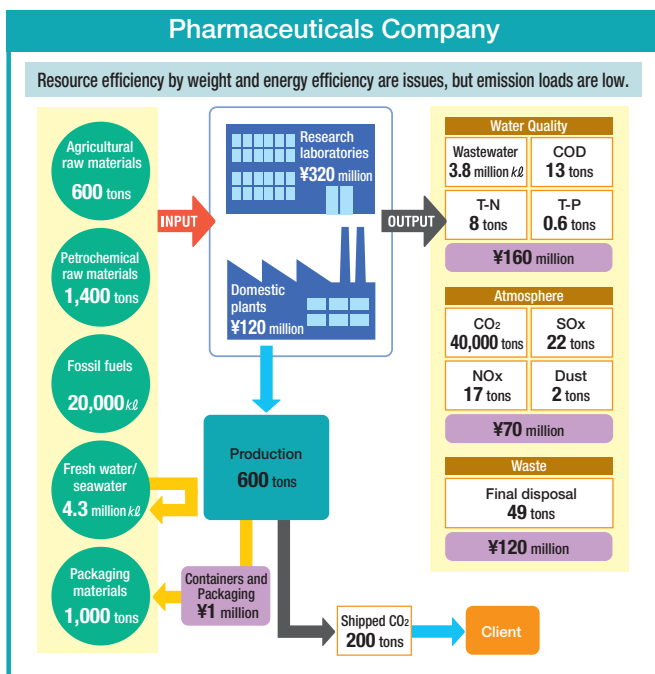
*3 Index of total usage of agricultural and petrochemical raw materials
*4 Fuel efficiency: Index uses crude oil conversion to express energy usage in kl

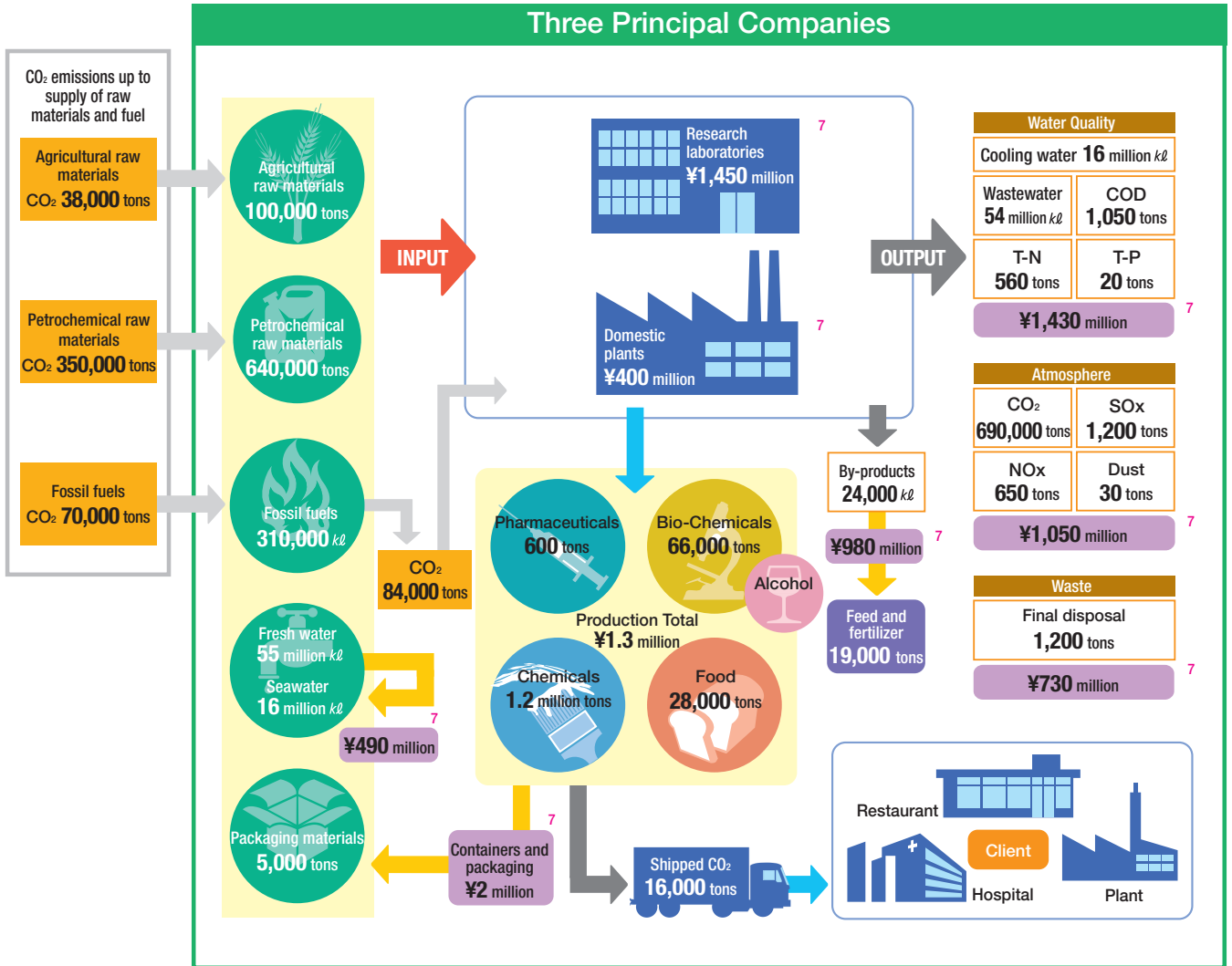
Unit Emissions by In-House Company

↗ Moderate deterioration
 → About the same
 ↘ Moderate improvement
 ↓ Improvement

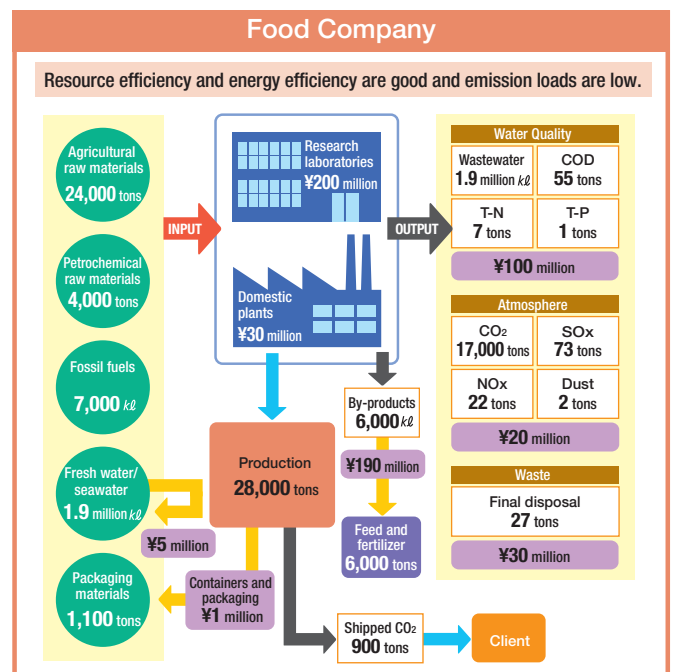
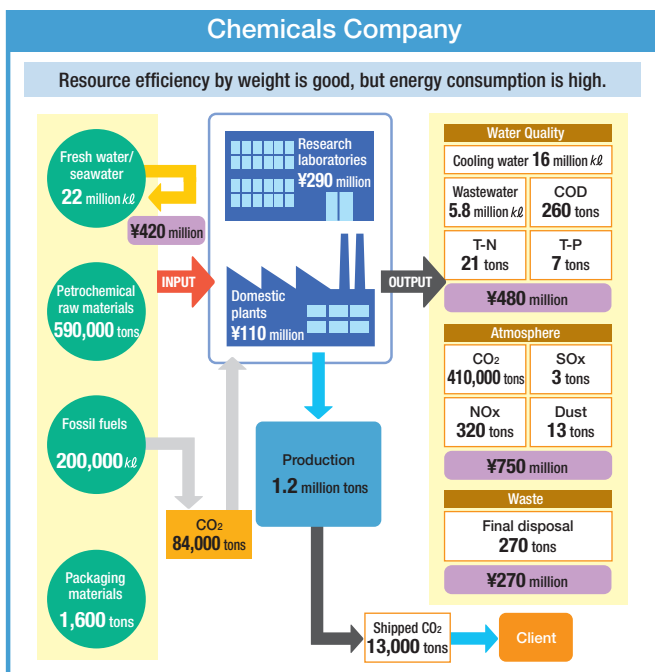
		Pharma-ceuticals	Bio-Chemicals	Chemicals	Food	Kyowa Hakko
Unit CO ₂ Emissions	tons/¥100 million sales	39 ↗	650 ↘	710 ↘	140 ↘	330 ↗
Unit Final Disposal	tons/¥100 million sales	0.047 ↓	2.6 ↓	0.47 ↓	0.23 ↓	0.60 ↘
Unit Water Pollution Emissions*5	tons/¥100 million sales	0.020 ↓	3.7 ↓	0.50 ↘	0.53 ↓	0.79 ↘
Unit Air Pollution Emissions*6	tons/¥100 million sales	0.039 ↓	4.2 →	0.59 →	0.82 ↘	0.92 ↗

*5 Index of total COD, N, and P levels
*6 Index of total SO_x, NO_x, and dust emissions





★7 The figures shown here were extracted from the environmental accounts.



Environment and Safety Profile

Environmental Accounting

Statistics for the eight plants and three research laboratories operated by the three principal Kyowa Hakko Group companies in Japan and for the five Japanese consolidated subsidiaries with production operations were compiled using the 2002 Environment Accounting Guidelines. Environmental protection costs (investment, expenses) and effects are summarized in the table. The environmental protection cost of the Pharmaceuticals Company, Bio-Chemicals Company, Chemicals Company and Food Company is shown in the graph on the right.

Investment amounted to ¥1,200 million. Projects included the upgrading of waste incinerators, the improvement of wastewater treatment facilities, and the installation or expansion of energy-efficient facilities.

Expenses totaled approximately ¥7,200 million. Operating costs for environmental protection (water and air) facilities and

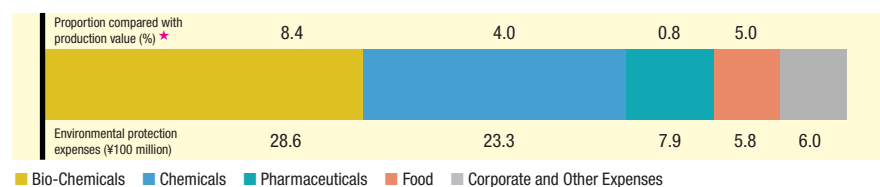
resource recycling in bulk production operations within business areas accounted for 71% and research and development costs for 20%. The remainder consisted of management activity costs. Upstream and downstream costs have been significantly reduced with the transfer of the liquor business.

Classification	Environmental Protection Costs (¥ million)			
	Principal Activities	Investment (¥ million)	Expense**1 (¥ million)	
(1) In-Situ Operating Costs		1,182	5,095	
Breakdown	(1)-1 Pollution Control Costs	<ul style="list-style-type: none"> Improvement, and operation/maintenance of wastewater treatment facilities 	263	1,690
		<ul style="list-style-type: none"> Reinforcement of exhaust gas cleaning towers, exhaust countermeasures for storage tanks Operation/maintenance of flue gas desulfurization, denitration, exhaust gas facilities Pollution load levy, etc. 	130	571
	(1)-2 Global Environmental Protection Costs	<ul style="list-style-type: none"> Purchase and fixation of gaseous CO₂ through the oxo process for use as raw material (Kyowa Yuka) Expansion of facilities required for conversion to natural gas as the heating fuel, expansion of process heat exchangers Energy conservation measures, including improvement of steam pipes, installation of gas air conditioners and improvement of facilities 	282	500
	(1)-3 Resource Recycling Costs	<ul style="list-style-type: none"> Upgrading of waste incinerators, operation/maintenance of waste treatment facilities, disposal by outside contractors Weight reduction, volume reduction of industrial waste; operation/maintenance of industrial waste recycling facilities Installation of exhaust gas coolers, recovery and use of exhaust gas, operation/maintenance of water conservation equipment 	507	2,334
(2) Upstream and Downstream Costs*1	<ul style="list-style-type: none"> Promotion of green purchasing of office supplies**2 Promotion of reduction of environmental impact of packaging material, etc. Refurbishment contract charges under the Packaging Materials Recycling Law 	0	12	
(3) Environmental Activities Costs	<ul style="list-style-type: none"> Establishment and operation of environmental management systems, measurement of environmental impact Creation of materials that disclose environment-related information Environmental improvement, including nature conservation, greening, beautification, scenery preservation 	35	585	
(4) R&D Costs	<ul style="list-style-type: none"> R&D of environment-friendly products R&D aimed at controlling environmental impact at the production stage 	1	1,453	
(5) Community Activities Costs	<ul style="list-style-type: none"> Membership in and cooperation with environmental protection and nature conservation activities 	0	15	
(6) Environmental Damage Related Costs	<ul style="list-style-type: none"> Oil pollution liability insurance 	0	1	
Total		1,218	7,161	

Item	Activities	Amount
Total Investment	Construction of new quality control laboratory building at pharmaceutical plant, expansion of pharmaceutical preparation plant, etc.	9,488
Total R&D Costs	R&D of new products and technologies	31,608
Sales of Items Related to Resource Recycling as in (1)-3	Fertilizer containing organic materials, used catalysts, used packaging materials for recycling	492
Effect Related to Saving Resources as in (1)-2 and 3	Conservation of energy, water, and resources and waste reduction	1,270

The Bio-Chemicals Company and Chemicals Company account for 72% of total environmental protection costs by in-house companies. Pharmaceuticals Company and Food Company products, which are manufactured through processing of raw materials and processed materials, have a comparatively small environmental impact, and environmental protection costs are correspondingly lower.

