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Scope of the Report

This report describes the environmental preservation activities that the Asahi Glass Group carried out to the end of July 2002. Unless otherwise noted, statistical figures shown in the report are those of Asahi Glass Co., Ltd., not the Asahi Glass Group, as of the end of March 2002.

The data shown for each year is taken from accounting figures closed in March annually.

Preface

The Asahi Glass Group published its environmental report for the first time in November 2000 with the aim of making its multifaceted environmental activity widely known to the general public. In editing the current environmental report, which is the third one, we made a comprehensive review of the previous reports to prepare a report which is fuller in content and easier to understand.

In addition, we, for the first time, asked the Environmental Information Science Center – an environmental non-profit organization – for all-out cooperation and involvement in the planning, editing, and proofreading of this report.

This report also includes site reports of all the establishments (factories and a research center) of Asahi Glass to facilitate the people in their neighborhood to understand the environmental activities of these establishments. The site reports contain data required by the PRTR (Pollutant Release and Transfer Register) Law, including the release and transfer of chemical substances. The environmental activities of the companies that are consolidated with Asahi Glass are also described in this report.

Company Profile

Name	Asahi Glass Co., Ltd.
Head Office	1-12-1, Yurakucho, Chiyoda-ku, Tokyo, Japan
Founded	September 8, 1907
Incorporated	June 1, 1950
President	Shinya Ishizu
Capital	¥ 90,472 million (1,175,242,497 outstanding shares)
Employees	6,989 (48,362 for the consolidated companies)

Message from the President

In the world that surrounds us, the growing concern about global environmental problems has initiated various activities aimed at creating a sustainable society. Securing sound interaction between our social and economic systems and the environment has demanded us to reduce the impact on the environment voluntarily and positively in all spheres of our society. We consider that a smooth shift to a sustainable society is indispensable in keeping the irreplaceable global environment intact for the future generations.

This report describes the contents and results of our environmental preservation activities so that it will help you understand how the Asahi Glass Group is dealing with various global environmental problems.

In April 2002, with the aim of reinforcing the centripetal force of the Asahi Glass Group to practice integrated management on a global basis in the true sense of the term, we formulated a new vision of the Group, "Look Beyond," and clearly defined the Group's missions, sense of value, and behavioral guidelines which the Group intends to keep cherishing in the future. With "Look beyond and create a brighter world" as the mission shared by all the member companies of the Group, we continue making innovations to take us beyond our present conditions. The Group has declared that, with the environment as the chief pillar of its sense of value, it will strive to maintain good harmony with nature and, as a good global citizen, continue to fulfill the responsibility of contributing to the development of a sustainable society. As detailed in our new Group vision mentioned above, the environment is one of the top management priorities; indeed, we have resolved to continue to tackle global environmental problems in a positive way.

Concretely, the Group focuses on establishing organizations and systems for dealing with environmental problems effectively and disclosing relevant information positively, taking measures to help curb global warming, reducing and recycling industrial waste, practicing proper management of chemical substances, and promoting the eco-business as the five main pillars. The Group is also positively tackling new tasks aimed at zero emissions of harmful substances, life cycle assessment (LCA), and environmental accounting.

Since last year, the scope of environmental preservation activity of Asahi Glass has been expanded to cover all the member companies of the Asahi Glass Group, including its affiliated companies and subsidiaries. As one of the leading companies in the basic materials industry, we are determined to implement effective environmental measures which are always one step ahead of those of the other companies.

Please feel free to bring to our attention any opinions or comments you may have about this report.

President & CEO



The Asahi Glass Group's Concept of the Environment

With the environment positioned as one of the most important management concerns, we are positively working on various environmental aspects. The Asahi Glass Group's basic concept of the environment is clearly described in the "Asahi Glass Group's Basic Policy on Environmental Preservation" and the "Guidelines for Environmental Behavior" based thereon, as well as the new Group Vision, "**Look Beyond**".

The "Environment" That Underlies the Asahi Glass Group's New Vision "**Look Beyond**"

In order to meet the changes in global business environment and aggressively evolve to ensure our continuing role as an enterprise that contributes to shaping the future, the Asahi Glass Group developed a new Group Vision "**Look Beyond**". The Group Vision declares "Our Shared Values" that all the members of the Group must share as the basis of every action we take. The "Environment" is one of the most important Shared Values that support Asahi Glass Group as a global enterprise.



"Our principles" that are extended based on the "Environment" as one of Our Shared Values, are as follows;

Our Principles

- To respect environmental conservation
- To contribute to the development of a sustainable society
- To be trusted as responsible global citizens by the world community
- To maintain and improve occupational health and safety and working environments

The Asahi Glass Group's Environmental Policy

The principle upon which the Asahi Glass Group engages in environmental management activities is as follows: Active contribution to environmental protection is a fundamental responsibility of enterprises towards the global society within which they operate. This principle is implemented in the following environmental management activities.

- 1** We are committed to the preservation of the environment of Earth as a top management priority in all our corporate activities.
- 2** We will make every effort to establish the organizations and systems required to preserve the environment and to work for continuous improvements.
- 3** We will comply with laws, ordinances, regulations, treaties and agreements designed to preserve the environment. We will also set and work to achieve voluntary objectives to reduce environmental impacts.
- 4** We will work to develop and provide society with products, technologies and services that reduce environmental impacts.
- 5** We will publicize our overall environmental preservation activities to ensure that they are properly understood by society.



Asahi Glass Environmental Guidelines

In order to execute the basic policy mentioned above, we have established guidelines for environmental behavior and five concrete measures to tackle environmental problems effectively and efficiently.

Active Management and Information Disclosure

Measures Against Global Warming

Waste Reduction and Recycling

Responsible Management of Chemicals

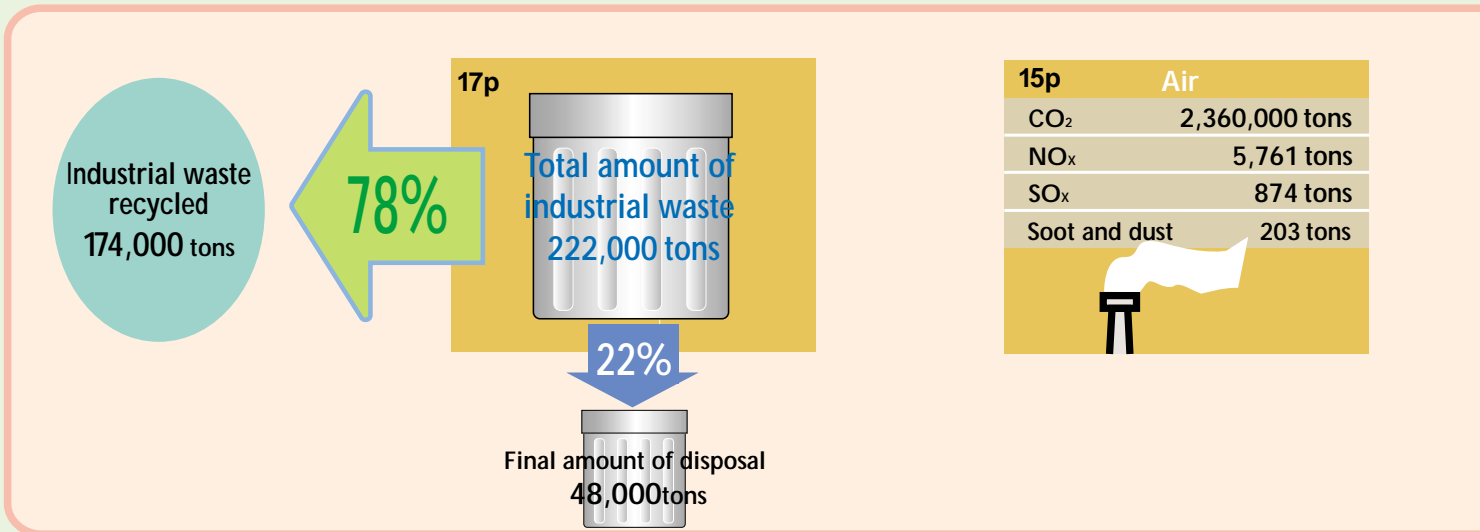
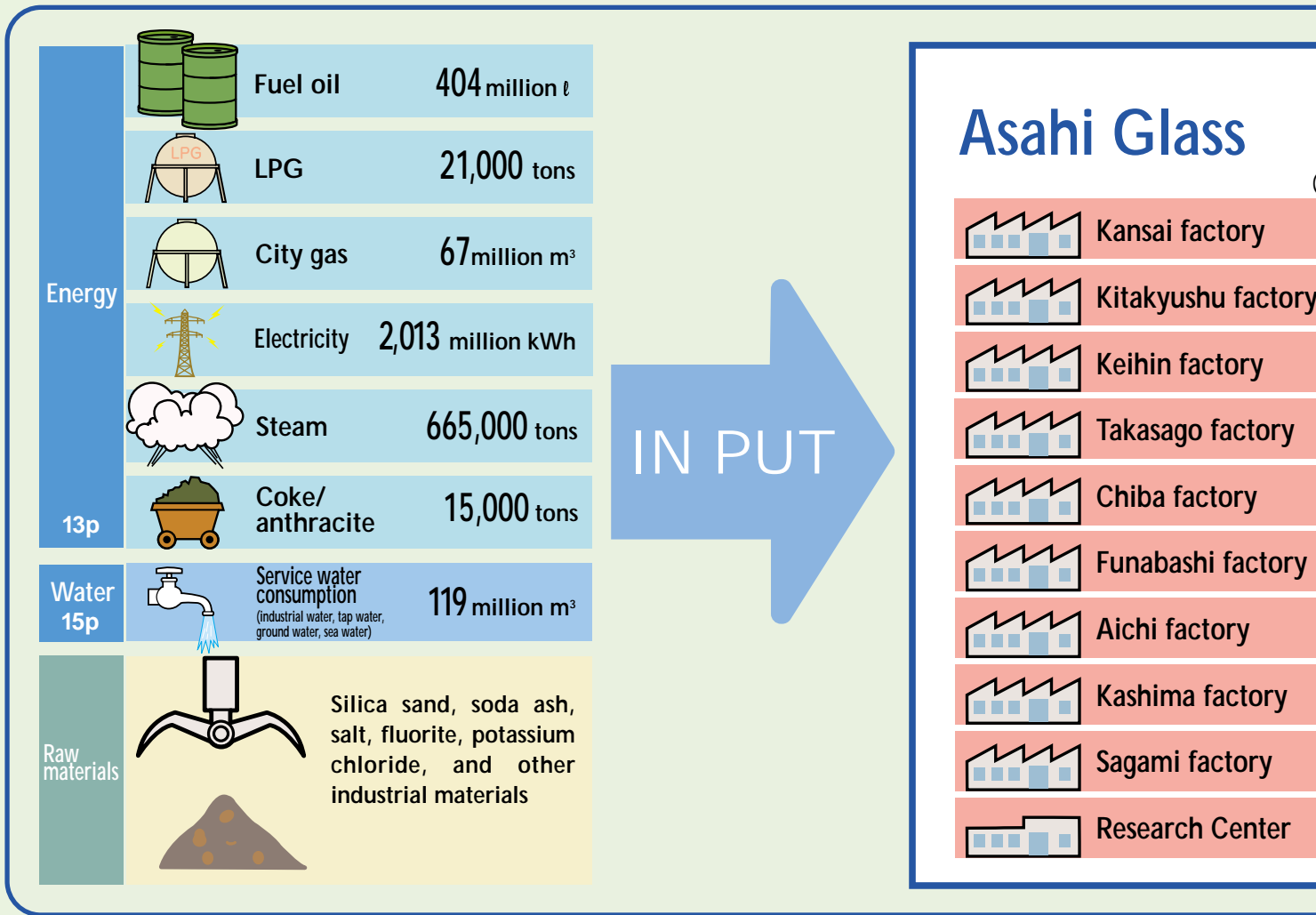
Environment-Related Business





Asahi Glass and Environmental Load Mass Balance

The diagram, below, schematically shows the business activities of Asahi Glass and their impacts on the environment.



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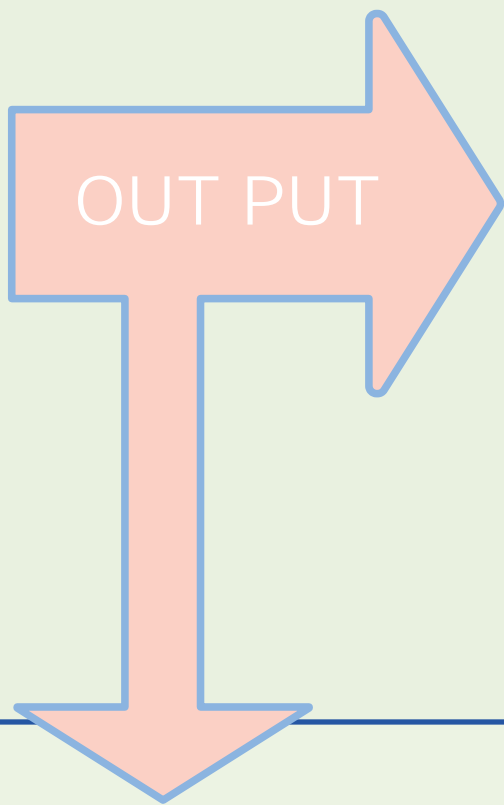
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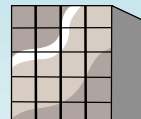
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Products

Flat Glass Company

[Products] Flat glass for housing and building Mirrors
Construction materials for housing Glasswares for store decoration



Automotive Glass Company

[Products] Fabricated glass for motor vehicle
Fabricated glass for industrial use



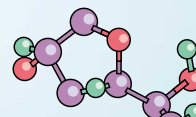
Display Company

[Products] CRT glass bulbs Glass substrate for liquid crystal display
Glass substrate for plasma display, etc.



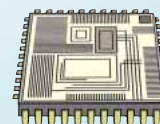
Chemicals Company

[Products] Inorganic chemicals Organic chemicals
Ion exchange membranes Fluoride products
Urethane products, etc.



Electronic Materials and Products General Div.

[Products] Glass frits and paste IC/circuit boards,
synthetic quartz, high-purity SiC Optoelectronic parts, etc.



Building Materials Div.

[Product] Outer wall materials for building
Siding boards for housing, etc.



15p Water

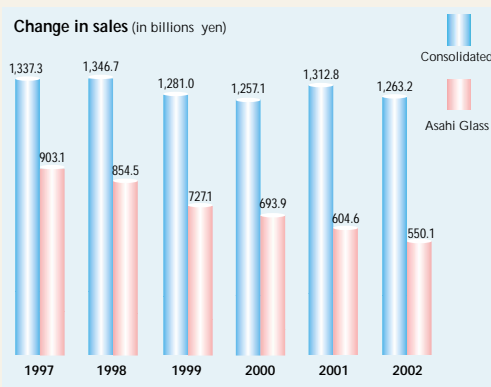
COD 1,283 tons

Wastewater 109million m³

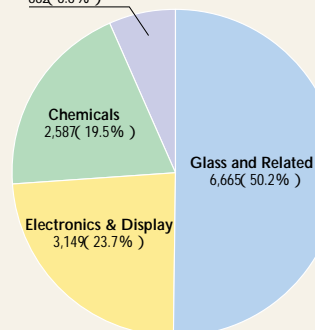


Sales

Change in sales (in billions yen)



Ceramics and Others
882 (6.6%)



Organizations for Environmental Management

For the purpose of environmental management, the Asahi Glass Group has set up organizations specializing in environmental preservation activities at different levels—“corporate” exercising general control over the entire Group, “companies” (divisions), such as Flat Glass and Automotive Glass, and “establishments” each, research center,.

Corporate Organization

At the Asahi Glass Group, the Corporate Environment & Safety Directorate headed by an executive vice president exercises general control over the Group’s environmental activities, including global environmental problems.

The major roles of the Directorate are as follows.

- Grasping the present conditions and trends of the environment and safety inside and outside the Group
- Establishing a basic stance on the environment and safety
- Determining specific activities relating to the environment

and safety

Formulating and promoting plans to carry out those activities

Specific environmental activities mentioned above are discussed in detail by the expert committees under the Directorate.

The Corporate Environment & Safety Directorate has Environment & Safety Department—a special organization that serves as secretariat to the Directorate

Company (General Division) Organization

Each of the companies has an organization that specializes in the environment (& safety) and promotes environmental activities of the company (includes the factory under the control of the company). Each company prepares and executes a concrete action plan according to an environmental activity policy set by the Directorate.

