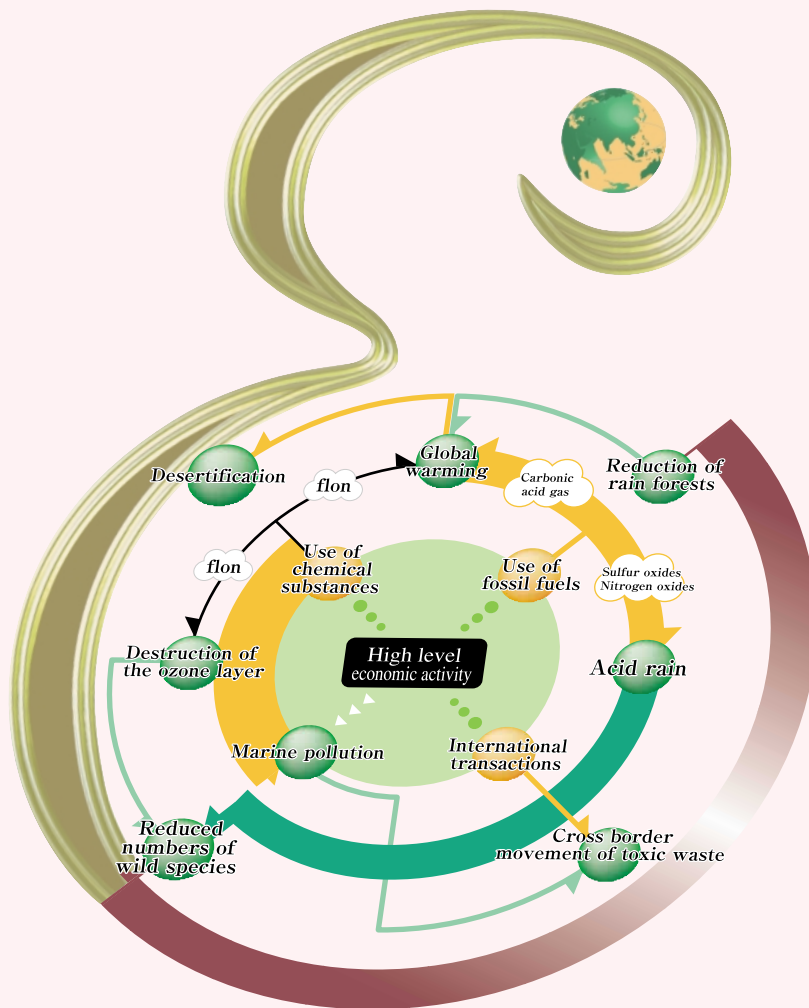


TOPPAN

ENVIRONMENTAL REPORT 2002

Toppan Group's Environmental Conservation Activities



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About the cover: The cover represents a vision of the diverse environmental issues that must be resolved by society. Toppan has also condensed this image into a simpler form, which is adopted as Toppan's Environmental Logo.

Editorial Policy

When asked about the Toppan Group's stance on the global environment and on the contents of the Toppan's *Environmental Report 2001*, about 70 percent of the respondents to a questionnaire about the report responded positively; they called it "easy to understand." In addition, 80 percent thought that the content of the report was "substantial." Based on these comments, the company has decided to follow the basic editorial policy of the *Environmental Report 2001*, and seeks to provide even further clarity for this year's edition.

The *Environmental Report 2002* has been compiled on the basis of the *Environmental Reporting Guidelines* (fiscal year 2000 version) of the Ministry of Environment. As far as possible, management tried to arrange the reported matters according to the layout of the guidelines, with a view to facilitating comparison by business category and by operator. Also, indicators of data were taken, wherever possible, from the Ministry of Environment's *Environmental Performance Indicators for Businesses* (Fiscal Year 2000 version).

An environmental report is a communication tool. Its editorial scope, including the range of the information to be covered, is determined according to the intended target readers. In pinpointing prospective readers, the company took as a reference the *Environmental Reporting Guidelines with an Emphasis on Those Affected—2001*, issued by the Ministry of Economy, Trade, and Industry. While our customers, suppliers, shareholders, and investors are the principal prospective readers of this work, we took into account that the general public would also review it, which prompted us to bear the following aspects in mind in our editing process:

- (1) Specialized environmental terms were marked with an "*" (asterisk) and explanations were inserted.
 - (2) For graphs, an explanation and description of data-calculation methods were provided to make values easy to read.
 - (3) Efforts were made to avoid using industrial terms and internal jargon. When such a term had to be employed, it was appended with an explanation.
 - (4) To invite as many people as possible to read this report, we employed numerous illustrations, tables, and photographs, and chose characters of easy-to-read size. Consideration was also given to making discrimination of data easy, with color, tabs, and appropriate page composition.
- In addition to the above, some unique innovations were employed to make this a more "reader-friendly" report.

Toppan's *Environmental Report* is issued annually, in Japanese and English, in accordance with the one-year period of the Environmental Management System. The *Environmental Report* is also released on the Internet, and the information covered there (including environmental performance data by site, news on the latest developments of ISO 14001 certification, and more) is regularly updated. Since fiscal 2000, some of our operational sites have been issuing *Site Reports*, in the form of simple booklets, on a yearly basis. Toppan's ISO 14001-certified sites are obliged to issue these *Site Reports* starting from the following fiscal year in which the certification is acquired.

Furthermore, to enhance the reliability of our *Environmental Report*, it is subjected to a third-party examination by an independent auditor, a process started from last fiscal year.

Environmental Report 2002

■ Period covered

April 1, 2001 to March 31, 2002

*Some key items include data acquired through August 2002, or through future projections.

*Due to revision of the methods of calculation or for other reasons, this report contains some of the data covered in the *Environmental Report 2001*, corrected or modified accordingly.

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Please refer to the Scope of Toppan Group Companies in the *Environmental Report 2002*. (See page 59)

■ Department in charge of publication

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Message from the President



Toppan Printing Co., Ltd.'s *Environmental Report 2001* was awarded the *Excellent Performance Prize* in the Environmental Reporting Category at the *Environmental Report Awards 2001* cosponsored by the Global Environmental Forum and the National Association Promotion of Environmental Conservation. We feel very honored—as well as encouraged for our future activities—to have received this prize, especially since there are so many competitive environmentally advanced enterprises doing environment-related work in Japan. I believe that our strengths stem from a new corporate vision, introduced two years ago, called TOPPAN VISION 21, which outlines our philosophy and new areas of business. Our new vision has begun to take root in our principal corporate activities, and our targets are starting to materialize. Our group must always keep in mind, however, that quite a few problems remain to be resolved to reach our ultimate goals.

Toppan is strengthening its efforts to prevent global warming, a significant and challenging issue for every country and every organization. It also endeavors to promote such eco-protection activities as pollution prevention, energy saving, waste reduction, chemical substances control, and many other areas to lead the industries we are engaged in.

To be more precise, as explained in this *Environmental Report*, we intend to disclose the environmental performance data obtained in all three major business fields (Information & Networks, Living Environment, and Electronics). We also aim to improve the precision of control and management by specifying each quantitative target value, and to reduce the environmental burden brought on by Toppan's production activities. Moreover, in promoting its corporate environmental management, in the eco-creativity activities, Toppan continually strives for development and commercialization of its environmentally-friendly products mainly in the Living Environment field.

As with last year's report, the *Environmental Report 2002* has been reviewed by an independent party. We believe that independent examinations strengthen the reliability of the information we present. We are also constantly attempting to clarify what we report and say, and to deepen the two-way environmental communication between our readers and the Toppan Group.

Finally, I can promise that Toppan will spare no effort in vigorously going forward as an "enterprise of the information communication industry," not only in existing businesses but also in newly developed areas of technology. We will accomplish this through seeking extremely close relationships and harmony with local communities and society, through operation of Toppan Hall, the Printing Museum, Tokyo and other cultural pursuits.

It is our hope that this report will deepen to the greatest extent possible the understanding of our customers and all other people who take interest in the Toppan Group's policies and activities for environmental conservation. We look forward to receiving your frank opinions and comments, as well as your kind guidance and support.

August, 2002

Naoki Adachi
President & CEO

Principal Environmental Activities for Fiscal 2001

In fiscal 2001, the company carried out a whole range of activities aimed at further consolidating group environmental management. The following is a summary of such activities.

Environmental Report 2001

Toppan's *Environmental Report 2001*, issued last year, was awarded the *Excellent Performance Prize* at the *Environmental Report Awards 2001* sponsored by the Global Environmental Forum and other organizers. The reason for its selection was that the report describes precisely the environmental impact caused by production processes according to each type of business activity, thus enabling readers to understand the environment-related problems by means of specific basic data and information as well as understand pertinent production schemes. (See page 56)



President's Award for the planning and publication of the *Environmental Report 2001*

Cartocan recycling system

Cartocan is a cylindrical-shaped, paper-based beverage container that can be used in vending machines in the same way as conventional steel and aluminum beverage cans. In cooperation with a business house dealing with raw materials in the paper manufacturing industry, Toppan has worked out a recycling system designed to manufacture toilet paper from used Cartocans as raw material. To ensure the volume of raw materials necessary for this process of recycling and re-commercialization as toilet rolls, Toppan collected not only all used Cartocans from its Akihabara Office, but also other possible materials such as spoilage from Cartocan processing plants, unwashed test samples from the filling process, and other materials. (See page 51)



Cartocan and its recycled toilet rolls

Exhibited at Eco-Products 2001

In December 2001, Toppan participated in *Eco-Products 2001* as a collaborator for the management of its Environmental Communication Zone—*Ecollable Café*, an event held by the organizer. Moreover, at this exhibition (held at Tokyo Big Sight), Toppan Printing Co., Ltd. and Toppan Forms Co., Ltd. jointly displayed the Group's products, including, among others, environmentally-friendly POP (Point of Purchase) displays, concealed postcards, and environmentally-friendly packaging products so that the Group's philosophy could be easily understood by visitors. (See pages 49 and 54)

Itabashi site obtains ISO 14001 certification

In February 2002, the Itabashi plant, the Group's biggest production center in the Information & Networks field, and Toppan Seihon Co., Ltd. was awarded ISO certification as the Itabashi site.

- 1) Scope of registration: Plate-making, printing, and manufacturing of books, magazines, and other publications
- 2) Examination and registration organization: Japan Quality Assurance Organization (JQA)

- 3) Examination standard: ISO 14001-1996, JIS Q 14001-1996
- 4) Date of registration: February 22, 2002
- 5) Registration number: JQA-EM2161 (See page 22)

Energy Management

In reducing CO₂ (carbon dioxide) emissions to prevent global warming, the Toppan Group as a whole has targeted the following medium- and long-term objectives:

- (1) Five-percent reduction of CO₂ emissions by fiscal 2010, relative to the fiscal 1997 figure.
- (2) Three-percent reduction of unit energy consumption in fiscal 2001, proportionate to plant output and relative to the fiscal 1999 value.

For fiscal 2001, Toppan aimed to maintain CO₂ emissions at their fiscal 2000 levels, and targeted a three-percent reduction in energy savings compared to fiscal 1999 levels. Alas, neither objective was achieved. Faced with the serious fact that the two indicators have increased, not decreased as we had planned, Toppan conducted a thorough and fundamental review to work out new and necessary measures, which have

led to the company's newly revised medium- and long-term environmental targets. (See page 28)

Waste management

Toppan has continued its initiatives, through thorough waste management, to reduce its final landfill disposal volume; it has been able to cut the volume by as much as 30 percent, far above its target of a five-percent reduction. Management believes that this success is based on the practice of the company's thorough sorting and recycling of waste materials.

Furthermore, Toppan is striving to realize "zero-emissions" through making the best use of generated waste as recyclable materials. In this regard, Toppan selected in November 2001 11 production plants as its certified zero-emission operational sites. (See pages 33–35)



Eco-Products 2001



Cogeneration system at Fukuoka plant No.1

Progress check sheet of environmental targets for fiscal 2001

Evaluation criteria: ◎: Achievements significantly above target ○: Target fully accomplished △: Tackled actively, but missed the target ×: Insufficient effort □: Deficient setup of annual target

Medium- and long-term environmental targets	Environmental targets for fiscal 2001	Progress made and present status in fiscal 2001	Evaluation	Page in report
• Enhanced employee awareness regarding environmental issues and the promotion of corporate-wide activities to conserve the environment	• Sharing of environmental information through effective use of the Intranet	• Setup, familiarization of <i>Toppan Environmental Link</i> and awareness-raising activities thereof	○	P.53
• Voluntary participation in social activities and active contributions to environmental conservation	• Participation in forestation activities	• Donation to the Global Citizen's Forest fund for tree planting activities: 2,380,472 yen	○	P.56
• Three-percent reduction (compared to fiscal 1999) of unit energy consumption in fiscal 2001, proportionate to plant output	• Three-percent reduction compared to fiscal 1999 levels	• 2.0-percent increase compared to the fiscal 1999 level	×	P.28
• 20-percent reduction (compared to fiscal 2000) of final waste landfill disposal volume by fiscal 2003	• Five-percent reduction compared to the previous fiscal year	• 30.6-percent reduction compared to the previous fiscal year	◎	P.33
• Realization of the zero-emissions target in 10 domestic plants by fiscal 2001, through the effective use of industrial waste generated in production	• Realization of zero-emission plants: 10 operational sites	• Realization of zero-emissions sites: 11 sites	○	P.35
• Compliance with in-house control standards that exceed legal regulations	• Compliance with in-house control standards that exceed legal regulations	• Confirmation by in-house environmental auditing for compliance with the in-house control standards at 48 operational sites	△	P.24
• Appropriate management of chemical substances and the reduction of toxic chemical substances	• Volume of released toluene: 10-percent reduction compared to the previous fiscal year (calculations based on the six production plants where film-based gravure printing is performed) • Emissions of dichloromethane into the air: 20-percent reduction compared to the previous fiscal year	• Volume of released toluene: 2.1-percent reduction compared to the previous fiscal year • Emissions of dichloromethane into the air: 35.3-percent reduction compared to the previous fiscal year	△	P.32
• Five-percent reduction (compared to fiscal 1997) of CO ₂ emissions by fiscal 2010	• Maintenance of fiscal 2000 levels	• 4.8-percent increase, compared to the fiscal 2000 level	×	P.28
• Reduction in inventories of specific CFCs and consumption of CFC substitutes	• Consumption of HCFC: five-percent reduction compared to the previous fiscal year	• Consumption of HCFC: 376.7-percent increase compared to the previous fiscal year	□	P.31
• Active proposals for proprietary technologies, products, and services to our customers	• Sales proceeds from Environmental Business: 19.5-percent increase compared to the previous fiscal year	• Sales proceeds from Environmental Business: 11.3-percent increase compared to the previous fiscal year (newly calculated and compared on the basis of the sales figures of fiscal 2000)	△	P.44–45
• Active cooperation to serve the needs of our customers and society	• Supply of environment-related information	• Received the <i>Excellent Performance Prize</i> at the <i>Environmental Report Awards 2001</i> • Supply of information through the participation in <i>Eco-Products 2001</i>	◎	P.49
• Involvement in businesses that can contribute to environmental conservation through Toppan's own environmental activities	• Research into new methods of recycling	• Continued investigation and research	△	—
• Planning and proposals for social recycling system	• Continued operation and promotion of a recycling system for paper-printed materials	• Establishment of the Cartocan (paper-based beverage containers) recycling system	◎	P.51
• Promotion of corporate activities that take into account in-house product planning, production processes, and final waste disposal of products	• Operation and enforcement of the Control Standards for Environmentally-friendly Products	• New development and proposal for environmentally-friendly products: five products	○	P.43
• Compliance with local regulatory standards, international treaties, etc.	• Execution of in-house environmental audits at overseas production plants: three plants in Asia and three in the United States	• Execution of in-house environmental audits at overseas production plants: three plants in Asia and three in the United States	○	P.24
• Active promotion of local environmental conservation activities	• Introduction of environmental management systems at nine overseas production plants	• Start of ISO 14001 certification obtaining activities at three overseas production plants	△	P.22–23

Review of Environmental Activities and Establishment of Environmental Targets for Fiscal 2002

The results of Toppan's annual environment-related activities undergo an evaluation and verification by the Chief Environmental Manager to review the medium- and long-term environmental targets and to set up targets for the following year.

Review of environmental activities at Toppan

Toppan reviews its environmental activities each fiscal year. The record of the annual activities of eco-protection, eco-creativity, and environment-related communication are all collected at the Ecology Center and the results are evaluated and verified by the Chief Environmental Manager. He then reviews the medium- and long-term environmental targets and sets up specific environmental targets for the following year. Whenever an environmentally related social trend undergoes a significant change, *Toppan's Declaration on the Global Environment*, which outlines the company's basic philosophy on its environmental policy, will also be subjected to study and review if required. In any case, the results of such review and the newly laid-out environmental targets will be communicated to the management for confirmation before being given to all parties concerned.

Eco-protection activities

At production plants and research centers, all environmental activities are led through environmental management activities. At each operational site, Toppan develops improvement activities in accordance with the *Eco-protection Activity Plan* to attain the goal set up for each site. The chairman of the Eco-protection Promotion Committee will control the progress of the activities in the monthly promotion committee meetings to carry out an intermediate evaluation/review within the framework of the annual planning.