Environmental Protection Expenses by In-House Companies and Other Expenses



Scope of Summary: Kyowa Hakko and Kyowa Yuka, Kyowa Medex, Riken Kagaku, Kyowa FD Foods, Kyowa Hifoods, Ohland Foods, Asahi Foods Products

*Environmental protection expenses / Production value by in-house company ×100 (%)

◆ Moderate deterioration
 ➡ About the same
 ◆ Moderate improvement
 ↓ Improvement

Focus	Effect			Criteria
	FY2002	Comparison with FY2001	Remarks (Future Measures)	Self-Imposed Control Standard in FY2001
Water pollution control				
• Total volume of wastewater	53.1 million-tons	8.9 million-tons decrease ◆	14% reduction from the previous year	—
• COD levels	1,064 tons	171 tons decrease ◆	14% reduction from the previous year; removed 4,400 tons of COD	1,530 tons
• Nitrogen levels	564 tons	243 tons decrease ↓	30% reduction from the previous year	1,521 tons
• Phosphorous levels	23.1 tons	10.6 tons decrease ↓	31% reduction from the previous year	86 tons
Air pollution control				
• SOx emissions	1,228 tons	52 tons increase ◆	4.4% increase from the previous year (radical countermeasures needed)	2,595 tons
• NOx emissions	655 tons	44 tons increase ◆	7.2% increase from the previous year	803 tons
• Dust emissions	29 tons	11 tons decrease ◆	27% reduction from the previous year	342 tons
Unit energy consumption (crude oil conversion)				
• Kyowa Hakko, Kyowa Medex, plus 5 other companies	96.1kℓ/¥100 million of production	21.1kℓ/¥100 million of production Moderate deterioration ◆	A change in the business structure of the Kyowa Hakko Group due to the transfer of the liquor business caused an apparent deterioration in unit energy consumption. In real terms, energy savings equivalent to 17,000 kiloliters of crude oil were achieved (5% year-on-year improvement for the Group).	Improvement of energy consumption per unit by at least 1% per annum
• Kyowa Yuka	170ℓ/tons production	6ℓ/tons production improvement ➡		
CO ₂ use (Kyowa Yuka)	86,000 tons	8,000 tons increase ◆	Recycled as raw material for oxo alcohol production	
Waste				
• Waste materials	194,000 tons	10,000 tons increase ◆	39% reduction relative to 1998 level (change in fermentation raw materials, reduced waste materials due to process improvement) 28% year-on-year reduction (continued promotion of recycle)	(50% reduction relative to 1998 level by 2004) (Zero emissions by 2007 — Target: 250 tons)
• Waste disposal at landfill sites	1,408 tons	553 tons increase ↓		
<ul style="list-style-type: none"> Administrative area initiatives under the Green Office Plan include green purchasing of copy paper and office supplies. Resource use and waste have been reduced through the elimination of exterior packaging for pharmaceuticals. Environment impacts have been reduced through such initiatives as the elimination of can packaging for bio-chemical products and the improvement of food packaging. ISO 14001 systems have been established and implemented at the three main companies' production sites (approvals obtained) and three research laboratories. The system will be extended to consolidated subsidiaries and affiliates by fiscal 2004. Disclosure about environmental and safety activities have been enhanced, including the publication of the Health, Safety, and the Environment/Sustainability Report (Japanese and English) and site reports for the three main Kyowa Hakko Group companies, and the placement of these publications on the web site. The Kyowa Hakko Group has continued to implement environmental countermeasures, including protection of the natural environment, tree planting, beautification, and preservation of scenic values. The Kyowa Hakko Group has continued to supply environment-supportive products, including chemical products based on consideration for the environment through the use of bio-technology or chemical product development (P 24-28). Resource consumption, waste and environmental impacts have been reduced by research and development relating to changes in raw materials, improvements to production processes, effective use of by-products, and wastewater treatment technology. The Kyowa Hakko Group participates in the Nippon Keidanren Nature Conservation Fund and the activities of the Japan Responsible Care Council. It also supports environmental preservation organization. The Kyowa Hakko Group participates in and supports river clean-up projects in areas around its plants. 				

*1 Expenses include depreciation, personnel costs, utility fees, cost of materials, cost of repairs, outside contracting costs.

*2 Green purchasing statistics represent total purchases of environmentally conscious products, including Eco-mark products.

- 015 Responding to Customer Expectations/
Social Considerations for the Pharmaceutical Business
- 018 Communications
- 020 Corporate Ethics and Employee Motivation
- 022 Preserving Safety and Health
- 023 Environmental, Safety and Product Safety Assessments
- 024 Contributing to Society through Products and Technology

Social Performance

014



Responding to Customer Expectations/ Social Considerations for the Pharmaceutical Business

The entire Kyowa Hakko Group is working to improve customer satisfaction. The aim of the pharmaceuticals business is to contribute to patient-focused care in the medical community. The Kyowa Hakko Group is determined to contribute to the health of people worldwide by supplying a wide range of pharmaceutical products, including cardiovascular agents, antiallergic agents, central nervous system agents and anticancer agents.

Group-Wide Activities to Improve Customer Satisfaction

One of Kyowa Hakko's most basic business policies is to put customers first by supplying products and services that are superior in both quality and functionality. This is the philosophy behind the CSMAX21 campaign. The name symbolizes Kyowa Hakko's determination to be a winner in the 21st century by maximizing customer satisfaction (CS).

Although the Kyowa Hakko in-house companies have widely differing customer bases, all respond to customer needs with products and services that embody unique functions. Kyowa Hakko works with customers to propose innovative values and solutions. The success of this approach depends on internal systems for rapid feedback of customer wishes and complaints, and on the ability to respond effectively.

Kyowa actively gathers safety data and distributes it promptly to customers. From raw materials to products, processes are designed for optimal quality. Kyowa's commitment to production improvement and quality management is reflected in its introduction of internationally recognized quality assurance systems, such as GMP, ISO and HACCP.

Contractors and suppliers also receive guidance on quality assurance measures for raw

materials and products manufactured for Kyowa Hakko.

The pharmaceutical business involves the manufacture and sale of ethical pharmaceuticals. Kyowa Hakko's medical representatives regularly visit medical professionals to provide information about products. Kyowa Hakko has also established the Medical Information Center as a rapid interface for complaints, requests for advice, or product suggestions.

The Biochemicals Company and the Chemicals Company have jointly established a web site called "Specialty Chemicals On Line." Customers can use this site to find information, including product standards, handling instructions, information about raw materials, storage requirements and uses. The site is also used to respond to and answer product suggestions and questions from customers. The Food Company is also developing a web site for product safety information and two-way communication.



Kyowa Hakko U.S.A. staff receive an "Excellent Supplier" award from a customer.

Social Considerations for the Pharmaceuticals Business

Social Interfaces for Pharmaceuticals— Communication with Medical Professionals

Pharmaceuticals have been described as "chemicals with information." They can fulfill their proper role only if used correctly on the basis of information about effects, benefits, usage, dosage, mechanisms of action, side effects and other characteristics.

This information is conveyed to front-line medical professionals by medical representatives (MRs), whose social mission is to contribute to patient-focused medicine. MRs also actively seek the views of patients and medical professionals as feedback for the development of truly beneficial pharmaceuticals. This important information is gathered on-site using mobile computers. MRs function as Kyowa Hakko's corporate representatives to the medical community. They work constantly in collaboration with supporting departments and offices to provide products, services, and information.

Enhancing Medical Care for Patients

In May 2003, Kyowa Hakko commenced clinical trials of its anti-hypertensive drug Coniel[®], which has been on the market for 12 years as one of Kyowa Hakko's flagship products in the ethical pharmaceutical field. The aim of this work, which is being carried out in cooperation with Yamaguchi University, is to help medical professionals to provide high-quality care using the methods of evidence-based medicine (EBM).

In Japan, clinical studies of approved antihypertensive drugs are generally small in scale, involving 100-300 subjects. Moreover, studies have also tended to cover relatively short periods of around one year. The inadequacy of clinical study in Japan in terms of both scale and duration is apparent from comparisons with overseas reports based on study involving as many as 40,000 subjects.

Kyowa Hakko decided to conduct the current study over a three-year period. Coniel[®], a calcium antagonist, will be adminis-



tered as the standard drug, in combination with an angiotensin II receptor antagonist, a beta blocker, or a diuretic. These are antihypertensive agents with different mechanisms of action. Angiotensin II receptor antagonists lower blood pressure by blocking the binding of angiotensin II, a vasoconstrictor, to its receptors. Beta blockers inhibit the secretion of various pressor substances by blocking the binding of neurotransmitters to beta-receptors. Diuretics promote the excretion of sodium and water via the kidneys, thereby lowering blood pressure.

The purpose of this study is to verify the most useful combination and verify efficacy and safety of Coniel® by gathering data from 1,000 subjects for each of the three regimens.

Medical Information Center

The Kyowa Hakko Medical Information Center responds to inquiries from patients and their families, and from medical professionals working to provide the best possible care and treatment to their patients. The staff endeavors to maintain an approach that is sensitive to the perspectives and needs of

patients and their families, and to respond promptly to inquiries from medical professionals with information that is accurate and relevant to actual medical practice.



The Medical Information Center

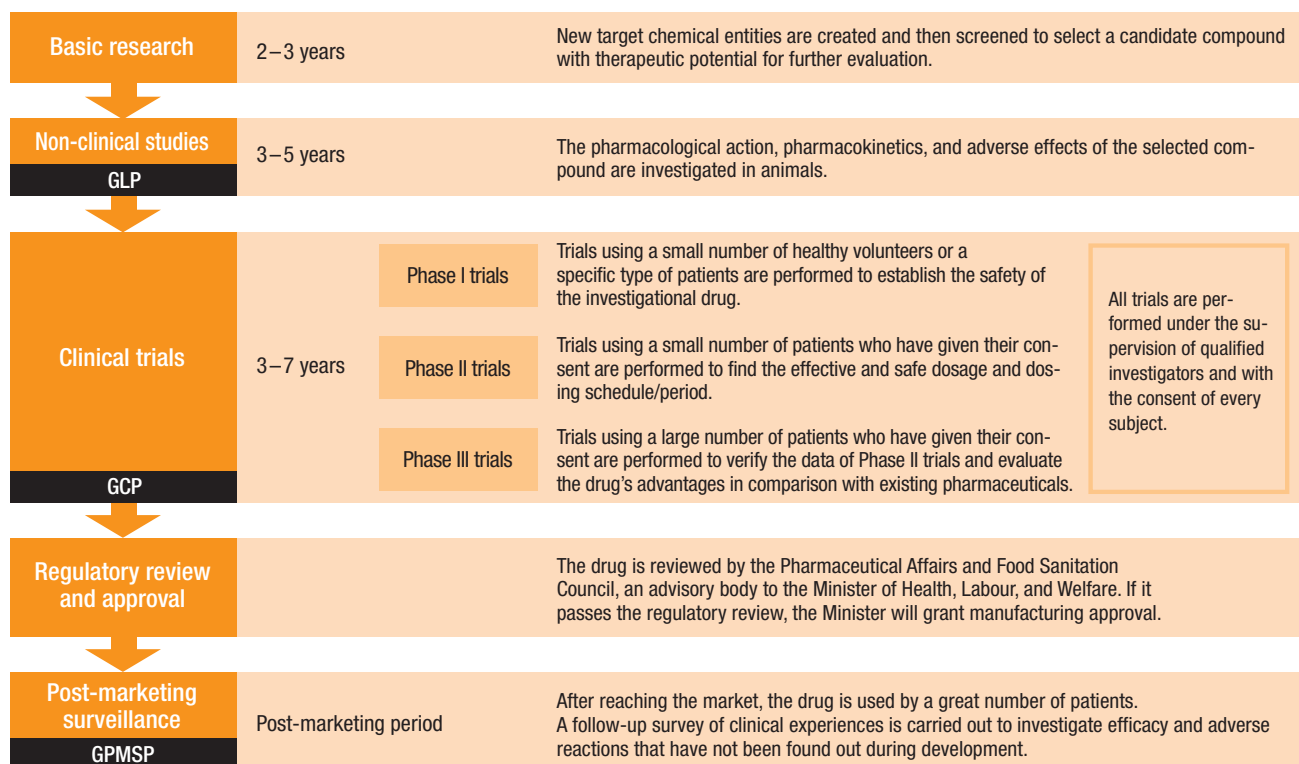
In September 1998, Kyowa Hakko established a web site (in Japanese) to provide information about pharmaceutical products. Users can access this site seven days a week and on public holidays to obtain the latest information about products.

Academic Seminar and Research Workshops Support for Academic Seminar and Research Workshops

Pharmaceuticals cannot be used effectively unless medical professionals and patients are fully informed about their characteristics. Kyowa Hakko continually supports the operation of academic seminars as well as research workshops and symposia as part of its efforts to disseminate information about its pharmaceuticals.

Approach to Drug Development

New Drug Development Process*1



*1 This table is quoted with corrections from the Japan Pharmaceutical Manufacturers Association Guide 2000

Appropriate Animal Testing

The clinical testing stage of the new drug development and approval process involves the administration of drugs to human subjects. Before that stage can begin, the safety of the drugs must be rigorously verified through by means of animal testing at the pre-clinical stage. Approval is granted only after the safety and effectiveness of new drugs has been confirmed through animal testing and clinical trials.

Kyowa Hakko has established Ethical Standards for Animal Testing, based on legal and academic guidelines as well as Animal Testing Guidelines, for each business site, and has set up committees at its head office and business sites to promote the implementation and use of the standards to ensure good practices. We direct researchers to avoid conducting unnecessary animal experiments, select the appropriate species for experimental use, set appropriate scales for testing and tend to the needs of the animals involved with the goal of causing no unnecessary suffering. We ensure that the research staff involved in these activities are fully apprised of and adhere to guidelines related to such matters as the safety, morality and relevance of experiments in addition to which, periodic verification is carried out by the head office.

Kyowa Hakko is progressively developing testing systems as alternatives to animal testing, including the use of cell cultures to clarify the effects and metabolism of drugs, and to predict side effects, with the aim of curtailing the number of animals used in testing.

International Drug Development Activities

The emergence of a number of world-class development pipelines has prompted Kyowa Hakko to implement a powerful global strategy for clinical development. Specifically, it has established Kyowa Pharmaceutical, Inc. (KPI) in the United States and Kyowa Hakko U.K. Ltd. in the United Kingdom as its front-line bases for overseas development activities. In 2003, development efforts based in Japan, North America and Europe reached an important stage of progress on such products as KW6002, a Parkinson's disease drug based on a new mechanism.

Kyowa Hakko is accelerating its development activities. Its aim is to bring these new drugs to market as quickly as possible so that they can benefit patients throughout the world.



A KPI staff meeting

Environmental and Safety Considerations for Pharmaceutical Products

Because pharmaceuticals are prescribed under the control of physicians, the quantities used are limited. However, it is important to consider environmental and safety factors relating to the use of these products. Kyowa Hakko strictly controls the disposal of waste products, including intermediates, at all stages of production. In principle, waste products are incinerated. The fate of pharmaceutical raw materials released into the natural environment has been an important area of study for Kyowa Hakko, which is currently conducting research into the environmental and safety implications of this issue.

Unused Pharmaceuticals and their Proper Disposal

Kyowa Hakko's bases in eastern and western Japan carry out the proper disposal of pharmaceuticals delivered to hospitals and other medical institutions that have passed their expiration dates or been recalled.