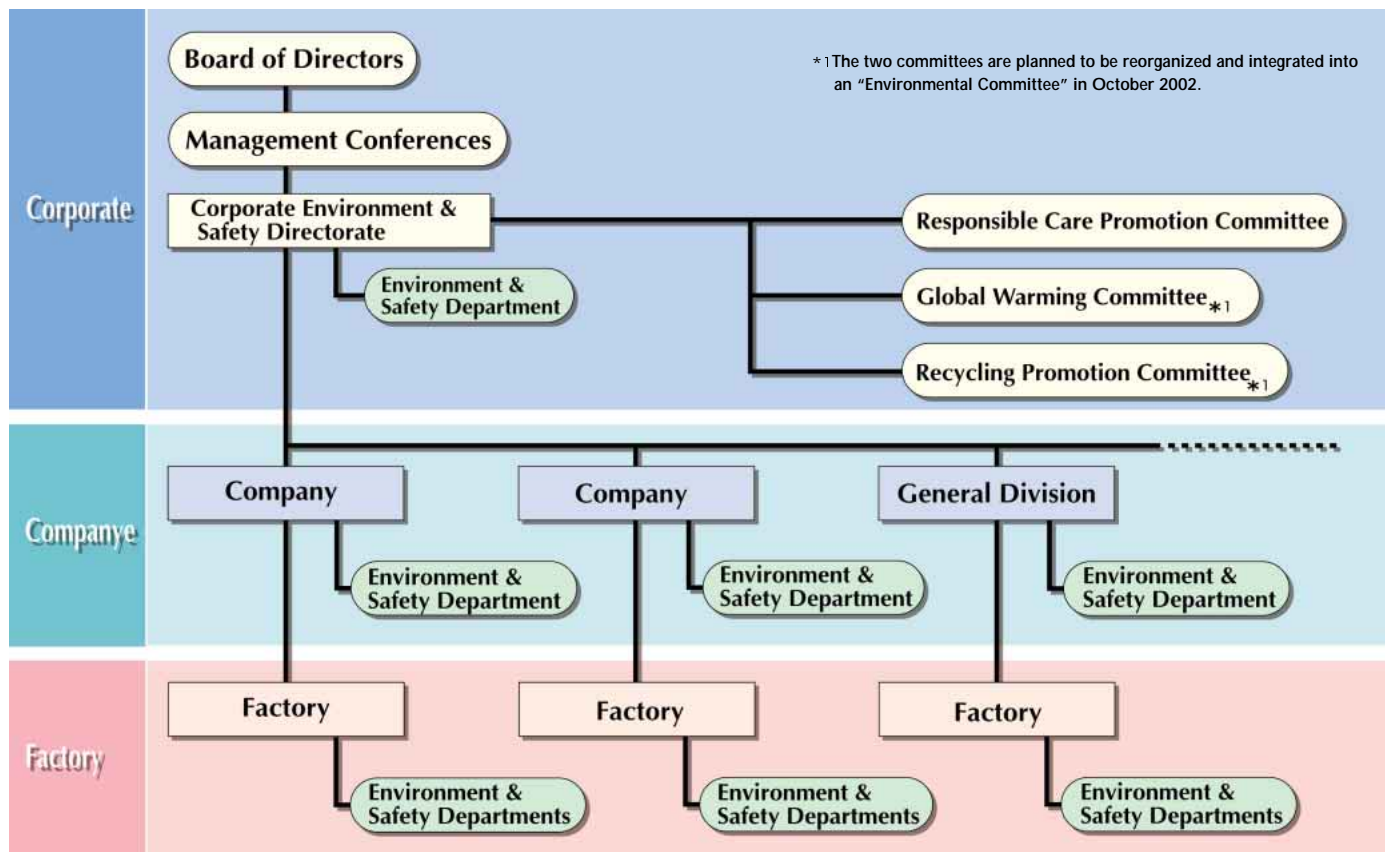
There are cases in which two or more companies which are closely related to one another form a study team to tackle a specific task. For example, the Flat Glass Company and the Automotive Glass Company have jointly organized a “Team for Studying Ways to Recycle Used Automotive Glass.”

Each Factory/Research Center Organization

Each of the factories and the Research Center have an Environment & Safety Department which is under the direct control of the general superintendent (director).

Each of the general superintendents manages the factory

environment and safety according to an environmental activity plan decided by the president and taking into consideration the specific conditions of the factory.



Environmental Management System

In order to implement an environmental management system, we are active in introducing environmental audit, obtaining ISO 14001 certification, introducing environmental accounting, and promoting green purchasing.

Obtaining ISO 14001 Certification

Concerning ISO 14001* which is an international standard of environmental management systems, the company decided in February 1997, soon after the standard was put into effect, that all its establishments should obtain ISO 14001 certification. Today all the establishments have been certified. Among them, the Keihin, Sagami, and Takasago factories attracted public attention as they were the first factories in Japan that obtained ISO 14001 certification in the flat glass industry, automotive glass industry, and CRT glass industry, respectively.

Establishments having obtained ISO 14001 certification

Establishment	Time certified	Accreditation body
Keihin factory	Feb. 1998	Japanese Standards Association
Sagami factory	Aug. 1998	Japanese Standards Association
Takasago factory	May. 1999	Japanese Standards Association
Kashima factory	Oct. 1999	Japan Chemical Quality Assurance Ltd.
Aichi factory	Mar. 2000	Japan Quality Assurance Organization
Funabashi factory	May. 2000	Japanese Standards Association
Research Center	Jul. 2000	JIC Quality Assurance Ltd.
Kansai factory	Dec. 2000	Japan Quality Assurance Organization
Chiba factory	Feb. 2002	Japan Chemical Quality Assurance Ltd.
Kitakyushu factory	Apr. 2002	Japanese Standards Association

More and more of our affiliated companies at home and abroad are obtaining ISO 14001 certification

Affiliated companies having obtained ISO 14001 certification

Japan:

- Asahi Glass Urethane Co., Ltd. Oct. 1999
- Optrex Corporation (Amagasaki Factory) Feb. 2000
- SP Pacific Ltd. Mar. 2000
- Asahi Glass Fine Techno Co., Ltd. Mar. 2000
- Kashima chorine and Alkali Co., Ltd. Mar. 2001
- Asahi Glass Matex Co., Ltd. Nov. 2001
- Asahi Fiber Glass Co., Ltd. (Glass Wool Div.) Jan. 2002

Overseas:

- Shanghai Asahi Electronic Glass Co., Ltd. (China) Jan. 1999
- AFG Industries, Inc. (U.S.A.)
 - AP Technoglass Ohio Plant Sep. 1999
 - AP Technoglass Kentucky Plant Dec. 1999
- Zibo Asahi Glass Fused Materials Co., Ltd. (China) Sep. 2000
- P.T. Asahimas Chemical (Indonesia) Jun. 2001
- Engro Asahi Polymer & Chemicals Ltd. (Pakistan) Aug. 2001
- Siam Asahi Technoglass Co., Ltd. Nov. 2001



FOOT NOTES

ISO 14001: Environmental standard approved and managed by the International Organization for Standardization(ISO). This standard is intended to help enterprises establish environmental policies and set environmental objectives within their establishments: it does not give any quantitative criteria.

Environmental Audits

Asahi Glass introduced environmental audits in 1994 in order to accurately grasp the actual conditions of environmental activities carried out at the individual factories and the Research Center and to make necessary improvements from the corporate-wide viewpoint. Concretely, all factories and the Research Center are subject to an annual environmental audit based on written records of their environmental activities. Depending on results of auditing, the head of the Corporate Environment & Safety Directorate visits the problematic factory for on-site environmental audit. The results of environmental auditing are always reported to the president by the head of the Directorate.

Environmental auditing implemented in the past six years

Year	On-site audit	Audit based on record
1996	Sagami plant, Aichi factory, Kansai factory, Research Center	All the factories in Japan, including the ones shown at left, and the Research Center
1997	Kitakyushu factory, Takasago factory, Chiba factory, Kashima factory	As above
1998	Keihin factory, Funabashi factory, Aichi factory, Sagami plant	As above
1999	Kitakyushu factory, Chiba factory, Kashima factory	As above
2000	Keihin factory, Funabashi factory	As above
2001	Chiba factory, Kansai factory, Takasago factory	As above

Asahi Glass' environmental activities now involve all its affiliated companies

Asahi Glass has long been attaching importance to environmental activities of its affiliated companies at home and abroad. Since 1995, the company has carried on environmental audit of its affiliated companies, mainly in the field of chemicals, in order to grasp the actual conditions of their environmental preservation activities and make improvements as required. In addition, Asahi Glass decided to expand its environmental activities to cover all the member companies of the Asahi Glass Group in 2001. Now, therefore, Asahi Glass and all its affiliated companies at home and abroad are promoting environmental preservation activities together.



Environmental audit at Asahi Techno Glass



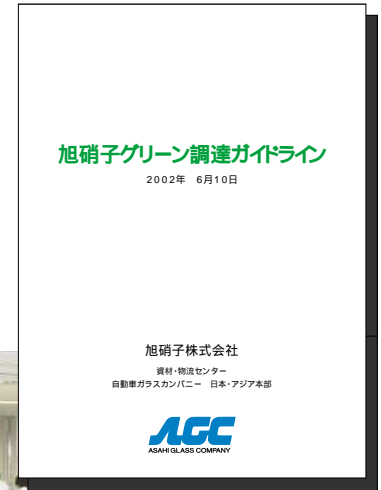
Environmental audit at Asahi Glass Fluoropolymers U.K. Ltd.

Green Purchasing

When we purchase a product or service, we believe it is necessary not only to consider need, quality and price, but also to pay attention to its impact on the environment. Namely, if other things are equal, we believe we should buy a product or service that has less impact on the environment.

The Asahi Glass Group started in 2002 green purchasing of office equipment, stationeries, and other general goods.

Automotive Glass Company, together with the Materials & Distribution Center, prepared "Guidelines for Green Purchasing at Asahi Glass" for the procurement of raw materials and parts, and held a meeting for presentation of the guidelines to its suppliers and contractors to ask for their understanding and cooperation in the implementation of green purchasing.



Meeting for presentation of guidelines for green purchasing

Life Cycle Assessment (LCA)

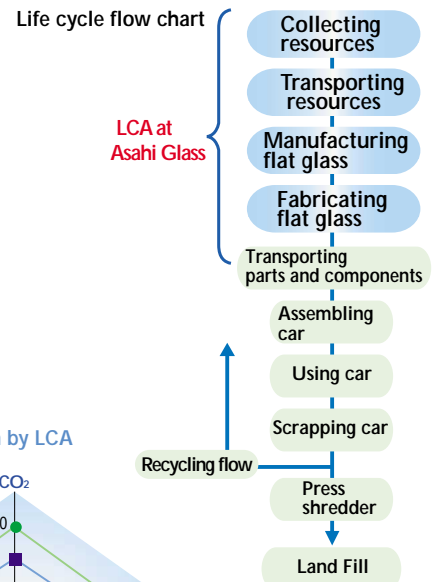
The Asahi Glass Group has installed a voluntary study meeting within each of the member companies to introduce LCA*. Automotive Glass Company, Chemicals Company, etc. have begun evaluating their representative products by LCA. They have already supplied life cycle inventory (LCI*) data about certain products in response to customer requests and started joint studies with the customers for application of LCA.

The environmental NPO's comment on environmental management

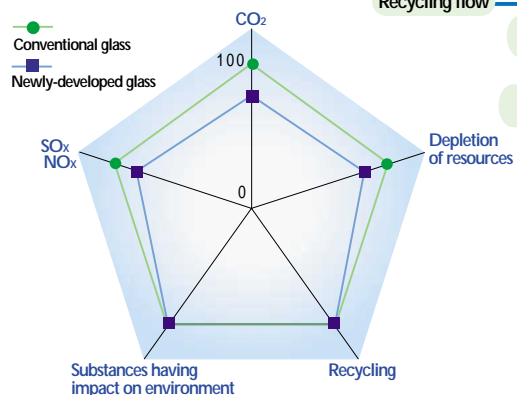
The environmental management system is the basis on which the company preserves the environment voluntarily and positively. However, the structure of environmental contents of management, such as the establishment of company organizations/systems and the implementation of auditing, can hardly be seen from outside the company and are difficult to understand, especially for the local communities general public.

In the future, Asahi Glass will find it necessary not only to would not only further sophisticate its environmental management system but also to let the community people know the status and functioning of Asahi Glass environmental management system. "what systems Asahi Glass has for environmental preservation and how the company is tackling the issue" and "what results the company has produced" and to ask for their opinions about the company's environmental activities. It will become important for the company to recommend that Asahi Glass assimilate more constructive opinions and ideas of local communities and verify its environmental management system in the future. and third parties.

Example of study on automotive glass



Example of evaluation by LCA



FOOT NOTES

LCA (Life Cycle Assessment): A technique to quantitatively analyze and assess the resources and energy consumption in and the environmental impact in the process of the "raw materials—product—use—scrapping". It is a tool for supporting decision making in product purchasing, selection, etc.

LCI (Life Cycle Inventory): The act of quantitatively grasping the environmental impact for a particular product, service in LCA.

Environmental Accounting

We believe that accurately grasping the management resources spent in a specific environmental preservation activity and the results of that activity is indispensable to promote effective environmental preservation activities.

Referring to the "Environmental Accounting Guidebook" published by the Environment Agency in March 2000, Asahi Glass designated in 2000 several model establishments for introduction of environmental accounting and began

analyzing environmental accounting data collected from those model establishments. The company disclosed environmental accounting data of the Kashima factory, one of the company's major facilities, for the first time in Asahi Glass Environmental Report 2001.

In the present report, the results of analyses of 2001 environmental accounting data collected from the entire company are disclosed.

[Notes]

Scope of data collected: All the data collected are for Asahi Glass. (No data were collected from any affiliated companies.)

Period of environmental accounting: April 1, 2001 to March 31, 2002

Cost of environmental preservation

Unit: Millions of yen

Environmental preservation cost					
Classification	Investment	Expense	Total	Contents of main activities	
Cost incurred within business area	5,923	6,163	12,086		
Breakdown	Pollution control cost	3,436	4,008	7,444	Investment: Measures to control air pollution, water pollution, soil contamination, etc. Expense: Operation, maintenance, and administration expenses, depreciations, etc. (air, water, etc.)
	Cost of global environment preservation	1,999	531	2,530	Investment: Measures to save energy, reduce emissions of greenhouse gases, etc. Expense: Operation, maintenance, and administration expenses, expenditures on treatment of greenhouse gases, etc.
	Cost of recycling resources	489	1,625	2,114	Investment: Measures to reduce industrial waste, recycle resources, etc. Expense: Expenditures on reduction of industrial waste, recycling, treatment, and disposal of waste, efficient use of resources, etc.
Cost incurred by upstream and downstream processes	0	566	566	Expense: Expenditures on recycling of pallets, packing materials, etc. and recovery of glass cullet	
Cost of management activities	5	616	621	Investment: Purchase of measuring instruments Expense: Personnel expenses for environmental management activities, expenditure on maintenance of ISO 14001 certification, expenditure on environmental measurement	
R&D cost	966	2,999	3,965	Investment: Development of technologies for saving energy, curbing global warming, etc. Expense: Development of recycling technology, energy saving technology, halon destruction testing, etc.	
Cost of social activities	0	132	132	Expense: Development and maintenance of green space	
Cost of repair of disrupted environment	0	915	915	Expense: Levies on air pollution*, etc.	
Total	6,894	11,391	18,285		

FOOT NOTES

Levies on air pollution : Levies based on the Law Concerning Compensation, etc. for Pollution-Related Health Damage. Any company having installed equipment emits dust is required by the Law to pay a certain amount of money per unit volume of emission.

NOx : Nitrogen oxides, including nitrogen monoxide (NO), nitrogen dioxide (NO₂), and nitrous oxide (N₂O). Emitted mainly from combustion processes and motor vehicles, NOx are considered to cause asthma and bronchitis.

11 **SOx** : Sulfur oxides, including sulfur dioxide (SO₂) and sulfur trioxide (SO₃). SOx are generated when heavy oil or coal is burned as a fuel at an industrial plant. SOx causes one of respiratory troubles.

Effects of environmental preservation

Effects of environmental preservation					
	Content	2001			
		Reduction of environmental load (see Note1)	Simple rate of reduction from previous year (see Note2)	Rate of reduction after correction based on sales (see Note3)	
Effects associated with cost incurred within business area	Effects relating to resources put in business activities	Total energy consumption (crude oil equivalent)	146 million /	11.3%	2.5%
		Water consumption	21 million m ³	15.0%	6.6%
	Effects relating to environmental loads and waste put out from business activities	Emission into open air • CO ₂	360,000 tons	13.3%	4.7%
		• NOx*	694 tons	10.8%	1.9%
		• SOx*	55 tons	5.9%	-3.4%
		• Soot and dust	88 tons	30.2%	23.3%
	Discharge into water areas • Wastewater		22 million m ³	16.8%	8.6%
		• COD	30 tons	2.3%	-7.4%
	Discharge of waste, etc. • Final volume of industrial waste disposal	67,000 tons	59.1%	55.1%	
	Effects associated with cost incurred by upstream and downstream processes	Effect of recycling packing materials for product shipment	(The amounts of reductions are reflected in the following table "Net Economic Effects.")		
Recovery of cullet		136,000 tons			

Note 1 Reduction of environmental load = Amount of substance in 2000 – Amount of substance in 2001

Note 2 Simple rate of reduction from previous year = Reduction of environmental load/Amount of substance in 2000

Note 3 Rate of reduction after correction based on sales = $1 - (1 - \text{simple rate of reduction})/0.91$ The figure 0.91 indicates the ratio of 2001 sales to previous year's sales at Asahi Glass.

Effects of Environmental Preservation in 2001

All the environmental loads shown above decreased from the previous year. Namely, the company reduced all types of environmental loads in real terms. For each type of environmental load, we calculated "rate of reduction after correction based on sales" reflecting the change in sales during the 2000 – 2001 period with consideration given to the change in environmental loads which depend on the activity rate of the company's factories. As a result, we found that all types of environmental loads, except SOx and COD, decreased from the previous year. Thus, even in terms of the rate of reduction after correction based on sales, the environmental loads at the company decreased appreciably.

Economic effects in real terms

Unit: Millions of yen

Net economic effects of environmental preservation measures		
	Earnings	Amount
Cost reduction	Revenue from recycling of waste produced from the company's main business activities or recycling of used products, etc.	605
Contents of economic effects	Reduction of energy cost by saving of energy	933
	Reduction of waste treatment cost by saving of resources or recycling of waste	2,042

Saving of Resources and Energy

Asahi Glass is equipped with salt electrolytic facilities* which consume large amounts of electric power and glass melting facilities which require large volumes of heavy oil. Therefore, the company necessarily consumes large amounts of energy. The sources of energy the company uses are of various types—electricity, fuel oil, gas, steam, etc.

Under these conditions, we consider it important to positively implement various measures to save energy from the viewpoint of minimizing the impacts of our business activities on the environment.

Examples of Measures Taken to Save Energy

Electrolytic plant employing ion-exchange membrane process (to save electric power)

Since 1982, Asahi Glass has dramatically reduced electricity consumption in the field of salt electrolysis by employing the ion-exchange membrane* "Flemion" developed by the company. Flemion permits the electrolytic plant to be operated at low voltages, hence the electrolytic process employing Flemion consumes much less energy than the conventional mercury process or diaphragm process.

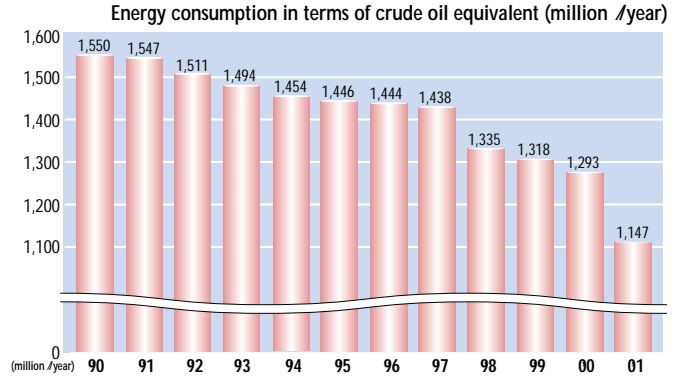
Capitalizing on its accumulated assets of technology and remarkable achievements, Asahi Glass has been working hard to come up with higher-performance ion-exchange membranes. The company has already licensed the Flemion technology to many customers to help them save energy significantly.