Eco-creativity activities and communication activities

In the Marketing/SP and R&D departments, Toppan deploys eco-creativity activities through its eco-creativity promotion system and environmentally-friendly product development system. The responsible persons for eco-creativity promotion at each division (division headquarters) will set up the target sales for Environmental Business to achieve

their goals. As for the development of environmentally-friendly products, the number of cases of development and the number of research items will be set as targets, the control of which is carried out by the responsible persons for the development system. Moreover, targets and goals for communication activities—which are led by all elements of the Toppan Group—are often related to the planning and execution of actions in view of the nature of such actions. All departments concerned are thus striving to attain the objectives.

Achievements in Fiscal 2001

For fiscal 2001, Toppan laid out a total of 17 environmental targets and unfolded its environmental activities to attain the goal. As a conclusion to these efforts, the target has been reached for 10 items, while the remaining seven were missed, which gave management an opportunity to review the causes of the failure. The company is especially troubled by the reported increase

during the period in two areas where we had actually projected a decrease: CO₂ emissions and energy consumption, both of which lead to global warming. The company must seriously deal with these problems and work out drastic measures without further delay; they represent the urgent and immediate tasks of Toppan's environmental management. As for the considerable increase in the use of HCFC, it was revealed that some inadequacy was introduced in setting up the target; the company will strive to set a value for fiscal 2003 to reduce the consumption. Finally, for the two items related to

waste, having been able to accomplish the targets, Toppan will modify the medium- and long-term targets even more aggressively.

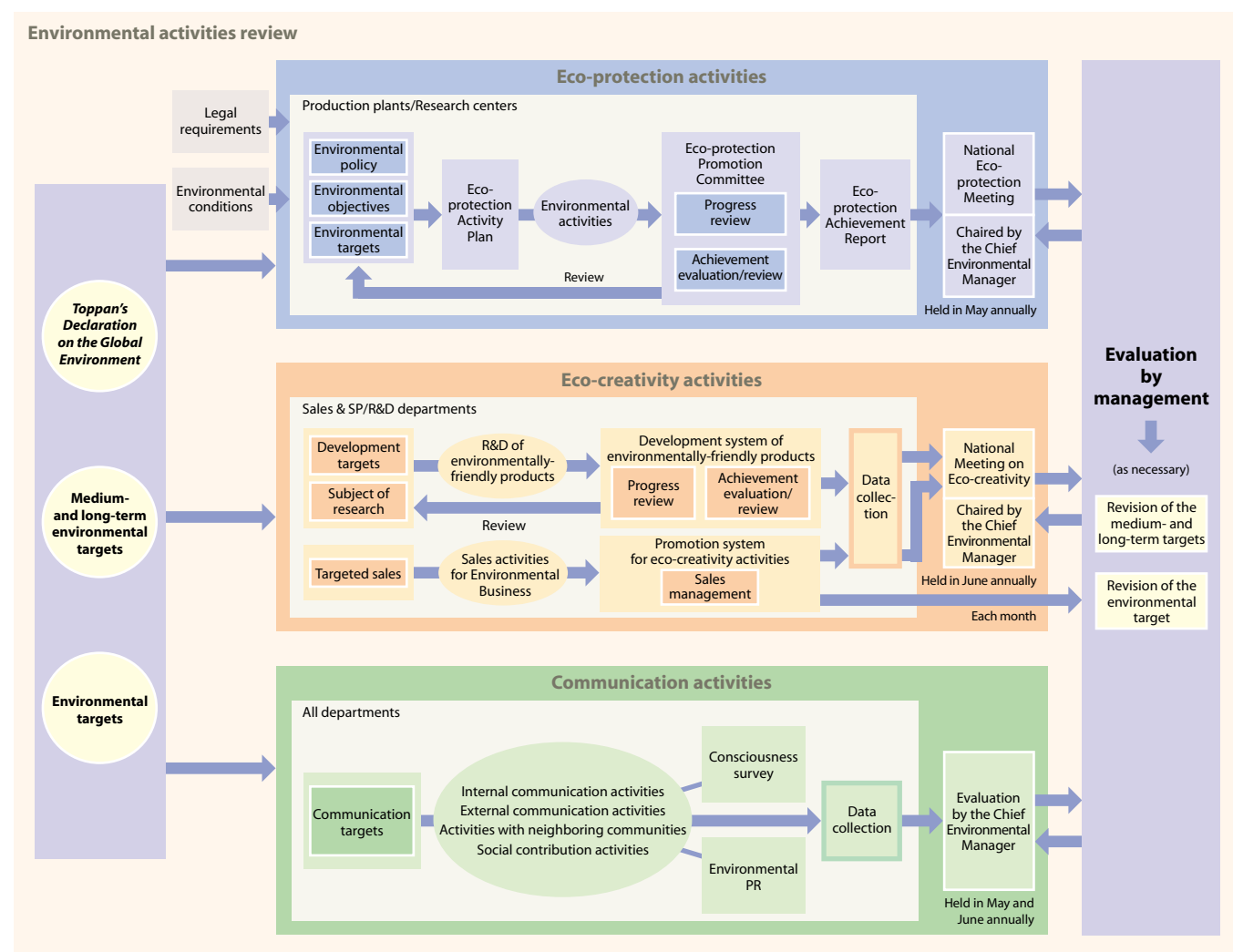
Environmental targets for fiscal 2002

Based upon the achievements for fiscal 2001, Toppan again laid out 17 items as targets for fiscal 2002. The following table specifies the essence of the environmental targets for fiscal 2002:

- Revision of medium- and long-term environmental target for energy saving
- Revision of medium- and long-term environmental target for reduction of CO₂ emissions
- Revision of medium- and long-term environmental target for reduction of final waste landfill disposal
- Revision of medium- and long-term environmental target for realization of zero-emissions
- Creation of an annual target for refinement of the environmental education system
- Creation of an annual target for LCA (Life Cycle Assessment) evaluation of environmentally-friendly products

Environmental targets and detailed actions for fiscal 2002

Medium- and long-term environmental targets	Environmental targets for fiscal 2002	Detailed actions to be taken
• Enhanced employee awareness regarding environmental issues and the promotion of corporate-wide activities to preserve the environment	• Restructuring of the environmental education system	• Introduction of e-learning system to the environmental education system • Promotion of two-way communication of environmental information through effective use of the company's Intranet, <i>Toppan Environmental Link</i>
• Voluntary participation in social activities and active contributions to the cause of environmental conservation	• Participation in forestation activities	• Donation to the Global Citizen's Forest fund for tree planting activities (continued)
• 30-percent reduction (compared to fiscal 2000) of unit energy consumption by fiscal 2010, proportioned to plant production output in internal amount	• Maintaining fiscal 2000 levels	• Establishment of an adequate energy management system, by setting up control indicators that permit the identification of the actual energy consumption efficiency at each of the operational sites • Introduction of a new high-efficiency production system • Introduction of a gas turbine cogeneration system
• 90-percent reduction (compared to fiscal 2000) of final waste landfill disposal volume by fiscal 2010	• 10-percent reduction compared to fiscal 2000 levels	• Reduction of direct waste landfill disposal through reduction of volume of waste generated • Reduction of residues through effective selection of intermediate treatment (final waste landfill disposal = direct waste landfill + post-intermediate-treatment residues landfill disposal)
• Realization of the zero-emissions target in all domestic operational sites by fiscal 2010 through the effective use of industrial waste generated in production	• Realization of zero-emission sites: 15 sites	• Promotion of waste recycling through review and definition of waste-sorting criteria • Reinforcement of in-house treatment/recycling facilities and search for appropriate partners for recycling
• Compliance with in-house control standards, exceeding the legal regulations	• Compliance with in-house control standards, exceeding the legal regulations	• Confirmation by in-house environmental auditing on the observance of in-house control standard items and values
• Appropriate management of chemical substances and the reduction of toxic chemical substances	• Volume of released toluene: 30-percent reduction compared to the previous fiscal year (calculations based on the six production plants where film-based gravure printing is conducted) • Emissions of dichloromethane into the air: 10-percent reduction compared to the previous fiscal year	• Reduction of materials containing toluene and conversion to substitute inks with low-toluene content • Introduction of exhaust gas treatment equipment for solvent recovery and others • Reduction of use of materials (cleaning agents and others) containing dichloromethane and conversion to substitutes with low-dichloromethane content
• Seven-percent reduction (compared to fiscal 2000) of CO ₂ emissions by fiscal 2010	• Maintenance of fiscal 2000 levels	• Conversion from liquid fuels to gaseous fuels • Introduction of a gas turbine cogeneration system
• Active proposal for proprietary technologies, products, and services to our customers	• Sales proceeds from Environmental Business: 12.1-percent increase compared to the previous fiscal year	• Product development in conformity with the Control Standards for Environmentally-friendly Products (Guidelines) for each product category • Development of packaging products through the application of ISO 14001 and promotion of sales activities
• Active cooperation to serve the needs of our customers and society	• Supply of environmental-related information	• Disclosure of product environmental information through Toppan's Environmental Product Labels • Supply of information through participation in environmental forums, exhibitions, lecture meetings, and other gatherings
• Involvement in businesses that can contribute to environmental conservation through Toppan's own environmental activities	• Reinforcement of efforts for Environmental Support Business	• Promotion of Environmental Report Preparation Support Business through environmental communication activities • Investigation and study of new recycling methods (continued)
• Planning and proposals for social recycling system	• Continued operation and promotion of a recycling system for printed materials	• Nationwide deployment of the Cartocan recycling system • Investigation of the recycling system on the market (continued)
• Promotion of corporate activities that take into account of in-house product planning, production processes, and the final disposal of products	• Introduction of Green Procurement • Execution of LCA (Life Cycle Assessment) of environmentally-friendly products: one case	• Group-wide deployment of Green Procurement based on Toppan's Basic Policy on Purchasing • Establishment of Green Procurement Standard and target values by each member of the Group • Activities conforming to the Control Standards for Environmentally-friendly Products at each division (division headquarters) • Research and application in practice of LCA (Life Cycle Assessment) method
• Compliance with local regulatory standards, international conventions, etc.	• Execution of in-house environmental audits at overseas production plants: six plants in Asia	• Execution of in-house environmental auditing, including local inspections
• Active promotion of local environmental conservation activities	• Introduction of environmental management system at nine overseas production plants	• Guidance in the creation of environmental management systems through in-house environmental auditing (continued) • Efforts to obtain ISO 14001 certification



Environmental Accounting

Since the introduction of environmental accounting, Toppan has been further promoting its environmental management. In fiscal 2001, the coverage of consolidation for this accounting was expanded to Toppan's overseas subsidiaries.

Commitment to environmental accounting

Toppan introduced environmental accounting for the first time for the achievements of fiscal 1998. The company believes that evaluating the costs incurred by environmental conservation, as well as its effects, are indispensable elements of environmental activities.

For a company to be able to carry out its environmental activities efficiently and continuously, it is essential to promote a type of environmental management that generates economic value through environmental activities. If environmental accounting is introduced and can be used to provide determinative criteria for environmental management, then environmental activities will be more effective. On the occasion of the introduction of environmental accounting, Toppan began further promoting environmental management and disclosing information widely in the hope that this would provide society with the necessary material on which to base comments and evaluations concerning our activities.

Expansion to overseas subsidiaries

To promote environmental management to the entire Toppan Group, the scope of data consolidation for accounting was expanded in fiscal 2001 to all its overseas subsidiaries. Toppan is studying the utilization of environmental accounting as a tool of judgment for its environmental management by identifying the environmental conservation cost and effect (environmental conservation effect and economic effect), including the Group's overseas subsidiaries.

Analysis of the results for fiscal 2001

Compared to the previous fiscal year, the results of the consolidation for fiscal 2001 show an increase of investment by 189 million yen and an increase of cost by 1.481 billion yen for total environmental conservation cost. The cause for this increase is mainly due to the rise in pollution prevention costs and R&D costs. The pollution prevention costs increased by the installation of wastewater treatment equipment (Electronics field), malodor prevention equipment (Information & Networks and Living Environment fields) and others. R&D costs increased through research and development of environmentally-friendly products (Living Environment field), of alleviation of environmental burden caused in the production processes, and other subjects. In fiscal 2001, there were two cases of exceeding the soil treatment standard (two cases of soil pollution analysis, according to local regulations for an old plant site redevelopment project), which led to an environmental remedial cost of 130 million yen (excavation and backfilling of polluted soil).

Through this operation, however, the polluted soil was adequately treated and disposed of in conformity with the Waste Disposal and Public Cleaning Law for each case. As for the economic effect, Toppan's Environmental Business showed an increase of 186 million yen, corresponding to a three-percent increase compared to the previous fiscal sales figure, due primarily to the increase of environmentally-friendly products. As for the environmental conservation effect, the results of analysis for fiscal 2001 show that emission of dioxins and discharge of water-polluting substances are on the decline, while total energy consumption and CO₂ emissions are on the rise. Toppan is now totally committed to tackling selectively such energy-related problems.

Future Challenges

Toppan is attempting to introduce benchmarks such as environmental efficiency, resource productivity, and others, utilizing the data acquired through applying environmental accounting and environmental performance information (CO₂ emissions, total waste discharge, and so forth). By doing so, Toppan is aspiring to further refine its environmental management.

Calculation standards of environmental accounting for fiscal 2001

1. Reference guidelines

Toppan's environmental accounting calculates values with reference to the Ministry of Environment's *Guidelines for Environmental Accounting* (Fiscal 2002 version).

2. Calculation standards for environmental conservation cost

- Depreciation cost: The portion of environmental conservation among the depreciation cost in the financial accounting is included for consolidation.
- Composite cost: To grasp strictly the portion of environmental conservation, the environmental-conservation-related percentage is defined in the in-house guidelines, for each cost item for consolidation.

3. Calculation standards for effect

The economic effect, covering only definitively quantifiable amounts of money, is calculated as described below:

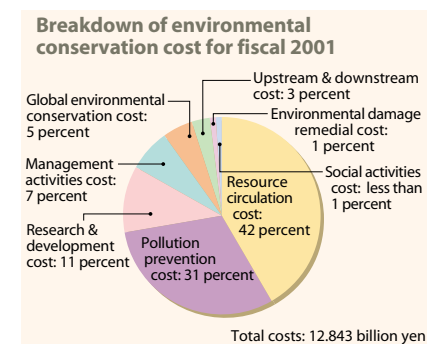
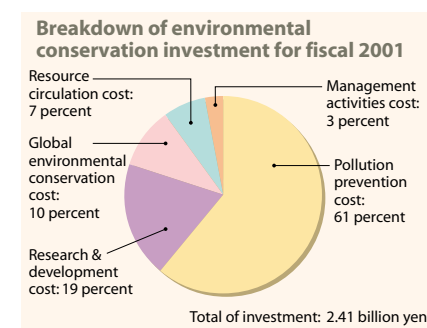
- Energy saving: The effect of energy saving, which covers only definitively money-quantifiable items, is calculated to show its effectiveness in terms of annual amount of money saved.
- Environmental Business: The effect of Environmental Business is calculated by multiplying the sales amount of environmentally-friendly products by the gross sales profit ratio.

As for the reduction in the environmental conservation effect, it is calculated as follows:

the reduction is that observed in the main body of Toppan (including the subsidiaries engaged in production activities); it is obtained by multiplying the environmental burden for fiscal 2000 by the expected environmental burden ratio for fiscal 2001 (= production amount of money (internal value) for fiscal 2001/production amount of money (internal value) for fiscal 2000). The multiplied product is then subtracted from the environmental burden for 2001. The symbol "▲" (negative value) stands for an increase, as compared to the previous fiscal year.

4. Revision of important factors

- Toppan's overseas subsidiaries, which began to be included for consolidation for the first time in fiscal 2001, are not included in the data for fiscal 2000. In addition, the environmental conservation cost includes: an investment amount of 15 million yen and expenses of 152 million yen, while the economic effect amounts to 128 million yen. The change shown includes these items.
- Based on the environmental account consolidation data for the latest three fiscal years, Toppan has revised, for more accuracy and refinement, its in-house guidelines by modifying the definitions of Global Environmental Conservation Cost as well as Environmental Business. (The same standards are also applied to the achievements for fiscal 2000, and for calculations and identification of increase/decrease.)
- The Subsidies, which began to be included for consolidation for the first time in fiscal 2001, were not included in the data for fiscal 2000.