Appropriate Packaging and Containers for Pharmaceutical Products

Though the volume of packaging waste is limited in quantitative terms, Kyowa Hakko nevertheless requires business units in its group to take appropriate steps. As stated in Health, Safety, and the Environment/Sustainability Report 2002 (Page 35), those steps have included the discontinuation of external packaging of pharmaceutical products and the marking of packaging to indicate the materials used. Kyowa is also helping to prevent medical errors by making its products more readily identifiable. Packaging design improvements include the use of phonetic script for product names and the use of larger typefaces.

Management Guideline and Points (Customers)

Management Guideline:

We will provide products, services, and information that are superior in terms of quality and functions in accordance with a policy of placing top priority on customer satisfaction.

Points (Extract):

- We will create products, services, and information that satisfy customers, are at the forefront of the era and have new value.
- We will diligently work toward Group-wide cooperation to disseminate customer feedback with the aim of quickly responding to customer needs and complaints.
- We will actively collect safety information and incorporate it into products, services and information while making the necessary disclosures to customers.
- We will implement such international quality assurance systems as GMP, ISO and HACCP to improve manufacturing and quality management.

Disclosure of environmental information is an important responsibility in the chemical industry, and the Kyowa Hakko Group strives to maintain two-way communications with local communities and the public. One of the Group's interfaces with the public is social cooperation activities based on its management philosophy. The aim of those activities is to foster an understanding of science among the young people who will lead society in the future.

Dialog with Communities

Plant Visit

Following the completion of a new quality control laboratory building, the public were invited to tour the Kyowa Hakko Sakai Plant. The purpose of this initiative was to inform the public about operations at the plant, where bulk pharmaceuticals is manufactured. Local community leaders were invited to view pharmaceutical manufacturing and environmental facilities at the Fuji Plant when incineration systems at the plant were upgraded. The Kyowa Hakko Group's plants and headquarters also participate in the activities of the Japan Responsible Care Council. Activities in fiscal 2002 included dialogues with consumer groups, students in the Tokyo region and people in the Yamaguchi region, where some of our facilities are located.

A tour of the Sakai Plant



Viewing facilities at the Fuji Plant

Environmental and Safety Reporting

Each year since 1999, the Kyowa Hakko Group has published reports in both Japanese and English concerning the Group's environmental and safety activities. The Kyowa Hakko Group also welcomes comments and questions from readers. Japanese and English environment and safety reports have also been available on the Internet since 1999, together with site reports (in Japanese) about key plants. Another example of the Kyowa Hakko Group's commitment to two-way communication is its inclusion of third-party assessments in its environment and safety reports, starting with the current year's edition.

http://www.kyowa.co.jp/eng/kankyoe/env_safe_e.htm

Supporting Environmental Activities

● Cooperation in ASEAN Environmental Protection Training Course

In November 2002 the Association for Overseas Technical Scholarship (AOTS) ran an environmental protection training course for the ASEAN region at the request of the Chemicals Division of Japan's Ministry of Economy, Trade and Industry, Manufacturing Industries Bureau. The Kyowa Hakko Group assisted by informing course participants about its responsible care initiatives. Most by-products from fermentation processes are used as fertilizer or animal feed. There was keen interest in this technology and its application.



A seminar for ASEAN representatives

● Contributing to Public Environmental and Safety Education

Staff from Kyowa Hakko plants contribute to public environmental and safety education activities in their regions. For example, staff at the Ube Plant have helped to provide environmental education for trainees from Shandong Province, China.

Making Science Accessible

Bio-Adventure Mobile Laboratory

The Bio-Adventure program of Tokyo Research Laboratories has been operating for four years, with the support of staff volunteers. In fiscal 2002 the

Volunteers with the Bio-Adventure



Children enjoy scientific experiments

Bio-Adventure mobile laboratory visited six elementary schools and junior and senior high schools in the vicinity of the Laboratories.

Children's Spring Science School and Summer Junior Science School

In March 2003, the Pharmaceutical Research Institute at the Fuji Plant held a spring science school for elementary school children from local communities. The Ube Plant cooperates in a junior science school program run by the local prefectural government during the summer vacation.



Learning about science

Initiatives for Youth

● Asahi Young Session

Kyowa Hakko was a co-sponsor of the 15th Asahi Young Session program, which was held in October 2002. The guest speaker was Akira Senju, an internationally renowned composer, arranger and producer of music. The primary sponsor of the program is the Asahi Shimbun newspaper.



● Kato Memorial Bioscience Foundation's Symposium and Research Assistance

The 19th open symposium of the Kato Memorial Bioscience Foundation was held in October 2002 at the Keidanren Hall. Its theme was the "Changing Microbiology—the possibilities and charm of microbes shown through the genome sequencing." At the symposium, microbial genome researchers from Japan and overseas engaged in lively discussion about current developments in the field. The Kato Memorial Bioscience Foundation contributes to the advancement of science through its wide-ranging activities, including the provision of research grants and grants for international exchange and academic seminars.



The invitation announcement for the 2002 symposium

Membership of the Nippon Keidanren 1% Club

The Nippon Keidanren 1% Club is a group established by the Nippon Keidanren (the Japan Federation of Economic Organizations) for companies that devote at least 1% of their ordinary income to social contribution activities. In fiscal 2002, the total value of the social contribution activities by Kyowa Hakko came to ¥1,792 million. In addition to its participation in 1% Club activities, the Kyowa Hakko also makes an extensive contribution to the advancement of science by supporting academic seminars through the Japan Pharmaceutical Manufacturers Association.

Management Guideline and Points (Society)

Management Guideline:

We will strive for management that is open to society and also vigorously adopt thinking based on global standards.

Points (Extract):

- We will carry out corporate activities that aim to realize growth that is in harmony with the communities in which we have operations, thus contributing to the development of society and the economy.
- We will work to earn the understanding and trust of local communities through communications, including the exchange of information, and participation in social contribution activities.
- We will carry out social contribution activities that will provide the young people who will lead the next generation with guidance for their lives and dreams to follow.
- We will respect the culture and customs of the regions—both domestic and overseas—in which we operate.
- In the event of a disaster, we will work closely with the local community in aid activities as well as recovery and reconstruction.

The Kyowa Hakko Group is committed to good corporate ethics, including fair and transparent competition, in all of its business activities. It also aims to provide each employee with opportunities to use his or her abilities to the full, and to assess and reward employees fairly.

Corporate Ethics

The Kyowa Hakko Group is aware of importance of corporate ethics. As part of its efforts to inform and educate all employees, the Kyowa Hakko Group has developed and distributed guidelines based on its ethical principles including guidelines on antitrust law.

In 1999 Kyowa Hakko formulated and adopted the “Kyowa Hakko Ethical Principles” and the “Kyowa Hakko Codes of Ethical Conduct for Employees,” stipulated by the Corporate Ethics Committee established in 1998. These documents are used to ensure compliance while maintaining strictly ethical standards. The mission of the Corporate Ethics Department is to



All employees receive this guide to Kyowa Hakko’s management philosophy and policies, which also incorporates the “Kyowa Hakko Ethical Principles.”

Management Guidelines and Points (Extracts from the “Kyowa Hakko Ethical Principles” and the “Kyowa Hakko Codes of Ethical Conduct for Employees”)

Management Guideline:

We will respect corporate ethics and also fulfill social responsibilities.

Key Points :

- In all areas of activity, we will comply with laws and other requirements, observe voluntary rules, and strive to maintain good ethical standards in its business activities.
- While recognizing that an enterprise is an economic entity dedicated to the pursuit of profit, we will reject any profit or advantage that can only be gained through illegality and unethical behavior with respect to laws or ethical principles.
- In all of its business activities, we will deal and compete freely, fairly and transparently while maintaining sound and appropriate relationships with all concerned, including politicians and government officials.
- We will fulfill its accountability obligations as a company trusted by its internal and external stakeholders, by actively disclosing accurate information in a timely manner.
- As a corporate organization, we will resolutely oppose antisocial forces and groups that threaten the order and safety of the civil society. We will not entertain any unlawful or unethical demands whatsoever.
- We will respect the humanity and individuality of its employees as autonomous individuals. It will reject unfair discrimination and provide quality workplaces based on a high awareness of the human rights and safety of employees.

disseminate knowledge about the ethical principles and other aspects of corporate ethics through activities that include job-specific ethical training for employees. It has also established a web site and help line. Compliance-related initiatives include the corporate ethical audits, and the establishment of double hot-lines for internal and external use.

Employee Relations

One of Kyowa Hakko’s management guidelines is to provide all employees with opportunities to improve their skills and apply their creativity, and to assess and reward employees fairly. This commitment is fulfilled through measures designed to create environments in which employees can enjoy working lives that promote physical and mental well-being.

Labor-Management Communication

Kyowa Hakko and main subsidiaries have established many forums, including a Central Management and Union Communication Council made up of senior union and management representatives. These forums facilitate free and frank discussion in a spirit of labor-management cooperation.



The Central Management and Union Communication Council

Employee Satisfaction Surveys

The Kyowa Hakko Group ascertains the level of organizational morale through questionnaire surveys of all employees and executives. These surveys are used to measure the vitality of individual in-house companies and divisions, and of the Kyowa Hakko as a whole. The results are used to develop measures designed to improve employee satisfaction.

The survey findings show that information sharing and long-term vision tend to be stronger in the Kyowa Hakko organization, but that overall there are significant awareness gaps

among organizational hierarchy. The Kyowa Hakko Group is now working to correct this situation.

Award System

A variety of awards, including President's Awards and awards for inventions, are given in recognition of especially meritorious achievements by employees (*Health, Safety, and the Environment/Sustainability Report 2002, Page 18*).

Education Programs

The Kyowa Hakko and main subsidiaries' education system consists of employee education programs and support for self-improvement efforts.

- Job-related training: Training for middle-aged and senior managerial staff, training for high-level managerial staff, managerial staff training, leadership training, supervisor training, middle-aged staff training, new employee training
- Support for self-improvement: Subsidies for correspondence education and spoken English courses
- Other programs: Overseas study, overseas training, etc.

Management Guideline and Points (Employees)

Management Guideline:

We will establish a motivating workplace by promoting the enhancement of individuals' abilities and creativity, as well as emphasizing fair evaluation and treatment of employees.

Points (Extract):

- We will nurture a corporate culture that encourages proactive and creative work by providing opportunities for employees to demonstrate these qualities.
- We will carry out thorough evaluations and award compensation based on work, special skills, and performance.
- We will upgrade training programs and a self-improvement system.
- We will provide support programs for financial planning.
- We will ensure a safe and hygienic workplace.
- We will create a work environment that fosters both mental and physical health.
- We will create a work environment that enables every employee, including senior citizens, women, people with disabilities, and foreigners, to demonstrate their abilities.
- We will create an environment in which employees can act as members of the community and participate in activities to improve the community.

Akie Nitta, Chief Representative of Shanghai Representative Office

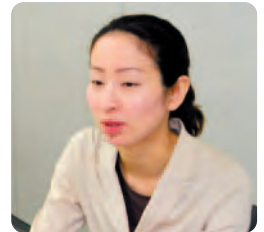
"The Kyowa Hakko's Shanghai Representative Office provides academic support for the Pharmaceuticals Company and gathers information for the Bio-Chemicals Company and Food Company. Our role has become increasingly important with the growth of the Kyowa Hakko's business activities in China. Everyday my staff and I are busy gathering information."



Ms. Nitta (fifth from right) and her staff

Kyoko Sawai, Clinical Development Center, Pharmaceuticals Company

"My task is to contract clinical trials to medical specialists, and to gather data from completed trials. I look forward to the approval of drugs that we have developed, since the Kyowa Hakko can then contribute to society by supplying products for use in the treatment of patients."



Kathy McLain, Human Resource Manager of BioKyowa, Inc.

"The last several years have been an exciting time of growth for BioKyowa. We have successfully gone from one product to multi-products and have increased our workforce by over 50 new employees. The HR department totally remodeled the hiring process to include testing for basic technical skills and physical abilities. That allowed us to hire only the very best employees.

Our employees have a strong desire to maintain BioKyowa as a strong and profitable business, while continuing to be exemplary citizens in the community."



Ms. McLain (left) and a member of her staff

Social Performance

Preserving Safety and Health

In all of its business activities, the Kyowa Hakko Group seeks to harmonize top-down management with bottom-up initiatives, so that its in-depth attention to health, safety and accident prevention is based on a risk management approach.

- The three main Kyowa Hakko Group companies—Kyowa Hakko, Kyowa Yuka and Kyowa Medex—all recorded an occupational injury frequency rate of zero in fiscal 2002.
- Kyowa Yuka's Yokkaichi Plant has been setting a new Japanese industry record for the longest period without accidents.
- The Kyowa Hakko Group is promoting physical and mental health through the improvement of related systems, such as medical checks.
- The Kyowa Hakko has expanded traffic safety initiatives for vehicles used in sales activities and is introducing low-pollution vehicles.



Plaque awarded by the Japan Industrial Safety and Health Association for best accident-free record in Japan

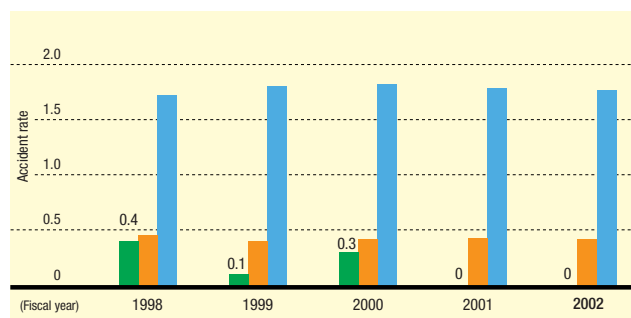
Occupational Safety

Safety is the foundation stone for all business operations of the Kyowa Hakko Group. The importance placed on safety is reflected in the cooperative efforts made by management and workers to maintain safety and health through approaches that include the thorough implementation of safety-related policies, the use of safety assessments when new business begin or new facilities are commissioned, and the application of risk management methods to day-to-day operations.

In fiscal 2002, the three main companies in the Kyowa Hakko Group all achieved zero accident rates (the number of occupational injury accidents resulting in worker absences and injuries per million man-hours of labor). The three principal com-

panies' record is among the best in the chemical industry. Trends in the accident rates of the three main companies are shown in the graph.