Glass melting furnace employing the oxygen combustion process (to save fuel)

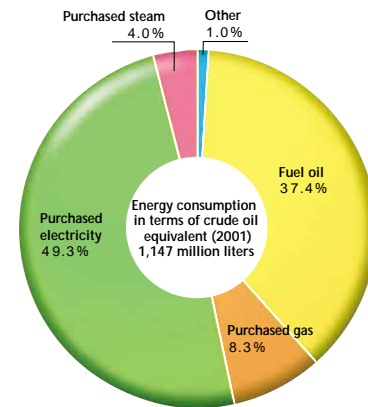
By using oxygen in place of air, it is possible to cut the consumption of fuel (heavy oil) by as much as 20% to 40%. In addition, the emissions of NOx decrease by 50% to 80%. Thus, the oxygen combustion process makes it possible to dramatically reduce the amount of exhaust gas from the glass melting furnace.

Asahi Glass adopted this new process for the first time in 1998 for the CRT glass melting furnace of its Funabashi factory. Since then, the company has been positively introducing the process to other factories at home and abroad, including the Takasago factory (for the CRT glass melting furnace) and the Keihin factory (for the flat glass melting furnace).

The company is also positively introducing the oxygen combustion process to its affiliated companies overseas. Siam Asahi Technoglass Co., Ltd. (Thailand) and P.T. Video Display Glass Indonesia (Indonesia) have already produced respectable results with the new process.



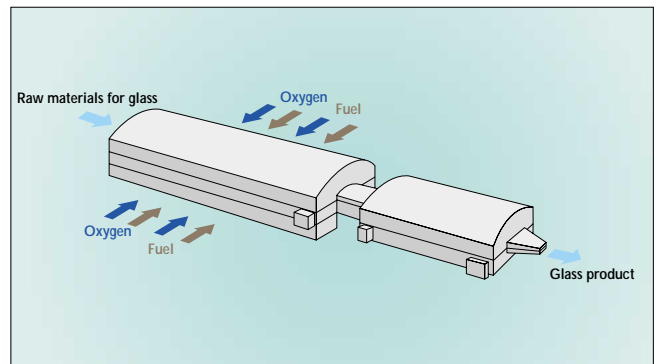
Types of energy used



Electrolytic plant



Fluorine-based ion-exchange membrane "Flemion"



Glass melting furnace employing the oxygen combustion process

FOOT NOTES

Salt electrolytic facilities : Facilities for manufacturing caustic soda (sodium hydroxide), hydrogen, and chlorine by electrolysis of salt water.

Ion-exchange membrane : A membrane which utilizes electrical energy or concentration differential to selectively pass/separate various types of ions (electrolytes) in a solution.

Measures Against Global Warming

Asahi Glass, which consumes large amounts of energy as already mentioned, emits considerably large amounts of CO₂. Besides, the company manufactures HFC and SF₆ which are among the six types of gases (CO₂, methane, nitrous oxide, HFC, SF₆, PFC) specified as greenhouse gases at COP3*. Therefore, we recognize that making earnest efforts to reduce the HFC and SF₆ emissions at the production sites is an important task of the company.

As shown in the diagram at right, the CO₂ emissions at Asahi Glass have been decreasing steadily.

The total CO₂ emission in 2001 was 69% of that in 1990.

Examples of measures taken

Greenhouse gas		Chemical business	Glass business
CO ₂	Energy (generated from use of fuel, electricity, etc.)	Saving energy used in salt electrolysis	Introduction of oxygen combustion process; integration of production facilities; switching of fuel from C-heavy oil to LNG
	Non-energy (generated by chemical reaction)	Switching from soda ash to natural ash <small>(see Note)</small>	—
SF ₆ HFC	—	Reduction of emissions from manufacturing and filling processes	—

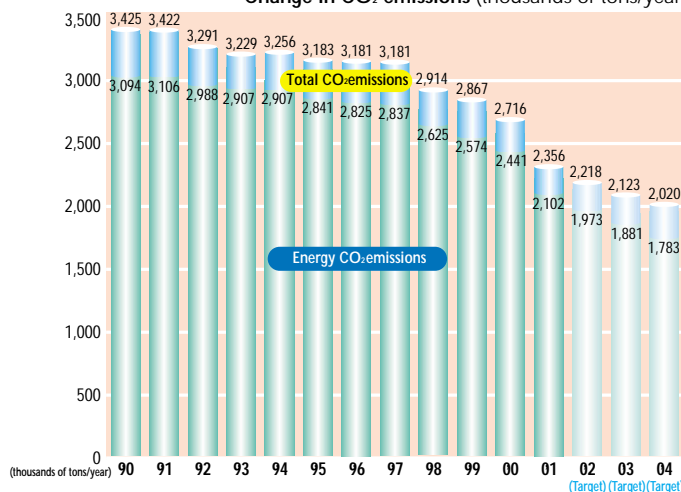
Note : A typical example of non-energy- emission of CO₂ is the emission of CO₂ as a result of chemical reaction of soda ash in the manufacturing process.

Examples of Measures Taken to Protect The Ozone Layer and Curb Global Warming

In view of the international efforts to protect the global environment, such as the Montreal Protocol* aimed to protect the ozone layer and the Kyoto Protocol aimed to curb global warming, Asahi Glass is also making positive efforts in the same directions—phase out production of greenhouse gases, strictly controlling the manufacturing processes, developing alternative products. In 1997 The Chiba factory started the CFCs destruction operation employing the liquid injection process* that thermally decomposes CFCs at 1,000°C or higher temperatures. As the CFCs Recovery and Destruction Law* and similar acts were put into effect, it is expected that the amounts of CFCs to be recovered and destroyed will increase in the years ahead. Asahi Glass destroys recovered CFCs for customers and issues a certificate of destruction.

In addition, the company is active in developing new technologies, such as technology for making fluorite* from destroyed CFCs and manufacturing fluoric acid* from fluorite and technology for producing a raw material for fluorocarbon resin from HCFCs which is not destroyed but refined.

Change in CO₂ emissions (thousands of tons/year)



Handling of specific CFCs, etc.

Substance	Main application	Relevance to international agreement		Company efforts	
		Ozone layer conservation	Anti global warming	Manufacturing	Destroying
CFC (specified FC)	Coolants, solvents, foaming agents		×	Discontinued	Underway
HCFC (repl. FC)			×	Phasing down production	Underway
HFC (new FC)		×		Controlled exhaust emission	Underway
SF ₆	Insulation, etching agent	×		Controlled exhaust emission	Underway



CFCs destruction plant

FOOT NOTES

COP3: Officially, the Kyoto Protocol to the United Nations Framework Convention on Climate Change. At COP3 held in Kyoto in 1997, a protocol (Kyoto Protocol) including quantitative targets of greenhouse gas reduction by the industrialized countries was adopted for the first time.

Montreal Protocol : An international convention providing for reduction/total abolition of specific CFCs and other substances that deplete the ozone layer.

Liquid injection process : A method of destroying CFCs approved by the United Nations Environment Programme (UNEP).

CFC Recovery & Destruction Law : The law that is intended to promote the recovery and destruction of CFCs in order to control CFC emissions into the atmosphere. For the recovery, etc. of CFCs from refrigerating machines for business use, the relevant provisions of the Law were put into effect in April 2002. For the recovery, etc. of CFCs from car air conditioners, the relevant provisions are to become effective in October 2002.

Fluorit[®] (CaF₂) : Calcium fluoride. A mineral used as a raw material for fluoric acid and optical lenses.

Fluoric acid (HF) : Hydrofluoric acid used as a raw material for CFCs and fluorocarbon resin and for etching glass.

Reducing Emissions of Air and Water Pollutants

Concerning air and water pollutants, such as NO_x, SO_x, and COD, Asahi Glass is striving to reduce their emissions while observing the relevant laws and regulations, including the pollution control agreements, etc. signed with the local governments that have jurisdiction over the districts in which the company's factories are located. To that end, the company has installed various facilities for denitration*, desulfurization*, wastewater treatment, etc. In the future, the company intends to tackle the task from the viewpoint of positively reducing the environmental impacts of air and water pollutants.

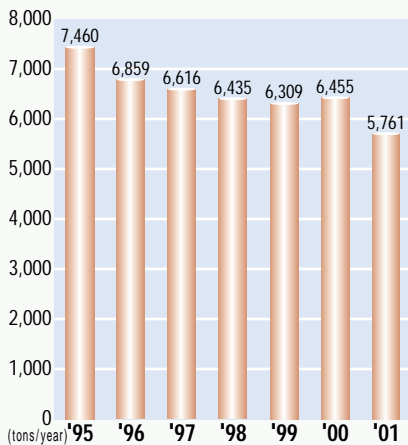
In particular, we give top priority to the reduction of NO_x emissions, and are taking various measures, such as promoting introduction of the oxygen combustion process for glass melting furnaces.

Some of our factories use large volumes of seawater as a raw material or cooling water. Since those factories discharge used seawater into the sea area, the volumes of sea water used and discharged are considerably large. However, they will decrease in the future since the factory operations are planned to be integrated.

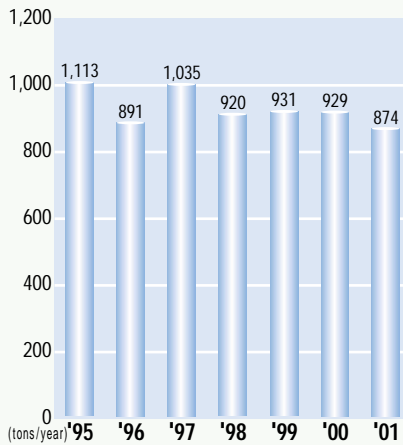
Change in emissions of major environmental pollutants

Air pollutants

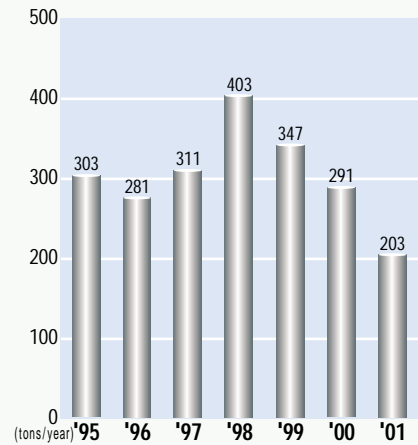
NO_x



SO_x

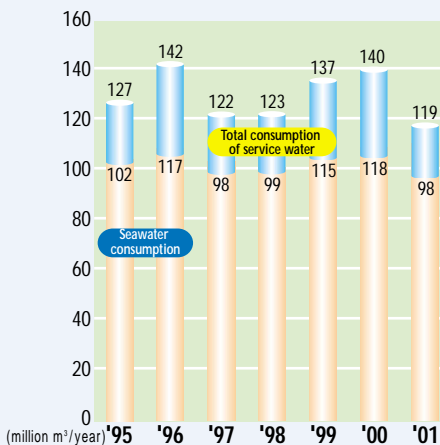


Soot and dust

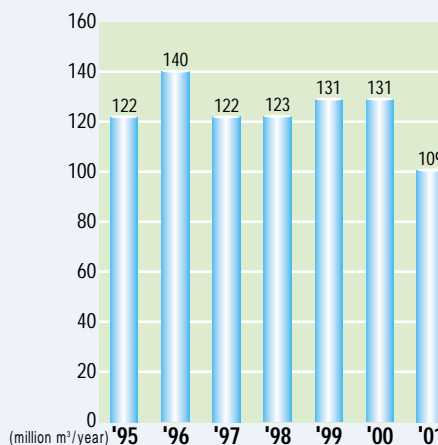


Water consumption, wastewater volume, and water pollutants

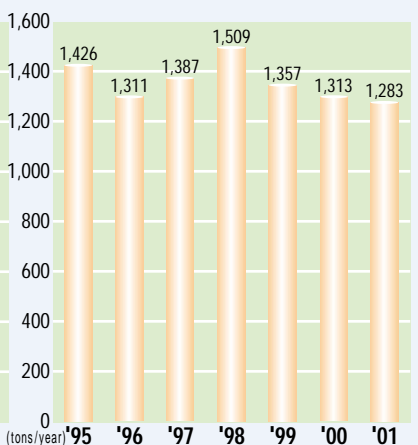
Water consumption



Wastewater



COD



FOOT NOTES

Denitration : The process of removing nitrogen oxides (NO_x) from flue gas.
Desulfurization : The process of removing sulfur oxides (SO_x) from flue gas.

Soil/Groundwater Examinations and Decontamination Measures

In accordance with the Environment Agency's "Standards for Application of the Guidelines for Soil/Groundwater Examinations and Decontamination Measures" (January 1999), Asahi Glass has carried out examinations of the condition of contamination of soil and groundwater at all its factories and Research Center, as well as its landed

properties, where the soil and groundwater might have been contaminated. If examination results indicate the presence of contamination in soil or groundwater, the company positively discloses relevant information and takes suitable decontamination measures under the direction of the administrative authorities concerned.



Collecting soil samples



Soil survey by boring

Measures to decontaminate soil/groundwater within the grounds of the Chiba factory

Concerning the contamination of the soil and groundwater within the grounds of their Chiba factory, Asahi Glass and its affiliated company—Asahi-Penn Chemical Co.—have discussed measures to prevent proliferation of the contaminants and to eliminate them on a permanent basis under the guidance of the administration and experts.

In order to decide on specific measures to be taken, a "Committee to Study Measures" was formed by the administration (Chiba Prefecture and Ichihara City) and persons having expert knowledge. This committee has carried on professional deliberations.

On the basis of the second interim report compiled by the committee, we identified the areas where the groundwater has been badly contaminated and started decontamination work by pumping out the groundwater there. We also have plans to carry out additional examinations by boring, etc. in order to clarify the mechanisms of contamination. Concerning the installation of impervious walls to prevent the proliferation of contaminants, we reviewed the original plan so as to reduce its effect on the groundwater flow system. The installation work was started last July as the scope of installation was finally decided. It is planned to be completed by the end of this year.



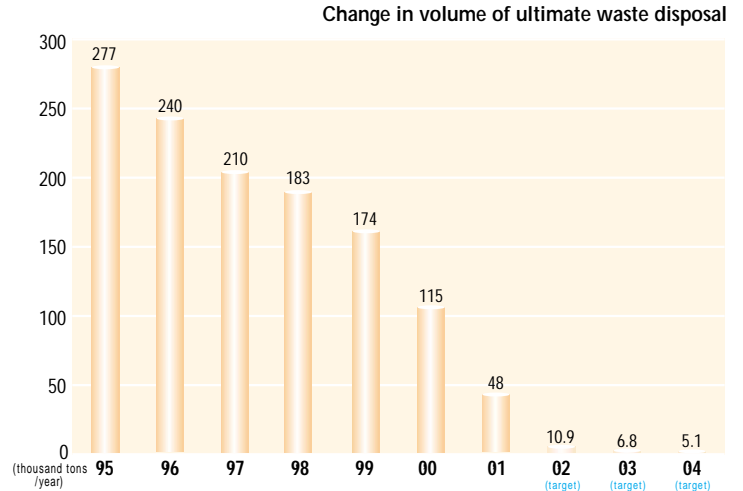
Soil survey by boring at the Chiba factory



Impervious wall installation work at the Chiba factory

Measures to Reduce Industrial Waste

Asahi Glass has been active in reducing volumes of industrial waste from its operations. For example, it aimed to reduce the volume of industrial waste to one tenth (a 90% reduction) of the 1995 level by the end of 2000—an exceptionally high target for the basic materials industry. The target was not completely attained within 2000. In the second half of 2001, however, we could decrease industrial waste to (a 92% reduction) of the 1995 level. The progress of our activities to reduce industrial waste is continually checked by the Recycle Promotion Committee—a corporate-wide organization, which decides policies and actions to take. The company has set a target of completely eliminating industrial waste by the end of 2005.



Examples of concrete measures to reduce/recycle industrial waste

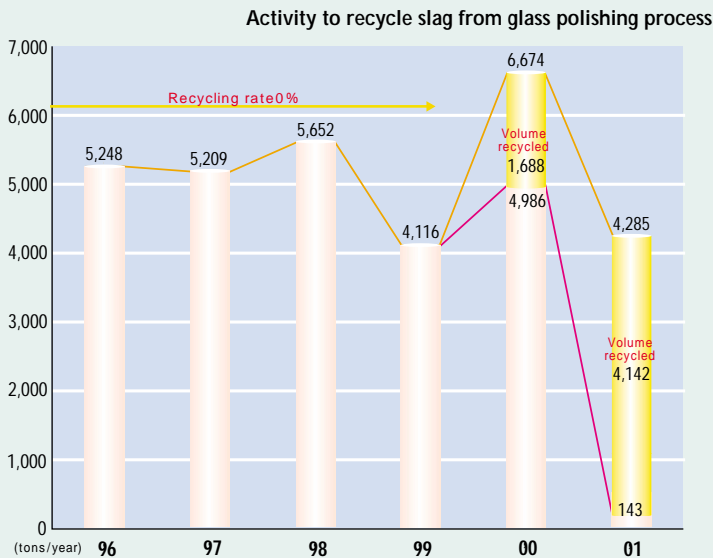
Our activities to reduce industrial waste include reusing flat glass cullet, cerium glass grindings, and CRT glass slag as raw materials and reducing volume of and recycling used sidings for building and housing and used soda ash.

Example of activity to reduce industrial waste

At the Takasago factory, the slag occurring in the CRT glass polishing process had been treated as waste. It had long been a major problem since more than 5,000 tons of slag had to be treated annually.

In 1999, when the factory obtained ISO 14001 certification, it set about development of technology for recycling the slag, which accounts for the majority of the waste produced at the factory, as part of its effort to reduce industrial waste. First, the factory developed a device for removing the slag of impurities in order to make it suitable for recycling and incorporated the device in the process. Then, it proceeded to improve the dryer by trial and error. Eventually, it came up with an efficient technology for making the recycling equipment capable of standing mass production.

As a result, the rate of recycling of the slag has dramatically improved to 97%, making it possible to drastically reduce the volume of ultimate waste disposal.



FOOT NOTES

Home Electric Appliance Recycling Law : The law that requires that TVs, refrigerators, and other home electric appliances which have fallen into disuse be recovered by the retailer or its agent in the locality at the expense of users.

Vehicle Recycling Law : The law that is intended to improve the rate of recycling of discarded motor vehicles and the process of recycling by charging the recycling fee to the users and defining the roles and responsibilities of the automakers, recycling agents, etc.