Toppan Group's environmental accounting for fiscal 2001

Period covered: April 2001 to March 2002 (January 2001 to December 2001 for overseas subsidiaries)
(unit: millions of yen)

● Environmental conservation cost

Item	Description of major contents	Current term		Change (current term-previous term)	
		Investment amount	Expenses	Investment amount	Expenses
(1) Business field cost		1,865	9,981	146	634
1. Pollution prevention cost	Cost for pollution prevention, such as air pollution prevention	1,442	3,936	348	909
2. Global environmental conservation cost	Cost for global environmental conservation, such as global warming prevention	251	617	23	▲278
3. Resource circulation cost	Cost for adequate treatment and recycling of waste materials	172	5,429	▲225	3
(2) Upstream/downstream cost	Cost for green procurement, containers/packages recycling, and others	—	343	—	81
(3) Management activity cost	Cost for obtaining certification of environmental management systems and maintenance, planting trees at sites, and others	80	941	▲142	198
(4) R&D activity cost	Cost for research and development of environmentally-friendly products and others	465	1,439	184	437
(5) Social activity cost	Cost for donations, support, etc. for environmental conservation organizations and others	—	10	—	0
(6) Environmental damage remediation cost	Cost for restoring damage, such as soil pollution, and others	—	130	—	130
Total		2,410	12,843	189	1,481

● Economic effect

(unit: millions of yen)

Item	Description of major contents	Current term	Change (current term-previous term)
(1) Energy saving	Reduced amount related to energy saving	142	▲114
(2) Sales proceeds of valuables	Sales amount of the waste from plants	1,336	▲312
(3) Environmental business	Profit amount related to sales of environmentally-friendly products	6,535	186
(4) Subsidies	Subsidies related to countermeasures for resources	85	—
Total investment amount for the period covered		83,820	▲15,230

● Environmental conservation effect

Item	Reduction	Environmental burden for fiscal 2001	Page number	
Energy	Total energy consumption	▲ 596,000 GJ	14,827,000 GJ	P.28-29
Water	Water consumption	498,000 m ³	11,812,000 m ³	P.28-29
Air	CO ₂ emission	▲ 34,000 t-CO ₂	633,000 t-CO ₂	P.28, P.30-31
	Emission of substances destructive to the ozone layer	▲ 1 ODPt	3.39 ODPt	
	NOx emission	▲ 1 t	247 t	
	SOx emission	8 t	74 t	
	Emission of dioxins	0.7 g-TEQ	0.26 g-TEQ	
Water system and soil	Total water discharge	693,000 m ³	10,469,000 m ³	P.30-31
	Underground penetration (water)	23,000 m ³	201,000 m ³	
	On-site evaporation (water)	▲ 113,000 m ³	1,157,000 m ³	
	Discharge of water-polluting substances	23 t	608 t	
Waste	Total generation	22,000 t	315,000 t	P.33-35

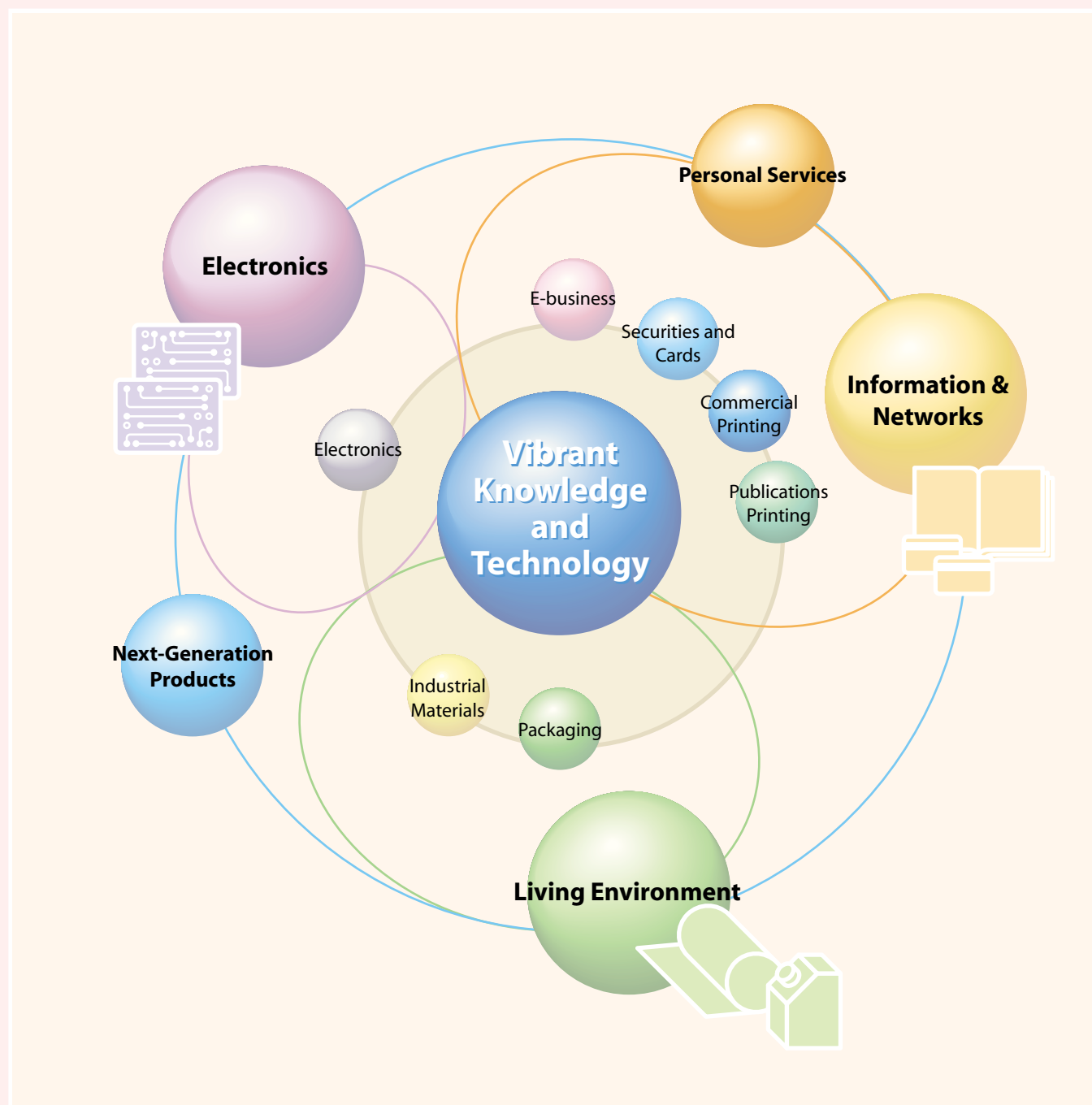
*Total values may not match, since decimals were rounded.

*The symbol "▲" (negative value) means an increase in reduction of environmental conservation effect compared to the previous year value.

1 TOPPAN'S BUSINESSES AND ENVIRONMENTAL IMPACT

Because Toppan encompasses a wide range of business fields, its business activities and corresponding environmental burdens need to be understood based on individual factors.

In this chapter, features of three of Toppan's business fields—Information & Networks, Living Environment, and Electronics—will be addressed, along with the environmental burdens they impose.



Toppan's Businesses and Involvement in Environment Issues—Questions to Directors

As an industry leader, Toppan recognizes the importance of the environment as one of its corporate duties. It promotes its environmental activities in all facets of business.

Toppan—information communication industry

Since its foundation in 1900, Toppan Printing Co., Ltd. has acquired a high-level of knowledge and techniques in plate-making and printing, and has deepened the links between information, daily life, and culture over the past century. Having crossed over into the 21st century, Toppan is deploying activities using knowledge and technology acquired through printing and applying them for the next generation. With printing as its core, Toppan fuses all types of rich communication together into an "information communication industry." This represents a series of challenges for the company.

It is, however, simply not possible to discuss these challenges without incorporating harmony with the global environment into our overall philosophy. In this context, let's ask some Toppan managers about how they are trying to undertake specific important future tasks, while striving for harmony with the environment.

What makes up the printing industry today?

Question: An "Information communication industry" sounds a little different from the image Toppan has as a company involved in the "printing" business. What does it mean exactly?

Mr. Ishida: The phrase "information communication industry" might give an image quite distant from what is called "printing." It is true that, today, Toppan is deploying its business activities covering such fields as color filters (largest share in the world), digital contents (more than one million catalogued items in Japan), neither of which can be considered a traditional printing business. However, it should be noted that the businesses deployed in the field of Electronics derive from etching, in application and development of one of the basic techniques of printing technology; the starting point of the idea thus stems from printing. In other words, in what Toppan calls the information communication industry, printing exists first of all; then come a variety of developed forms of businesses stemming from what may be considered as a continually evolving printing industry.

The company refers to this as "expanded printing." The basic role of printing has been, since its invention by Gutenberg 500 years ago, to "sort information and convey culture." Maintaining this concept is the task we at Toppan must undertake, and that is what we concentrate on.

Corporate Philosophy

Each of us shall reciprocate our customers' continued trust, create dedicated products by harnessing our vibrant knowledge and technology, and contribute to a fulfilling lifestyle as a mainstay of information and culture.

TOPPAN VISION 21

Question: Two years ago, as part of the centennial celebration of its foundation, management officially announced "TOPPAN VISION 21," which specifies its basic philosophy and orientation as a company realigning business activities geared for the 21st century. How are the corporate ideas, ideals, and business fields, defined in this vision? How are they to be realized?

Mr. Ishida: TOPPAN VISION 21 shows, both inside and outside the company, our base of values for corporate activities and operations in five business fields: Information & Networks, Living Environment, Electronics, Personal Services, and Next-Generation Products. In this context, the key word for all our business activities is "environment." Although this is covered in detail in TOPPAN VISION 21, let's ask Mr. Kawai, Chief Environmental Manager of our company, for his interpretation of how the environment is related to Toppan's image.

Mr. Kawai: We at Toppan consider the environment as the most important subject for our business management. In this regard, aiming at sustainable business activities as a company, we are promoting our activities to put into shape the environmental activities linked to corporate management. In other words, we are continuously fulfilling appropriate environmental measures to assume our social responsibility as a company. That is our basic stance.

Of the five business fields to be established within TOPPAN VISION 21, three of those—Information & Networks, Living Environment, and Electronics—are already our main fields of business, while "Personal Services" and "Next-Generation Products" are new areas that we will vigorously pursue and that will eventually lead to the ultimate image of Toppan as it should be in the future. Of course, we have high expectations for the role of technical innovation in both existing and new fields of Toppan's business

activities. Our future path, I am sure, is the role of a model global citizen while remaining focused as a printing company whose responsibility is to "sort information and convey culture."

Toppan's business activities and the environment

Toppan has two faces. One is that of a manufacturer that is required to minimize the environmental impact of its production processes. The other is that of an enterprise that supports Environmental Business. For this, the main theme is the reduction of indirect environmental impact through supply of Toppan's products designed from this point of view.

Toppan's environmental activities

Question: Please tell us more about the kinds of things Toppan is doing. Also, give us an explanation about the company's main tasks and actions and how they are carried out.

Mr. Kawai: Toppan's environmental activities can be classified into two categories: eco-protection activities and eco-creativity activities. The former covers a series of actions aimed at literally protecting the global environment. In our daily business activities, we carry out various types of manufacturing, including many forms of printed materials. In the course of such manufacturing, the use of raw materials, energy consumption, CO₂ emissions, and so forth are unavoidable operations that generate environmental burdens. In addition, other forms of environmental burden may be imposed on the air, water, and soil as well as noise, vibrations, and odors in the neighborhood of operational sites. The recognition of such environmental burdens related to our business activities and their reduction relates to what we call our "eco-protection activities."



Masayasu Ishida
Public Information Manager and
Managing Director

On the other hand, our “eco-creativity activities” can be interpreted as a business that aims to ensure environmental friendliness, which is to say that they are activities to reduce the environmental burden through supplying society with a variety of environmentally-friendly products, through supporting various types of environment-related businesses, and through many other activities. Furthermore, we are promoting TOPPAN VISION 21 by focusing what we call the 3E’s: E-business, Environmental Business, and Electronics.

Mr. Ishida: To confidently carry out these eco-activities, I believe that it is vital to integrate the environment into every aspect of our business management. Normally, when considering the relationship of business management and the environment, we tend to think that it means business management taking into consideration the environment. But we at Toppan have developed this idea into what we call Environmental Business, as Mr. Kawai has just explained.

To deal with the environment as a business, as indicated in *Toppan’s Declaration on the Global Environment*, we announced our commitment to global environmental conservation activities and actively propose to our customers the supply of our environmentally-friendly products. For more details on our products in this regard, please refer to other parts of this booklet.

Toppan Group’s environmental activities

Question: Can we consider Toppan’s environmental activities as those of the whole Toppan Group?

Mr. Kawai: Certainly. Toppan’s environmental activities are the actions that the entire Toppan Group must participate in and carry out. We are already promoting

both eco-protection activities and eco-creativity activities by the entire Toppan Group. From now on, we are striving to realize more homogeneous activities as a Group, and to this end we are currently conducting a total review concerning, among others, the organization, personnel exchanges, execution of auditing, interactive communication, and many other areas.

Mr. Ishida: The word “co-business” is used widely at the company to refer to making the most use of the capabilities of the Group. For this reason, we organize management meetings and technical validation/verification at the level of the Group so that all the members can share in common the necessary consciousness and know-how.

Mr. Kawai: I attend, from time to time, audit operations in my official function. And last year, I visited our affiliated companies not only in Japan but also in North America, where I inspected as an auditor the operation of their environmental management systems and the present status of progress of their environmental activities. On those occasions, through dialogs with local management and staff members, I found that the level of awareness for the environment had been very much raised and had become fairly homogeneous among different members of the Group. This shows that our basic policy based on the environment has become part of our common philosophy for the whole Toppan Group. I’m both proud of and very happy with this.

Mr. Ishida: That’s valuable information. Environmental problems are not only for the business world to tackle. They are rather to be resolved with close relationships among

users, other companies, and the administration. The most ideal form of mutual understanding must be sought to promote the necessary environmental activities. From this point of view, the Toppan Group must be a group of enterprises that strives to generalize and consolidate, both within and outside Japan, overall consciousness on the environment, and to deepen communications with local communities.

Review of environmental activities in fiscal 2001 and future tasks

Following our efforts to realize our environmental targets for fiscal 2001, the company has attained good results for, among others, waste management, environmental communication, and the build-up of a recycling system for paper-printed materials. However, targets in such fields as energy saving, reduction of use of chemical substances, and cutting CO₂ emissions have been missed. These represent the future tasks that Toppan must tackle.

Verification of the activity results

Question: Verification aims to clarify not only the positive side of the results, but also the negative side of environmental activities. What are the results?

Mr. Kawai: I of course feel a sense of relief for the good results, but the unsatisfactory results just strengthen my resolve to tackle them head-on in the future. In 2001, a production increase led to a slightly greater energy consumption and increased CO₂ emissions. We think that the increase in those factors is, to some extent, unavoidable

when increasing production. Intelligent utilization of energy is the main issue to be addressed. We thus established the Energy-saving Promotion Project, the main role of which is to coordinate the head office (targets) and each plant (concrete measures). Moreover, we are promoting TPM Activities (no loss) at each plant to improve the total efficiency of the facilities as a whole.

Mr. Ishida: In other words, our environmental efficiency must be improved. In view of the finitude of our globe, further improvement of environmental efficiency is a must to realize a sustainable society.

Environmental education

Question: What is the situation on the in-house education system to raise consciousness of the employees and to stimulate environmental activities?

Mr. Ishida: Of course, to successfully ensure all environmental activities, it is essential that every single Toppan employee seriously and sincerely deal with the problems. For this reason, we understand that giving employees the necessary environmental consciousness through education is an important aspect to achieve the targets laid out.

Mr. Kawai: In *Toppan’s Declaration on the Global Environment*, every employee must be aware of the importance of the environment and of the necessity of environmental conservation. We intend to introduce, from fiscal 2002, an “e-learning” system to enable all personnel to enhance their environment-oriented mind and deepen their pertinent knowledge.

Green Standard and GPN guidelines

The Japan Federation of Printing Industries (JFPI) published its *JFPI’s Green Standard for Offset Printing Services* for member companies to follow as a guideline. Meanwhile, the Green Purchasing Network (GPN) made public its *Order Guidelines for Offset Printing Services*, which offers to buyers of offset printing some environmentally important points.

Raising the level of the printing industry

Question: For the announcement of the *Green Standard Offset for Printing Services* in August 2001, Toppan played an important role as a member company of the Japan Federation of Printing Industries (JFPI). In this connection, please give us some background explanation not on Toppan itself as a corporation, but on the printing industry as a whole.

Mr. Ishida: All members of the printing industry, including ourselves, worked out these guidelines because we want our clients to make an appropriate judgment when placing an order. And we would like to concretely show to the public the direction the printing industry must choose for the future.

Mr. Kawai: The significance of the introduction of the *Green Standard* resides in the following two points:

1. The same standard can be applied, independently of the size of the printing company.
2. The introduction of the *Green Standard* can raise the level of the entire printing industry.

In establishing the *Green Standard*, we held thorough discussions with member companies. If, however, the actual form of the standard is inadequate in any way, we will keep a flexible attitude that may include revisions. Company size varies within the industry, and some firms feel that it’s too early to obtain ISO 14001 certification. But even for them, it will be easy to introduce their environmental management system by changing and modifying only part of the *Green Standard*.