Accident Rate Trends of Three Main Kyowa Hakko Group Companies



■ Kyowa Hakko ■ JCIA*1 members ■ All industries

*1 Japan Chemical Industry Association

Principal Safety Awards Since 2001

Fiscal year	Name of Award	Plant Receiving Award
'01	Minister of Health, Labour and Welfare Group Award	Kyowa Kai at the Ube Plant
	Fire Defense Agency Commissioner's Award (Contributor to Safety Maintenance Award)	Head Office
	Blood Donation Prize (Minister of Health, Labour and Welfare)	Hofu Plant
	Minister of Health, Labour and Welfare Award, level two (9.3 million man-hours accident-free record)	Fuji Plant
'02	Industry record for longest period without accidents (organic chemical manufacturing)	Yokkaichi Plant

Occupational Health

The Kyowa Hakko Group works to prevent illness by providing legally mandated health checks and encouraging all employees to have checkups. It also promotes sound physical and mental health by providing counseling services, access to sports clubs and education in the development of physical health and strength.

	1998	1999	2000	2001	2002
Employees undergoing thorough medical checks	713	780	750	704	760

Traffic Safety and the Environment

The Kyowa Hakko has 1,067 vehicles for use in sales activities (as of March 2003). In-depth safety-related activities include the development of traffic safety plans for every site. The number of accidents had been increasing over the past few years but was capped in fiscal 2002, with one severe injury (5 days absence).

The environment is also an important consideration in relation to vehicle use. The Kyowa Hakko has replaced 482 vehicles, or 45% of total sales fleet, with certified low-emission gas vehicles. The percentage of low-emission vehicles will continue to rise as more of the fleet is replaced with low-emission vehicles.

	1998	1999	2000	2001	2002
Accidents caused by negligence	101	113	118	124	102



This full auto micro plate immunoassay system WAAMS2 (Kyowa Medex) bears the CE mark, indicating that it conforms with EU safety standards.

The Kyowa Hakko Group accurately monitors the environmental, safety, and product safety implications of its activities in accordance with the Basic Policies relating to the environment, safety, and product safety. It uses data from these monitoring activities as the basis for comprehensive risk management and efforts to reduce environmental impacts while ensuring the health and safety of employees and the safety of its products.

Environmental, safety, and product safety assessments at all stages from research and development through utilization and disposal

Main evaluation processes from research and development through to use and disposal

	Environmental Protection	Safety, Hygiene, Security, Accident Prevention	Product Safety (Quality)
Assessment at R&D stage	<ul style="list-style-type: none"> • Environmental impact of raw materials • Environment impact of processes and their elimination • Recycling of waste products • Life cycle assessment • Environment impact of products after use, etc. <i>al</i>, 	<ul style="list-style-type: none"> • Hazard/toxicity of raw materials • Safety of sub-reaction products • Past examples of Occupational injury • Process safety 	<ul style="list-style-type: none"> • Safety of raw materials, impurities • Product safety and stability • Handling safety
Assessment at manufacturing stage	<ul style="list-style-type: none"> • Environmental impact, capacity of removal facilities • Local impact of processes • Community dialog on important issues 	<ul style="list-style-type: none"> • Occupational injury prevention measures • Process safety • Community dialog on important issues • Change management 	<ul style="list-style-type: none"> • Quality Assurance • Management change • Product liability response
Assessment at sales and distribution stage	<ul style="list-style-type: none"> • Information about responses to leaks and other problems • Environmental impact of distribution 	<ul style="list-style-type: none"> • Information about responses to fires and other contingencies 	<ul style="list-style-type: none"> • Preparation of product handling manuals
Assessment at utilization and disposal stage	<ul style="list-style-type: none"> • Content of information provided to customers • Labeling • Recycling 	<ul style="list-style-type: none"> • Content of information provided to customers 	<ul style="list-style-type: none"> • Provision of product information • Content of labeling • Responding to consumer requests and complaints
Reference: Systems and regulations	<ul style="list-style-type: none"> • Environment and safety management regulations, environmental and safety standards for chemical substances, internal regulations concerning recombinant DNA technology, environmental and safety assessment regulations 		<ul style="list-style-type: none"> • Quality assurance regulations ISO 9000s GMP, HACCP

Environmental and Safety Assessments of Chemicals

● Safety Assessment of Chemicals

The Kyowa Hakko Group has participated in the HPV and LRI initiatives of the International Council of Chemical Associations (ICCA) and has produced assessment work reports as leader company for two HPV products. It is also working as a supporting company for 16 products.

● Safety Assessment of Plasticizers

The Japan Plasticizer Industry Association (JPIA) and plasticizer industry groups in Europe and North America contracted independent research organizations to conduct long-term tests involving the administration of diethylhexyl phthalate (DEHP) to primates (marmosets) over a two-year period starting in September 2000. The purpose of these tests was to check the overall safety of DEHP, particularly with regard to the effects on the testes and its behavior inside the body. The

test results were collated in January 2003. The findings are summarized below.

- 1) Unlike those of rodents, the testes of primates are not affected by DEHP.
- 2) The behavior of DEHP in the body differs significantly from its behavior in rodents, including the fact that there is no accumulation of the substance in the testes.

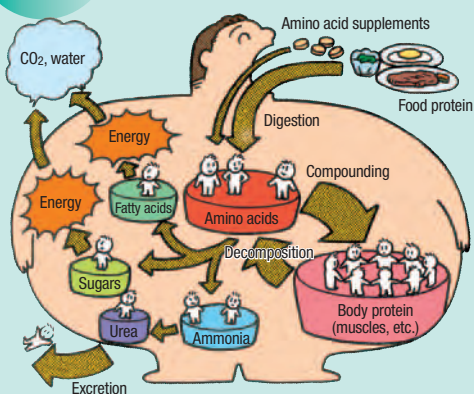
Because the tests have shown that DEHP does not affect the testes of primates and behaves differently in primate and rodents bodies, risk assessments based on tests especially at high doses rather than estimated level of exposures with rodents will need to be reconsidered.

The results of these tests were announced at the 42nd annual general meeting of the Society of Toxicology in March 2003.

In addition to pharmaceuticals, the Kyowa Hakko Group also develops amino acids and health-food raw materials in collaboration with customers. Through its various products, it contributes to the health of consumers. Outlined here are activities relating to the exploration of material functions and the development of new products.

Health

Amino Acid Research and Development



Amino acids are the component parts of proteins formed in all living things. Both animal and plant cells contain large amounts of these substances. Human beings need about 20 amino acids, which make up about 20% of our bodies.

Amino acids are the basis of biological activity, and our bodies are equipped with systems that ensure that these substances are used properly (see diagram). Amino acid deficiencies affect our health in various ways.

In recent years, the different and amazing functions of the 20 amino acids have been explained one after the other. In addition, technology has been developed allowing us to produce essential natural amino acids cheaply and in large quantities. As a result, individuals are now able to use amino acids to supplement their specific needs or improve their health.

The Bio-Chemicals Company is continually studying ways in which amino acids can be used to benefit the health.

● Health-Related Uses

In the area of sports, there has been extensive research into the use of amino acids, such as arginine, ornithine, glutamine, leucine, isoleucine and valine, to maintain and build muscle and recover from fatigue. In addition to their importance in sport, these amino acids also help elderly people to remain active and healthy. The basic metabolic rate of muscle tissue is high, and it helps to consume excess energy and prevent obesity.

Glutamine, arginine and ornithine are known to enhance immune system functions. Temporary deficiencies of these amino acids occur after vigorous exercise, and research reports indicate that the incidents of colds after exercise can be reduced by taking amino acids.

These are just a few examples of the functions of amino acids. These substances work in various ways to improve the quality of life. The Kyowa Hakko Group is intensively researching the functions of amino acids.



Biological Functions and Health Benefits of Amino Acids, Foods and Food Ingredients Journal of Japan No. 206

● Cosmetic Uses

Amino acids function as natural moisture retention factors in the keratin layer, which covers the skin surface. Many cosmetic products based on these amino acids are on the market today. Particularly important is the amino acid hydroxyproline, which in the past has been produced from animal sources. The substance can now be produced safely using Kyowa Hakko's fermentation technology, and its use in cosmetics has expanded. Hydroxyproline is an ingredient of collagen protein, which is involved in skin elasticity. It is now known to increase cell activity and propagation while enhancing collagen synthesis capacity.



Researchers at the Tsukuba Research Laboratories

For further information:
Kyowa Hakko Bio-Chemical Company
Development Department Tel: 81-3-3282-0995

BIO-INNOVATOR

Research and Development into Anti-Cholesterol Food Ingredients

Hypercholesteremia is a condition that occurs when certain factors cause large amounts of cholesterol to accumulate in the blood. Causes include lifestyle factors, certain diseases, such as diabetes, a hereditary predisposition, or a combination of these factors.

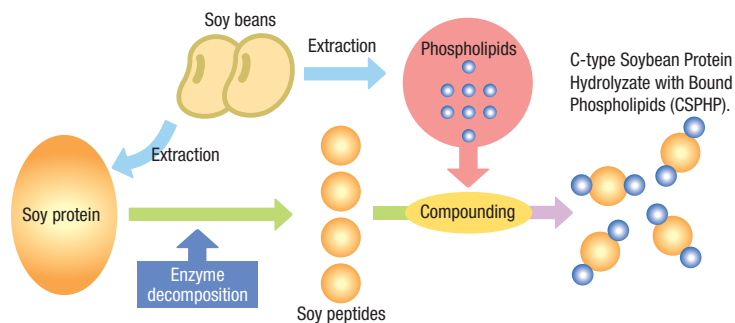
Hypercholesteremia is closely linked to arteriosclerosis. The resulting hardening of the arteries increases the risk of ischemic heart disease, including myocardial infarction and angina, and cerebral infarction.

The Food Company aims to use biotechnology and natural raw materials to create food ingredients that will help to reduce high cholesterol. The new product introduced below is a cholesterol-lowering peptide, C-type Soybean Protein Hydrolyzate with Bound Phospholipids (CSPHP), a unique Kyowa Hakko product made from soy beans.

Among natural food ingredients, soy beans in particular have attracted interest because of their ability to improve cholesterol levels. However, it is necessary to consume several tens of grams per day, and the maintenance of a sustained intake would be difficult. The Food Company has succeeded in further improving the nutritional func-

tions of the soy bean. The result was a new food ingredient called "CSPHP." This product allows much more of the key nutritional constituents of the soy bean to be added to the diet without bulk. It has been marketed as a food for specified health use and as a health food for use on a day-to-day basis.

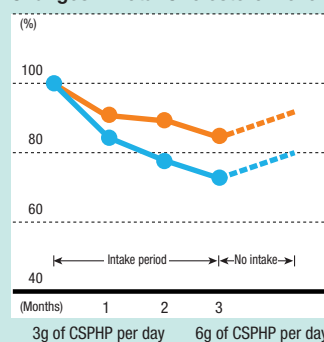
Manufacturing CSPHP



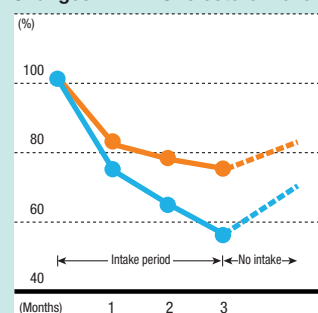
Pilot production of CSPHP foods

Benefits of CSPHP consumption

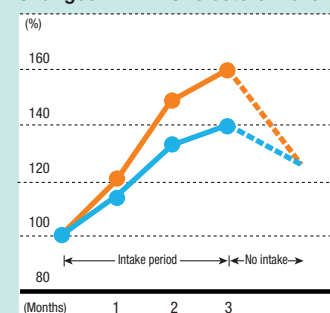
Changes in Total Cholesterol Level



Changes in LDL Cholesterol Level



Changes in HDL Cholesterol Level



For further information:
 Kyowa Hakko Food Company
 Health Care Products Department Tel: 81-3-3282-0075

The baker's yeasts offered by the Kyowa Hakko Group are differentiated products targeted toward the bread manufacturing industry. These products help customers to adapt to the changing distribution environment by improving operating efficiency and extending shelf lives. Kyowa Medex, which provides health and medical services based on external diagnostic agents, also contributes to the food industry with food safety analysis technology.

Products for the Food Industry

Developing New Baker's Yeast

The Food Company has used its extensive development resources to respond to manufacturers' needs, including products that help to save labor and maintain quality.

● Cold-Sensitive Yeast—Helping to Improve Operating Efficiency and Bread Quality

Cold-Sensitive yeast developed by Kyowa Hakko will ferment in the same way as ordinary yeast at temperatures above 25°C, but fermentation activity declines to less than one-third when the temperature falls below 15°C. This means that yeast and dough can be stored in a refrigerator. Dough made in the evening can be stored in a refrigerator until the following morning. Once the temperature returns to 25°C, normal fermentation will occur, and the dough will rise properly. When baked, it will produce good bread. Cold-Sensitive yeast contributes to society, since it reduces the need for late-night or early-morning work by bread manufacturers.



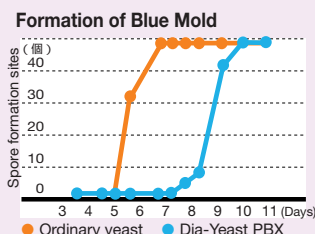
Butter rolls made with ordinary yeast (left) and Cold-Sensitive yeast (right)

● Antifungal Yeast—Dia-Yeast PBX

Consumers want bread that will stay fresh longer, especially in summer. Kyowa Hakko developed Dia-Yeast PBX by selecting yeasts that produced bread with excellent flavor and aroma, yet resists mold formation. This product has excellent fermentation characteristics when used with dough containing relatively little sugar. Moreover, tests that involved the deliberate application of mold to bread have confirmed that it is better able to inhibit mold formation than ordinary yeast.



Mold contact tests
Ordinary yeast (left) Dia-Yeast PBX (right)



For further information:
Kyowa Hakko Food Company
Food Sales Department Tel: 81-3-3282-0077

Contributing to Food Safety through Analysis

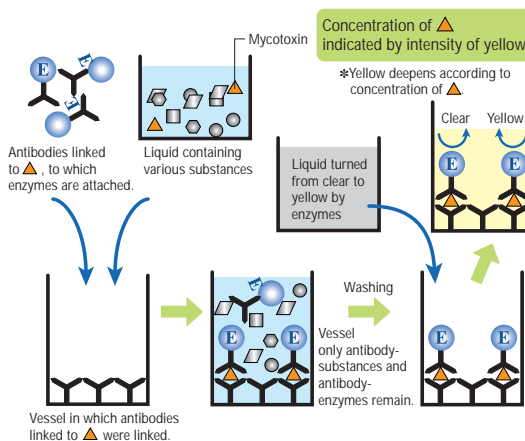
Kyowa Medex is contributing to food safety through analytical work based on its own technology.

● Mycotoxin Analysis

Kyowa Medex has developed a high-speed enzyme-linked immunosolvent assay (ELISZA) for use in detecting four known mycotoxins: *deoxynivalenol (DON), *nivalenol (NIV), *T-2 and *HT-2. It has started to sell kits and offer contract analysis services. Among the products is the world first commercially available kit that allows easy detection of nivalenol (NIV).