Examples of Activities to Comply with New Laws and Regulations

Asahi Glass is not only tackling the reduction of industrial waste which occurs at its factories. In order to comply with new laws and regulations, including the Home Electric Appliance Recycling Law*, the company is also active in recovering its products which have fallen into disuse and developing new technologies for recycling them.

Recycling of disused TV bulbs

As the Home Electric Appliance Recycling Law was put into effect in April 2001, the recycling of disused TVs has started in earnest. Asahi Glass, one of the members of the TV Working Team of the Association of Home Electric Appliances from the beginning, has been positively tackling development of technology for recycling disused TV bulbs (CRT glass). At present, the company melts disused TV bulbs in glass melting furnaces and reuses them as raw materials at its Takasago and Funabashi factories.



Cullet of disused TV bulbs to be recycled



Cullet being carried into the recycling plant

Automotive glass recycling

The Vehicle Recycling Law* is to be effective as of January 2005. Asahi Glass has already developed several new technologies for automotive glass recycling, such as technology for recovering and sorting windshields printed glasses and technology for melting raw materials which contain high cullet ratio.

At present, the company is conducting various tests to establish a workable automotive glass recycling system.



Recovered automotive glass



Equipment for sorting glass (after crushing)



Cullet of automotive glass

Proper Management of Chemical Substances

Compliance with the PRTR Law

The PRTR Law* requires that starting from 2002 every industrial plant concerned keep track of the release and transfer of each of 354 Class 1 chemical substances specified in the Law (if the plant is handling them) and report the results to the administration.

In 1996, years before the legislation, Asahi Glass voluntarily started grasping the amounts of release and transfer of those chemical substances at some of its factories. Since then, the company has been developing its system for proper management of the chemical substances it handles, including efforts to reduce the release of harmful chemical substances. According to calculation results, the company released 43 of the 354 types of chemical substances during 2001.

In the future, we intend not only to implement proper management of those chemical substances but also to further reduce the amounts of release and transfer of them.

Number of chemical substances specified in the PRTR Law used at Asahi Glass

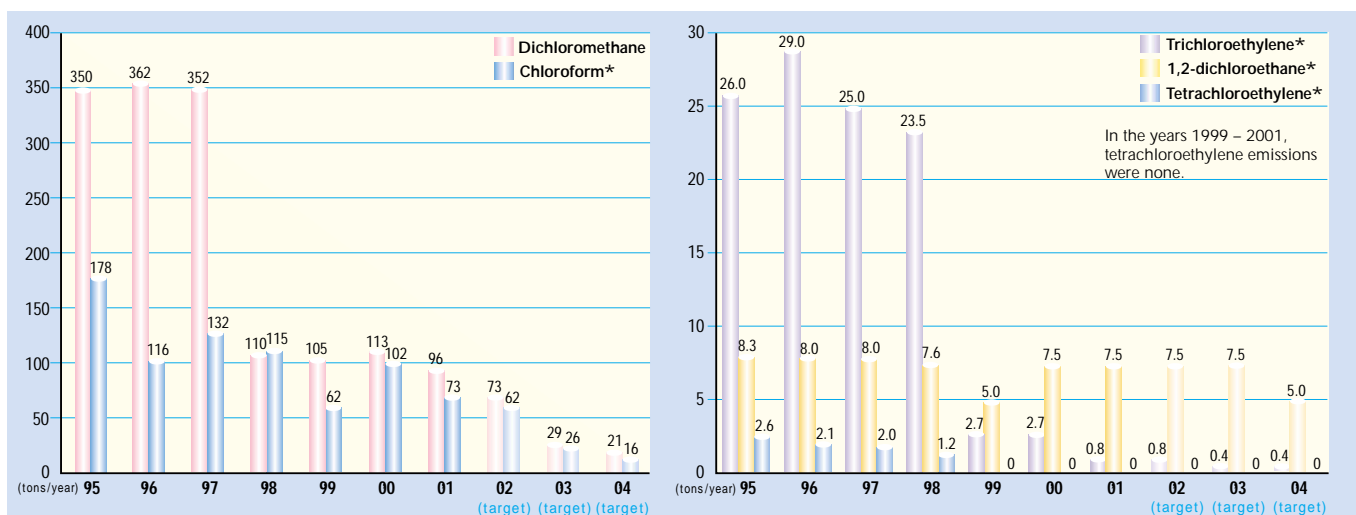
Establishment	Number of chemical substance type
	2001
Kansai factory	1
Kitakyushu factory	1
Keihin factory	1
Takasago factory	6
Chiba factory	27
Funabashi factory	4
Aichi factory	3
Kashima factory	22
Sagami factory	2
Research Center	0
Total	43

Monitoring and reducing release of chemical substances

Dichloromethane* and other volatile organic compounds manufactured at Asahi Glass are widely used as raw materials for chemical products, cleaner solvents, reactive solvents, etc. On the other hand, certain laws and regulations call for measures to prevent the undesirable effects of those compounds on the environment and human health.

Asahi Glass, together with other companies in the same line

of business, has been striving to drive home the proper uses of the compounds mentioned above and reduce the release of those compounds from the factories. In particular, for the five types of compounds shown below, the company has set specific targets of reduction and is striving to reduce their emissions into the atmosphere by, for example, reinforcing the existing recovery facilities.



FOOT NOTES

PRTR Law : The Pollutant Release and Transfer Register Law, intended to promote the monitoring and control of emissions of certain types of chemical substances. This law requires every industrial plant to report to the administration the amount of release of each of 354 types of chemical substances to the atmosphere, water, and soil and the amount of transfer of each of those substances as waste in order to make them public.

Dichloromethane : Methylene chloride (CH₂Cl₂): used for cleansers, solvents, etc.; use of this chemical must be reported to the authority concerned under the Industrial Safety and Health Law, etc.

Chloroform : Trichloromethane (CHCl₃): used for medicines, solvents, etc.; use of this chemical must be reported to the authority concerned under the Industrial Safety and Health Law, etc.

Trichloroethylene : Ethylene trichloride (C₂HCl₃): used for degreasing agents, solvents, etc.; use of this chemical must be reported to the authority concerned under the Industrial Safety and Health Law, etc.

1,2-dichloroethane : Ethylene dichloride (C₂H₂Cl₂): used for solvents, raw material for resin, etc.; use of this chemical must be reported to the authority concerned under the Industrial Safety and Health Law, etc.

Tetrachloroethylene : Perchloroethylene (C₂Cl₄): used for cleansers, solvents, etc.; use of this chemical must be reported to the authority concerned under the Industrial Safety and Health Law, etc.

Consideration for Product Safety While Product is in Use or When it is Discarded

Preparing and issuing Material Safety Data Sheet (MSDS*)

Since 1992, Chemicals Company of Asahi Glass has been distributing MSDS (safety data sheets on chemical substances, etc.) to provide product information, including the proper method of handling, characteristics, environmental impact, etc. of each of its products while the product is in use or when it is discarded. In order to ensure that the relevant MSDS is distributed to every user, Asahi Glass has established an automatic MSDS issuance system on its LAN (Local Area Network).

Present status of MSDS (as of March 31, 2002)	MSDS issued (in Japanese)	MSDS issued (in foreign languages)
	1,147types	510types

MATERIAL SAFETY DATA SHEET	
No.0-0030E-05 Identity (As Used on Label and List)	
Sodium Hydroxide, Liquid	
Section I	
Manufacturer's Name ASAHIGLASS Co., Ltd. Emergency Telephone Number 03-3218-5482 Address 12-1 Yurakucho 1-Chome Chiyoda-ku, Tokyo 100-8405, JAPAN Chemicals General Division Chlor-Alkali Division Telephone Number for Information 03-3218-5482 Facsimile Number for Information 03-3218-7845 * Date Prepared: June 25, 1993 * Date Revised: April 2, 2001	
Section II - Hazardous Ingredients/Identity Information	
Hazardous Components Material: Sodium Hydroxide CAS No. 1310-73-2 OSHA (1993) PEL - TWA: 2mg/m3 ACGIH (1987) TLV - TWA: 2mg/m3 %: 48.0%	
Section III - Physical/Chemical Characteristics	
Boiling Point: 138 °C (at 48%)	

Consideration for Product Safety While Product is Transported

Preparing and issuing Yellow Cards

As its name indicates, the Yellow Card is a yellow-colored card which describes what the driver of a tank truck, etc. must do for himself or the emergency measures he is supposed to ask the nearest fire station, police station, office of Japan Highway Public Corporation, etc. to take if some accident occurs during transportation of a chemical substance or high-pressure gas. Each time a product is shipped from any of the factories, a Yellow Card, which varies in content according to product type and grade, is handed to the driver. There are 75 types of Yellow Card in use (as of March 31, 2002).



Yellow Card handed to the driver at time of shipment

Transport vehicle accident mutual support group membership

1. Local High-Pressure Gas Fire Prevention Association

To minimize the effect of any accident that may occur involving transport vehicles, Asahi Glass is part of this mutual support system covering the whole of Japan.

2. Company facilities registered with Japan Chemical Industry Association as able to provide neutralizing agents in the event of accidents.

If an incident occurs, facilities may be called upon to provide neutralizing agents (soda ash, slaked lime).



Yellow Card

FOOT NOTES

MSDS : A data sheet for supplying or communicating information about a specific chemical substance when the manufacturer ships that chemical substance or a product containing it or when the manufacturer asks an outside company to dispose of the waste from that substance or product.

Activities to Reduce Environmental Impact

Implementation of distribution safety audit

In order to ensure safe transportation of chemical substances, Asahi Glass implements safety audits at its distribution centers.

Distribution-related accidents

In 2001, Asahi Glass suffered only one accident during transportation of product—the leak of a very small amount of liquid caustic soda. Thanks to proper action taken after the accident, no damage was caused to any third parties. (Incidentally, the company's transportation operations are entrusted to specialized agents.)

Risk Communication Activities

Risk communication* training

Each of the factories of Asahi Glass carries on its own activities to comply with new environmental laws and regulations (e.g., the PRTR Law) and reduce the impact of its operations on the environment. In order for each factory to carry out its planned activities to prevent soil/groundwater contaminations, reduce and recycle industrial waste, help curb the global warming, save energy, etc., it has become increasingly important to disclose relevant information to the communities in its neighborhood and have its activities well understood by them. Therefore, Asahi Glass provides its employees responsible for communications with the local communities with training in environmental risk communication so as to enable them to explain their environmental activities in easy-to-understand terms and exchange opinions with the community people smoothly.

Exchange of opinions with local inhabitants at the Kitakyushu factory

The Kitakyushu factory of Asahi Glass periodically explains its environmental activities to and exchange opinions with the local people who are voluntary environmental monitors. The main topics of the most recent presentation meeting held by the factory were: the present status and future plans for construction work needed for foundation of a new company following the planned withdrawal of its division; the new environmental policy set after the factory obtained ISO 14001 certification; and introduction of new products.



Scene of risk communication training



Presentation to local community (at Kitakyushu factory)

The Environmental NPO's opinion comment on environmental performance

The report acknowledges it can be seen that Asahi Glass has set targets for its various environmental activities and has been striving to attain those targets in order to reduce the impact of its operations on the environment.

Since the efforts to reduce CO₂ emissions involves various factors, such as development of new technologies, relocation of factories overseas and change of businesses, we hope that the company will calculate not only total CO₂ emissions but also CO₂ emissions from the individual operations could be calculated, and strive to further reduce the environmental impact in the future. We also hope that company will collect relevant environmental data from all members of the Group its establishments throughout the country (only the corporate-wide data is presented here) and strive to further reduce the environmental impact in the future.

In addition, we recommend that Asahi Glass And sets reduction targets of activities to reduce CO₂ emissions and evaluate the progress of the individual activities while maintaining smooth communications by communicating with the local communities.

FOOT NOTES

Risk communication : The act of the parties concerned sharing relevant information, exchanging opinions, and working together to improve the level of mutual understanding and trust so as to reduce the risk.

Environmental Education

Asahi Glass Group's Environmental Forum

During 'Environment Week' in June 2002, Asahi Glass held an Environment Forum with the aim of promoting the communication of various types of information about the environment within the Asahi Glass Group.

At the Forum, Professor Itaru Yasui from the Production Engineering Research Institute of the University of Tokyo delivered a keynote address entitled "Environmental Problems of the 21st Century." After that, representatives of the companies within the Group and affiliated companies of Asahi Glass presented the themes of their environmental activities and exchanged opinions.



Asahi Glass Group's Environmental Forum

Environmental seminar

This seminar was started in 2001. Intended for the employees of the Asahi Glass Group, the seminar provides one-day course of lectures and discussions about the Group's environmental policy and such important themes as risk communication and measures against soil contamination.

Course of lectures on judicial affairs

Intended for the Group's middle-rank employees, this course is annually provided by the Office of Legal Affairs with environment-related laws and regulations as the main themes. It covers many subjects ranging from international conventions to domestic laws, regulations, and ordinances.

Education within each individual company

Chemicals Company

Chemicals Company provides its employees with education which is focused on the safety of chemical substances, the methods of assessing toxicities of chemical substances, the laws providing for the handling of chemical substances, and the procedure for reporting the use of specific chemical substances. In addition, the Company explains to its employees the latest movements in protection of the ozone layer and prevention of the global warming in relation to fluorocarbons*, which Asahi Glass manufactures and sells in large quantities.

Automotive Glass Company

Automotive Glass Company explains the policy of its environmental management, the method of operation of its environmental management system, etc. to the employees of the Head Office and sales offices, excepting the factories that have already obtained ISO 14001 certification.

Education at the individual factories

At each of the factories, the ISO 14001 staff plays the leading part in providing the individual workplaces with education in the operation of the environmental management system.



Texts for the environment seminar



Employees of Automotive Glass Company receiving education

FOOT NOTES

Fluorocarbons : Any of compounds of fluorine and carbon; used for refrigerants and solvents.

Information Disclosure

Tools for information disclosure outside the company

Environmental Report (in Japanese and in English)
Published annually (the first Environmental Report published in 2000) and distributed to the local communities, customers, investors, concerned administrative agencies/organizations, business partners, affiliated companies, and any person who desires to have a copy thereof.



Environmental Report 2000



Environmental Report 2001

Asahi Glass Homepage <http://www.agc.co.jp>
Can be accessed by any person outside the company. The "Environmental Activities" page can be opened from "Company Profile."
The homepage contains the company's environmental policy, Environmental Report, environment-related events made public by the company, etc.
<http://www.agc.co.jp/english/>



Asahi Glass homepage "Environmental Activities"

Tools for information disclosure within the company

House Organ "Asahi"
This is to give publicity to the company's policies, activities during Environment Month, activities during Recycle Promotion Month, etc. to the employees.



House organ "Asahi"

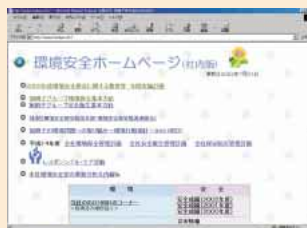
Company homepages

The individual companies and factories, the Research Center, etc. have their own homepages to supply information to and promote communications among the employees of Asahi Glass.

The homepage of the Environment & Safety Department of the Corporate Environment & Safety Directorate provides Asahi Glass' environmental policy, annual schedules for environmental education, etc., judicial affairs, and the current topics which many employees are interested in.

The homepage of Chemicals Company allows for inspection and issuance of MSDS and Yellow Cards, inspection of the environmental database and results of safety tests, etc.

At each of the factories and the Research Center, the ISO 14001 Secretariat plays the leading role in disclosing the factory's environmental policy, targets of waste reduction, saving of energy, etc., results of environmental activities, and so on.



Homepage of the Environment & Safety Department of the Head Office

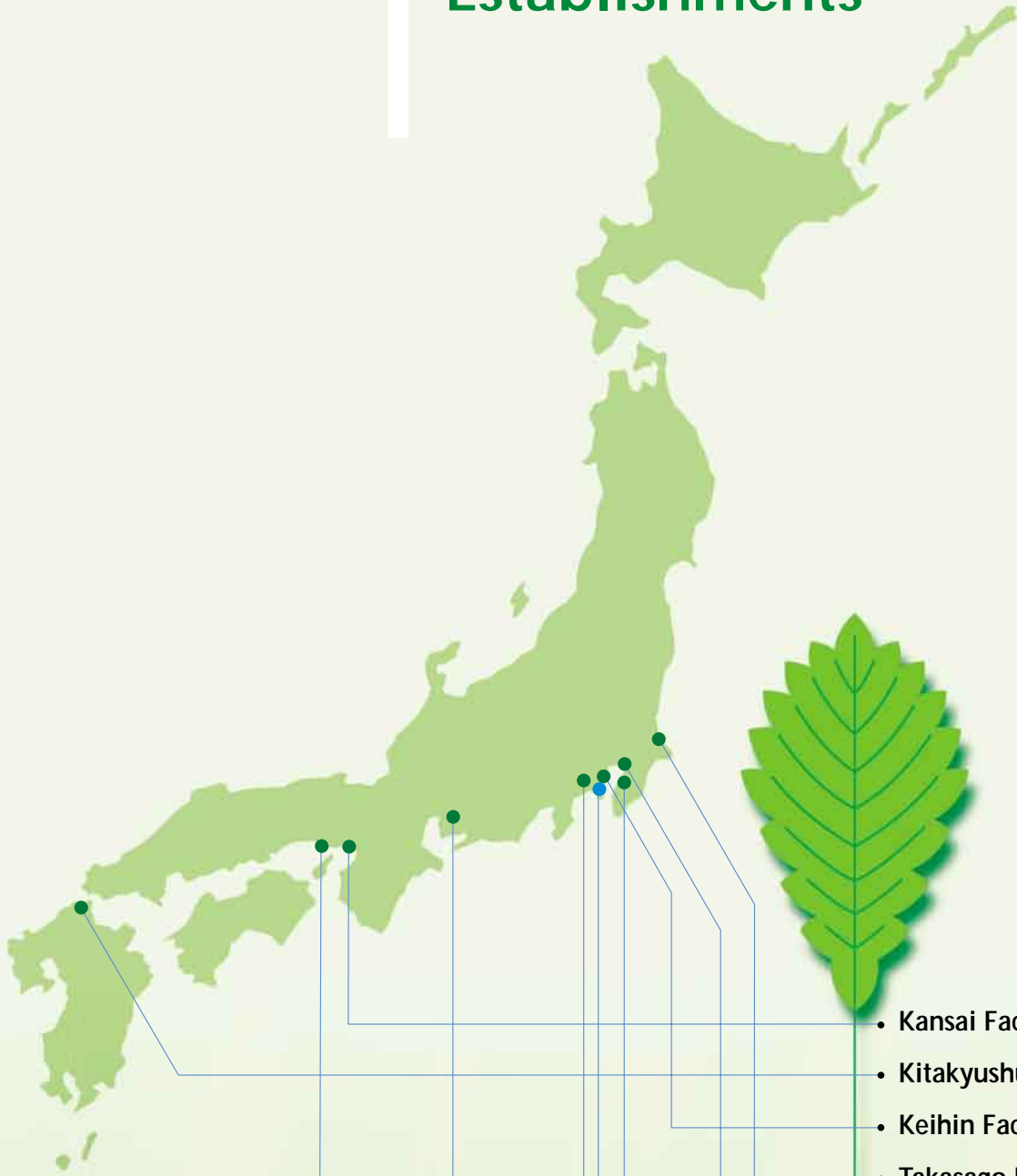


Homepage of Environment Management Office of Automotive Glass Company



Research Center's ISO 14001 homepage

Environmental Activities at Individual Establishments



- Kansai Factory
- Kitakyushu Factory
- Keihin Factory
- Takasago Factory
- Chiba Factory
- Funabashi Factory
- Aichi Factory
- Kashima Factory
- Sagami Factory
- Research Center