In fact, many companies continue to

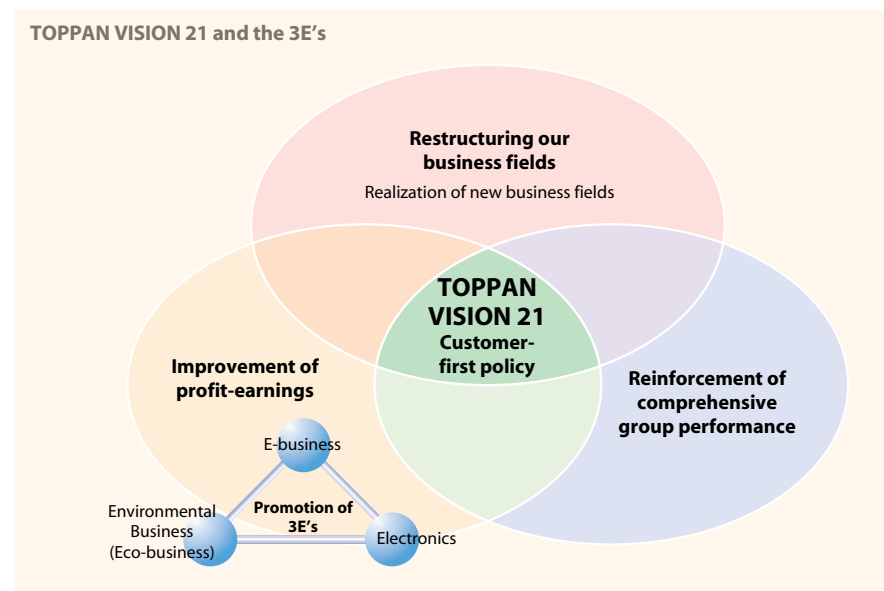


Hideaki Kawai
Chief Environmental Manager and
Managing Director

show their interest in the *Green Standard*; every time the Japan Federation of Printing Industries (JFPI) organizes an environment-related seminar, the seminar room is always full. In the past at such an event, printing technology used to be the most popular subject. I have thus realized that the environment is everything today.

Communication at a higher level

Mr. Ishida: As for the *Order Guidelines for Offset Printing Services* (GPN-GL14) published in December 2001, it can be consid-



Toppan’s Declaration on the Global Environment

Foreword
Numerous issues concerning global environmental disruption have significantly affected world politics, the economy, and the global society in recent years, concurrent with the rise of global commerce. It is therefore critical that each of us should make a personal pledge concerning these issues so that future generations may enjoy the blessings of a clean planet. Toppan contributes to society through its corporate activities, pursuing our self-definition as an “information and lifestyle-related industry rooted in culture.” Accordingly, we will continue to develop measures that address global environmental issues, in order to fulfill our social responsibility as a corporate citizen.

Declaration

1. Each of our employees recognizes the importance of global environmental issues and endeavors to conserve the global environment.
2. We actively promote energy/resource conservation and recycling as a means of conserving the global environment.
3. We abide by laws and social order, striving to prevent environmental pollution.
4. Through our business operations, we actively support our customers’ activities to conserve the global environment.
5. In our research, we endeavor to develop products and technologies that help conserve the global environment.
6. We implement corporate activities designed to further global conservation in the context of an international society.

Principal Businesses and Environmental Impact for Fiscal 2001

Ranging from books, magazines, and pamphlets to packaging materials, industrial materials, and LCD photomasks, Toppan is unfolding operations in a diverse range of areas, with “printing” as its key word.

ered as the reverse side of the JFPI *Green Standard*. They have a lot of common points. Because of the recent publication, concern for GPN-GL14 remains at around 40 percent in terms of recognition by offset printing businesses, but I am sure that will draw more and more attention in the near future.

Mr. Kawai: When these guidelines are published, we always provide our clients with explanations and proposals. Of course, not all the proposals can be accepted

Mr. Ishida: But, for the customers too, the new guidelines are quite meaningful; they often realize the inherent sense of environmental friendliness when placing an order.

Mr. Kawai: Yes, I think so. With those two publications, the *Green Standard* and *Order Guidelines for Offset Printing Services*, the clients and the printers can communicate at a higher level.

Toward continued evolution of environmental activities

Conventionally, business in the printing industry has been carried out from one company to another (B to B), but broader activities are now required that include general consumers. Through technological innovations such as those in printing technology, information technology, and other technologies, many applications that used to be impossible have been materialized. Those new technologies are now highly appreciated from an environmental perspective as well.

Environmental activities as today's social trend and movement

Question: Where are environmental activities headed in the future?

Mr. Ishida: I said earlier that the relations among consumers, companies, and the administration are important. In this connection, I would emphasize the importance of the necessity of collaboration with NPOs. Many NPOs express this relation by the term “co-creation.” I think that to grapple in earnest with the environmental problems, it is necessary to seek such co-creation in all critical situations.

Mr. Kawai: Yes. And the prerequisite for that condition is surely the disclosure of information. I think that more and more corporations will be required in the future to supply information not only to NPOs but also to consumers for their specific needs.

Mr. Ishida: I agree with you. The Cartocan (paper-based beverage container) recycling system Toppan developed is a good exam-

ple. It may be necessary to show clearly how a used Cartocan, after buying it from a vending machine and drinking it, is recycled. Discussions will certainly be very active on the need to actively disclose information to involve as many parties as possible and to transform this into a social movement. A single company's environmental activities are neither sufficient nor feasible alone.

As a mainstay of information and culture

Mr. Kawai: Toppan once used the slogan “Bringing Communication to Life.” In the field of environment, information—becoming awake to market needs—is very important.

Mr. Ishida: Another example is book-on-demand printing. It is a method that computer technology has enabled. Book-on-demand printing typically involves very small lots. Even single-copy printing is possible, which is virtually impossible using conventional methods. As for the readers, they can obtain even out-of-print books and other materials, while for the manufacturers this type of printing offers, compared to the traditional methods, many more advantages in the production processes in terms of resources required, energy consumption, and so forth.

Mr. Kawai: Electronic paper, which is under joint development by Toppan and E Ink Corporation (U.S.A.), is now attracting big attention from various sectors of the industry, and it has tremendous potential for environmental issues. It is said some decades ago that with the introduction of OA (Office Automation), business activities would become paperless, but the prediction did not come true in reality. Various reasons can be given, but it is, I would say, because, after all, printed data (characters and graphics) are easier to read and more convenient when they are at hand.

Moreover, a recent study report says that image recognition through computer display is not a process of “reading” but “looking,” and therefore harder to retain in memory.

To the contrary, the electronic paper under development is not exactly paper, but is relatively closer to paper, and therefore the reader can “read” the image on the display. When electronic paper becomes popular, it may reduce paper consumption in the office and at home. We at Toppan strive to not only put into application this environmentally-friendly electronic paper, but also to promote its use worldwide, including in many developing countries.

Mr. Ishida: Protecting the finite environment called the Earth, creating new environ-



Sample image of electronic paper
External monitor for mobile phone ©E Ink

mentally-friendly products, and developing new means of cultural communications. This is Toppan's mission, as the mainstay of information and culture.

Environmental activities of heart

Question: Toppan constructed in its Koishikawa Building the Printing Museum, Tokyo and Toppan Hall, which have been in operation since autumn 2000, as part of its social and cultural contribution to society for development of information and culture.

Mr. Ishida: The Printing Museum shows, in a way that is easy to understand, the whole range of printing technologies, which have been diffusing culture to a broader world and enriching the hearts of mankind. At Toppan Hall, we can enjoy the essence of classical music with the highest-quality sound standards. I call these activities “environmental activities of the heart.” This is an important role for Toppan.

Toppan's principal business fields

Toppan's business can be broadly classified into three areas. Information & Networks comprises securities and cards, commercial printing, and publications printing. Living Environment can be divided into packaging, and industrial materials. Furthermore, Toppan carries out diverse production activities in the Electronics field.

Environmental impact caused by Toppan

Because Toppan's range of operations is very wide, the environmental impact caused by Toppan is also diversified. The environmental burden of the printing industry is, as input, the use of raw materials such as paper, plastic film, ink, and solvents. It also exhausts resources due to fuel consumption in production processes and, indirectly, deforestation, acid rain, and so forth. As output, one can cite impact, including the destruction of the ozone layer and global warming due to the use of chemical substances in production processes and CO₂ emissions caused by energy consumption.

In addition, the environmental impact on the air, water, and soil, the generation of environmental problems including, among others, waste disposal, and indirect environmental impact through the use and after-use of the products are also to be taken into account.

Environmental conservation in production and environmental efficiency

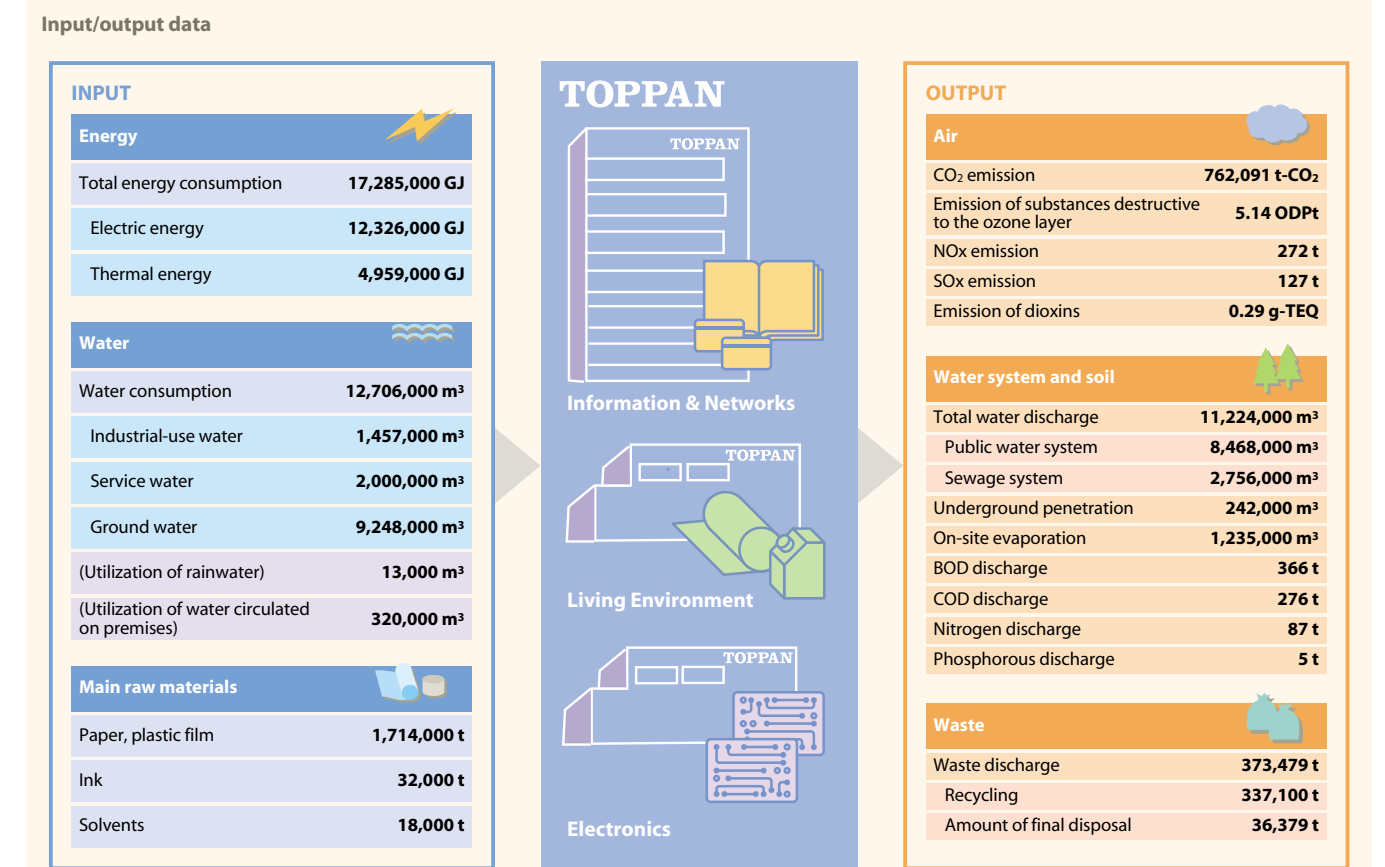
In reducing the environmental burden caused by our processes, it is first necessary to acquire an accurate idea of the impact imposed by the total processes of the company's business activities. Each production plant at Toppan records the input and output of various substances and utilizes these data as environmental indicators.

Toppan has introduced a system of disposal waste per unit of production (generated amount of waste, including inserviceables that can be recycled as resources/production volume) as a focus of resource productivity. In this context, we have been working since fiscal 1999 on the standardization of

indicators that will enable us to assess the maximum production and added values using minimal resources, by business field and product type. This way of thinking will interact well with the traditional notion of yield control and improvement, and the data derived from the concept will be utilized as reference for comparison among production plants of similar product types and for determining targets for improvement of resource-saving efficiency.

For the other main item, energy consumption, Toppan has reviewed the management system on an individual operational site basis, which serves as a tool to work out detailed measures. It determines the effectiveness and utilizes such data for the PDCA cycle activities.

Amid the current call for increases in environmental efficiency in manufacturing industries, Toppan will further seek to review its systems in their entirety and to improve the accuracy of data to grasp more accurately the actual state of the system.



*1 The period of consolidation covered for the overseas subsidiaries is from January 1, 2001 to December 31, 2001.

*2 For the scope of water consumption calculations, the data include neither utilization of rainwater nor water circulated on premises.

*3 Main raw materials data do not include those of overseas subsidiaries and independent subsidiaries.

*4 The data shown in pages 28–37 do not include those of overseas subsidiaries and independent subsidiaries.

Information & Networks

Information & Networks is comprised of securities and cards, commercial printing, and publications printing, encompassing a diverse range of information technologies.

Products within the three production divisions

The Information & Networks field is classified into three groups, according to their product categories:

Securities and Cards

Toppan produces various types of securities, including share-certificates, bonds, gift vouchers, and a variety of cards, including credit cards and prepaid cards.

Commercial Printing

Toppan produces diverse commercial printed materials, including catalogs, pamphlets, flyers, posters, and calendars.

Publications Printing

Toppan produces a variety of publication materials, including magazines, books, encyclopedias, dictionaries, and art books, among many others.

Environmental impact of Information & Networks

Production plants in the Information & Networks field mainly undertake offset printing. The offset printing process is broadly divided into plate-making, printing, and converting.

Environmental impact of the plate-making process

Plate-making creates positive films for printing and produces press plates (machine plates, or stamps). The output of this process

—which consists of waste water, developing and fixing solutions used in film development, waste films, and so forth—poses an environmental burden. However, the spread of digitalization technology (referred to as CTP) has shortened the production process and eliminated films (“filmless” plate-making), which has resulted in a lower environmental burden imposed by the film development process.

CTP stands for “Computer To Plate,” meaning a filmless plate-making system that makes use of a high-speed digital network. As the system directly outputs characters, photographs, figures, and charts edited on a PC via DTP (Desktop Publishing) for plate-making, it involves no output of positive films, as was the case in traditional plate-making processes. This enables the company to save resources and to reduce waste as well. On top of that, the new system allows us to shorten production time and to secure stable quality.

Environmental impact of the printing process

Printing is conducted on an offset press. There are two different methods of offset printing: sheet-fed and web offset (on an offset rotary press). The web press, which can print simultaneously on both the front and the back of paper, is more suitable for large print jobs, as compared with the sheet-

fed press. The distinctive features of these two printing methods reside in the difference in their drying methods: the web press performs evaporation drying via hot-blast dryer, while the sheet-fed press utilizes a chemical reaction of the ink (oxidative polymerization^{*1}) to allow the ink to stick to the paper. Moreover, the web press evaporates the solvent content of the ink by heat, and executes exhaust-gas treatment with deodorization equipment after drying.

The input in the printing process is the thermal energy of the web press dryer, and the output consists of exhaust gases from the deodorization equipment of the web press, whose gases pose an environmental burden. Paper spoilage also takes place in the printing process, nearly all of which is recycled today. (See page 34)

On the other hand, a waterless printing method is also in use today. The method employs press plates prepared for waterless printing, and forgoes the use of “dampening water”^{*2} containing IPA (isopropyl alcohol). This eliminates output waste solutions and contributes to the reduction of waste. (See page 47)

*1 Oxidative polymerization: This means that the resin contents of the ink react, and are bonded, with oxygen in the air to form large molecules (polymers). This reaction deprives the ink of fluidity, causing the ink to solidify and dry as a result.

*2 Dampening water: In a conventional offset press, printing is performed by supplying water to the plate so that the ink sticks to the (oily) portion to be printed. This water is called “dampening water.”