* If humans ingest large amounts of these mycotoxins, they may suffer nausea, vomiting, diarrhea and other symptoms of poisoning. Chronic poisoning resulting from prolonged ingestion is regarded as a serious problem on a global scale.

Principle of Enzyme-Linked Immunosolvent Assay (ELISZA)



For further information:
Kyowa Medex Marketing & Planning Section Sales & Marketing Department Tel: 81-3-3297-8103
In charge of contract analysis services:
KM Assay Center Tel: 81-55-988-8222

● Bovine Spongiform Encephalopathies (BSE) Analysis Device

To ensure that beef is safe, all cattle in Japan have been tested for bovine spongiform encephalopathies since October 2001. The AP-96 developed by Kyowa Medex is a fully automatic microplate EIA analysis system. It uses an enzyme-based immunoassay method to detect bovine spongiform encephalopathies. This product is helping to protect the safety of food.



The AP-96 Full Auto Micro Plate EIA Analyzer

BIO-INNOVATOR

The Kyowa Hakko Group contributes to society by supplying low environmental-impact chemical products. It is also actively involved in research into next-generation green biotechnology, which is expected to produce important environmental benefits.

Environment-Supportive Chemical Products

The Chemicals Company supplies low environmental-impact industrial chemicals.

● Low Environmental-Impact Solvents

The introduction of the PRTR Law has sparked debate about the release of paint and ink solvents, such as toluene and xylene, into the environment. Among the substances chosen as low-toxicity, low environmental-impact alternatives to these solvents are ethyl acetate and butyl acetate, and consumption of these products is increasing. As a major supplier of ethyl acetate and butyl acetate, the Chemicals Company is helping to promote environmentally sound solvent use.

● Lubricant Intermediaries for Use as CFC Alternatives that Do Not Damage the Ozone Layer (Polyvinyl Ether, Synthetic Fatty Acids)

Ozone layer depletion has become a particular focus of efforts to combat global environmental problems. CFCs, which were once commonly used as refrigerants, were found to cause serious damage to the ozone layer, and efforts are now focusing on the development of alternatives. The main ingredients of this new refrigerant are polyvinyl ether and synthetic fatty acids manufactured by the Kyowa Hakko Group. It is used in refrigerators bearing the Eco-mark.



● Kyowasol—A Substitute for Specified CFCs and Chlorine-Based Solvents

Halogen solvents became popular because of characteristics that made them easy to use, including their safety and flame-resistance. However, properties that made these substances

difficult to break down have themselves become the cause of environmental problems that include damage to the ozone layer, the accumulation of persistent organic pollutants (POPs), and chemical residues. Kyowasol is a non-halogen solvent that is both safe and kind to the environment.

● Landfill Liners (Kyowa Urethane Waterproof Sheets)

In controlled landfills, waterproof sheets are used to prevent leakage of contaminated water. Kyowa urethane waterproof sheets have been used in numerous landfills because of advantages that include strength, flexibility and ease of installation. This product has also earned an excellent reputation because of its leakage detection system and repair technology. It has been an extremely effective solution to landfill problems.



● Cross-Linkable Monomer for Waterborne Coatings (DAAM)

The past few years have seen the start of initiatives to reduce indoor concentrations of volatile organic compounds in houses, and waterborne coatings have started to become the main products of choice. Because solvents are not used in waterborne coatings, high-quality resins are needed to provide a quality finish. Diacetone acrylamide (DAAM) is used in raw materials for waterborne coatings as a hydrazine cross-linking system.

For further information: **Kyowa Hakko Chemical Company Specialty Chemicals Department** Tel: 81-3-3282-0044

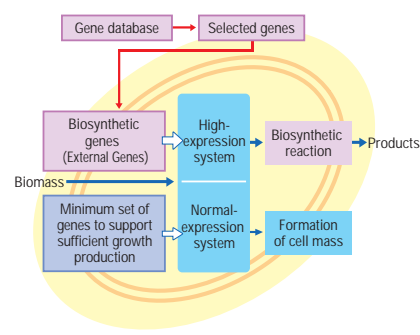
Green-Bio—Next-generation sustainable production technology Using the synthesis capabilities of microorganisms to produce substances

The Kyowa Hakko Group uses production technology based on ATP regeneration to produce useful substances. This approach allows the creation of a wide spectrum of products with a complexity of chemical structure that was not previously possible.

By application of this technology, products that could once be manufactured only from petroleum can now be made from renewable, agro materials such as starch, through the action of microorganisms. There has been high acclaim for this revolutionary, low environmental-impact technology.

In recent years, rapid advances in genome science have brought dramatic progress in the use of biomass as raw materials for biotechnology. The Kyowa Hakko Group is participating in a national project to develop mini-genome factory (MFG) technology as a low environmental-impact production method based on the abilities of microorganisms.

Mini-Genome Factory



- 029 Group-Wide Environmental Protection Activities
- 030 Environmental Protection Activities
- 038 Risk Management
- 039 Environmental Protection Activities

Environmental Performance

028



Group-Wide Environmental Protection Activities

The three priorities for the environmental protection activities of the Kyowa Hakko Group are, considering potential impacts on the environment, energy conservation, the achievement of zero emissions, and control of chemical substances. Activities in these areas are based on common goals for the entire Group. Fiscal 2002 brought major progress toward all goals.

Group-Wide Activities

Kyowa Eco-Project (KEP)

Goals

- CO₂ emissions in fiscal 2010 below fiscal 1990 level
- 1% reduction per annum in unit energy consumption
- Achievement of zero emissions by 2007

Since 1998 the Kyowa Hakko Group has integrated energy conservation and emission reduction efforts at its plants into Kyowa Eco-Project (KEP) activities. In fiscal 2002, the scope of these activities was expanded to include research laboratories and the Fuji Plant of Kyowa Medex.

Announcing Overall Eco-Project Results

In June 2003, personnel from plants and research laboratories gathered to share information about progress in the past year and energy conservation methods. There was a 5.0% yearly

improvement in the Group's unit energy consumption, while conservation of energy and resources resulted in substantial savings of ¥120 million and ¥330 million respectively.



Principal Achievements

- CO₂ emissions reduced through increased use of LNG as a percentage of total fuel consumption
- Initiatives to reduce utility consumption in laboratories
- Energy-efficient operation of environmental facilities (active sludge treatment, waste incinerators)
- Energy conservation through increased use of process heat exchange systems
- Introduction of energy and waste information system

Green Office Plan (GOP)

Goals

- Reduction of energy conservation by at least 1% per annum
- Promotion of green purchasing
- Reduction of copy paper use by at least 5% per annum

The Green Office Plan (GOP) focuses on administrative operations in the Kyowa Hakko Group. Environment-related activities included energy conservation, the reduction of copier paper use, and the promotion of green purchasing. Power consumption in sales operations was reduced by 1.3% in fiscal 2002, compared with a target of 1%. Another goal of the plan is to ensure that all

Energy conservation activities at Kyushu branch

lighting and equipment in factories are switched off when not required. Copy paper use has been reduced by 7.7%, compared with a target of 5%, while green purchasing efforts have lifted the percentage of environment-supportive products, such as "Eco-Mark" office products and copier paper, to 70%. GOP activities are currently being expanded to include affiliated companies.



Green Procurement (GP)

Goals

- Requirement that suppliers establish ISO management systems
- Thorough implementation of limits on use of chemical substances

The Kyowa Hakko Group has established prohibitions or restrictions on the use of some substances and is requiring its suppliers to use environment-supportive raw materials. In the current year, 15 items that are currently being studied by the Japan Chemical Industry Association were added to the list of restricted substances. The same policy has been also being applied in research laboratories.

Environmental Performance

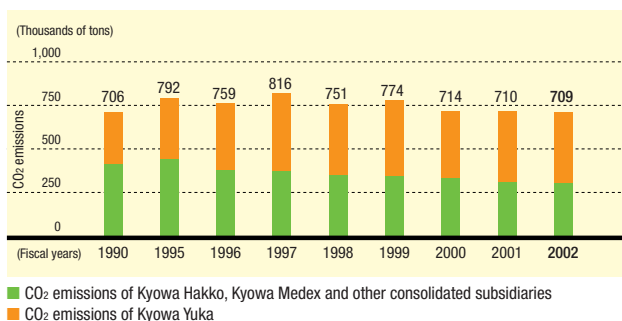
Environmental Protection Activities

The Kyowa Hakko Group is helping to prevent global warming through intensive energy conservation efforts and the introduction of LNG. These measures have reduced CO₂ emissions marginally despite increases in production. However, business structuring has caused a significant deterioration of unit energy consumption.

Global Warming Prevention Initiatives

- Efforts to reduce energy and resource consumption, especially through the Kyowa Eco-Project, have brought an improvement in unit energy consumption equivalent to 17,000 kiloliters of crude oil, or ¥450 million, per year.
- CO₂ emissions in fiscal 2002 amounted to 709,000 tons. This is 0.2% below the previous year's level and is equivalent to 100.5% of the 1990 level.
- Production growth in fiscal 2002 caused energy consumption to increase by 3.5% over the previous year's total to the equivalent of 323,000 kiloliters of crude oil.

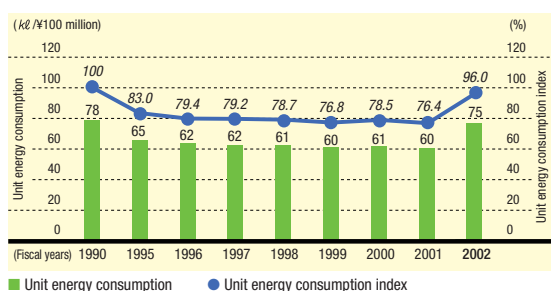
CO₂ Emissions



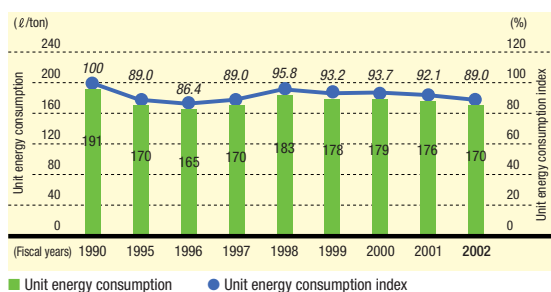
Increased production of amino acids, chemicals and other items caused energy consumption to increase by 3.5% in fiscal 2002. Despite this, there was a marginal reduction in CO₂ emissions because of factors that included an increase in the use of natural gas as a percentage of total energy consumption.

The CO₂ emissions of the Kyowa Hakko Group now stand at 100.5% of the 1990 level.

Unit Energy Consumption (Kyowa Hakko, Kyowa Medex and other Consolidated Subsidiaries)



Unit Energy Consumption (Kyowa Yuka)



The Kyowa Hakko Group aims to reduce unit energy consumption to 90% of the fiscal 1990 level by fiscal 2010. This goal is based on the Voluntary Action Plan on the Environment established by the Nippon Keidanren (Japan Federation of Economic Organizations).

Unit energy consumption in fiscal 2002: the Kyowa Hakko Group's unit energy consumption deteriorated by 21% year-on-year, but there was a 3.4% improvement in the result for Kyowa Yuka. The change in unit energy consumption resulted from a major change in the Group's business structure due to the transfer of the liquor business.

Reducing Energy Consumption in Distribution Operations

Energy consumed for distribution operations is equivalent to less than 3% of the total for production operations. In the chemical segment, which has the highest distribution volumes, the Chemicals Company has made wide-ranging changes to its approach, including the use of advanced Eco-tankers, a shift from road to rail transport, and the use of large ISO containers. In fiscal 2002, these modal shifts advanced significantly, lifting the energy savings from 1.3% in previous year to 3%.



The use of ISO containers is an important part of a modal shift strategy.

Sensho—Japan's First Eco-Tanker Runner-Up in "Ship of the Year" Competition

The Sensho is Japan's first chemical tanker with an electrically powered propulsion system. The power is supplied by three diesel generators. It has been verified that the vessel meets the energy saving target of 15%. The Society of Naval Architects of Japan selected the Sensho as the runner-up in its "Ship of the Year" competition for 2002.



The Eco-tanker Sensho



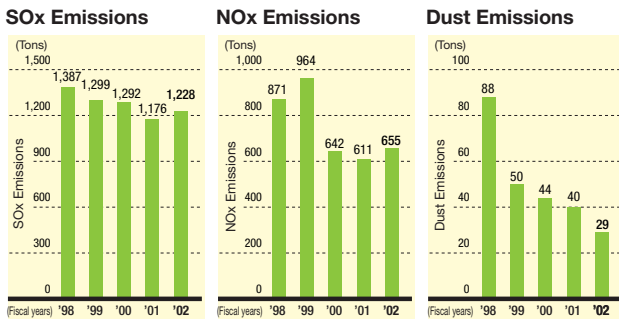
The award ceremony

Though the Kyowa Hakko Group works relentlessly to prevent air and water pollution, there are limits to what can be achieved with elimination technology. In relation to atmospheric issues, the Group will accelerate its efforts to implement specific measures, including fuel conversion.

Air Pollution Prevention Initiatives

- SOx and NOx emissions have increased by 4.4% and 7.2%, respectively, but dust emissions have been reduced by 27%.
- The higher SOx and NOx levels are attributable mainly to increased fuel oil consumption because of production growth.
- The reduction of dust emissions was achieved through various enhancements, including a change in the burners used in main boilers.

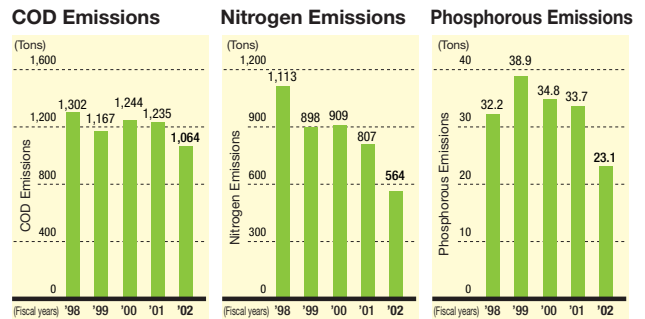
High plant operating rates were reflected in higher SOx and NOx emissions in 2002. The Kyowa Hakko Group is currently formulating a fuel conversion plan to reduce the environmental impact, following conversions at Sakai and Yokkaichi (partial) Plants.