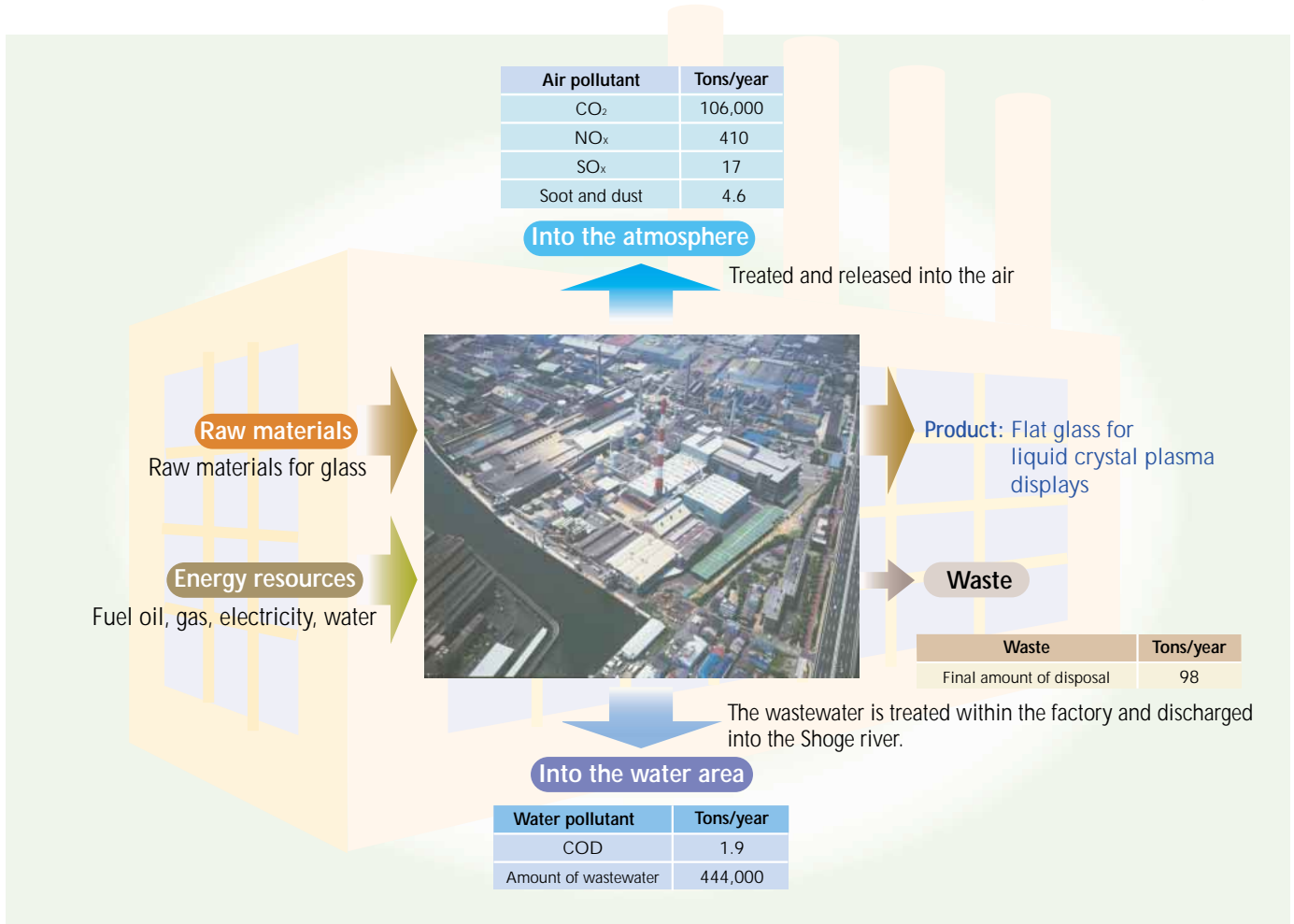
Kansai Factory

2, Nishimukojima-cho, Amagasaki City, Hyogo Prefecture 660-0857
 Tel : 06-6413-3325 Fax : 06-6417-5129

Situated in Amagasaki City, center of the Hanshin industrial district, the Kansai factory was constructed in 1907 when Asahi Glass was founded. It is a memorable factory in that it successfully mass-produced flat glass for the first time in Japan. As the pioneer in the flat glass industry, the Kansai factory has made history not only of Asahi Glass but also of the Japanese glass industry. At this factory that has inherited the company's pioneer spirit, high-function glass substrates which are used in electronic display devices are manufactured with high technologies.



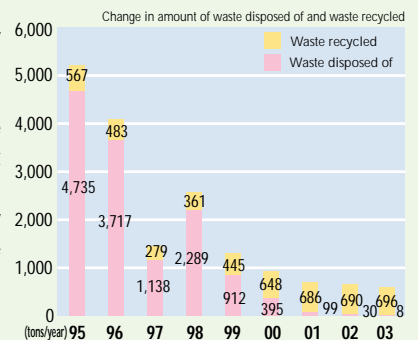
General Superintendent
Norihiro Miyata



Topics

Aiming to become a factory which releases no industrial waste

The Kansai factory has positively carried on its environmental activities aiming to attain zero emissions of industrial waste by the end of 2003. In 2001, the amount of ultimate waste disposal was 98 tons (target: 99 tons). That is only about 2% of 4,735 tons of the base year (1995).



PRTR Name, amount of release, and amount of transfer of substance reported to the authority concerned in 2001

Unit: kg

Substance name	Amount of release		Amount of transfer
	Atmosphere	Water area	
Barium and its water-soluble compounds	2.0	0	0

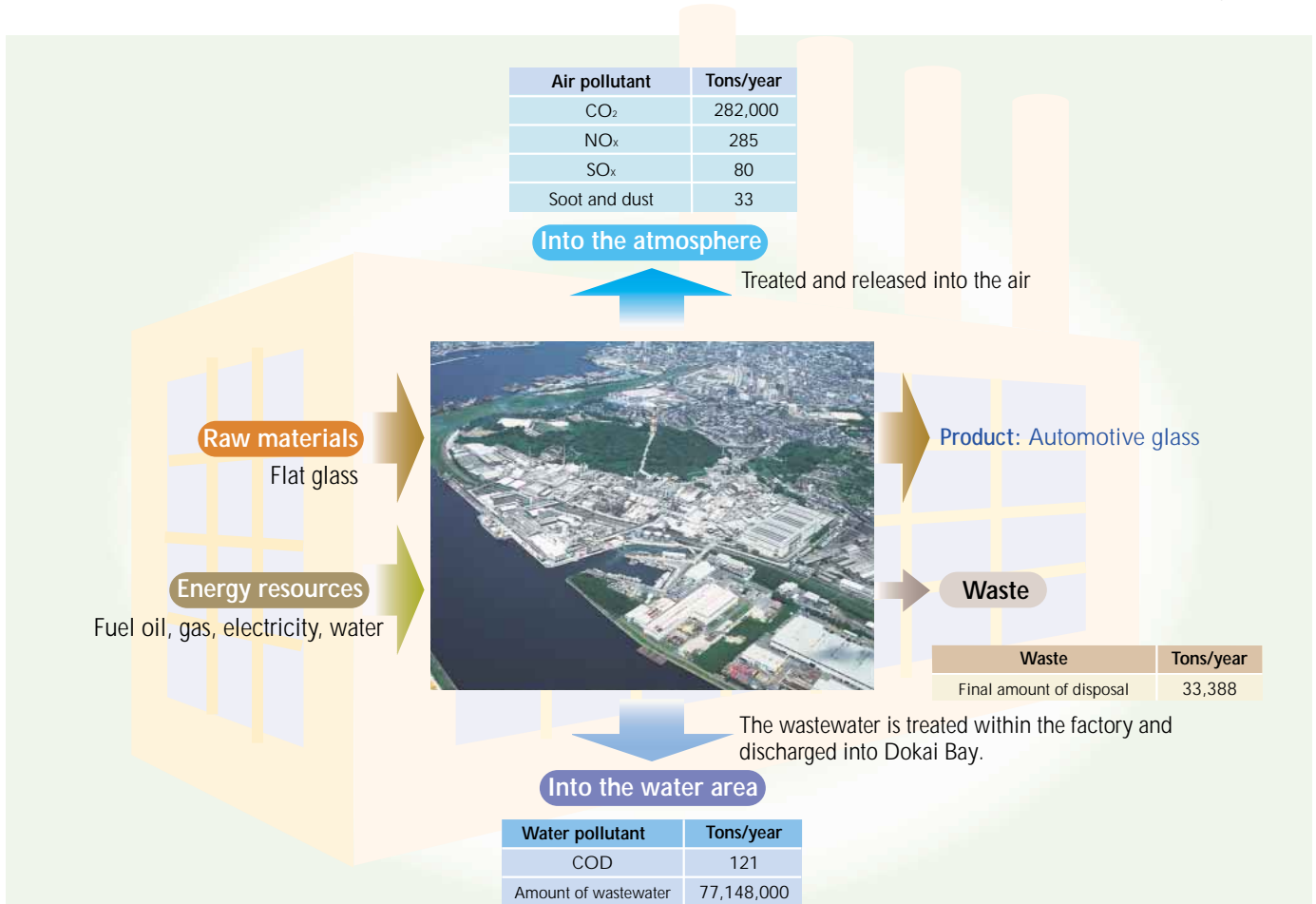
Kitakyushu Factory

1-1, Makiyama 5-chome, Tobata-ku, Kitakyushu City, Fukuoka Prefecture 804-8520
Tel : 093-871-1551 Fax : 093-871-2842

The Kitakyushu factory that is situated in Tobata-ku, Kitakyushu City, Fukuoka Prefecture was constructed as the second factory of Asahi Glass in 1914. Started as a sheet glass manufacturing plant, the factory succeeded in production of soda ash by the ammonia-soda process* for the first time in Japan in 1917. The factory developed as a pioneer in Japan's inorganic and alkali industries manufacturing mainly soda ash which is the principal raw material for sheet glass. In the meantime, the factory started manufacturing ceramic products, including ceramic building materials. At present, the factory is engaged mainly in production of automotive glass.



General Superintendent
Hiroshi Taniguchi



PRTR Name, amount of release, and amount of transfer of substance reported to the authority concerned in 2001

Substance name	Amount of release		Amount of transfer
	Atmosphere	Dumping	
Lead and its compounds	0	25	740

Unit: kg

Topics

The Kitakyushu factory visited by "Kodomo-Yamagasa"

"The factory is a member of the community." The Kitakyushu factory strives to deepen the mutual understanding with the local community and extends positive cooperation in the development of the community by participating in various local events and promoting smooth communication with the local people.



FOOT NOTES

Ammonia-soda process: The process of manufacturing soda ash (Na₂CO₃): raw material for glass by blowing ammonia gas and CO₂ into salt water.

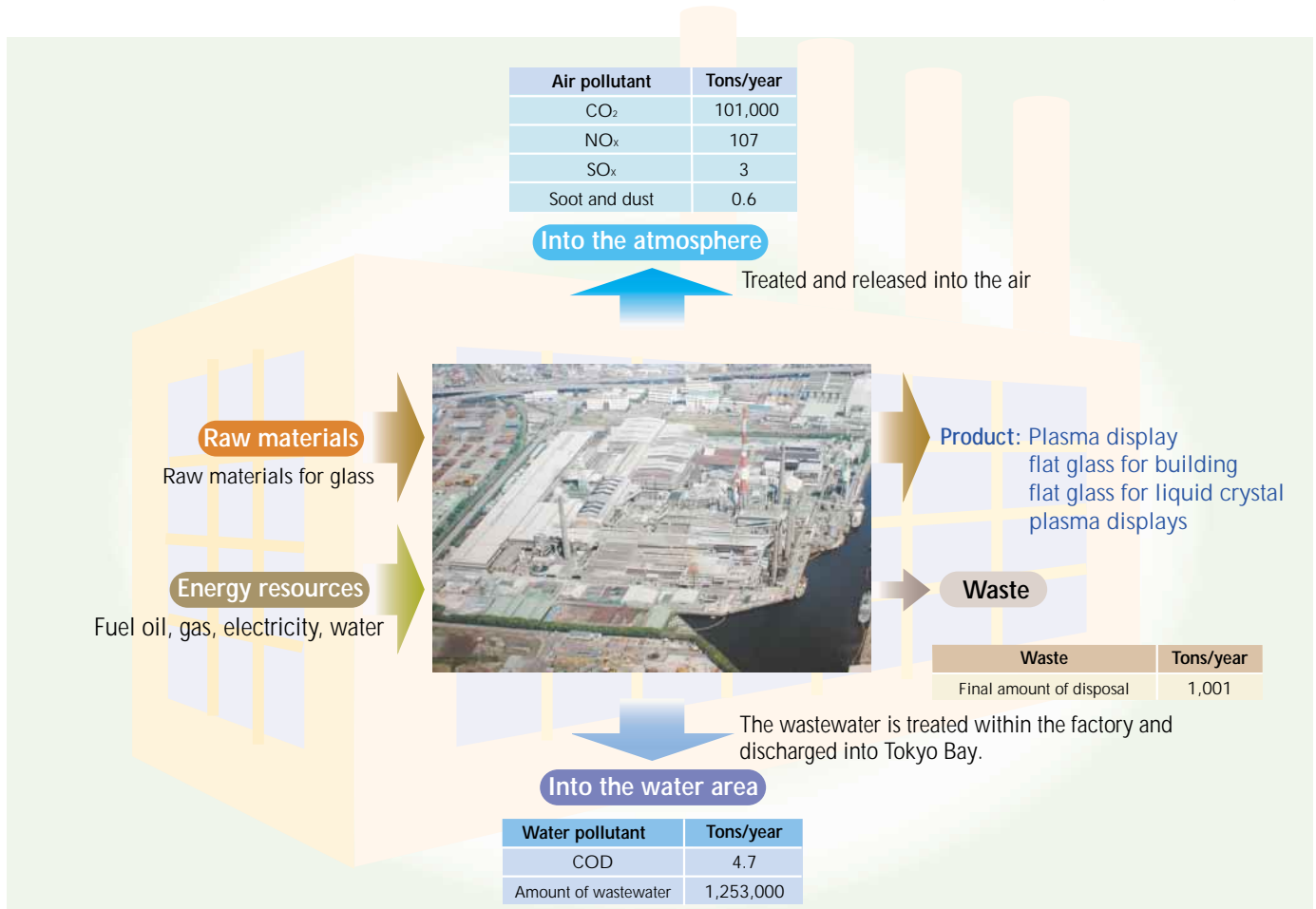
Keihin Factory

1-1, Suehiro-cho, Tsurumi-ku, Yokohama City, Kanagawa Prefecture 230-0045
 Tel : 045-503-7100 Fax : 045-503-9635

Situated west of Bentenbashi Station of the JR Tsurumi Line, the Keihin factory (the third one of Asahi Glass) was put into operation as far back as 1916. At present, the factory is engaged in the production of wired glass for buildings and alkali-free glass for TFT liquid crystal by the float glass process* and the fabrication of glass for plasma display (PDP). The factory is also active in environmental protection: it has positively introduced new technologies for dramatically reducing NO_x and CO₂ emissions. For example, in the domestic sheet glass industry, the factory was the first to adopt the oxygen combustion process. It is also the first flat glass manufacturing plant in Japan that obtained ISO 14001 certification (in 1998).



General Superintendent
Takeyasu Murayama



Topics

The employees of the factory and cooperative companies clean the environs of the factory once a month (this activity was started in 1999).