Environmental impact of the converting process

Bookbinding is representative of the converting process. This process generates refuse paper from cutting when it converts printed paper into books and the like, and the output (consisting of spoilage) poses the largest environmental burden of the process. However, as in the printing process, the spoilage is now almost totally recycled. (See page 34)

Input/output data for the Information & Networks field

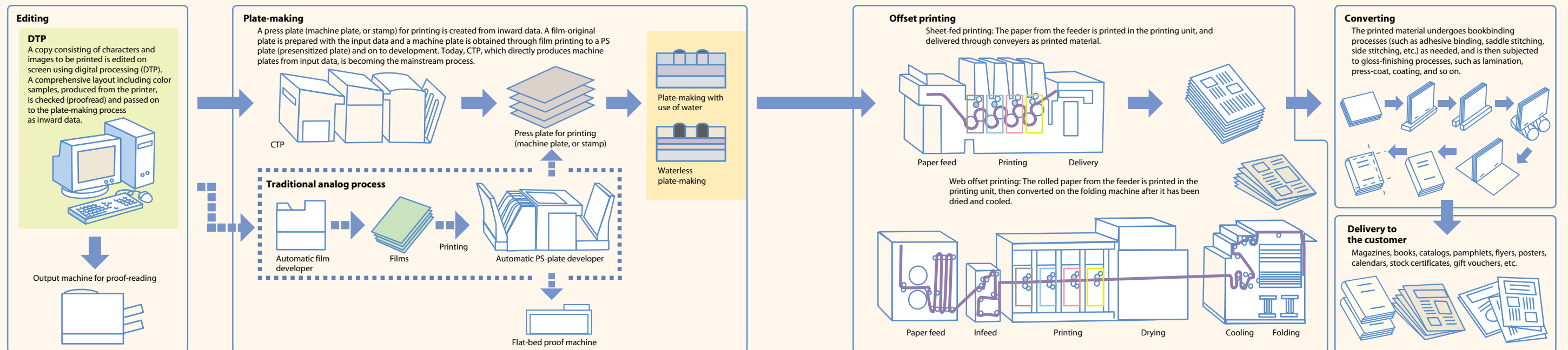
According to the input/output data of this field for fiscal 2001, the total generated quantities of waste stood at 222,000 tons, accounting for 59.5 percent of the total at Toppan. The major stumbling block to be cleared is reducing the amount of generated waste, and the priority target is now to reach zero-emissions. Currently, 68.3 percent of the ozone-depleting materials are emitted from production plants under Information & Networks, since they use an alternative CFC (HCFC-141b) as a cleaning agent to clean press plates and other printing equipment.

HCFC (Hydrochlorofluorocarbon) is one of CFC substitutes, which causes depletion of the ozone layer and contributes to the greenhouse effect. Toppan’s environmental target of fiscal 2001 calls for a five-percent reduction (relative to the previous year) in consumption of HCFC. However, in fiscal 2001, the consumption of the CFC substitute (HCFC) proved to have increased. There were two reasons for this increase: Toppan’s efforts to reduce dichloromethane (an air pollutant), and improved accuracy in the consolidation. In view of this result, Toppan is now striving to work out a drastic revision to solve this problem once and for all, and to lay out new settings to be applied effective fiscal 2003.

Input/output data for the Information & Networks field

INPUT	
Energy	
Total energy consumption	6,950,000 GJ
Water	
Water consumption	2,402,000 m ³
OUTPUT	
Air	
CO ₂ emission	305,676 t-CO ₂
Emission of substances destructive to the ozone layer	3.51 ODPt
NO _x emission	103 t
SO _x emission	36 t
Emission of dioxins	0.19 g-TEQ
Water system and soil	
Total water discharge	1,772,000 m ³
Underground penetration	152,000 m ³
On-site evaporation	559,000 m ³
BOD discharge	176 t
COD discharge	68 t
Nitrogen discharge	18 t
Phosphorous discharge	1 t
Waste	
Total waste discharge	222,133 t
Recycling	212,646 t
Final waste disposal	9,487 t

Information & Networks production process (offset printing)



Living Environment

The Living Environment, comprising packaging and industrial materials, is a business field based on the development of products that will contribute to creating more comfortable lifestyles.

Products within the production divisions

The Living Environment field is classified into two groups, according to their product categories:

Packaging

Toppan produces a variety of packaging materials, including paperware, plastic films and other packing materials, plastic containers, different types of cups, paper containers for liquids, corrugated cardboard, and more.

Industrial materials

Toppan produces a variety of industrial materials, such as various sheets for interior decoration of houses and stores, wallpapers, woodwork products, building members, exterior and interior flame-retardant materials, and so forth.

Living Environment's environmental impact

The production plants under Living Environment operations mainly perform gravure printing. This is carried out by engraved plate printing, using thermally quick-drying ink. The process of gravure printing is broadly divided into plate-making, printing, and converting.

Environmental impact of the plate-making process

In gravure printing, the portion to be printed is engraved electronically, to later be filled

with ink for printing. For this reason, the plate (stamp) for plate-making is made from a metallic cylinder made of steel or aluminum. The surface of this cylinder is copper-electroplated prior to engraving to facilitate the process. After engraving, a chrome-electroplating treatment is applied to harden the surface of the engraved plate. Although wastewater from the electroplating process is neutralized in the treatment equipment, the output—which consists of waste solutions derived from the replacement of electroplating solutions and sludges from wastewater treatment—imposes an environmental burden.

Environmental impact of the printing process

The printing process conducts gravure printing on a rotary gravure press. Gravure printing is characterized by use of numerous colors and large quantities of organic solvents. The contemporary trend requires environmental friendliness of gravure printing for the use of organic solvents, and Toppan is developing environmentally-friendly ink processes without the need to use organic solvents. That is to say, the development of gravure printing using water-based ink as well as laminated water-based gravure packaging material (with water-based adhesive, non-solvent adhesive, and so forth), among others, is taking place. Moreover,

Toppan is jointly developing biodegradable and other inks to transform the current organic-solvent type gravure printing into a more environmentally-friendly form of printing with improved environmental features that can be proposed to customers.

Moreover, in gravure printing, for each color employed, vaporation by a hot air drying unit (dryer) is required for multi-color printing so that ink adheres to the substrate surface. For this reason, thermal energy for drying (input) and discharge gas of the dryer unit (output) pose the heaviest environmental burden for this type of printing.

As for the thermal energy, Toppan is studying measures, including recycling of waste heat, replacement with high-efficiency boilers, and other measures. At the time of a review of the facilities, these measures become the subjects for modernization. As for the exhaust gas from the dryer, the Toppan Group is studying, among other means, modifications by adding a discharge gas processing system (solvent recovery unit, discharge gas combustion unit, and others) to minimize the discharge of volatile solvents into the air.

Environmental impact of the converting process

The converting process is further divided into laminating (melted resin or other films onto the printing substrate), embossing

(applied to the surface), heat sealing (of edges of bags) and die cutting (to obtain the final form).

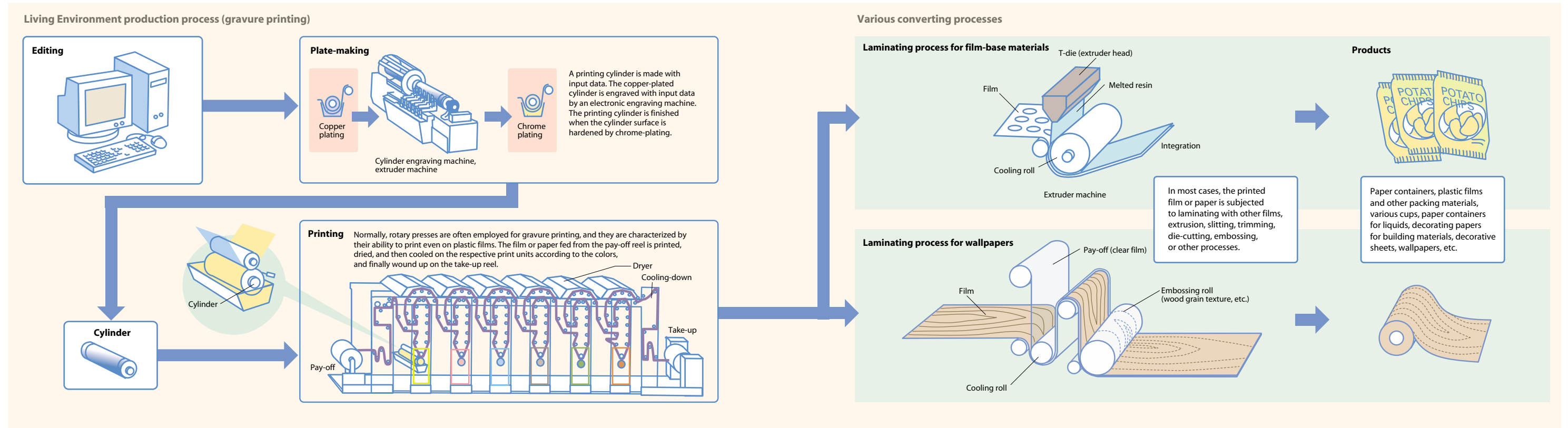
Input (thermal energy for melting resins and heat sealing) and output (waste plastic discharged as die-cutting scraps) jointly pose the heaviest environmental burdens in this process.

Input/output data for Living Environment

According to the input/output data of this field for fiscal 2001, the emissions of NOx (nitrogen oxides) stood at 127 tons, SOx (sulfur oxides) at 73 tons, dioxins at 0.06 g-TEQ. The size of these figures is due to the fact that many of Toppan's operational sites use waste (plastics and others) as an energy source within the premises for thermal recycling. In fiscal 2001, thanks to the removal, modification, or improved operation of incinerators, the Group was able to reduce the dioxin discharge by 89.4 percent. For NOx and SOx, no comparison related to the previous year was conducted due to change of calculation criteria effective fiscal 2001.

Input/output data for the Living Environment field

INPUT	
Energy	
Total energy consumption	5,284,000 GJ
Water	
Water consumption	2,362,000 m ³
OUTPUT	
Air	
CO ₂ emission	259,186 t-CO ₂
Emission of substances destructive to the ozone layer	1.63 ODPt
NOx emission	127 t
SOx emission	73 t
Emission of dioxins	0.06 g-TEQ
Water system and soil	
Total water discharge	1,951,000 m ³
Underground penetration	40,000 m ³
On-site evaporation	361,000 m ³
BOD discharge	65 t
COD discharge	120 t
Nitrogen discharge	21 t
Phosphorous discharge	3 t
Waste	
Total waste discharge	110,341 t
Recycling	95,338 t
Final waste disposal	15,003 t



Electronics

Electronics is a business field based on the supply of individual components, including semiconductors, displays, color filters, and so forth.

Products within Electronics

Electronics

Toppan designs and manufactures a great variety of electronic components and devices, centering on semiconductors and displays. These include photomasks used in the manufacture of semiconductors, and LSI (large-scale integrated circuit) package related products: lead frames, shadow masks for CRTs (cathode ray tubes), color filters for LCDs (liquid crystal displays), printed wiring boards for various electronic units, and so forth.

Environmental impact of Electronics

The production plants under Electronics, where precision parts are manufactured, require a very clean environment. All the products are produced in cleanrooms where constant temperature and moisture are maintained with air-conditioning equipment. The input of the energy consumed for this air-conditioning poses an environmental burden.

Of the diverse range of subprocesses composing the production process, metal etching using chemicals is the object of special consideration. The etching subprocess prints patterns onto a metal material coated with photopolymer, develops it, rinses it of all elements other than the photopolymer in

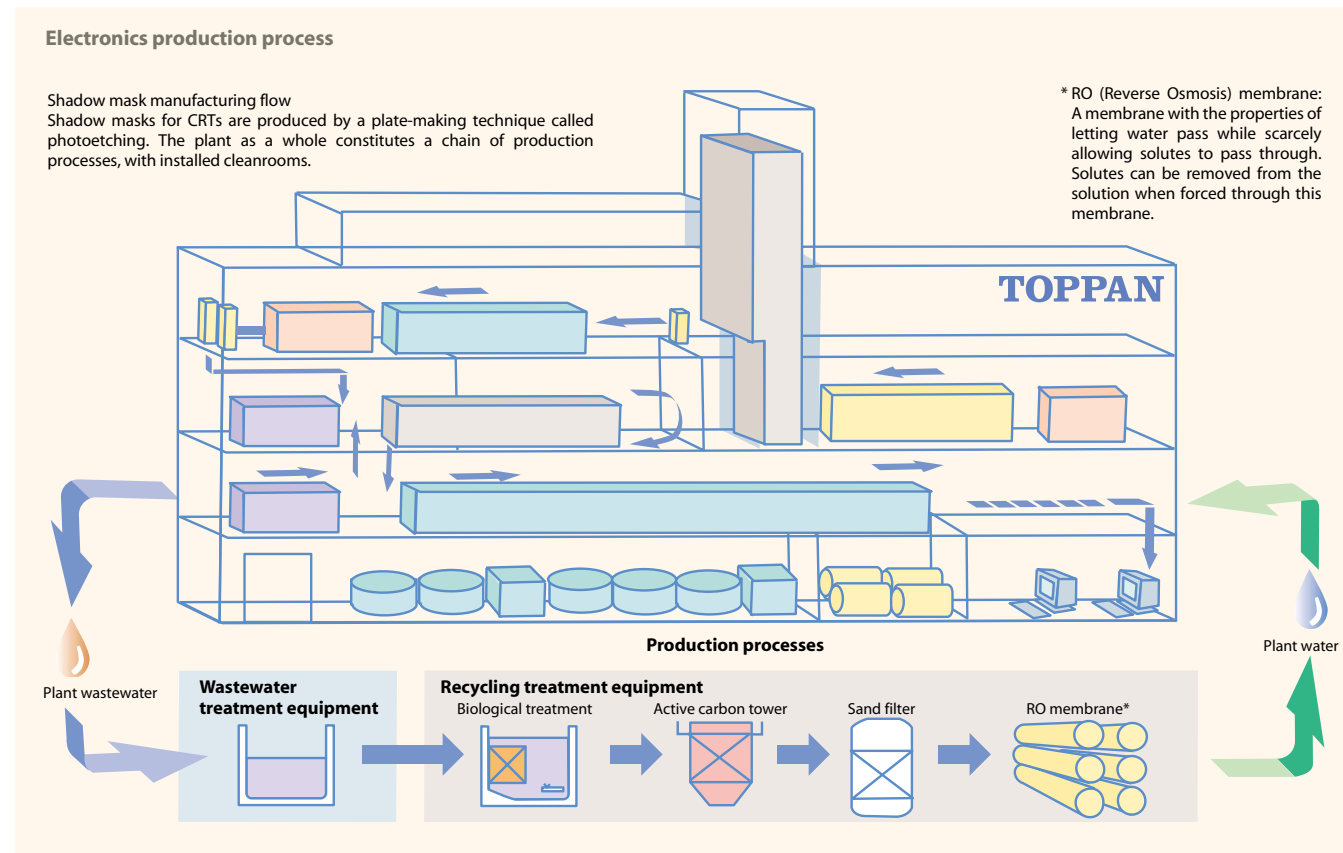
the etching solution, and finally applies a coating process, for example metal plating, to produce a finished product. The wastewater derived from the repeated washing in this process is neutralized in treatment equipment and is finally discharged into the public water system. This large volume of wastewater constitutes an output of the process and imposes the heaviest environmental burden of all outputs from processes in the Electronics field.

Input/output data for Electronics

According to the input/output data of this field for fiscal 2001, water consumption stood at 7,655,000 m³ and discharged water volume stood at 7,250,000 m³, accounting for 60.2 percent and 64.6 percent of the total, respectively. This large volume of water consumption is due to the fact that the production processes of the plants involve many cleaning phases for components. In fiscal 2001, by utilizing wastewater recycling systems and other means, Toppan promoted the reduction of water usage and wastewater discharge. It also promoted the effective use of resources. As a result of these efforts, Toppan was able to reduce water consumption and the total water discharge by 5.9 percent and 8.0 percent respectively.

Input/output data for the Electronics field

INPUT		
Energy		
Total energy consumption	4,460,000 GJ	
Water		
Water consumption	7,655,000 m ³	
OUTPUT		
Air	CO ₂ emission	175,305 t-CO ₂
	Emission of substances destructive to the ozone layer	—
	NO _x emission	40 t
	SO _x emission	17 t
	Emission of dioxins	0.04 g-TEQ
Water system and soil	Total water discharge	7,250,000 m ³
	Underground penetration	50,000 m ³
	On-site evaporation	270,000 m ³
	BOD discharge	123 t
	COD discharge	86 t
Waste	Nitrogen discharge	46 t
	Phosphorous discharge	1 t
	Total waste discharge	39,740 t
	Recycling	27,940 t
	Final waste disposal	11,800 t



Personal Services

Content distribution network Bitway on the Internet

Bitway, Toppan Group's content distribution business on the Internet, with more than three million purchasers for its approximately 10,000 items, has become one of the biggest and best enterprises in the field. In collaboration with a total of 15 ISPs (Internet Service Providers) and EC (e-commerce) sites, the Group is striving to expand its content distribution network. Moreover, Bitway also unfolds its operations to PDA-users through its affiliate @irBitway, forming alliances with such enterprises as Kodansha, Ltd., Sanrio Co., Ltd., Oscar Promotion Co., Ltd. The Group's continued expansion efforts have resulted in wireless LAN Internet services that are now usable at stations and in other "mobile" locations that provide access to this content distribution site.

In-house entrepreneurial ventures

As Toppan's first in-house venture, Toppan Character Production Co., Ltd. was established in April 2002. With the participation of our customers, the new company is carrying out content exploration that focuses on various forms of characters to create a marketplace for such businesses including validation of rights, intermedia-tion of supply of content, and others.

In addition, Toppan Mind Wellness, Co., Ltd. was set up in April 2002 to provide office workers with individual counseling and other mental care services. Through these activities, the new business offers a means of raising the motivation of employees and improving the productivity of the organization in such fields as education, consultation, and others.