Water Pollution Prevention Initiatives

- Nitrogen and phosphorous emissions have been reduced by 30% and 31% respectively from the previous year's levels.
- There has been a substantial reduction in emissions of nitrogen and phosphorous into closed bodies of water.
- COD emissions have been reduced by 14% from the previous year's level. If the effect of the transfer of the liquor business is excluded, the reduction would have been 5%.

In fiscal 2002, Ube Plant worked to curb emission levels through cooperative efforts involving the production and environmental departments. Nitrogen emissions were reduced by 250 tons per year through improvements in operating conditions for biological processing.



“The keys to energy conservation are commitment and knowledge sharing.” Chiba Plant, Kyowa Yuka Yoshiaki Kondo



In fiscal 2001 the Chiba Plant established the Ecological Issue and Solution Acceleration Committee. This group's task is to identify clearly defined issues, and to achieve related targets as quickly as possible. It consists of managerial staff of production and technology and Eco-Project officials. Meetings have been held on a monthly basis.

At the meetings, those responsible for each area present progress reports. If progress in a particular area has failed to reach the target level, committee members analyze the reasons and identify solutions.

In fiscal 2002, this approach resulted in savings of ¥200 million through improved resource and energy conservation in fiscal 2001 and fiscal 2002.

“Energy conservation is a matter of teamwork.”

Ube Plant, Kyowa Hakko Michiaki Shigenaga



An energy conservation project has been established at the Ube Plant. Regular energy conservation patrols and hand-made posters have helped to build enthusiasm for the project, which has yielded steady improvements.

For example, the Operations Team of the

Engineering Section, to which I belong, has focused on the operating efficiency of biological processing facilities. Our determined efforts to reduce the power consumption of aeration blowers and recycling pumps have brought a sustained improvement, resulting in power savings of 340,000 kWh last year.

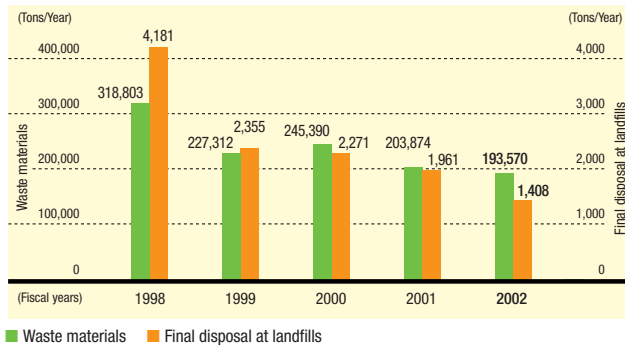
The entire Kyowa Hakko Group is working toward the goal of zero emissions*1 by fiscal 2007. Projects have been established, and a variety of steps are being taken to reduce waste materials, increase recycling and minimize final disposal at landfills.

Working toward Zero Emissions

- In fiscal 2002, waste materials amounted to 193,570 tons. However, recycling and appropriate disposal reduced final disposal at landfills to just 1,408 tons, or 0.7% of total waste materials. This represents a 28% reduction from the previous year's level.
- The Group has achieved 74% of its management target of 250 tons/year (2007).
- Zero emission status has been achieved at the Hofu Plant and Fuji Plant.
- The Kyowa Hakko Group is also making detailed efforts to recycle even small amounts of waste.

The following graph shows trends in waste materials and final disposal at landfills over the past five years. There have been significant reductions in both figures, indicating that the Kyowa Hakko Group is making steady progress toward its goals of 500 tons by fiscal 2004 and zero emissions (250 tons) in fiscal 2007.

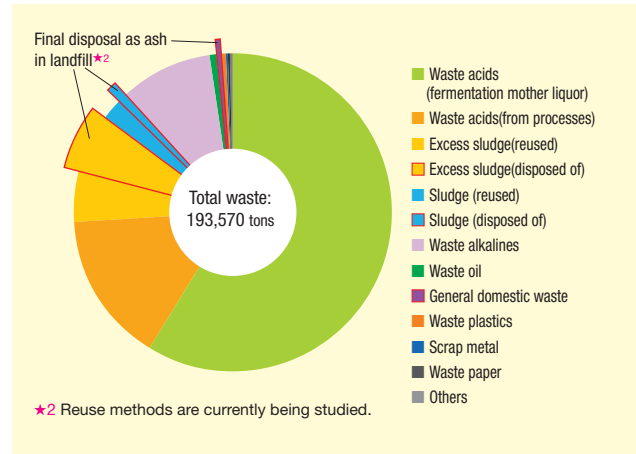
Trends in Waste Materials and Final Disposal at Landfills



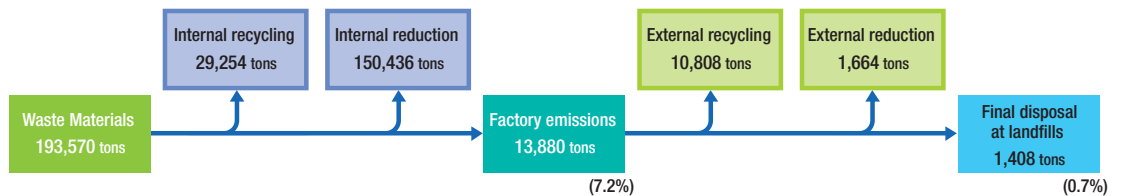
*1 The term "zero emissions" implies the reduction of waste products to zero. However, in addition to the "3R" (reduce, recycle, reuse) approach, the Kyowa Hakko Group must also deal with substances that require appropriate disposal through incineration. Its zero emission strategy therefore calls for the reduction of final disposal at landfills, which involves a high environmental risk, to no more than 0.1% of total waste. The target for fiscal 2007 is to reduce final disposal at landfills to no more than 0.1% of the total of 250,000 tons of waste materials in fiscal 2000, or 250 tons.

In fiscal 2002, the amount of waste materials produced was reduced 5% below the previous year's level to 193,570 tons. As shown in the graph below, this total consists mainly of waste acids, sludge and waste alkalines.

Waste Materials by Type of Substance



Overall Waste Recycling and Disposal Flows (Fiscal 2002)



Figures in parentheses represent percentages of total waste materials.

Waste acids, sludge and waste alkalines are either recycled or disposed of appropriately. The Kyowa Hakko Group recycle 100% of waste acids. Waste alkalines are also either recycled or disposed of appropriately. There is zero final disposal at landfills in regard to these wastes.

Sludge produced through fermentation processes at the Hofu Plant is no longer incinerated and is instead recycled. However, in fiscal 2002, the Kyowa Hakko Group disposed of over 900 tons of incinerated sludge at landfills. The reduction of this amount to zero is a key priority.

Reuse and Disposal Methods for Main Waste Materials

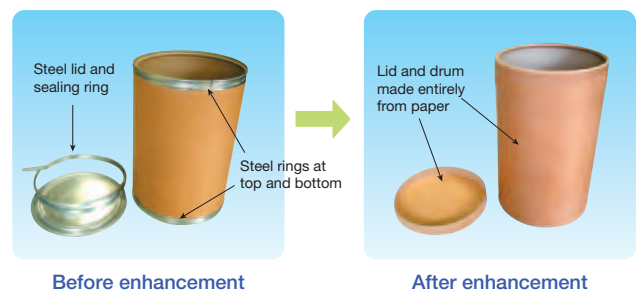
Waste Materials		Reuse Situation	Zero Disposal at Landfills
Waste acids	Fermentation mother liquor	Fully recycled as fertilizers and animal feed (Hofu)	Fully achieved
	From processes	Recovered as hydrochloric acid and fully recycled in processes (Yokkaichi)	Fully achieved
Sludge	Excess sludge	Hofu Plant: Entire output used as fertilizer Fuji Plant: Incinerated sludge cinders used as road paving material	Achieved at some sites
	From processes, etc.	Recycled in cement production Entire output recycled at Fuji Plant and Tsuchiura Plant	Achieved at some sites
Waste alkalines	From processes	In-house disposal of 99.6% of total output Zero final disposal at landfills 0.4% reused	Fully achieved

To achieve zero emission status, it will also be necessary to recycle waste materials other than waste acids, sludge and waste alkalines, which make up less than 1% of total waste. The Kyowa Hakko Group is working to achieve this through in-depth efforts to recycle even small amounts of waste materials.

Improvements to Packaging Materials

The improvement of packaging materials is an important aspect of efforts to establish a society geared toward the recycling of waste. Because the Kyowa Hakko Group supplies many of its products in bulk, the volume of packaging materials used is not great. However, the Group is actively introducing environment-conscious packaging methods. For example, the Pharmaceuticals Company has rationalized external packaging and introduced packaging materials that can easily be recycled. The elimination of external cartons has reduced resource consumption by over 30 tons annually, and the economic benefit is worth ¥50–70 million a year. In the past it was difficult to recycle Fiber Drums (FDs), which are used to package bulk products, because the lids and some drum parts were made from metal. However, Kyowa Hakko has been working with the manufacturer since 1996 to develop a metal-free FD. This work has resulted in the creation of a high-strength FD, and the Kyowa Hakko now packages its products in easily recyclable FDs. Unfortunately, some overseas suppliers have not yet adopted new type of drum, and the Kyowa Hakko is striving to find solutions to this problem.

Comparison of Fiber Drums



Toward Zero Emissions

Hofu Plant, Kyowa Hakko Takashi Iwamoto



Until recently sludge from fermentation processes and food production at the Hofu Plant was disposed of through incineration. By enhancing cleaning systems and other aspects of the processes, it has been possible to establish a recycling method based on the use of the sludge as fertilizer, and the incineration facility has been decommissioned. Benefits include a reduction in the amount of fuel oil used, and a contribution to energy conservation through the decommissioning of the facility.



The decommissioned sludge incinerator

As a global leader in the field of bulk fermentation products, the Kyowa Hakko Group is establishing overseas amino acid production facilities to supply raw materials and meet the needs of users throughout the world. Described here are the recycle initiatives of the Kyowa Hakko Group at its overseas production sites, the environmental and safety activities of BioKyowa Inc. in the United States, and communications with local communities.

Environmental Characteristics of Overseas Production Operations

- In the eight years since data collection began, overseas production sites have maintained zero emission rates (99.8% or higher).
- The amount of waste is being reduced by improving the purity of raw materials.
- Sustainable production systems have been established, as indicated by recycling volumes of 620,000 tons and a recycle ratio of 96%.
- Energy use is also being reduced.

At its three overseas production sites, the Kyowa Hakko Group uses fermentation and environmental technology developed at its domestic plants to produce foodstuffs, industrial raw materials and amino acids for animal feed. The raw materials for these processes are based on glycosides, which are agricultural products. The Kyowa Hakko Group led the world in the development of technology for the reuse of molasses, which is a by-product of sugar manufacturing. This technology is also used at its overseas plants.

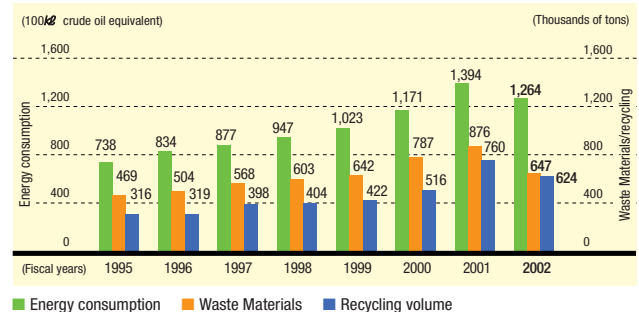
Energy consumption is an important aspect of the reuse cycle. The Kyowa Hakko Group is working to improve the sustainability of its production operations by reducing waste and increasing the amount reused. Its approach is based on the increased use of high-grade raw materials, and on the expansion of high-added-value applications. BioKyowa has played a pioneering role in these efforts. The overall result has been 25% reduction in the total volume of waste materials produced at overseas

production sites, while the recycle rate has risen to 96%.

CO₂ emissions resulting from energy use at overseas sites are equivalent to 33% of total emissions in Japan. CO₂ emissions have increased by about 150,000 tons compared with the 1990 level, and efforts are now focusing on the reduction of energy use.

The production operations of Fermex in Mexico ceased at the end of July 2003.

Energy Consumption, Waste Materials and Recycling Volumes at Three Overseas Sites



BioKyowa Inc.

U.S.-based BioKyowa is the Kyowa Hakko Group's main overseas production center. It was established 20 years ago 160km south of Saint Louis, Missouri. Initially it was involved mainly in the production of feed-



A sign displaying safety and quality policies



A joint environmental and safety assessment

grade lysine, but today its principal products are health foods and industrial amino acids.

Located alongside the Mississippi River in the heart of the American corn belt, BioKyowa uses corn sugar as its raw material. By-products are reused as resources in agricultural areas. This highly effective recycling system includes regular monitoring of soil quality on farms.

In May 2003, BioKyowa conducted a joint environmental and safety assessment with the Japanese parent company. It was found that environmental issues had been significantly improved through measures targeting production processes. While



The BioKyowa Plant

there had been no major occupational injuries, the incidence of minor accidents was high compared with plants in Japan. BioKyowa has clarified its accident reduction policy and placed it bulletin boards. It has also established an in-house journal dedicated to the environment and safety. Other initiatives include the introduction of KY (kiken yochi = accident risk awareness) program developed in Japan.

Community Perception of BioKyowa

The State of Missouri is fortunate that BioKyowa had the foresight to locate its swine and poultry feed supplements plant in Cape Girardeau 20 years ago, becoming one of the first Japanese companies to locate in the Show-Me State. Our business partnership has been fruitful with BioKyowa, which has twice expanded its operations in Missouri. We are also pleased that BioKyowa is developing value-added agricultural products that are assisting in Missouri's efforts to become a leader in the animal health and nutrition field, an important part of our burgeoning life science industry.

BioKyowa's long-term commitment to the state and to Cape Girardeau has contributed immensely to the globalization of Missouri, as well as serving as the center for Kyowa Hakko's global marketing. However, that relationship extends well beyond a business partnership. As a good corporate citizen, BioKyowa's staff has embraced the local community by contributing time and resources to create a better quality of life in the Cape Girardeau region. The company has helped promote a

greater understanding of different cultures through the sponsorship of Japanese scholar visits to Southeast Missouri State University. Children of BioKyowa staff have also served as cultural ambassadors, teaching their American preschool classmates about Japan's culture and language.

I appreciate the diversity and culture you share with Missourians, and I am pleased we have BioKyowa as a business partner in Missouri.

On behalf of the people of Missouri, I wish you many more years of growth and prosperity.

July 2003

Sincerely,



Bob Holden
Governor



Seal of the State of Missouri

BioKyowa Inc., has made a commitment to the community of Cape Girardeau that is shown in the community's perception of the industry. "It is perceived as one of the top employers in the community, offering a remarkable working environment and conditions to its employees," Mitch Robinson, executive director of the Cape Girardeau Area Industrial Recruitment Association, said.