PRTR Name, amount of release, and amount of transfer of substance reported to the authority concerned in 2001

Unit: kg

Substance name	Amount of release		Amount of transfer
	Atmosphere	Water area	
Boron and its compounds	5,700	390	840

FOOT NOTES

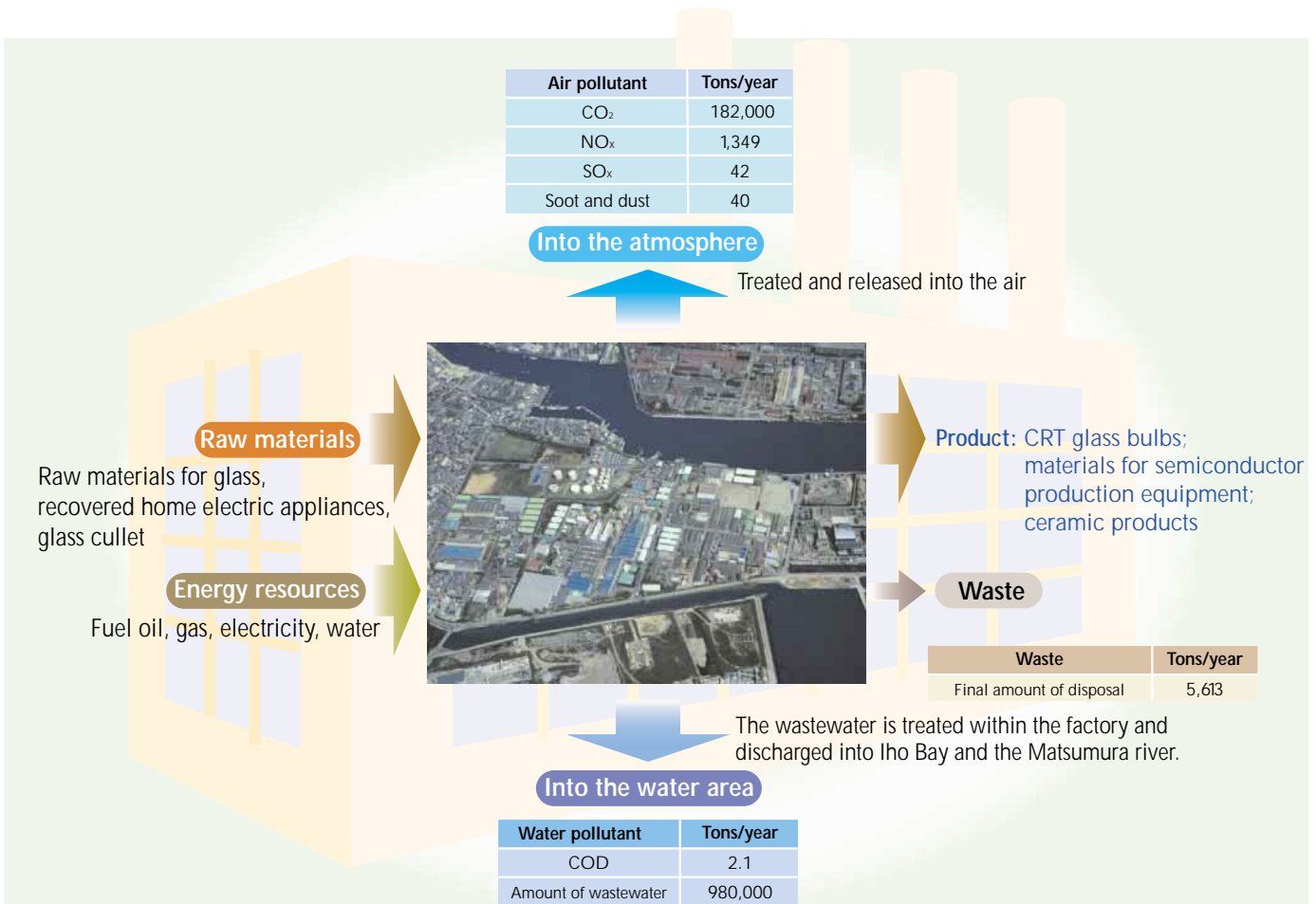
Takasago Factory

6-1, Umei 5-chome, Takasago City, Hyogo Prefecture 676-8655
 Tel : 0794-47-1882 Fax : 0794-48-6631

Situated in an industrial district on the Inland Sea of Seto, the Takasago factory manufactures CRT glass bulbs and materials for semiconductor production equipment. The factory has introduced the oxygen combustion process in its glass melting furnaces to reduce NOx and CO2 emissions dramatically. In addition, it recycles CRT glass cullet recovered from disused TVs as a raw material for glass. Recently, the factory has started activities to attain zero emissions of waste by recycling the slag that occurs in the glass bulb polishing process and the soot and dust recovered by dust collecting equipment. At Asahi Glass Ceramics Co., Ltd. that manufactures ceramic products within the grounds of the Takasago factory (the company became independent in April 2002), disused sand molds and grindings which occur in the manufacturing process are reused as subbase course materials, etc.



General Superintendent
Takeshi Asao



PRTR Name, amount of release, and amount of transfer of substance reported to the authority concerned in 2001

Unit: kg (mg-TEQ for dioxins)

Substance name	Amount of release		Amount of transfer
	Atmosphere	Water area	
Chromium and chromium() compounds	3,000	4.8	1,700
Lead and its compounds	670	11	12,000
Antimony and its compounds	88	280	160
Nickel compounds	5.6	2.7	100
Chromium() compounds	0	5.8	4.2
Dioxins	39	0.0000019	0.047

Topics

Recycling of CRT glass of disused TVs



Disused TVs recovered by a recycling company



CRT disassembly process at the recycling company



CRT glass cullet storage yard of the Takasago factory

Chiba Factory

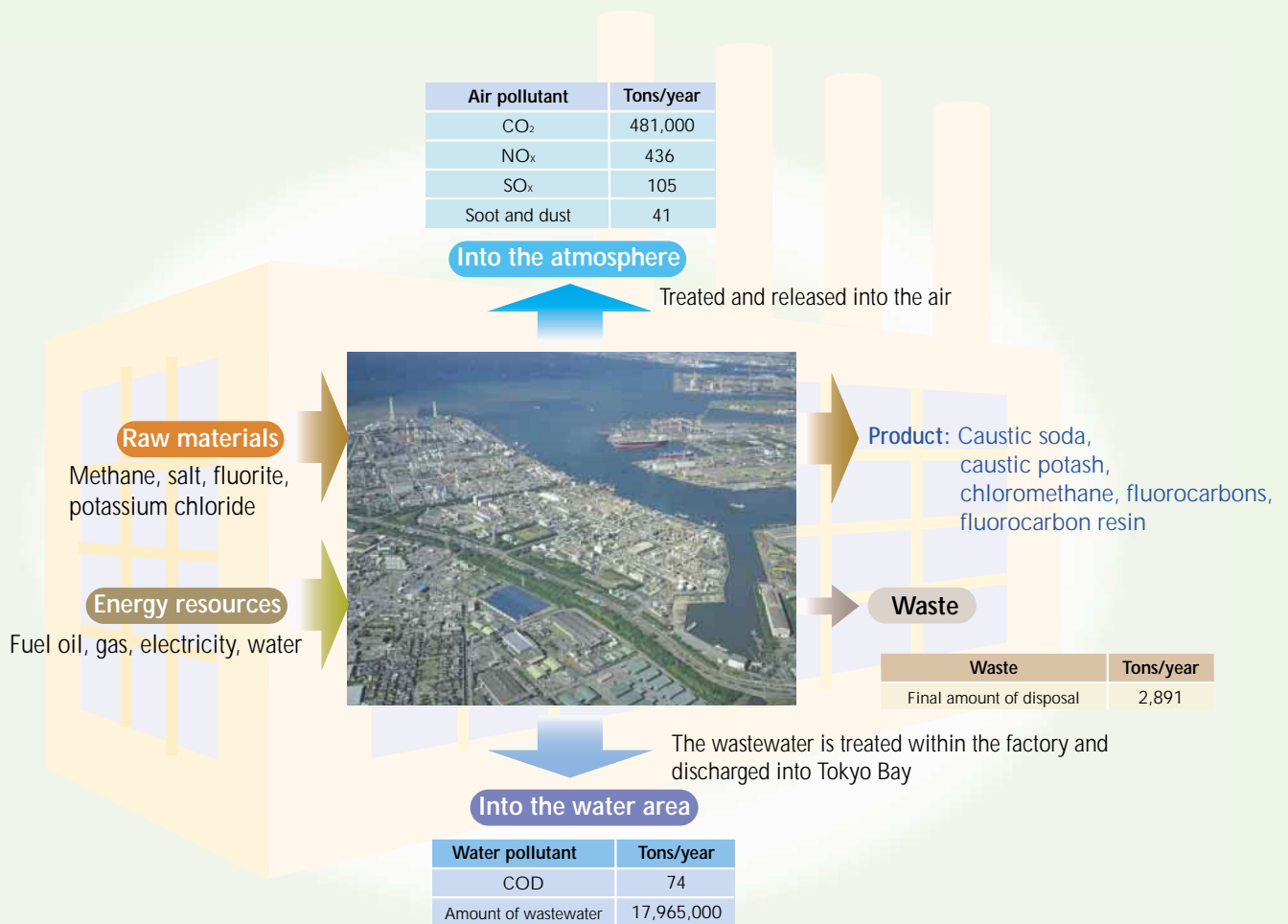
10, Goikaigan, Ichihara City, Chiba Prefecture 290-8566
 Tel : 0436-23-3121 Fax : 0436-23-3167

Ohami-Shirasato Mining Station
 940, Hosogusa, Ohami-Shirasato-cho, Sanbu-gun,
 Chiba Prefecture 299-3211
 Tel : 0475-77-2111 Fax : 0475-77-2309



General Superintendent
Jujiro Shimazaki

Situated at Goikaigan of Ichihara City on the Bay of Tokyo, the Chiba factory is Asahi Glass' main factory that manufactures chemical products, including caustic soda, caustic potash, chloromethane, fluorocarbons, and fluoropolymer. The factory is active in environmental protection as exemplified by obtaining ISO 14001 certification (in February 2002), the reduction of greenhouse gas emissions by installation of CFCs destruction equipment, the planting of trees on the grounds of the factory, and the cleaning of the neighboring areas along Route 16.



Basic environmental policy of the Chiba factory

In order to reduce the environmental impact of our factory, we shall establish an environmental management system, make continual improvements on the system, strive to control environmental pollution, and secure symbiosis with the local community and the Earth. In addition, we shall comply with the environmental laws and regulations and other requirements and positively carry out environmental activity plans which are compatible with our environmental objectives and targets.

PRTR Name, amount of release, and amount of transfer of substance reported to the authority concerned in 2001

Unit: kg (mg-TEQ for dioxins)

Substance name	Amount of release		Amount of transfer
	Atmosphere	Water area	
Acrylic acid	0	0	0
Antimony and its compounds	0	0	7,400
Ethylbenzene	1,400	0	0
Ethylenediaminetetraacetic acid	0	0	0
Xylene	4,000	0	0
Vinylchloride	1,200	0	0
HCFC-142b	820	0	0
HCFC-22	67,000	0	0
Chloroform	57,000	0	0
Methyl chloride	7,000	0	5,300
Tetrachloromethane	11,000	0	0
1,2-dichloroethane	7,500	0	0
Vinylidene dichloride	0	0	0
HCFC-141b	14,000	0	1,200
HCFC-21	3,900	0	0
HCFC-225	29,000	0	1,000
Methylene dichloride	55,000	0	2,100
N,N-dimethyl formamide	7,700	0	360
Tetrachloroethylene	630	0	19
Tetrafluoroethylene	89,000	0	0
Trichloroethylene	790	0	4,200
CFC-113	690	0	1
Nickel	0	0	130
Nickel compounds	0	0	0
Hydrogen fluoride and its water-soluble salts	0	0	180
Hexamethylene-diisocyanate	0	0	0
Dioxins	9.4	1.6	2.4

Topics

Measures to decontaminate soil and groundwater

- Carried out voluntary surveys of soil and groundwater for contamination and made public the fact of contamination (in May 2001).
- Has held a technical study meeting of the administration, experts, and the Chiba factory on work to decontaminate the soil and groundwater (11 times during 2001-July 2002).
- Started impervious wall installation work in June 2002 (planned to be completed within the year).

Destruction/recovery of fluorocarbons

- Started the fluorocarbon destruction business in 1998. Destroyed about 113 tons of fluorocarbons in 2001.
- Started the fluorocarbon recovery business in 2001. Developing technology for recycling HCFC 22 recovered from outside the factory as a raw material for fluoropolymer.

"Clean Day" activity

Cleans the environs of the factory along Route 16 once a month. For its activity, the Chiba factory received a "Letter of Thanks for Clean Promotion" from the mayor of Ichihara City in September 2000.

"F-Clean" greenhouse

An experimental greenhouse built within the factory. It employs fluorocarbon resin film ("F-Clean") which has a long life and hence does not easily become waste (it means less impact on the environment). Despite the fact that the greenhouse has been used for 10 years, it is almost free of stains.



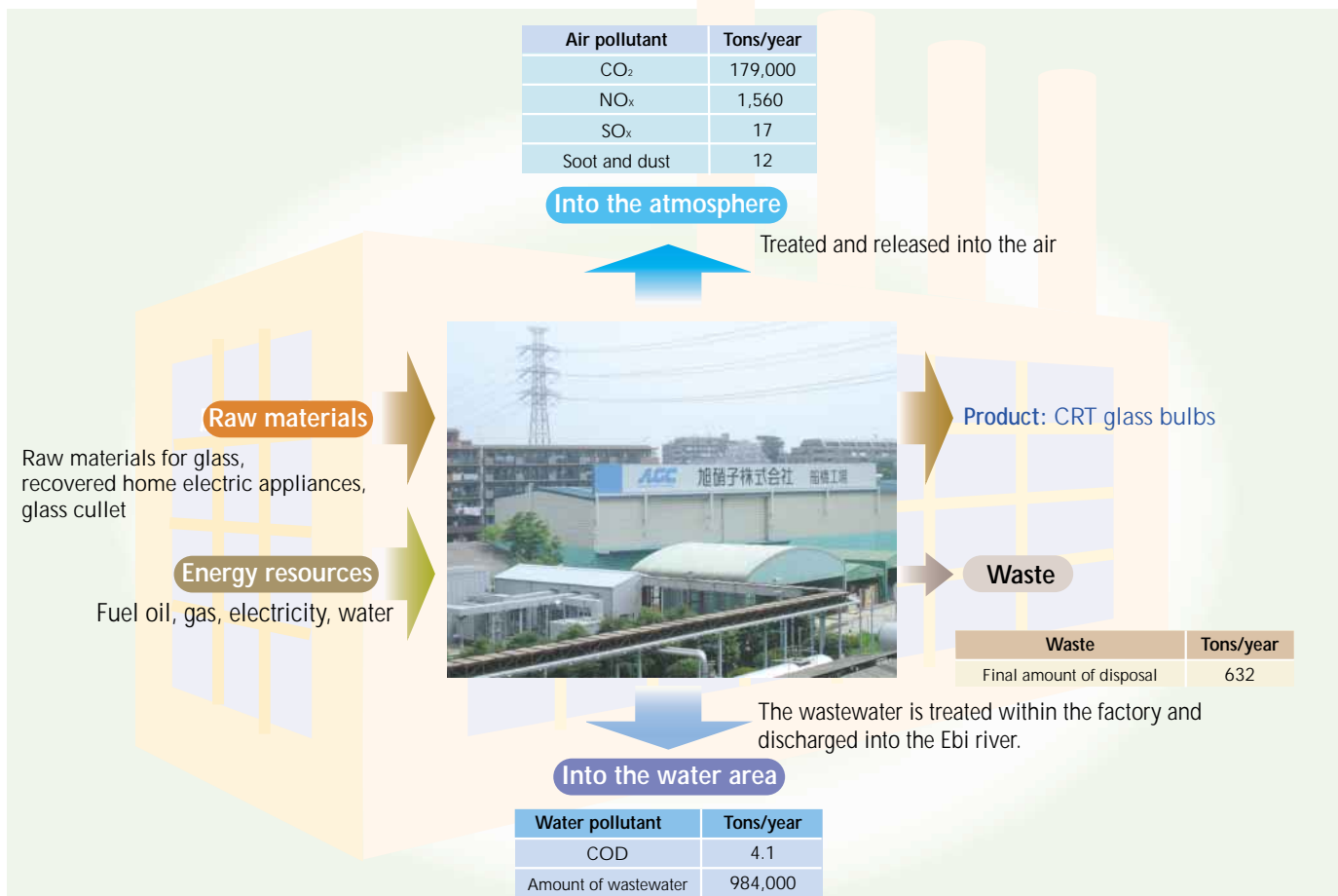
Funabashi Factory

10-1, Kitahonmachi 1-chome, Funabashi City, Chiba Prefecture 273-0864
 Tel : 047-424-1101 Fax : 047-425-0760

Situated east of Shin-Funabashi Station of the Tobu-Noda Line, the Funabashi factory is dedicated to the production of CRT glass bulbs. The factory has introduced the oxygen combustion process in its glass melting furnaces to reduce NOx and CO2 emissions. In addition, it is recycling glass cullet recovered in compliance with the Home Electric Appliance Recycling Law. Since the factory discharges its wastewater into the Ebi river, it positively engages itself in prevention of water pollution through the "Association of Business Enterprises for Keeping the Ebi River Clean." As Asahi Glass has plans to move the production base overseas, the production operations of the factory will be ended by the end of 2003.



General Superintendent
Isao Fujimoto



Topics

Through the "Association of Business Enterprises for Keeping the Ebi River Clean," the factory, together with the business enterprises in its neighborhood, participates positively in various beautification activities, such as "Funabashi Cleaning Day" sponsored by Funabashi City. In addition, the factory cleans up its environs once a month.