Bitway web site (<http://www.bitway.ne.jp/>)

Next-Generation Products

Outline of the business

Toppan has long acquired expertise in the field of microprocessing technology, polymer materials processing technology, and many others. Based on this knowledge, in the fields of the very promising bio-related market, energy-

related businesses, nano-technology market, and the like, Toppan is striving to develop and supply new categories of products based on high-performance materials and environmental friendliness to offer safe and comfortable lifestyles for future generations.

Developments in the bio-market

In the bio-related market, Toppan is seeking the commercialization of bio-chips in view of the generalization of tailor-made medication and pharmaceuticals. In cooperation with other companies though alliances and co-businesses, and with academic sectors through joint research, Toppan is undertaking the study and realization of new production and sales systems.

Future efforts

Toppan is aspiring to further continue the development of "Printed Electronics," which will create electronic circuits by printing methods based on the company's semiconductor circuit design knowledge and high-precision printing expertise. These efforts will also expand the scope of applications of newly developed areas to next-generation products, including manufacturing of next-generation displays, utilization of bio-related materials and nano-technology-based materials, and many other areas.

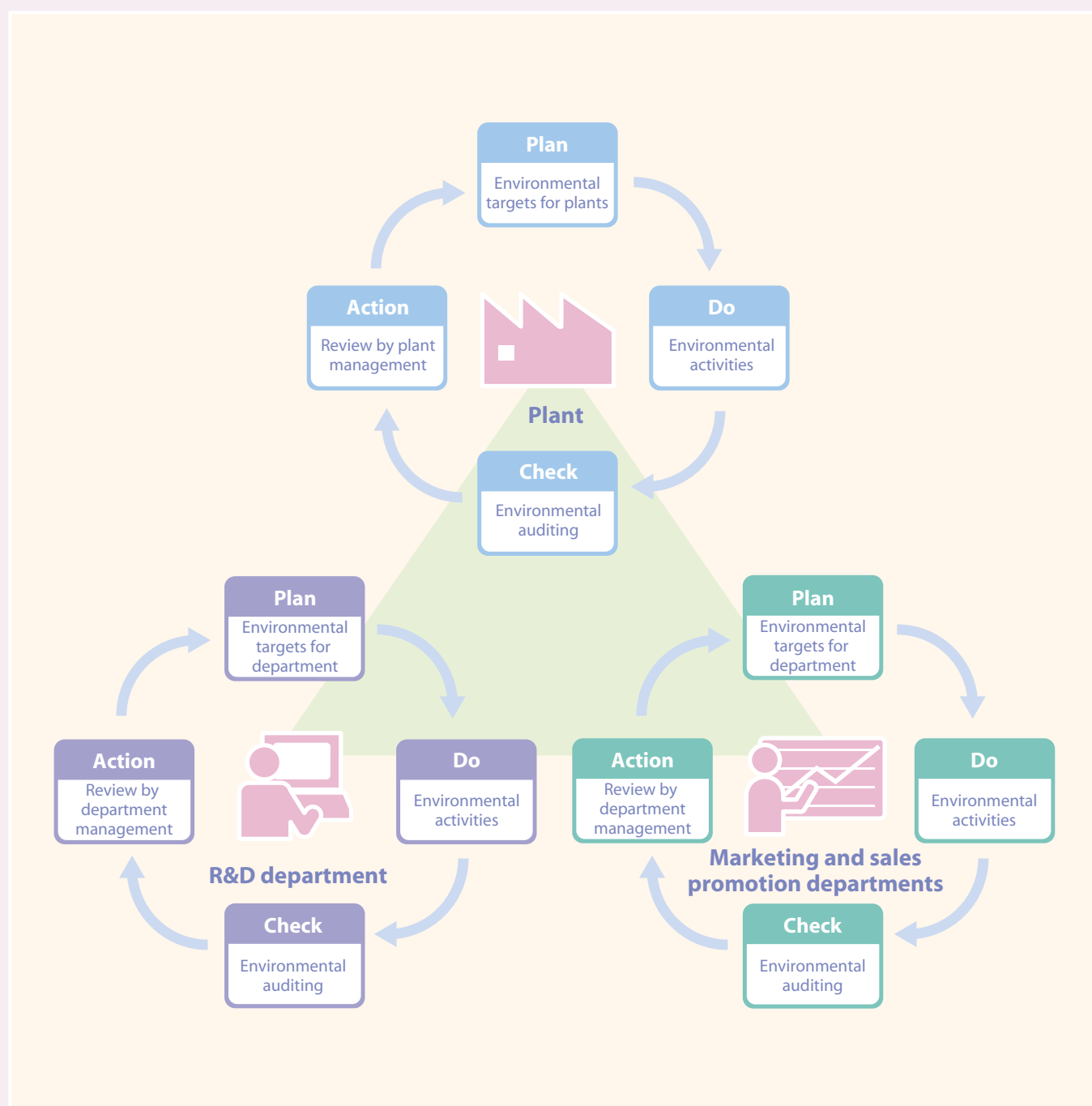


Toppan Technical Research Institute

2

ENVIRONMENTAL MANAGEMENT ACTIVITIES

For more efficient conduct of environmental activities, Toppan has built up an environmental management system to use as the basis for all its environmental activities. This chapter gives a detailed overview of Toppan's management system, and discusses its effectiveness and areas to be improved.



Environmental Management Structure

Toppan builds up an ISO-14001-based environmental management system and unfolds its eco-protection and eco-creativity activities.

Characteristics of Toppan's environmental management

In each of its operational sites both inside and outside Japan, which include production plants, R&D departments, and marketing and sales promotion departments, Toppan has set up an environmental management system under the control and leadership of the President and the Chief Environmental Manager. The Ecology Center, belonging to Toppan's head office's Corporate Manufacturing, Technology & Research Division, is directly responsible for the system operations, aiming to make the different divisions (division headquarters) and production plants fully aware of the environmental policies

and measures determined by management as well as to convey environmental information from the divisions (division headquarters) and production plants to management. Furthermore, to go forward efficiently with the two main engines to drive Toppan's eco-protection and eco-creativity activities, the company has established internally an Eco-protection Promotion System and an Eco-creativity Promotion System, both of which are now deploying specific environmental activities.

Eco-protection Promotion System

In each Toppan production plant, an Eco-protection Promotion Committee has been set up to promote environmental activities,

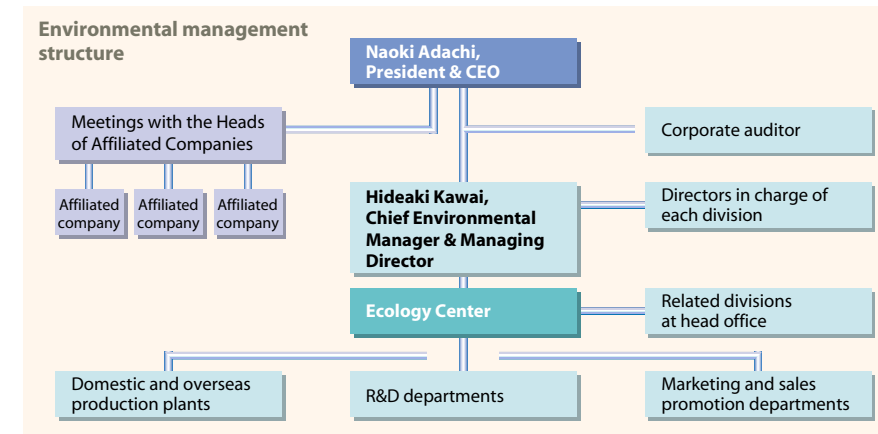
with different subcommittees designed to function for specific environmental issues. The National Eco-protection Meeting, chaired by the Chief Environmental Manager, controls the operations unfolded at each production plant and makes general use of valuable eco-protection cases so that other sites can also share the benefits of those successful initiatives.

Eco-creativity Promotion System

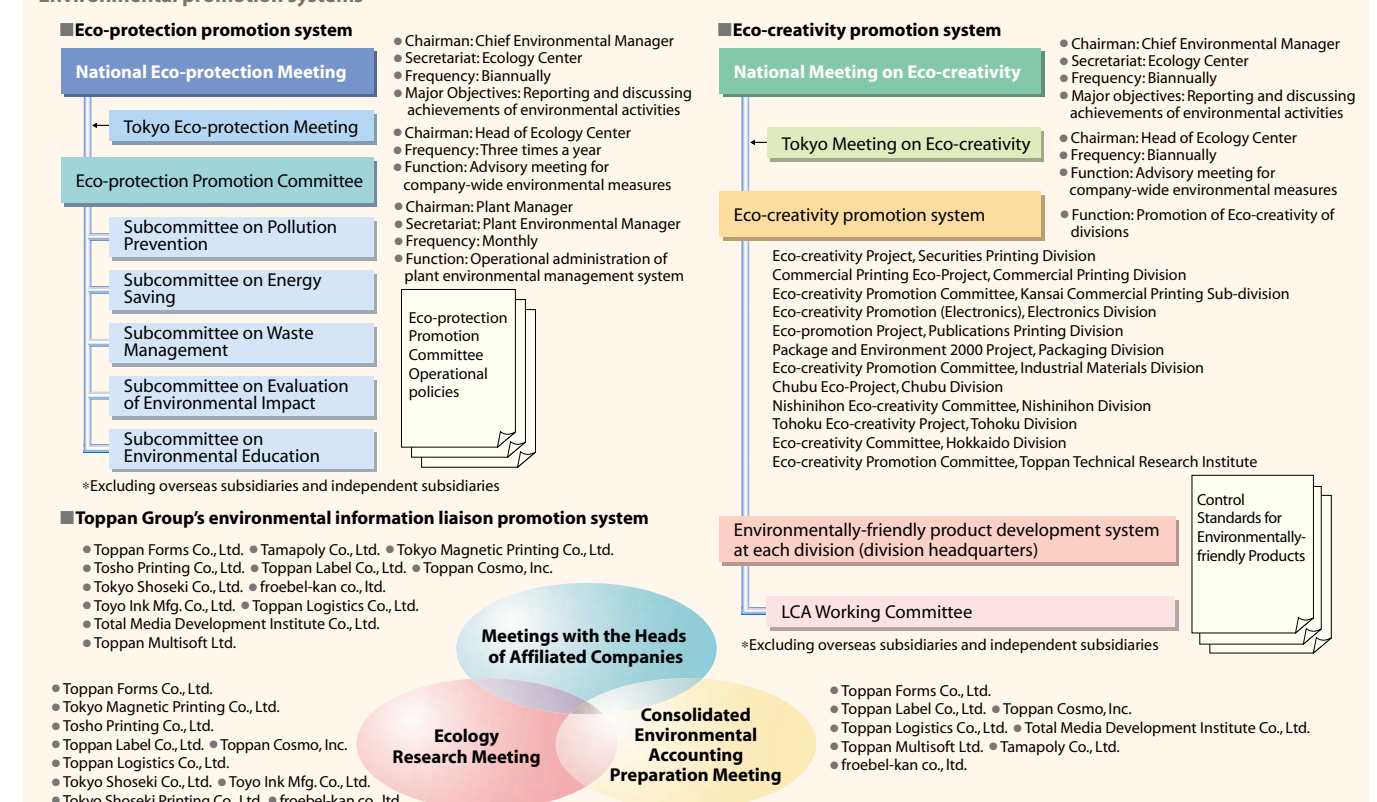
In each Toppan division (division headquarters), an Eco-creativity Promotion Committee has been established to develop environmentally-friendly products and to conduct environment-supporting businesses. The National Eco-creativity Meeting, headed by the Chief Environmental Manager, directs those activities and introduces successful cases of eco-creativity to other operational sites for possible application to other areas of the company.

Toppan Group's Environmental Information Liaison Promotion System

In its efforts to help and guide other group companies tackle environmental issues, the Toppan Group holds regular Meetings with the Heads of Affiliated Companies to discuss and establish measures aimed at making optimal use of the Group's total capacities through its consolidated environmental accounting and other leading measures.



Environmental promotion systems



Environmental Management System

In fiscal 2001, Toppan's Itabashi plant, the biggest production center in the field of Information & Networks, was awarded ISO 14001 certification. In addition, Toppan promotes thorough in-house environmental auditing, covering the entire operational sites of the Group.

Toppan's environmental management

Establishment of a unique environmental management system

Based on its 1992 Declaration on the Global Environment and Environmental Action Plan, Toppan is incorporating the philosophy of its environmental activities into all facets of its business. And with its unique environmental management system, the company is actively promoting environmental initiatives.

Characteristics of Toppan's environmental management system

Toppan's environmental management system features a unique structure: it conforms to the company's "PDCA" (Plan-Do-Check-Action) Cycle concept independent of ISO 14001 certification by the operational site. Each domestic production plant (47) and research center (2) has worked out management objectives such as the Environmental Policy, Environmental Objectives and Targets, and the Eco-protection Activity Plan. Moreover, systematic document control is ensured by the Environmental Management Manuals, Management Regulations, Management Standards, Detailed Regulations, Documents and Forms and other documentation.

Toward continual improvement

Toppan management confirms and reviews the company's environmental activities regularly once a year, acquiring the basic data for laying out our Environmental Policy and Environmental Objectives and Targets for the following year. For fiscal 2002, the following problems are to be improved:

1. Feedback on the point specified by in-house auditing is not sufficient.

ISO 14001 certification within the Toppan Group (16 systems and 20 sites as of August 31, 2002)

Division	Operational site	Main product	Registrar	Registration date
Electronics	Shiga	Electronics products	JQA	1998.7
Electronics	Kumamoto	Electronics products	JQA	1998.11
Industrial Materials	Satte/Kashiwa	Wallpapers, decorative papers, decorative sheets	JQA	2000.3 (revised in June 2000)
Electronics	Niigata	Electronics products	JQA	2000.4
Publications/Commercial Printing	Sakado	Books, magazines, catalogs	JQA	2000.10
Securities Printing	Ranzan	Credit cards, IC cards	JQA	2000.11
Packaging	Akihabara office/Ebie office	Planning, development, design, sales, prepress of packages	JQA	2001.3
Publications	Itabashi/Toppan Seihon Co., Ltd.	Books, magazines	JQA	2002.2
Packaging	Fukuzaki	Soft packaging materials, paper cups, plastic products	JQA	2002.7
Publications	Toppan Graphic Co., Ltd.	Books, magazines	JQA	2002.8

Member companies of the Group	Operational site	Main product	Registrar	Registration date
Total Media Development Institute Co., Ltd.	Whole company	Consulting for museums and related facilities	JSA	2001.3 (revised in April 2002)
Toppan Forms Co., Ltd.	Hino	Business forms	JQA	2001.6
Tokyo Shoseki Printing Co., Ltd.	Head office & head office factory/Saitama	Textbooks, educational books, general and commercial printed materials	JCQA	2001.7
Toppan Label Co., Ltd.	Fukushima	Self-sealing labels	JQA	2001.11

Companies incorporated overseas	Main product	Registrar	Registration date
Siam Toppan Packaging Co., Ltd.	Paperware, fine-appearance corrugated cardboard	MASCI	2002.4
Toppan Printing Co., (H.K.) Ltd.	Books, magazines, commercial printed materials	DNV	2002.5

Plans for obtaining certification*: five operational sites are slated to be certified by the end of March, 2003 (*Simultaneous obtaining of certification of: ISO 9001, ISO 14001 and OHSAS 18001).

2. Understanding of the actual environmental risks in affiliates' production plants is not sufficient.

Toppan is studying to improve and to refine the eco-protection and eco-creativity promotion systems, covering the entire extent of the Group's activities.

Furthermore, the Eco-protection Achievement Reports and data on energy, waste, and other environmental issues are calculated, analyzed, and submitted from the operational sites at the end of each fiscal year. Feedback regarding this information is provided at the National Eco-protection



ISO certification report for overseas subsidiaries (Left: Siam Toppan Packaging Co., Ltd. Right: Toppan Printing Co., (H.K.) Ltd.)

Meeting, which is held in May of each year. If any measures are found to be particularly effective, they are reported in the eco-protection case study meeting, so that other sites can share the benefits of those successful initiatives.

Status for obtaining ISO 14001 certification

Upon publication of ISO 14001, the international standard of certification for environmental management systems, Toppan initiated activities directed toward obtaining this certification for its domestic and overseas sites, research centers, and offices.

The operational sites awarded with ISO 14001 certification up to the previous fiscal year were: two sites for Electronics (Sakado plant and Ranzan plant), four sites for Living Environment (Satte plant, Kashiwa plant, Akihabara and Ebie offices of the Packaging Division) and three sites for Electronics (Shiga plant, Kumamoto plant and Niigata plant).

Added to the above list in fiscal 2001 was the biggest production center in the field of Information & Networks, the Itabashi site (Itabashi plant and Toppan Seihon Co., Ltd.). With these ISO acquisitions in fiscal 2001, the number of the employees of Toppan itself (including the subsidiaries engaged in production activity) working under ISO 14001 certification reached approximately 9,000.

Member companies of the Toppan Group certified in fiscal 2001 by ISO 14001 included Toppan Forms Co., Ltd. (Hino plant), Tokyo Shoseki Printing Co., Ltd. (head office, and head office plant including its Saitama plant) and Toppan Label Co., Ltd. (Fukushima plant).