"BioKyowa has won our Commitment to Excellence Award two times. That is one tangible testament to the perception of this great leader in the Cape Girardeau industrial community," John Mehner, President and CEO of the Cape Girardeau Chamber of Commerce.



Old Courthouse

"BioKyowa is perceived on the corporate side as a major player assisting various organizations in the community from financial assistance to volunteers from within BioKyowa," Robinson

added. The employees of this company are prominently involved in the community donating their time, talents and money to the Area Wide United Way, the March of Dimes, the Saint Louis Ballet (for more than 2,500 area school children), the Cape Girardeau Career & Technology Center, the Cape Girardeau Chamber of Commerce, and Southeast Missouri State University to name a few beneficiaries of this great corporate neighbor.

The community sees BioKyowa as the embodiment of achievement. The company's continued commitment to Cape Girardeau only augments an already positive perception.

"When you think of the top industries in Cape Girardeau, BioKyowa is always a leader of the pack," Mehner said.

June 2003

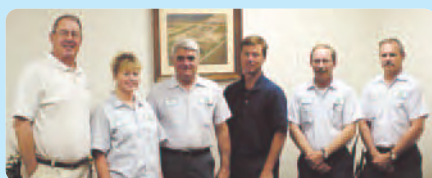
Edited by Cape Girardeau Chamber of Commerce Communications Director
Michael Wells



Seal of the City of Cape Girardeau

Ensuring Environmental Quality and Safety

Q.C., Safety-Environmental Manager BioKyowa, Inc. D. Bruce Blankenship



W. Hinckley, Plant Manager (far left), D.B. Blankenship, Q.C., Safety-Environmental Manager (third from right) and members of his staff

Our department has the distinction of being very diverse. On a daily basis we are concerned with issues of production quality, plant safety, and the impact of our plant site on the environment.

Our team members are diligently working on projects such as HACCP

accreditation, Injury reduction goals and NPDES water permit documentation.

All team members realize the importance of assuring that the products are safe for our customers and that everyone is entitled to work in a safe environment.

The Kyowa Hakko Group stringently controls the use of highly hazardous chemicals and either prohibits or restricts the use of certain substances. The disposal of chemicals at all stages from research laboratory to plants is also carefully controlled to minimize emissions into the environment. The characteristics of each substances are identified, and appropriate processes are used to decompose and treat of compounds.

Controlling Chemicals

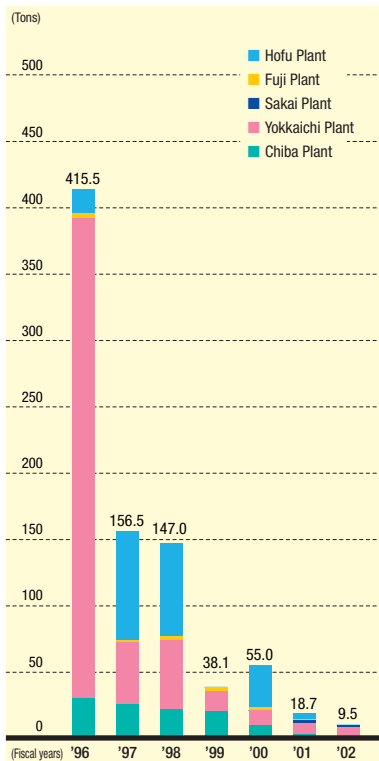
- The chemical industry has called for prioritized efforts to curb emissions of 12 chemical substances. In fiscal 2002, the Kyowa Hakko Group reduced its emissions of these substances by 49.2% below the previous year's level to 9.5 tons. The Group has already achieved its goal of reducing emissions by 97% relative to 1996 levels by 2004.
- Total emissions of PRTR Law Class I chemicals substances were reduced by 8% year-on-year.
- The Kyowa Hakko Group appropriately controls dioxins, PCBs and CFCs, etc.

Curbing Emissions of 12 Chemical Substances (Adverse Air Pollutants)

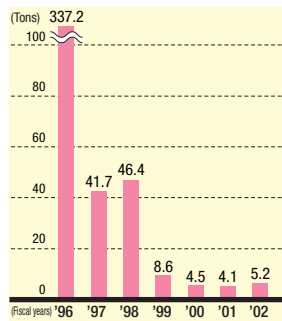
In fiscal 2002, the Kyowa Hakko Group reduced its emissions of dichloromethane to zero and benzene emissions almost to zero. Chloroform emissions were also drastically reduced

through the use of recovery systems of chloroform. Total emissions of the 12 chemicals substances were reduced by 49.2% year-on-year to 9.5 tons. Emissions have been reduced by 97.7% relative to the 1996, which means the 2004 target has already been reached.

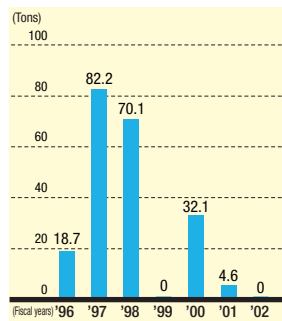
Total Emissions of 12 Chemical Substances



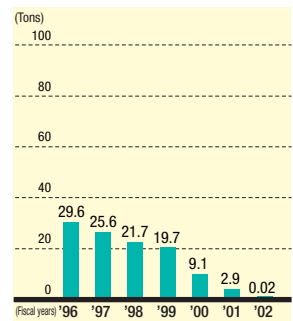
Acetaldehyde



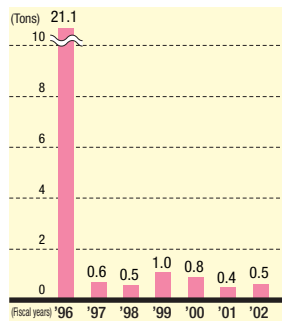
Dichloromethane



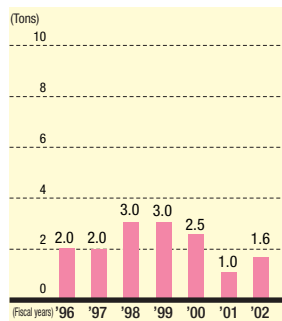
Benzene



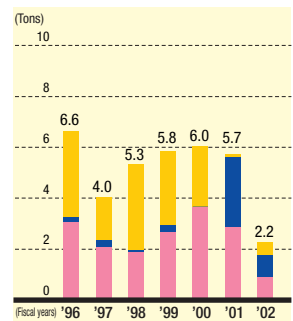
Formaldehyde



Ethylene Oxide



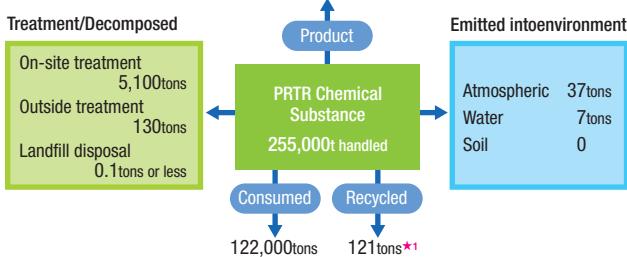
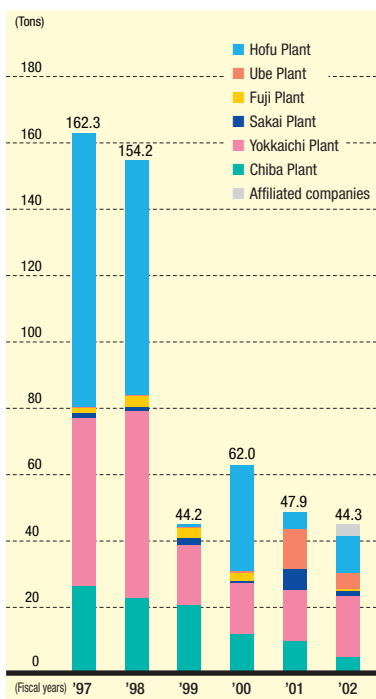
Chloroform



Curbing Emissions of PRTR Law Class I Chemical Substances

The graph below shows the total amounts of Class I chemical substances handled, consumed, recycled, emitted into the environment, treated or decomposed by the Kyowa Hakko Group in fiscal 2002. The total amount handled in fiscal 2002 was approximately 255,000 tons, of which 44.3 tons were emitted. The graph also shows trends in emission levels. The fiscal 2002 represents a reduction of 8% from the previous year's level. Emission statistics for individual substances are shown on the Kyowa Hakko web site.

Total Emissions of Class I Chemical Substances



*1 Sixteen tons from the "Recycled" category (out of a total of 137 tons mentioned in the Sustainability Report 2003 printed in October 2003) was reclassified as "Product" because it was sold to other parties for use in production. (Revised November 2003)



A solvent recovery system at the Pharmaceutical Research Institute

Limiting the Use of Ozone Layer-Depleting Substances

The Kyowa Hakko Group limits the use of CFCs to sealed systems, such as air conditioners and freezers. In fiscal 2002, CFC replenishment by the entire Kyowa Hakko Group amounted to 3.5 tons, which is an increase over the previous year's level of 0.6 tons. Future plans call for active measures, including increased support and control for affiliated companies, and the use of coolants that are less damaging to the ozone layer.

PCB-Related Measures

The amount of PCBs stored at all sites is less than 2 tons. Storage conditions are regularly inspected to ensure that there is no leakage. In June 2001, the Japanese government passed a law providing for special measures to ensure appropriate disposal of PCBs. As soon as official facilities are ready, the Kyowa Hakko Group will systematically implement non-toxic disposal measures.

Dioxin-Related Measures

At the end of 2000, the Kyowa Hakko Group had a total of 17 incinerators. At present, only seven incinerators are in operation, and all comply with facility maintenance standards that came into effect on December 2002. Three of these are operated by Kyowa Hakko and four by Kyowa Yuka. These facilities are subject to stringent maintenance procedures covering both hardware and software.

Odor Prevention

Sakai Plant, Kyowa Hakko Tetsushi Yamamoto

Because the Sakai Plant is surrounded by residential areas, we are very careful about environmental issues, especially odors. The vents of our exhaust scrubbers are fitted with odor sensors, and their operation is stringently managed on the basis of control values.



An exhaust scrubber

Amounts of Class1 Chemical Substances Designated under PRTR Law Handled, Released, Removed or Recycled in FY2002

Name of substance	Amount handled (t)	Amount released				Total consumption (t)	On-site treatment (removal) (t)	Outside treatment (transfer) (t)	Quantity recycled (t)
		Atmospheric (t)	Water (t)	Soil (t)	Total (t)				
Zinc compounds (water-soluble)	7.7	0.0	0.4	0.0	0.4	1.4	0.0	5.9	0.0
Acetaldehyde	109,372.2 ^{*1}	1.0	4.2	0.0	5.2	51,290.8	4,895.5	1.6	0.0
Ethylene oxide	18,077.0	1.6	0.0	0.0	1.6	18,041.0	34.4	0.0	0.0
Xylene	39.2	16.4	0.0	0.0	16.4	0.0	22.8	0.0	0.0
Chloroform	89.9	2.2	0.0	0.0	2.2	0.0	13.2	30.8	43.7
Cobalt and its compounds	9.8	0.0	1.7	0.0	1.7	5.5	0.0	2.6	0.0
Divanadium pentaoxide	2.2	0.0	0.0	0.0	0.0	0.0	2.2	0.0	0.0
Nickel oxide (nickel compounds)	2.5 ^{*2}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1,2-dichloroethane	9.4	0.2	0.0	0.0	0.2	0.0	0.1	9.1	0.0
N,N-dimethylformamide	10.3	0.1	0.0	0.0	0.1	0.0	2.4	7.8	0.0
3,5,5-trimethyl-1-hexanol	816.8	0.2	0.0	0.0	0.2	816.6	0.0	0.0	0.0
Toluene	85.3	0.5	0.0	0.0	0.5	7.0	0.1	0.0	77.7
Nickel	5.2 ^{*2}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bis(2-ethylhexyl) phthalate	74,460.0 ^{*3}	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0
Trichlorofluoromethane (CFC-11)	0.9 ^{*4}	0.9	0.0	0.0	0.9	0.0	0.0	0.0	0.0
Chlorodifluoromethane(HCFC-22)	2.6 ^{*4}	2.6	0.0	0.0	2.6	0.0	0.0	0.0	0.0
Benzyl chloride	150.8	0.1	0.0	0.0	0.1	150.7	0.0	0.0	0.0
Benzene	642.3 ^{*5}	0.0	0.0	0.0	0.0	601.4	40.9	0.0	0.0
Boron and its compounds	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Formaldehyde	472.1	0.5	0.0	0.0	0.5	396.6	3.0	72.0	0.0
Phthalic anhydride	50,369.4	0.0	0.0	0.0	0.0	50,286.4	83.0	0.0	0.0
Maleic anhydride	278.0	0.0	0.0	0.0	0.0	278.0	0.0	0.0	0.0
Monoethanolamine	51.6	10.7	1.0	0.0	11.7	8.3	31.6	0.0	0.0
Total	254,951.6	37.0	7.3	0.0	44.3	121,883.6	5,129.4	129.8	121.4
Dioxins (mg-TEQ)	195.9	90.1	104.8	0.0	194.9	0.0	0.0	1.0	0.0

*1 53,179.1 tons of which were sold

*2 100% sold for recycling

*3 74,459.8 tons of which were sold

*4 CFC statistics indicate amounts used to replenish freezers

*5 Removed from naphtha as an impurity in the form of a subraw gas and incinerated for energy recovery

The Kyowa Hakko Group recognizes risk management as an important management priority. To ensure that all employees are fully informed about procedures, it has formulated clear emergency action guidelines and risk management manual. The Group has accumulated knowledge by identifying risks in all areas of activity and developing responses.

Emergency Action Guidelines

We will work to protect the environment and maintain safety and also provide products with consideration of the environment and safety.

1. Consideration for human life and health is the first priority.
2. We will strive to minimize impacts on customers, shareholders, suppliers, consumers and communities.
3. We will give priority to humanitarian and social contribution, even where this causes a temporary disadvantage to the Company.
4. We will take all possible care to protect and conserve the environment.
5. We will maintain a high standard of transparency and disclose accurate information as part of corporate governance.

The Kyowa Hakko Risk Management
(a risk management manual)



Hazardous Chemicals

Hazardous chemicals are identified in the new product development procedures, which restrict the use of these substances in production. In 2001, the Kyowa Hakko Group identified highly hazardous chemicals and raw materials with poor biodegradability. The Group's research laboratories and suppliers were asked to avoid the use of these substances in order to prevent harm to ecosystems and human health. These requirements have been clearly stipulated as chemical environmental standards for the Kyowa Hakko Group. From a risk management perspective, appropriate disposal procedures that reflect the properties of each substances are required even where the quantities involved are minute. There are stringent regulations against the release of hazardous chemicals into the environment.