PRTR Name, amount of release, and amount of transfer of substance reported to the authority concerned in 2001

Unit: kg

Substance name	Amount of release		Amount of transfer
	Atmosphere	Water area	
Antimony and its compounds	400	89	2,200
Lead and its compounds	1,400	20	330,000
Nickel compounds	0	4.9	24
Boron and its compounds	350	980	2,600



Aichi Factory

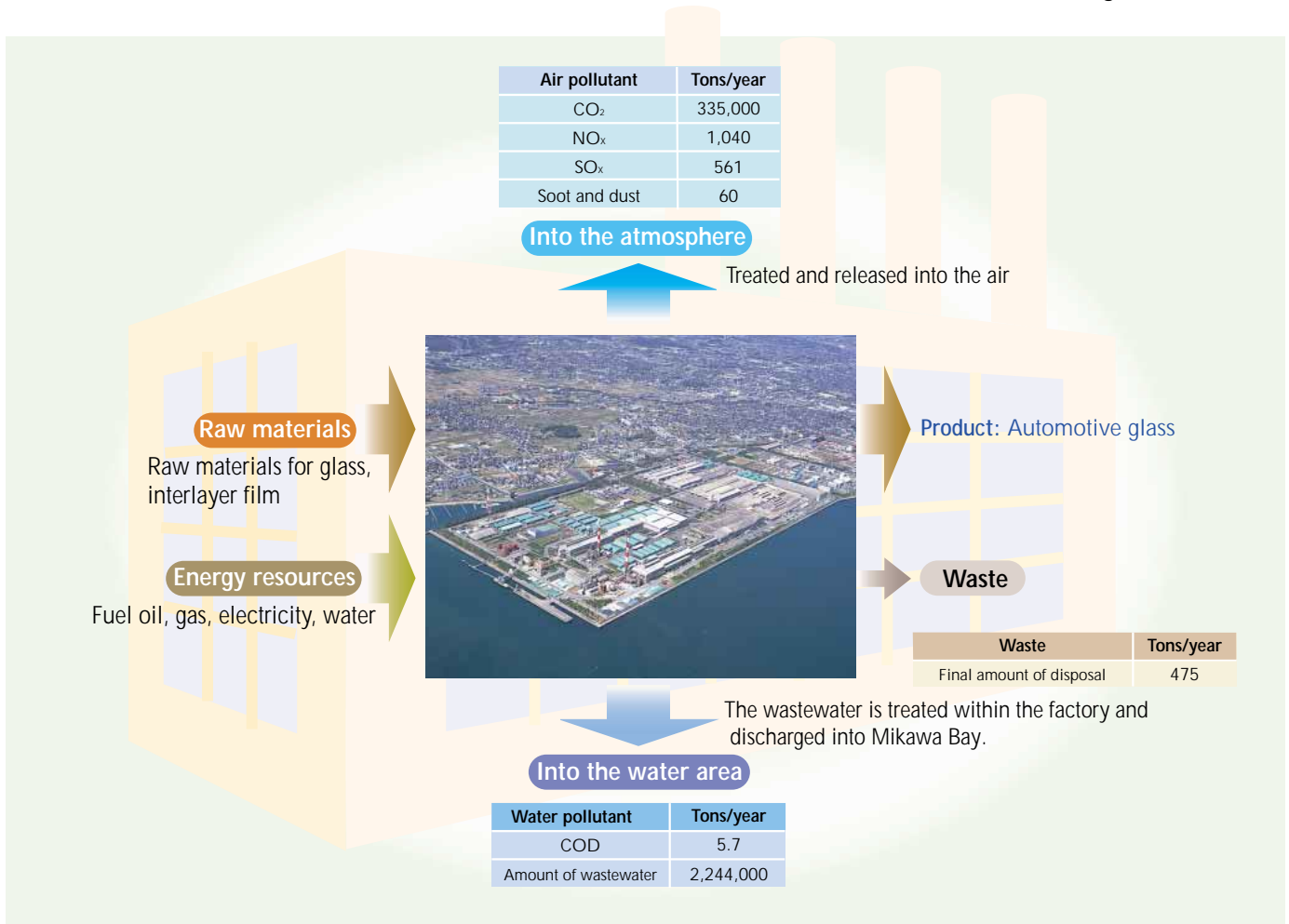
(Taketo) 1, Aza Asahi, Taketo-cho, Chita-gun, Aichi Prefecture 470-2394
Tel : 0569-73-1110 Fax : 0569-72-4890

(Toyota) 30-1, Umetsubo-cho 9-chome, Toyota City, Aichi Prefecture 471-0064
Tel : 0565-32-7331 Fax : 0565-31-1185

Since 1970, the Aichi factory—an integrated automotive glass manufacturing plant in the Chubu area that is the center of Japan’s automotive industry—has put out a wide variety of high-function glass products, from flat glass to fabricated glass for motor vehicles. In 1991, the second flat glass factory was constructed. As a factory employing the float glass process, the new factory boasts the largest production capacity in Japan. The Aichi factory is ever expanding both as a world-class automotive glass factory and a world-class general glass factory.



General Superintendent
Shigeru Tanaka



Topics

As part of its local activities, the factory annually carries out garbage collection, mainly on the national roads in its neighborhood.

PRTR Name, amount of release, and amount of transfer of substance reported to the authority concerned in 2001

Unit: kg

Substance name	Amount of release		Amount of transfer
	Atmosphere	Water area	
Chromium and chromium() compounds	0	0	650
Lead and its compounds	0	0	2,400
Nickel compounds	0	0.5	0



Kashima Factory

5, Higashiwada, Kamisu-cho, Kashima-gun, Ibaraki Prefecture 314-0195
 Tel : 0299-96-2215 Fax : 0299-96-7970

Situated in the eastern part of the Kashima coastal industrial region—one of Japan’s largest industrial districts, the Kashima factory, on a site of about 1 km square engages itself in production operations in three different fields of business: the building flat glass business having the world’s largest capacity and the attendant high-function glass business; the ceramic building materials business that has adopted a new brand name “AG-WALL”; and the chemical business that has put its ultramodern “Fine Sodium Bicarbonate Plant” into operation. All these business units work closely together to implement necessary environmental measures. The main environmental activities of the plant include participation in the activity to beautify the Kashima industrial complex and foundation of the “Kashima Center for Joint Recycling of Resources” by joint investment of the local community, administration, and business enterprises with “Creating a resource recycling society” as the theme.



General Superintendent

Hideki Hibakari



PRTR Name, amount of release, and amount of transfer of substance reported to the authority concerned in 2001

Unit: kg (mg-TEQ for dioxins)

Substance name	Amount of release		Amount of transfer
	Atmosphere	Water area	
Zinc compounds(water-soluble)	0	1,300	0
Antimony and its compounds	0	0	10,000
Epichlorohydrin	4,900	0	0
Propylene oxide	98,000	0	0
Xylene	50,000	0	18,000
HCFC-22	58,000	0	0
Allyl chloride/3-chloropropene	15,000	0	0
Chloroform	18,000	120	0
Chloromethane/methyl chloride	130,000	0	0
Tetrachloromethane	42,000	88	0
HCFC-123	13,000	0	0
HCFC-21	15,000	0	0

Substance name	Amount of release		Amount of transfer
	Atmosphere	Water area	
1,2-dichloropropane	130,000	330	0
Dichlorobenzonitrile	0	0	76
HCFC-225	40,000	0	0
Dichloromethane/methylene chloride	42,000	49	0
Tetrafluoroethylene	34,000	0	0
CFC-113	5,400	0	0
CFC-11	1,400	0	0
Lead and its compounds	0	0	2,700
Hydrogen fluoride and its water-soluble salt	0	47	0
Dioxins	32	17	0

Topics

Kashima Center for Joint Recycling of Resources

This center is an advanced model facility of resources recycling type that burns RDF prepared from general flammable refuse discharged from one city and two towns of the Kashima district (Kashima City, Kamisu Town, and Hazaki Town) and flammable waste discharged from the Kashima coastal industrial district and converts the thermal energy into electrical energy. The Kashima factory asks the Center to incinerate general flammable refuse and waste plastics which occur within the factory.



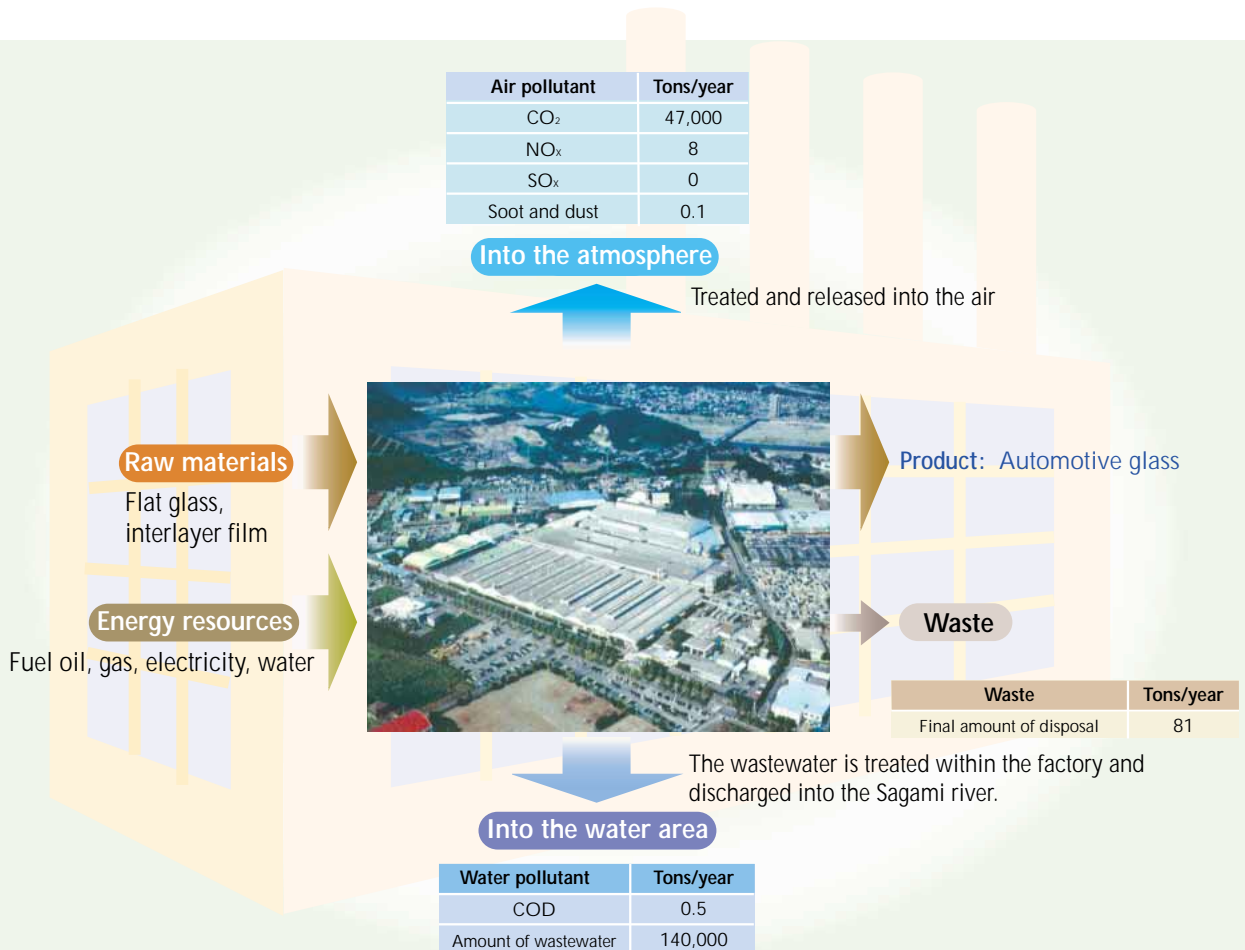
Sagami Factory

426-1, Tsunoda, Aikawa-cho, Aiko-gun, Kanagawa Prefecture 243-0301
 Tel : 046-286-1254 Fax : 046-286-1688

Situated at the center of Aikawacho—an inland town blessed with beautiful natural landscapes (Mount Tanzawa, Nakatsu Valley), the Sagami factory manufactures automotive fabricated glass, which is supplied to the entire Kanto area. Having a geographical advantage (Tomei Expressway, major national roads, and bypasses run through the area), the factory speedily sends out safe, beautiful, high-function automotive glass products to the customers with hopes that its products will contribute to the improvement of safety and comfort of motor vehicles. The factory continues growing in a cheerful and healthy environment.



General Superintendent
Hiroshi Urano



PRTR Name, amount of release, and amount of transfer of substance reported to the authority concerned in 2001

Unit: kg

Substance name	Amount of release		Amount of transfer
	Atmosphere	Water area	
Chromium and chromium() compounds	0	0	1.5
Lead and its compounds	0	0	2.6

Topics

Maintaining friendly interaction with the environment

Our factory always tries to maintain good relations with the environment. For example, we use clean fuels which will not pollute the environment. By using sulfur-free liquefied petroleum gas (LPG) and electricity as the fuels, we can prevent the air from being polluted. The water used within the factory is subjected to a number of purification processes (settling, filtration, chemical treatment, demineralization by the ion-exchange membrane "Selemion"—a high-function product of our company) so that it can be used repeatedly. This helps protect the rivers and save valuable water resources appreciably.

Research Center

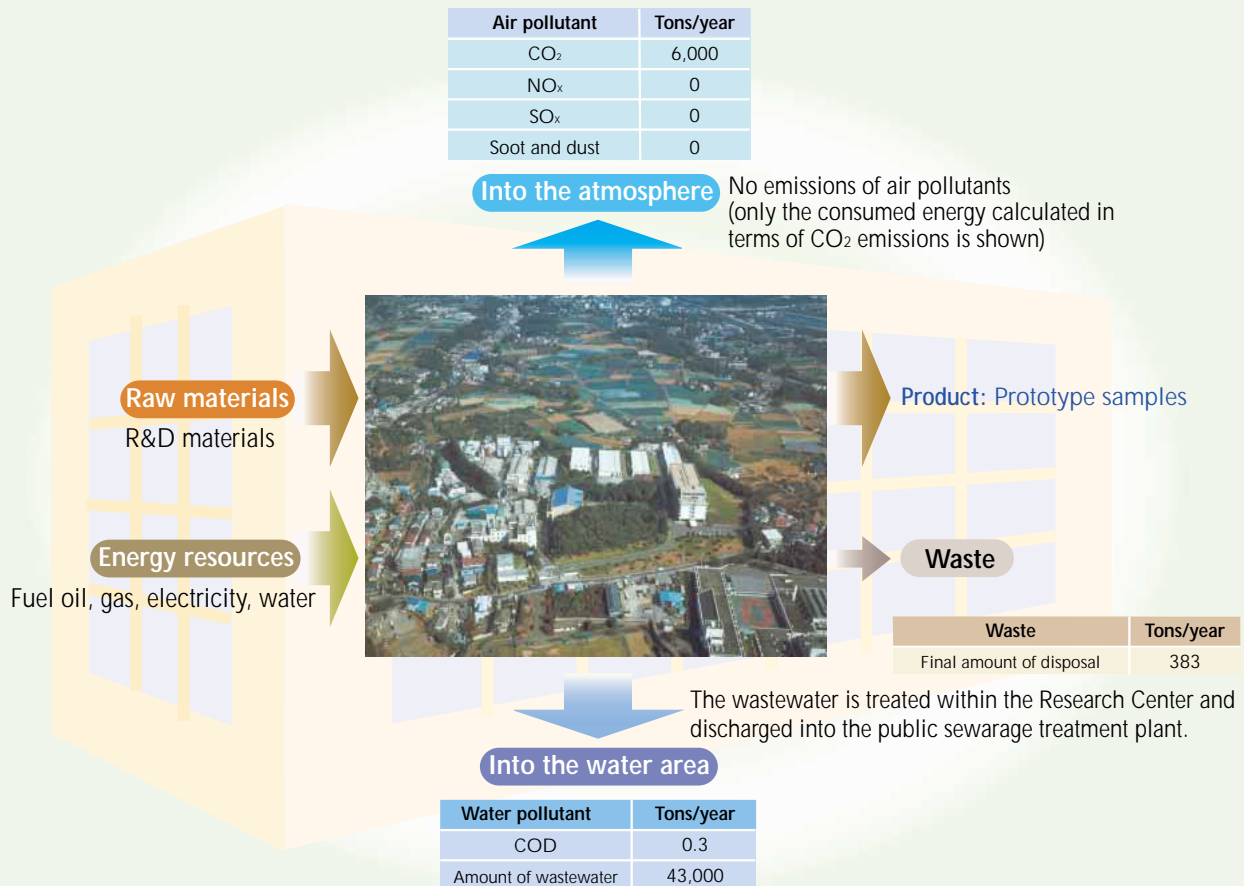
1150, Hazawa-cho, Kanagawa-ku, Yokohama City, Kanagawa Prefecture 221-8755
 Tel : 045-374-8888 Fax : 045-374-8850



General Superintendent

Seiji Munekata

At the beginning of the new century, the Research Center engages itself in the development of new materials and systems in the fields of information communications, electronics, and displays with "human beings" and "light" as the key words. The Research Center is also developing clean energy systems, filters for cleaning the environment, etc. with the aim of creating an environment which is friendly to us human beings and the Earth.



PRTR Name, amount of release, and amount of transfer of substance reported to the authority concerned in 2001

Unit: kg

Substance name	Amount of release		Amount of transfer
	Atmosphere	Water area	
None			

Topics

Having obtained ISO 14001 certification in July 2000, the Research Center is also positively tackling the saving of energy and resources and the recycling of waste. For the remarkable results of its activities, the Research Center was designated as an environmental management office for Kanagawa Prefecture in 2001.

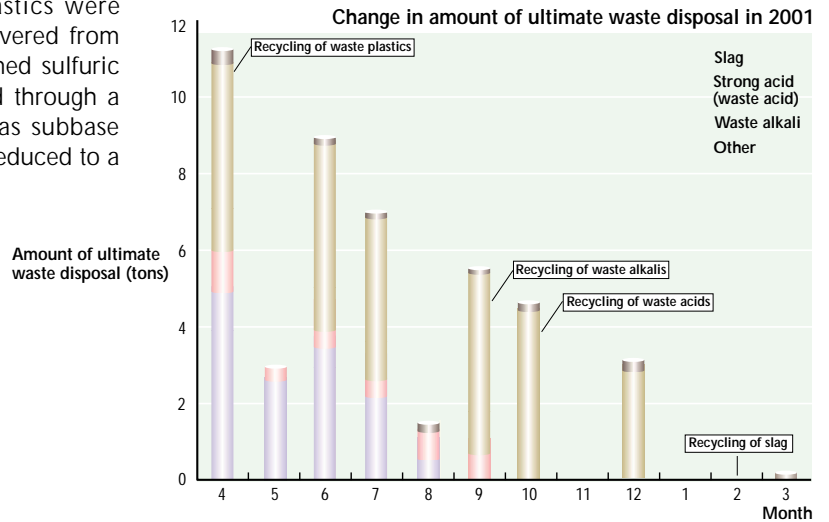
Activities of Affiliated Companies

Asahi Precision Circuit Co., Ltd.

Asahi Precision Circuit Co., Ltd., founded in Fukushima Prefecture in 1997, manufactures high-precision printed wiring boards. Since April 2001, this company has carried on activities to reduce/recycle industrial waste under the guidance of the Electronic Materials and Products General Div. of Asahi Glass. In the beginning, the company analyzed the industrial waste that actually occurs and studied economical equipment capable of recycling the waste within the company. At the same time, the company searched its neighborhood for an outside recycling company. The two companies jointly developed necessary technologies for recycling the waste. Waste plastics were recycled into reclaimed plastics. Copper was recovered from waste acids, which were then recycled into reclaimed sulfuric acid. Waste alkalis and inorganic slag were passed through a number of processes so that they could be used as subbase course materials. As a result, waste emissions were reduced to a minimum in one year.



Inorganic slag that can be recycled into a subbase course material



P.T. Asahimas Chemical (Indonesia)

P.T. Asahimas Chemical is a chemical company which manufactures caustic soda, polyvinylchloride(PVC) monomer, and polymer by integrated processes. It is one of the largest companies in the ASEAN area.

The company obtained ISO 14001 certification in June 2001. Since then, it has carried on environmental activities under its environmental management system.

Each of the company sections is tackling its own tasks keeping in mind the plan-do-check-act cycle. In particular, the company took up wastewater as the most serious environmental problem, hence installed additional pieces of equipment for measurement and pollution control and reinforced the wastewater management system.

In addition, the company has established voluntary control standards for PVC operations to implement management by objectives.



Eco-Business

In order to tackle global environmental problems, the Asahi Glass Group is active in developing eco-products that are friendly to the environment.