As for the company's overseas sub-

siaries, for the first time an out-of-Japan operational site, Siam Toppan Packaging Co., Ltd., was awarded ISO 14001 certification in April 2002. In the following month, May 2002, Toppan Printing Co., (H.K.) Ltd. obtained three certifications simultaneously—ISO 9001, ISO 14001, and OHSAS 18001. This was a first for a printing company in Asia, excluding Japan.

In-house environmental audit based on Toppan's in-house environmental audit system

Toppan's in-house environmental audit system follows a two-stage screening process: a document record audit and an on-site audit. The in-house environmental audit team consists of a corporate auditor and provisional auditors of the Environmental Management System. This team inspects and evaluates not only the structural status of systems and compliance with rules and regulations, but also the status of compliance with in-house standards at all the operational sites subject to the audit. The auditors then put together the In-house Environmental Audit Results, reflecting, if any, necessary improvements pointed out during the auditing, and submit this to the director in charge. These auditors perform a review of the in-house environmental audit within the same fiscal year with a view to further raising the level of compliance for the following fiscal year.

Environmental audit and examination at ISO 14001-certified production plants

In addition to the in-house environmental audit system, the ISO 14001-certified plants are subject to the following environmental audits and examinations:

1. Annual internal environment audits
2. Annual surveillance inspections by an outside examination organ
3. Triennial renewal inspections by an external examination organ

Environmental audits at overseas production plants

At overseas production plants in the United States and Asia, local hearings and inspections are carried out every other year. In

years in which no local inspection is conducted, improvement activities are promoted through document review. In fiscal 2001, local environmental auditing was carried out at the following operational sites (three production plants in Asia and three more in the United States):

1. Toppan Printing Co., (H.K.) Ltd. (Hong Kong)
2. Toppan Printing Co., (Shenzhen) Ltd. (Shenzhen, China)
3. Toppan Printing Co., (Shanghai) Ltd. (Shanghai, China)
4. Toppan Printing Inc., (America) Ltd. (New Jersey, U.S.A.)
5. Toppan Electronics Inc. (San Diego, U.S.A.)
6. Toppan Interamerica Inc. (Atlanta, U.S.A.)

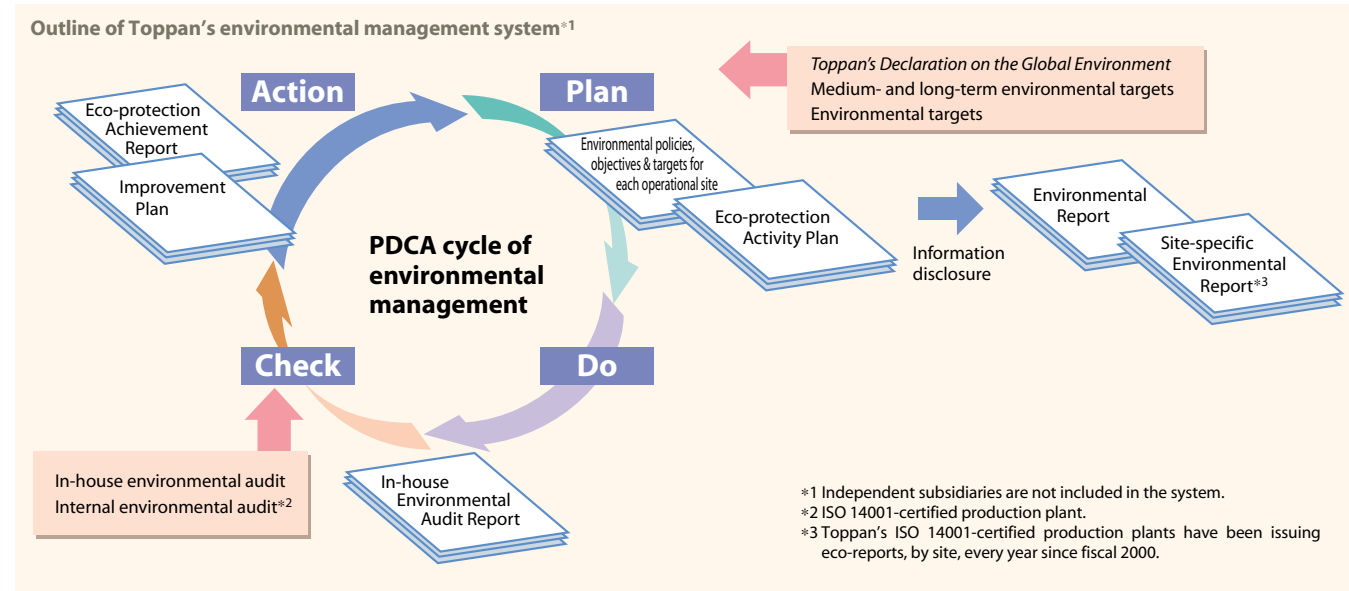
Information sharing and disclosure

Based on the Eco-protection Achievement Report and on data calculations, environmental performance data acquired through the results of environmental activities are used to verify the degree of achievement for targets and actions. These data are compiled into an In-house Environmental Audit Report and submitted to the head office. The cost incurred in the environmental activities and the corresponding effects of these activities are also covered and reported in the same In-house Environmental Audit Report as individual site-based Environmental Accounting.

Toppan broadly discloses the results of these audits through the Environmental Report. In addition, as a point of note, the ISO 14001-certified plants have each been obliged to put together a Site Report designed to disclose information to the local municipal government and neighboring residents.

Registered in internal environmental auditors (as of June 30, 2002)

Position	Personnel
Managers	133
Supervisors	65
Employees	45
Total	243



*1 Independent subsidiaries are not included in the system.
*2 ISO 14001-certified production plant.
*3 Toppan's ISO 14001-certified production plants have been issuing eco-reports, by site, every year since fiscal 2000.



Itabashi plant (Information & Networks)



Toppan Seihon Co., Ltd. (Information & Networks)



Toppan Label Co., Ltd. (Living Environment)

Education and Emergency Response

Toppan carries out thorough environmental education designed to maintain and improve the quality and scope of the company's environmental activities. In preparation for accidents that may have an impact on the environment, the company also conducts emergency training and drills.

State of audit in fiscal 2001

In-house environmental audit results from fiscal 2001

As a result of the in-house environmental audits for fiscal 2001, there were a total of 316 cases requiring improvement. Some of the more major problem areas include the following:

1. Inconformity of the execution of remedial measures with an improvement plan prepared for the issues in question
2. Excess of values specified by the In-house Management Standard
3. Incorrect control of environmental documents
4. Lack of arrangement and storage tidiness for waste materials

Toppan worked out an *Improvement Plan* for these observations; it specified improvement methods and an execution schedule to solve the problems.

The internal environmental audit did not, however, uncover any administrative problems that could directly lead to a grave environmental accident outside of our environmental control. For the indicated issues, reviews of in-house environmental audits were conducted for 93 cases at nine operational sites to verify the progress status of remedial actions. Moreover, for 223

Number of issues pointed out under ISO 14001 (Fiscal 2001)

Item	Contents	Number of issues pointed out
Minor nonconformance	Partial nonconformity with the standard	1
Point for observation	Possible efforts required for improvement for full conformity with the standard	82
Excellent point	Notable achievement, as an action, made from the point of view of environmental management	11

indicated cases, follow-ups are planned with respect to the execution status of these remedial actions during the in-house environmental audits of fiscal 2002.

Audits at ISO 14001-certified sites

Of Toppan's operational sites certified under ISO 14001, the Shiga plant and the Kumamoto plant (both awarded certification in 1998) underwent new examinations performed by an external inspection team in fiscal 2001.

As for the annual surveillance inspection, 41 cases were pointed out for observation. At Toppan, these examination results were reported to the Chief Environmental Manager and are being followed up, and the lessons learned are being disseminated company-wide to further improve the overall environmental management system.

Results of environmental audits at overseas production plants

In fiscal 2001 the company carried out on-site audits at three operational sites in Southeast Asia and at three sites in the United States, and examined the status of environmental management and operations. In particular, three items of inspection were covered: 1) the understanding, operation, and confirmation of observance of the local environment-related laws and regulations; 2) the environmental impact on the air and water; and 3) the daily control of waste materials.

As a result, we discovered a total of 43 cases that required improvement. The Group's local management and workforce are endeavoring to carry out the measures recommended according to the *Improvement Plan*.

Philosophy and structure

In maintaining and improving the quality and scope of educational activities, we believe that a new level of awareness is required of all Toppan employees. Therefore, a variety of environmentally conscious educational opportunities are provided for the entire workforce, from new recruits to managerial staff.

Environmental education system

New recruits undergo a special training course focused especially on understanding relations between the printing industry and the environment. Toppan's environmental education program encompasses diverse aspects pertaining to environmental activities, including training for new management staff, specialized training, and the like.

Moreover, at each operational site, Toppan is providing its employees with environmental education that aims to explain the environmental influences to the area caused by production activities of the site. The educational efforts also cover the countermeasures taken to deal with this impact, and the environmental conservation activities undertaken by the company to raise employee consciousness regarding the environment.

Stressing the importance of enhancing education across the entire company, Toppan

introduced an e-learning system supported by WBT (Web-Based Training) in fiscal 2002. This system will enable all Toppan's workforce to receive effective training, within a limited period of time. These kinds of programs have been made possible by the realization that high-quality education is no longer limited by time and place, thanks to new two-way communications systems, including Q&A functions through the Internet.

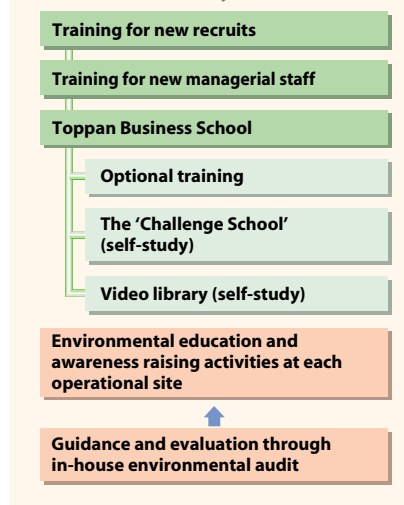
Training of internal environmental auditors

To make the internal environmental audit at each site more effective, Toppan organizes a training course for internal environmental auditors, sponsored by the head office. A total of 70 trainees participated in, and successfully finished, the course, which was held twice during fiscal 2001.

Efforts in fiscal 2001

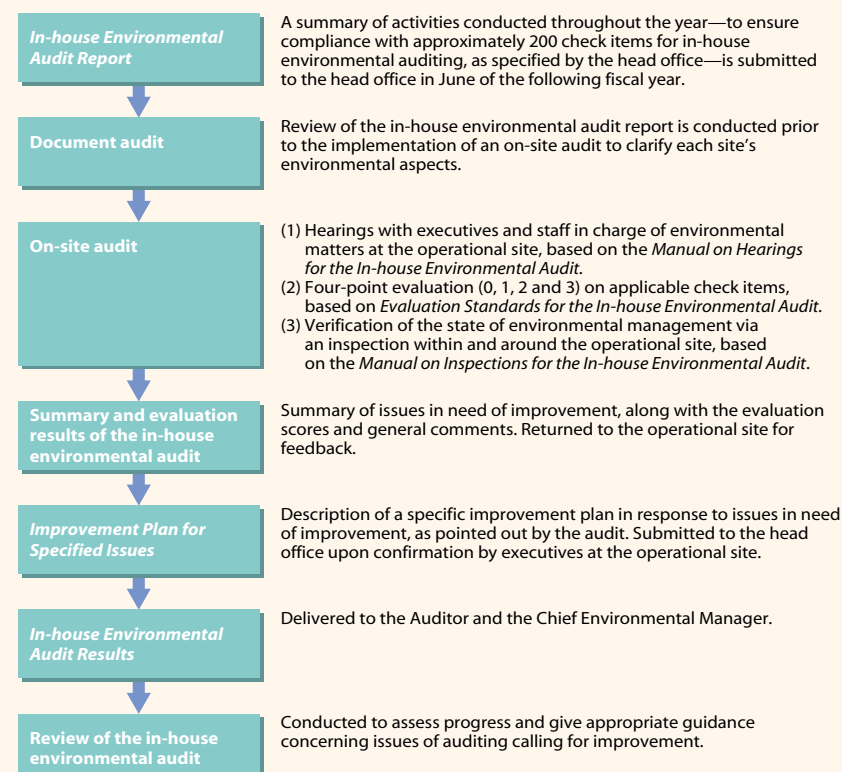
In fiscal 2001, a total of 326 new recruits underwent their training program and 60 participants attended the environment course of the Challenge School (self-study). In addition, two operational sites (one system), have initiated efforts to seek ISO 14001 certification. Environmental education was provided to every worker and executive at each site.

In-house education system



Training for internal environmental auditors

Structure of in-house environmental audit



In-house environmental audit—hearing



In-house environmental audit—inspection

Emergency response

Preventive emergency-response measures

At each operational site, chemical solvents are used and handled on a daily basis. One example may be their transfer from tank trucks into storage tanks. These operations involve the risk of soil and water pollution, should an accident occur. At operational sites where the possibility of such an environmental impact is present, we are installing pollution-preventive devices and preparing oil fences, sandbags, and other appropriate measures to prevent the flow of solvents outside the sites in the event of a leak and other similar accidents.

Preventive emergency-response actions

Toppan's operational sites are provided with documented procedures of response against hypothetical emergency cases, including leaks and other accidents. Periodic drills are also carried out so that necessary actions can be taken in case of an emergency. At the same time, the procedural manuals are regularly evaluated and updated with respect to their validity in actual emergencies.



Installations of emergency shut-off valves on the final drainage line



Installation of watergates to adjoining public water systems



Mock emergency drills

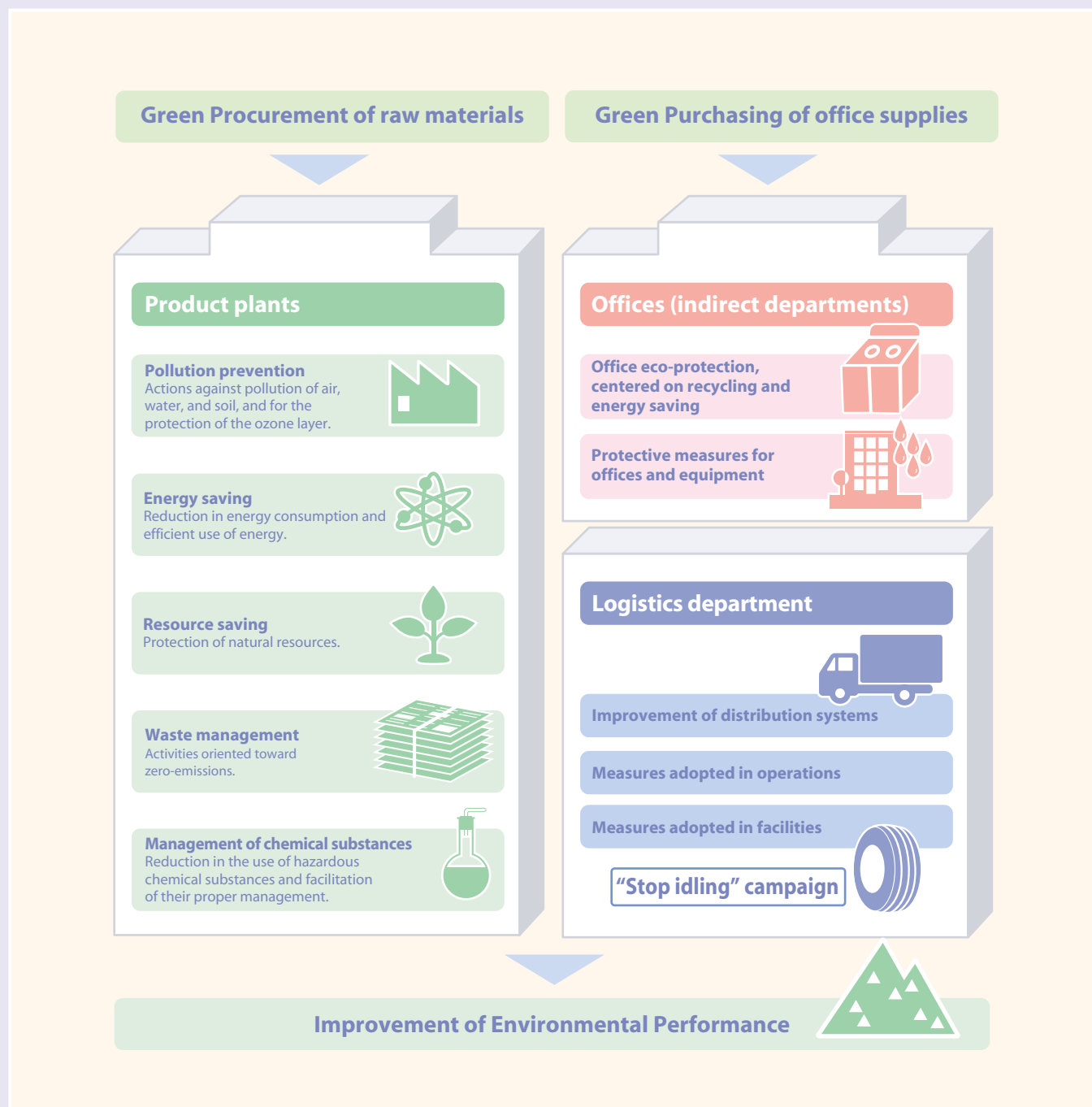


Posting of emergency response procedures

3

ECO-PROTECTION ACTIVITIES

At Toppan, efforts at reducing the environmental burden involved in business activities are called “eco-protection activities.” The people of Toppan aspire to contribute to conserving the global environment and to foster a recycling-oriented society. This dedication permeates not only the company’s operational sites, but also our administrative and logistics sites.