Soil Contamination

The Kyowa Hakko Group takes great care to avoid the risk of soil contamination. For example, it has established its own system of mandatory leak checks for its four underground tanks, and the construction of new underground storage tanks is currently prohibited. Countermeasures against soil contamination

include risk response systems based on legal standards for contamination within sites owned by the Kyowa Hakko Group. Appropriate risk surveys are also carried out when sites, including those operated by affiliated companies, are closed or mothballed. Contamination in excess of the standard level was detected at one site, but appropriate countermeasures have already been completed under the guidance of local authorities.

Preparing for Major Earthquakes

The Kyowa Hakko Group recognizes its social responsibilities as a manufacturer, particularly with regard to its role as a supplier of pharmaceuticals. Since the second half of the 1970s it has been preparing for a predicted earthquake in the Tokai region. Those preparations have included the establishment of regulations and procedures, the dispersal of production and distribution operations, and the earthquake-proofing of buildings.

Distribution Safety

The Kyowa Hakko Group takes every possible precaution to ensure its transport operations are safe and environmentally sound. It has established a 24-hour emergency response system as part of its measures to ensure that high-volume, general-purpose products, such as chemicals and alcohol, are transported safely. Other initiatives include the introduction of the "Yellow Card" system and the provision of training for transportation workers.



A Yellow Card

This safety checklist, known as a "Yellow Card," is completed when goods are dispatched.

Environmental Protection Activities

~1970

1970

1980

1990

2000

Principal Environmental Management Activities	Principal Achievements in Product and Technology Development
1964 Production of organic fertilizer using recycled fermentation mother liquor at the Hofu Plant	
1968 Wastewater treatment facility introduced at the Hofu Plant	
1971 Wastewater combustion facility introduced at the Yokkaichi Plant	1970 Contributed to meat production with amino acid additives for stock feed
1973 Creation of Safety and Environmental Management systems at Kyowa Hakko and Kyowa Yuka Acetaldehyde removal facility introduced at the Yokkaichi Plant	Used an oxo process to recover CO ₂
1975 Wastewater treatment facility introduced at all Kyowa Hakko and Kyowa Yuka plants Flue gas desulfurization equipment introduced at the Yokkaichi Plant	
1977 Kyowa Hakko won first Director General of the Environment Agency Award	
1979 Introduction of biodenitrification and dephosphorization process to wastewater treatment facilities	
1981 Under a Companywide energy conservation project, Kyowa Hakko achieved a 20% reduction in energy use	1981-1986 Participated in a MITI-sponsored national research project on converting unused biomass into fuel oil
1993 Formulation of policies for environmental protection	1993 Developed and commercialized Landfill Liner, polyurethane sheets for final waste-disposal sites Developed and commercialized cleaner and new raw lubricant for refrigerant used as CFC substitute
1996 Implementation of Responsible Care	1996 Developed and commercialized phytase, an enzyme used in feed additives to prevent environmental damage caused by the livestock industry
1997 Recycling of <i>shochu</i> distillate begun at the Moji Plant, Kyowa Hakko ended ocean dumping	1997 Commercialized a new manufacturing method for hydroxyproline, an amino acid that uses no collagen and causes little environmental damage Simplified and reduced the volume of packaging used for pharmaceuticals and foods
1998 Vast reduction of COD levels in wastewater Installation of cogenerator at the Chiba Plant	1998 Through joint research with Tsuji Oil Co., Ltd., developed and commercialized a process that converts <i>shochu</i> distillate into animal feed
1999 Implementation of deodorizing facilities at the Hofu Plant Publication of the Health, Safety, and the Environment Report Installation of new organic fertilizer production facility under the energy-saving and environmental protection systems	1999 The Japan Scientific Feeds Association presented Kyowa Hakko with the Technology Award in recognition of the Company's efforts, through its business activities in amino acids and enzymes for feed additives, to promote the development and wide usage of feeds that reduce environmental impact. Shifted to easy-to-recycle materials for PET bottles for <i>shochu</i> products Promoted elimination of metal cans by the Bio-Chemicals Company
2000 Enhancement of NOx removal facility at the Yokkaichi Plant Received ISO 14001 certification at eight Kyowa Hakko and Kyowa Yuka plants	2000 Marketed an organic wine with no additives Promoted environment-conscious packaging, such as that eliminating outer packaging materials for medical products
2001 Installation of low-NOx burners, fortified SOx measures ISO 14001 certification of Kyowa Medex's Fuji Plant Affiliates began construction of EMS based on ISO 14001 standards	2001 Developed and implemented new dichloromethane-free production process 2002 Increased efforts toward achievement of zero emissions Start of shipments of all-fiber drums Start of eco-tanker services
2002 Completion of incinerator upgrades and shut-downs to comply with Waste Management and Public Cleansing Law	2003 Launch of mycotoxin analysis method onto market



Third-Party Assessment

Academic experts have guided the development of this year's report from the preparation stage. We will strive to reflect their views in the continuing improvement of the environmental management of the Kyowa Hakko Group.

Assessing the Sustainability of Corporate Activities

Professor **Itaru Yasui**

University of Tokyo Institute of Industrial Science



These are some personal views on ways in which corporate activities should evolve over the next decade.

Participants at the Johannesburg Summit in 2002 emphasized that sustainability would remain a major goal for the future, and that the advanced nations needed to rectify unsustainable production and consumption. In March 2003, the Japanese cabinet responded by adopting the "Basic Plan for Establishing a Recycling-Based Society." Three indicators have been selected for the Basic Plan: the reduction of waste disposal at landfill sites, the improvement of cyclical use rates, and the improvement of resource productivity. It will also be necessary to reduce greenhouse gas emissions, as required under the Kyoto Protocol, and to continue existing efforts to reduce emissions of adverse substances. Another priority, which relates somewhat to social responsibilities, is the implementation of extended producer responsibility (EPR). All companies will need to work in all six of these areas over the next decade.

Because I could not visualize the areas of Kyowa Hakkō's business activities that involve the use of fermentation-based manufacturing methods, I toured one of their factories. This visit gave me a clearer understanding of the fermentation process and the use of recrystallization as a refining process.

Based on my impressions from the factory visit and interviews, I checked this year's environmental report from the perspective of sustainability. First, it appears that considerable progress has already been made toward the reduction of waste disposal at landfill

sites. In fact, Kyowa Hakkō appears to have reached a stage at which further progress will be difficult. It seems difficult to use cyclical use rates as targets for the chemical business, a core operation of Kyowa Hakkō. Kyowa Hakkō's efforts in this area appear to be based on green purchasing in its offices under its Green Office Plan. Generally, improvement of resource productivity and carbon dioxide emissions per unit of production are being achieved through resource and energy conservation efforts, and through a shift to high-added-value products. I had assumed that Kyowa Hakkō's increased emphasis on pharmaceuticals and functional foods would bring a steady improvement in resource productivity. In fact, data for the current year show a significant worsening of carbon dioxide emissions per unit of product price resulting from the transfer of liquor manufacturing operations to another company. This aspect requires a slightly more detailed explanation. There has been significant improvement in chemical substance emissions, including dramatic reductions of PRTR* substances and the 12 substances targeted for priority efforts. As far as extended producer responsibility (EPR) issues are concerned, responsibility for products appears to be more important than responsibility for packaging in this industry.

The preceding comments represent only a very rough analysis. However, my impression based on the factory visit is that Kyowa Hakkō is working steadily in these areas, and that management thinking is permeating to detailed aspects of the company's operations.

An expert in materials chemistry, Professor Itaru Yasui, University of Tokyo Institute of Industrial Science, has been implementing major environmental research projects for the past 15 years and is an important opinion leader in this area. He is concerned that there have been no comprehensive environmental research projects to meet today's need for research data based on intelligent insights. In line with his view that appropriate policy decisions must be based on a comprehensive viewpoint, he is currently implementing his own Internet-based campaign asking people to consider the extent to which an individual can achieve comprehensiveness.

•Professor Yasui's views on environmental reporting are as follows:

"In recent years there has been an increase in the publication of sustainability reports, especially in Europe, and these are now taking the place of environmental reports. However, the word "sustainability" as used in these reports represents a totally different concept from the sustainability issues now confronting humanity. The "triple bottom line" concept addressed in sustainability reports seems to be a defensive notion relating to risk management efforts undertaken by companies on behalf of investors with the aim of avoiding public criticism. On the other hand, what is needed is an aggressive stance in the form of positive action by companies toward the achievement of global sustainability. To demonstrate this type of commitment, companies need to produce reports that describe their activities in detail, with particular emphasis on environmental aspects."

*PRTR (Pollutant Release and Transfer Register): A means stipulated in the Law Concerning Reporting, etc. of Releases to the Environment of Specific Chemical Substances and Promoting Improvements in Their Management (The Pollutant Release and Transfer Register Law) to measure levels of reduction in the environmental risk that chemical substances and environmental pollutants pose by requiring companies to report to the government how much waste is discharged on-site and how much waste is transferred off-site.

Clarifying Visions and Management systems toward Sustainability

Kimie Tsunoda

Steering Committee Valdez Society



On reading the first and second proofs of the “2003 Health, Safety and the Environment Sustainability Report” and the “Kyowa Hakko Group Health, Safety and the Environment Sustainability Report 2002,” my attention was drawn to the fact that the word “Sustainability” has been used in the title of these reports in two successive years. I would like to offer the following recommendations for improvements to the next report.

(1) It is very pleasing to see that the information concerning social performance, including corporate ethics, has been expanded compared with the previous year’s report. However, the Kyowa Hakko Group’s sustainability vision is not clearly defined. I hope the next report will provide descriptions of vision, management systems and quantitative progress toward sustainability.

(2) Data and information coverage should include overseas activities in the report. If Kyowa Hakko aims to achieve sustainability at group level, then the report should be on a consolidated basis, in the same way as financial reports.

(3) Sustainability concerns a more diverse

range of stakeholders than the environment. There should be a process that communicates the views of multiple stakeholders to be sought at the planning stage and reflected in the content of the report.

(4) With regard to environmental issues, throughout the report, there is evidence of a highly commendable commitment to information disclosure in addition to self-assessment information, such as environmental accounting, and descriptions of future policies and activities. The report also includes graphs with numerical data, which were not previously disclosed. Future reports should also provide information that allows readers to trace yearly trends of material flows, environmental accounting, and so forth, as well as more information about targets in medium-term plans and the appropriateness of policies and activities.

(5) The group web site provides site reports and other data and information in greater detail than in the paper report. Specific roles should be identified for paper and electronic media, and paper versions should be edited effectively to encourage and guide readers to access electronic versions as well.

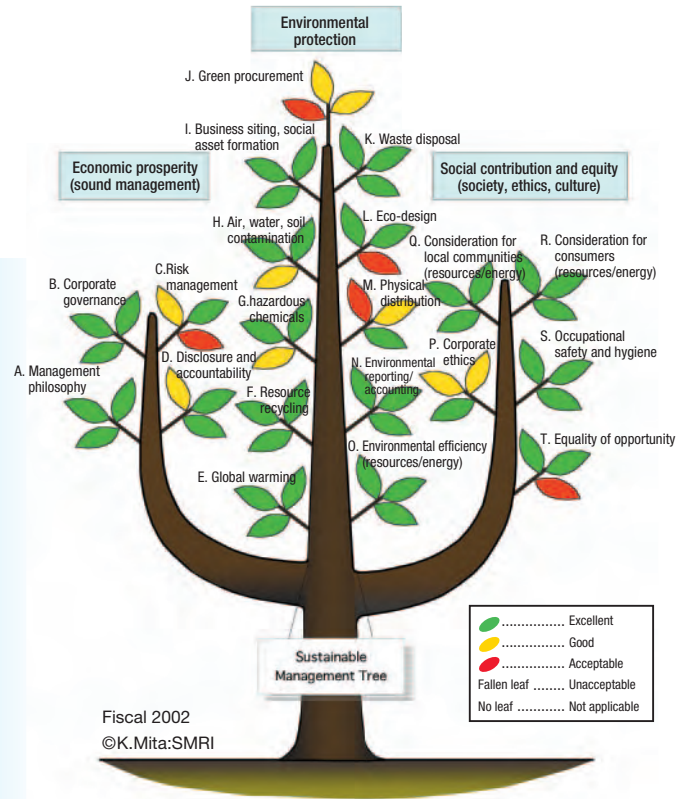
The Valdez Society was established in 1991 as a non-governmental organization (NGO). It carries out research and provides recommendations concerning the corporate environmental responsibilities toward sustainability. This work is approached by citizens and corporations in a joint effort.

It is the only coalition member of the CERES in Japan. CERES is an American NGO, and in 1989, it adopted the Valdez Principles (later renamed the CERES Principles), which were the world’s first code of corporate environmental responsibility in the context of sustainable development. It was also proposed the organizational framework for Global Reporting Initiative (GRI), which promotes sustainability reporting guidelines.

Third Party Assessment

Sustainable Management Rating Institute

In 2002 this organization, with the assistance of the government, issued its first environmental ratings based on its perspective as a neutral, third party, carrying out sustainability assessments for 86 Japanese companies. The assessments required dialog between assessors and corporate officials to ascertain various information about the many branches and leaves on the sustainability management tree. Kyowa Hakko responded positively to the process of sustainable-management rating by society by undergoing the assessment, and received the rating shown in the diagram on the right. The results placed it around the middle of the participating companies. There is significant difference of opinion over some of the findings, but these have nevertheless been disclosed with the permission of the Institute.



Social Responsibility Assessment of Pharmaceutical Company by Storebrand

Storebrand is an investment company based in Sweden. It emphasizes socially responsible investment, especially in the Scandinavian countries. It gave a high rating to the environmental and social contribution activities of Kyowa Hakko, which it included in its SRI fund with a "Best in Class" designation. As a pharmaceutical company that is fulfilling its social responsibilities, Kyowa Hakko was given permission to use the butterfly symbol shown on the right. This status was granted to the top 30% of the 52 companies that applied.

Note: The "Best in Class" designation is awarded to companies that score above the average and near the top of companies in the category for which they apply.





**Scanning electron micrograph of
Corynebacterium glutamicum ATCC 13032.**

This bacterium was discovered as a potent glutamic acid-producing microorganism by Kinoshita *et al.* in 1956. This discovery provided a novel approach to establish commercial methods for producing natural amino acids. And the extracellular production of a desired amino acid was developed by the metabolic engineering. In 2000, the complete genome sequence of *C. glutamicum* ATCC 13032 was determined by Nakagawa and co-workers of Tokyo Research Laboratories.

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