Energy-saving double glazed glass for home use

Solar panel power generation for residential use

Arsenic-free glass for liquid crystal panel

Lead-free coat for automotive glass

Infrared Ray(IR) cut glass

Ecosafe System for removing black smoke from stationary diesel engine

DPF for diesel car

Aclesia Agent for preventing plumes of exhaust gases from heavy oil boilers

Affiliated Companies

F-Clean

Fluoropolymer film for Greenhouse

Gas combustion type incinerator

Eco-Products

Energy-saving double glazed glass for home use

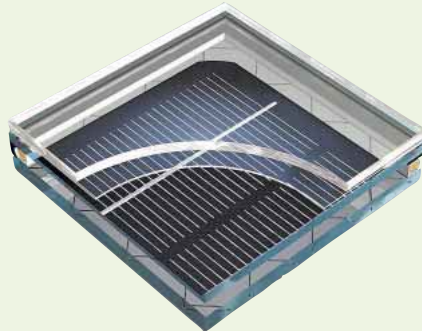
The degree to which windows, a building's main apertures, are insulated plays a large role in holding down the amount of carbon dioxide emissions. Through the use of high thermal insulation double-glazed glass overlaid with a specialized metal coating (for warm climates: Sunbalance; for cold climates: Sunlane), carbon dioxide emitted by climate control systems can be cut substantially, as compared to when conventional single sheet glass is used.

If all residences in Japan were fitted with double glazing, and their heat insulation performance, including for walls and floors, were to be brought up to next-generation energy-saving standards, estimates show that there would be a potential decrease in fuels use equivalent to 4,000,000t in annual carbon dioxide emissions. This amount is equivalent to 1.2% of the total emissions from Japan in 1996.



Solar panel power generation for residential use

These solar panel modules* have crystalline cells sandwiched between two sheets of reinforced glass. These modules are photovoltaic units that are closely integrated with their buildings – while the power cells absorb the heat waves and produce energy savings, they are also making possible just the right balance of lighting. Also, since its large-module, frameless structure can be used with skylights and curtain walls*, with façades* or at the eaves, it is possible to create unique architectural spaces. This product shows every promise of enabling a building's owners and tenants to better present themselves as grappling with the issues of the environment.



FOOT NOTES

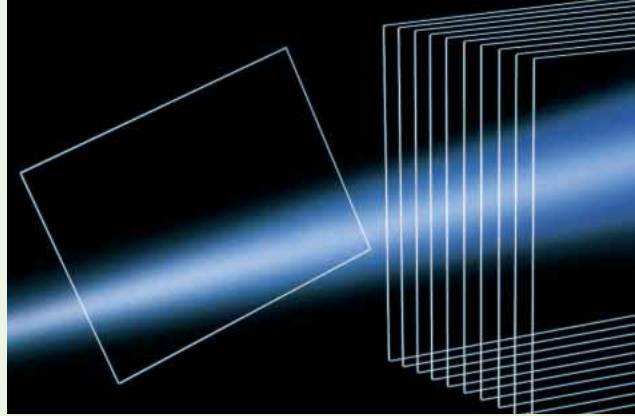
Solar panel module: A module which efficiently absorbs solar heat and transforms the thermal energy into electrical energy.

Curtain wall: A building outer wall made mainly of glass to give aesthetic appeal to the structure.

Façade: Any glass used in halls of high-rise buildings.

Arsenic-free glass for liquid crystal panels

When the glass used for TFT-LCD panels contains arsenic, the scrap glass generated during processing is harmful to the environment. By proactively removing arsenic, the source of the problem, Asahi Glass was ahead of the industry.



Lead-free coat for automotive glass

Asahi Glass has developed a lead-free black ceramic print applied to the periphery of the windshield and back light glass of automobiles from very early stage, and has proposed such lead-free ceraprint to the customers. In the EU countries, the use of a lead-free products is to be obliged in July 2003. In response to requests from the customers, we are replacing the conventional print with its newly-developed lead-free ceraprint.



Infrared Ray (IR) cut glass

Asahi Glass has commercialized a new type of laminated infrared cut glass that allows radio waves to pass through, for the first time in the world.

This glass is adopted for the windshields of "Elgrand" of Nissan and "Alphard" of Toyota, which are both new models announced in May 2002.

The IR cut glass used for the windshields of automobiles is a heat-insulating glass which eases the unpleasant feeling of sizzling heat caused by solar radiation and helps prevent the interior temperature from rising.

Since the IR cut glass reduces the load on the car air conditioner, it is also effective to improve the mileage.



Ecosafe System for removing black smoke from stationary diesel engine

From the viewpoint of reducing CO₂ emissions, the diesel engine that is more energy-efficient than the gasoline engine is more desirable. However, the harmfulness of the black smoke contained in the diesel engine exhaust has become a major problem. In order to solve this problem, Asahi Glass developed a system for removing black smoke from the diesel engine exhaust. This system won the "Agency of Industrial Science and Technology Director General' Award" in 2000. By making improvements on the original technology, the company has succeeded in reducing the system size and developing a practical filter for use in waste incinerators, and thereby the company's product lineup has been further expanded.



DPF for diesel car

The DPF (Diesel Particulate Filter) is a plugged honeycomb filter for removing the soot in the exhaust gas of diesel vehicles. Silicon nitride was used for the DPF. The porous product of silicon nitride* was directly made from metallic silicon by reaction sintering process. The products fully meet the standard soot filtration performance and regeneration characteristics of collected soot. Thus it is a technology that can contribute to develop diesel vehicles with low pollution emissions. In the future, Asahi Glass intends to establish mass production technology and start mass production of DPF when the new emission regulations are put into effect in Europe in 2005.



Aclesia Agent for preventing plumes of exhaust gases from heavy oil boilers

A derivative of sodium bicarbonate*, Aclesia does an excellent job of removing any acidic traces to be found in gases. It can extract sulfur trioxide(SO₃)* out of the exhaust gases produced by heavy oil-burning boilers, and prevents the plume of smoke caused by sulfuric acid. It is also excellent for the removal of acidic traces, such as hydrogen fluoride, sulfur dioxide, hydrogen chloride* and boric acid* levels can be reduced to very low concentrations.



Before use of Aclesia



After use of Aclesia

Eco-Products of Affiliated Companies

F-Clean Fluoropolymer film for Greenhouse

Asahi Glass Green Tech Co., Ltd.

The greenhouse industry has difficulty in disposing of the wasted film. The fluoropolymer film "F-Clean" has a life more than 10 times longer than that of the conventional PE, hence contributes much to the reduction of waste film. The company has built a system in Japan for recovering and recycling disused film and puts recycled film back to the market, winning popularity among the users.



Gas combustion type incinerator

Plibrico Japan Co., Ltd.

This is a new type incinerator the company has developed by applying monolithic refractory* and its engineering know-how. Since the incinerator employs a gas combustion system, it produces very small amounts of dioxins and soot despite its small size. It has attained high levels of safety and durability.



FOOT NOTES

Porous product of silicon nitride: A solid, honeycomb-like product obtained by sintering silicon nitride (SiN).

Sodium bicarbonate: NaHCO₃; used for medicines, baking powder, neutralizing agents, etc.

SO₃: Sulfur trioxide; a kind of SO_x; produced when SO₂ is oxidized; used to produce sulfuric acid (H₂SO₄).

Hydrogen chloride (HCl): Aqueous solution of HCl is called hydrochloric acid; regulated by the Regulations on Toxic and Caustic Substances.

Boric acid (H₃BO₃): Used as raw material for glass, medicines, etc.

Monolithic refractory: The powder becomes clayey and easy to work on; when mixed with water used as substitute for ordinary refractory, rectangular heat-resisting brick, etc.

Commendation & Assistance for Environmental Efforts

The Asahi Glass Foundation, which was established in 1933, commends funds to worthy projects and provides assistance to people who are working to solve global environmental problems or carrying out associated technical research.



Blue Planet Prize

The Blue Planet Prize is an international environmental award given to individuals and organizations who have made outstanding achievements in scientific research and its application, and in so doing have helped provide solutions to global environmental problems. Each year, two award recipients are chosen from among candidates named by nominators from Japan and overseas. Each winner receives a certificate of merit, a commemorative trophy, and a supplementary award of 50 million yen.



2001 (10th) Laureates

Lord (Robert) May of Oxford

(Australia)
President of Royal Society of London

For developing mathematical ecology, the means to predict changes in animal populations that serves as a fundamental tool for ecological conservation planning.



Dr. Norman Myers

(U. K.)
Honorary Visiting Fellow of Green College,
Oxford University

For ongoing leadership in warning about new environmental problems, such as the mass extinction of species, and stating the criteria for a society that attaches importance to environmental conservation.

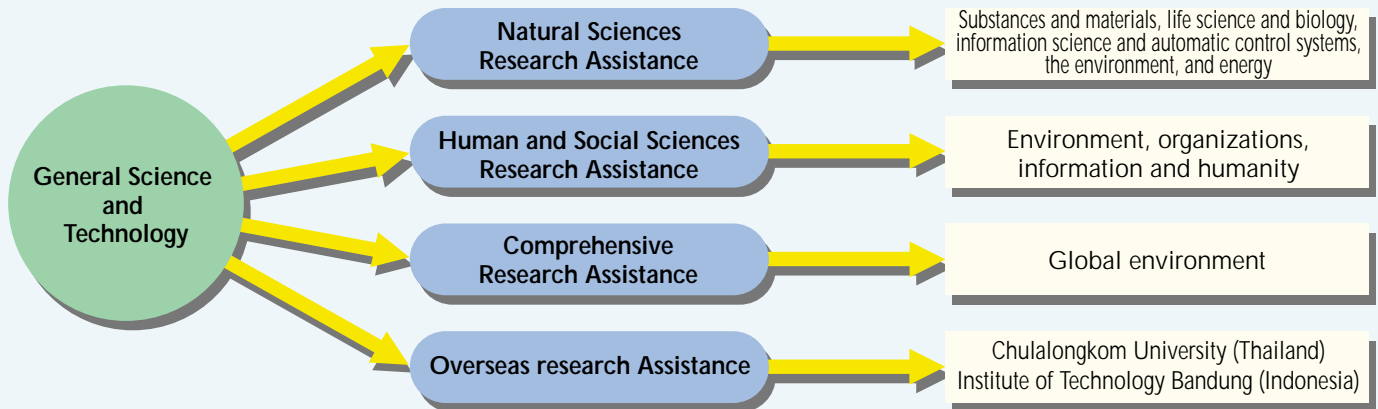


Fields of recognition

Global environmental problems in general, including but not limited to global warming, acid rain, ozone layer destruction, dwindling tropical rain forests, destruction of ecosystems and extinction of species, progress of desertification, and river/ocean contaminations. Problems which have direct bearing on protection of the global environment and nature, including but not limited to energy, food, water and population problems, environmental ethics and policies, measures to remedy diseases caused by change in the environment, and treatment/recycling of waste.

Research assistance

The research aid system is intended to support original research in the field of natural science which “will help build a solid foundation for the next-generation society” and research in the field of cultural and social sciences which “will provide guidelines for solving important social problems.” The system also supports general research on the global environment which attaches importance to international and interdisciplinary studies.



The research aid system covers researchers (assistant researchers and higher) who belong to domestic universities having postgraduate courses, research laboratories annexed thereto, common research institutes, etc. (for the support for research overseas, only the two universities shown above).

Assistance research placing emphasis on environmental problems

In 1991, The Asahi Glass Foundation expanded the scope of research aid by announcing that emphasis should be placed on environment-related themes as well.

During the 1991-2001 period, the support for research into environment-related themes accounted for about 18% of the total amount of research aid. Among them, 19 general research received research aid. By theme, they are broken down as shown in the table at right.

Breakdown by theme Comprehensive Research Assistance which received research assistance program

Field	Number of research projects
Climate/Earth science	3
Ecosystems	2
Environmental ethics/Philosophy	2
Measures to prevent environmental disruption	3
Environmental economics/Policies (includes sustainability)	5
Water management	3
Energy	1
Total	19

The themes of recent researches which received Comprehensive Research Assistance aid are as follows.

- 1999
Long Range Transport and Accumulation of Hazardous Air Pollutants in the Arctic
- 2000
Clean Development Mechanism from the Viewpoint of Incentives: Contributions from Asia for the Global Environment
- 2001
Development of a New Microbial Treatment for Wastewaters Discharged from Fermentation/Palm Mill Industries in Southeast Asian Countries



On Publishing the Environmental Report 2002

Voices of readers of Environmental Report 2001

Concerning Environmental Report 2001, we received many valuable opinions from many readers within and outside the company.

The table at right lists the contents of the Report which the respondents to our questionnaire told us they were interested in or impressed by. The content that interested the readers most was "Environment-Related Business." Many of the readers showed interest in "how" and "in what fields" Asahi Glass was deploying its environmental activities as its eco-business. We also confirmed that the company's environmental performance drew the attention of many readers. We feel that the readers made a straightforward evaluation of the measures Asahi Glass was taking to reduce the environmental impact and of the present conditions of the company's environmental activities.

Looking at the free comment columns, we noticed many constructive opinions from environmental experts and readers who are much interested in environmental problems. These opinions include: "I want more detailed information," "I want to know about the environmental activities at the individual factories," and "The company should improve the levels of its environmental activities."

We positively reflected the valuable opinions of the readers in the planning of our future environmental activities and in the editing of the current environmental report. Thank you very much for your cooperation.

Contents impressed or interested readers	
1. Company Profile	14
2. Message from the President	5
3. The Asahi Glass Group's Policy for Environmental Protection	18
4. Asahi Glass Environmental Policy and System	22
5. Environmental Management System	30
6. Environmental Awareness Education Etc.	18
7. Saving Energy & Protecting Water Resources	34
8. Measures against Global Warming	35
9. Reducing Impact on Air and Water	24
10. Responsible Management of Chemicals	24
11. Measures against Industrial Waste	35
12. Soil Surveys and Remediation Measures	16
13. Environment-Related Business	56
14. Interactive Efforts with Local Communities	25
15. Commendation and Assistance for Environmental Efforts	15
Total	371

(multiple answers)

Activities of the Environmental Report Working Group

With the aim of preparing an environmental report which is easier to understand, in March 2002 Asahi Glass installed a working group consisting of three people from the Environment Information Science Center, 11 self-recommended employees of Asahi Glass, and three staff members.

Although this environmental report is distributed to many people throughout the country, we would most like to have it read by the people living in the neighborhood of our factories. Therefore, we decided that the contents of the report should be such that they are understandable to the members of the families of the employees. In addition, referring to the results of the questionnaire survey conducted last year, the working group reviewed the contents of previous year's environmental report and decided to include many concrete examples of the environmental activities in the current environmental report so as to improve the reliability of the report. In addition, to disclose information which is strongly needed by society, pages were allocated for the first time to each of the factories and the Research Center. The working group held a meeting eight times, during which it received various opinions and advice from many persons.



The Editor's Postscript



Senior Executive Vice President
General Manager of the Corporate
Environment & Safety Directorate

Hajime Amemiya

It has been my firm belief that the Asahi Glass Group should be contributing to the development of a sustainable society while regarding the environment as one of the values to be shared and cherished most by all the members of the Group. The Asahi Glass Group has carried out various environmental activities, such as the establishment of environmental organizations and the implementation of measures to prevent global warming and reduce emissions of industrial waste, as a group of business enterprises. It is my hope that the individual employees of the Group will steadily carry on environmental activities in their day-to-day operations and at their own levels within the global framework. Then, the Asahi Glass Group should eventually be evaluated by the society as a “group contributing to protection of the environment in various aspects.”

In this report, we tried to explain the Group's environmental measures and activities, and their results, to the reader in an easy-to-understand manner. To that end, the current environmental report was made fuller in content than the previous reports. In addition, with the aim of securing adequate reliability of the contents of the current report and seeking opinions and advice of third parties, we asked Environmental Information Science Center—an environmental NPO—for involvement in the planning and editing of the report. The current report is issued with all-out cooperation of the Center.

I will be very happy if the reader understands the Asahi Glass Group's environmental activities through this report and gives us any opinions or comments about the Group's environmental activities in the future.



Chief Researcher
Center for Environmental
Information Science

Osamu Murakami

I consider that every environmental report has three roles: (1) to report environmental activities and their results by suitable indexes on a year-by-year basis, (2) to convey the meanings of the indexes in a way easily understandable to the reader, and (3) to clarify the points the publisher wants to communicate to the reader by the present report on the basis of (1) and (2). The guidelines for environmental reports published by the Ministry of Environment and the Ministry of Economy, Trade, and Industry, respectively, set the base line shown in (1). As a citizen who looks through environmental reports, I always wonder if it is all right to prepare an environmental report which simply follows the guidelines.

I hope that the environmental reports of Asahi Glass will play the roles (2) and (3) in the future. Apparently, the current environmental report has been edited primarily for the people living in the neighborhood of the factories of Asahi Glass. So it may be said that the Group has just reached the doorstep of (2). As the next step, it is important for the Group to truly communicate with the local communities using this environmental report as a tool, listen carefully to their opinions and comments, and reflect them properly in the next and subsequent environmental reports.

After having involved myself in the editing work, I realized that it is difficult for different departments even of the same company to reach a consensus. Unlike small environmental NPOs, large corporations do not seem to have much flexibility. There are several plausible reasons for that. “Our company has many different divisions, but there are few indexes that are used in common by all the divisions,” “Because of the competition with rival companies, we tend to hesitate to disclose vitally important data,” and so on. Since the Asahi Glass Group has positioned the environment as one of the most important pillars in its management vision and has taken a step ahead as to its environmental report, it is to be desired that the Group should take time to form a consensus among its employees, and form an optimum environmental organization so that the Group can tackle various environmental problems more effectively and efficiently.

When an outsider is involved in the preparation of an environmental report, he/she is generally supposed to play the role of ensuring the reliability of data disclosed in the report. This time, we simply advanced editorial hints—the way the environmental report should be edited to make it easier to read and draw attention of the local communities. Concerning such points as the verification of data contained in the current report and the presence or absence of information which might have negative effects on the company when disclosed, our NPO did not have sufficient discussions with the people of Asahi Glass.



ASAHI GLASS CO., LTD.

URL <http://www.agc.co.jp/>

ENVIRONMENT & SAFETY
CORPORATE ENVIRONMENT & SAFETY DIRECTORATE

1-12-1, Yurakucho, Chiyoda-ku, TOKYO
100-8405, JAPAN

Phone : 03-3218-5639 Fax : 03-3218-7801



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