Outline of Eco-protection Activities

In efforts to reduce the environmental burden involved in production activities, every Toppan production plant and research center has set up its own Eco-protection Promotion Committee.

Environmental conservation activities in production fields

Today, emphasis is placed on the improvement of environmental efficiency. Toppan aims to minimize the environmental burden posed by business activities and maximize the value of the production generated by business operations. To realize this improvement of environmental efficiency, Toppan is unfolding its activities by focusing on cutting back on waste generation and energy consumption at each operational site.

Activities led by the Eco-protection Promotion Committee

In view of the above, each operational site has organized an Eco-protection Promotion Committee, with subcommittees to be held for specific subjects. The Committee carries out activities designed to reduce the environmental burden at the site level. With the aim of reducing the environmental burden, the following efforts, among others, are made at each production plant:

1. Pollution prevention: Actions against pollution of air, water, and soil, and for the protection of the ozone layer.

2. Energy saving: Reduction in energy consumption and efficient use of energy.
3. Resource saving: Protection of natural resources.
4. Waste management: Activities oriented toward zero-emissions.
5. Management of chemical substances: Reduction in the use of hazardous chemical substances and facilitation of their proper management.

Sharing of environmental data

The status of these environmental activities is reported to the Ecology Center in the *Eco-protection Achievement Report*, which summarizes and controls these data and conveys the information to management. Through the National Eco-protection Meeting (held semiannually) and the Intranet, Toppan is endeavoring to ensure that everybody shares in the knowledge of eco-protection.

Eco-protection activities at other departments

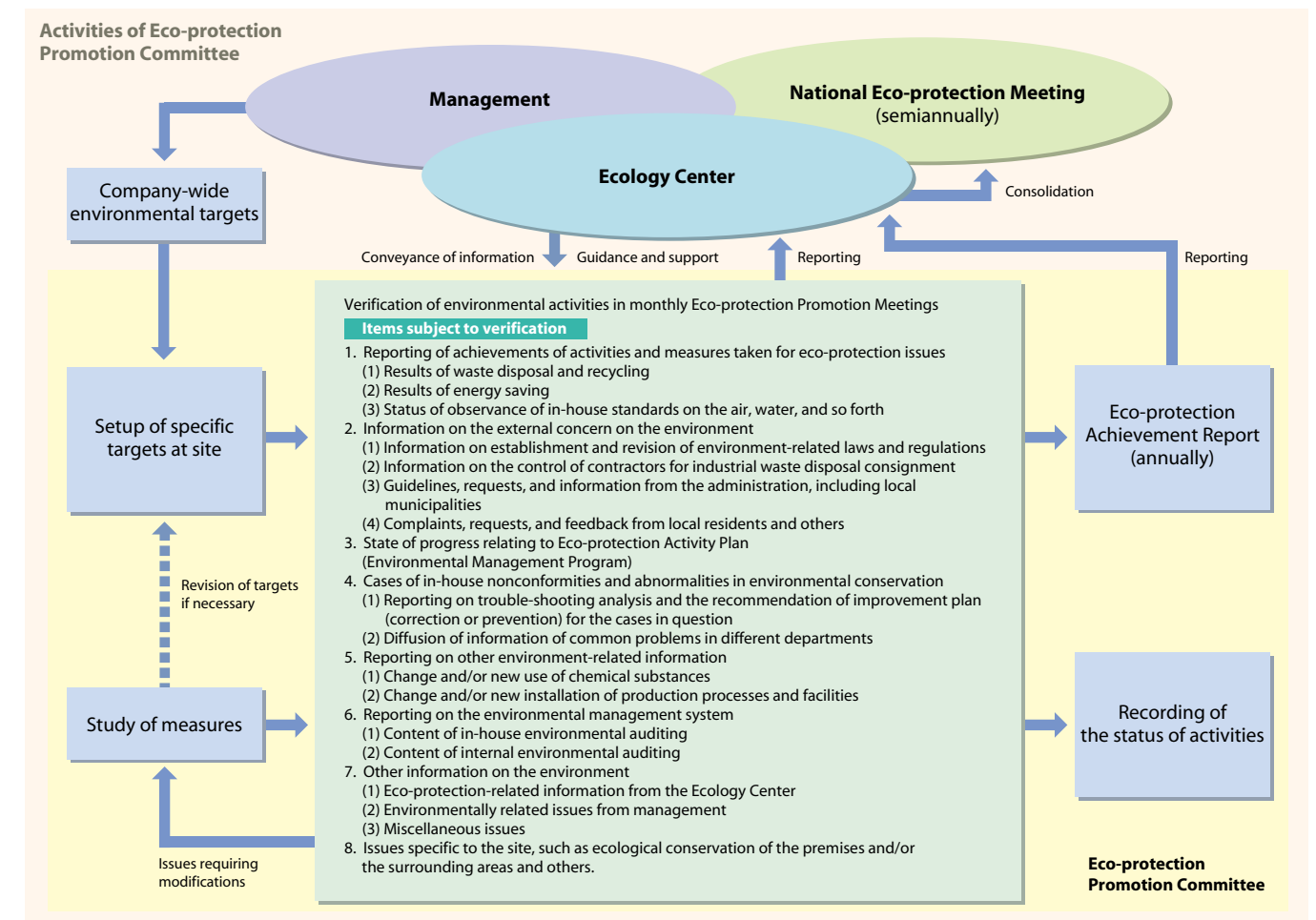
Offices (indirect departments)

The offices of each operational site practice Green Purchasing for their office supplies and, at the same time, execute the following activities:

1. Efforts for Office Eco-protection, centered on recycling and energy saving.
2. Protective measures for facilities and equipment, such as the adoption of rain-water utilization systems at new buildings, introduction of ice thermal-storage systems, installation of motion-sensors in lighting, and so forth.

Logistics department

In addition to efforts to secure higher efficiency in the distribution system, Toppan Logistics Co., Ltd., which undertakes logistics in the Group, is implementing eco-driving promotion activities by encouraging the following measures: a “Stop Idling” campaign, economic-speed driving, and other environmentally friendly means in its transportation operations. The company also uses low-noise tires in its transportation equipment.



Prevention of Global Warming (Energy Saving)

In fiscal 2001, Toppan failed to attain its environmental targets related to energy saving and CO₂ emissions. Therefore, the Group is aspiring, with utmost efforts, to achieve the goal of energy saving laid out for fiscal 2002.

Incorporating the basics in energy saving

Toppan takes the prevention of global warming very seriously. The company is constantly striving toward more effective ways to use energy in an effort to reduce CO₂ (carbon dioxide) emissions classified as greenhouse gases. Toppan has established and has been striving to accomplish the following goals, as the Group's medium- and long-term environmental targets:

1. To reduce CO₂ emissions by seven percent in fiscal 2010, relative to fiscal 2000 figures.
2. To reduce energy consumption by 30 percent per unit of plant output (internal value in amount of money) in fiscal 2010, relative to the fiscal 2000 figures.

To achieve the above values, Toppan set up the Group's company-wide targets for the next fiscal year. Each operational site also lays out its own target figures, making every effort to achieve the goals. Each site sets up the targets, using production amount and production volume, or a substitute production value (energy consumption per unit of production volume) as an energy control for evaluation purposes.

Moreover, the company is presently promoting the following items, at each of our sites, as the three pillars of our energy-rationalization activity:

1. Introduction of high-efficiency systems and facilities.
2. Improved efficiency in production processes.
3. Thorough daily management.

Achievements for fiscal 2001

For fiscal 2001, Toppan established the following environmental targets:

1. Energy saving: three-percent reduction compared to the fiscal 1999 level (in terms of unit production volume).
2. CO₂ emissions: Maintain fiscal 2000 levels.

However, the following represent the results of the activities:

1. Energy saving: 2.0-percent increase compared to fiscal 1999 (in terms of unit production volume).
2. CO₂ emissions: 4.8-percent increase compared to fiscal 2000.

We missed both targets. The cause of increase is due to the inauguration of operations of the New Fukuoka plant No.1 and the Sapporo plant.

These production plants are constructed with transfer and reinforcement of the existing facilities in the respective old plants. We initially thought it would be possible to reach the targets by offsetting the expected increase of energy consumption in the new

plants by further improvements in the other operational sites. Faced with the result of both upward indicators, however, Toppan recognizes the need to drastically change the current policy of energy saving. The company is now working out the necessary measures to tackle the tasks.

Energy consumption

The energy-saving activities carried out in fiscal 2001 resulted in an energy consumption of 14,827,000 GJ (giga-joules), up 3.5 percent from the previous fiscal year's figures. This represents an increase of 3.5 percent in energy consumption per unit of plant output. In terms of the energy consumption per unit of production volume by plant, only 20 out of 51 plants and departments successfully slashed energy consumption.

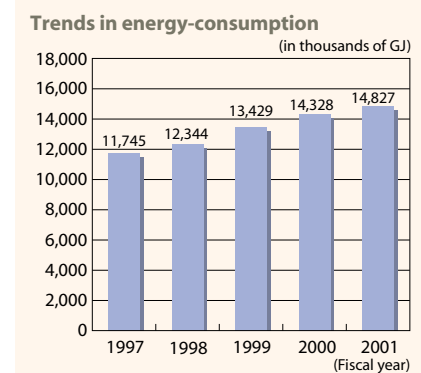
CO₂ emissions

Meanwhile, CO₂ emissions stood at 633,000 t-CO₂, an increase of 4.8 percent from the previous fiscal year, meaning that our environmental target was missed.

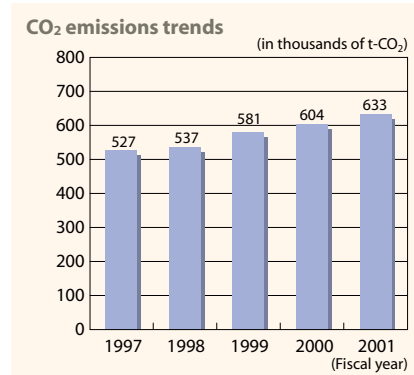
Energy consumption per type of principal energy

The consumption of city gas registered a high growth of 17.0 percent, due to the conversion to this cleaner energy source by introducing a cogeneration system (CGS)*. As a result, electric consumption showed a slight increase at 1.6 percent, while the consumption of kerosene and A-grade heavy oil were cut by 9.3 percent and 10.6 percent respectively, indicating a certain progress in energy consumption. Further efforts will continue until the final goal is achieved.

*Cogeneration system: System that supplies multiple types of energy, such as heat and electricity, obtained from a single energy source. Improves energy efficiency by 75 to 80 percent. For this reason, the system is considered effective for reduction of CO₂ emissions.



*Calculation base
The values were taken as reference, from the Law concerning the Rational Use of Energy and the 1999 Survey on Economic Statistics Concerning Energy (compiled by the Energy Data and Modeling Center, the Institute of Energy Economics, Japan). From this fiscal year, the conversion ratio from electric power into calorific value applicable to the calculations has been changed to 10,250 kJ/kWh, in accordance with the Law concerning the Rational Use of Energy.



*Calculation base
The following values for CO₂ emissions were taken from the Results of Analysis on the Calculation Methods of Greenhouse Gas Discharge compiled by the Committee on Calculation Methods of Greenhouse Gas Discharge (Environmental Agency) in September 2000.

*Coefficients of CO₂ emissions:
Electric power: 0.357 kg-CO₂/kWh
City gas: 2.15 kg-CO₂/m³
A-grade heavy oil: 2.77 kg-CO₂/ℓ
Light oil: 2.64 kg-CO₂/ℓ
Kerosene: 2.51 kg-CO₂/ℓ
LPG: 3.02 kg-CO₂/kg
Waste oil: 2,900 kg-CO₂/t
Waste plastics: 2,600 kg-CO₂/t
(Due to change of the bases of calculations, the applicable ratios of CO₂ emissions have been revised effective this fiscal year.)

Energy-saving measures at new plants

New Fukuoka plant No.1

In the newly constructed Fukuoka plant No.1 completed in July 2001, carefully designed energy-saving measures are being taken, such as the introduction of a cogeneration system and other equipment (utilities facilities) and control of number of compressors in service and other machines (operational management).

(See page 29: Column "Environmental activities at the Fukuoka plant No.1")

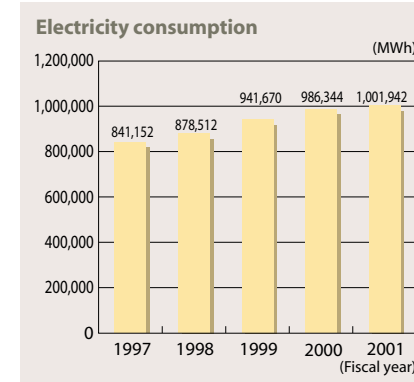
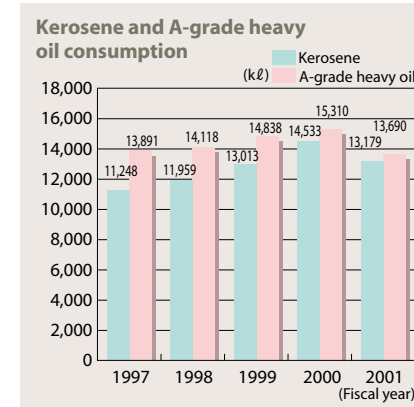
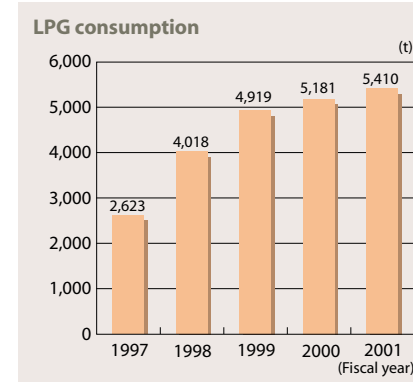
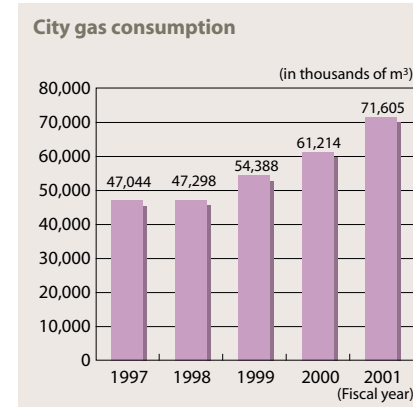
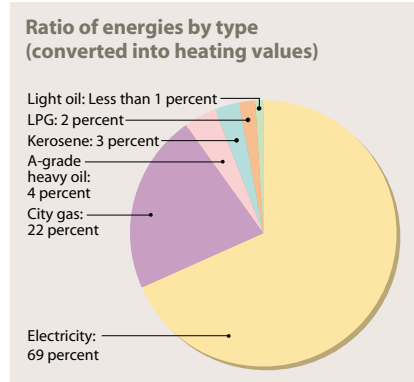
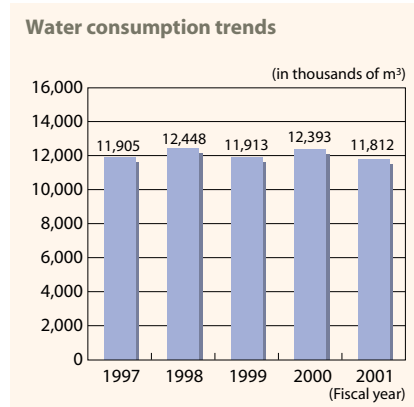
Sapporo plant

At the Sapporo plant, where the factory and office buildings are under restructuring initiatives, in February 2002 some business activities have begun at the marketing and sales promotion department, pre-press department and part of the printing department. Among many energy-saving measures, Toppan installed an energy-saving drying-type deodorization unit onto the new high energy-efficiency printing system. It has also added a flexible design capable of ambient-air in-take to reduce the air-conditioning loads in the spring and autumn.

Protection and recycling of water resources

In operational sites in the Electronics field, where large quantities of water are consumed, Toppan actively promotes the reduction of water intake and discharge as well as the effective use of water resources by means of efficient wastewater recovery and recycling systems.

The total water consumption in fiscal 2001 stood at 11,812,000 m³, showing a reduction of 4.7 percent, relative to the previous fiscal year.



Environmental activities at the Fukuoka plant No.1



Sumio Ezaki
Plant Manager
Chairman of the Eco-protection Promotion Committee

The newly constructed Fukuoka plant No.1, completed in July 2001, is surrounded by a rich natural environment. There, we mainly produce soft packaging materials using plastic films, among many other products. Our environmental activities include the introduction of a heat-electricity convertible cogeneration system, small through-flow boilers, and a control system for the number of air compressors in service (for energy saving). Other activities include the reuse of wastewater by a closed-circuit heavy-metal-traced water processing system, and the use of rainwater (for resource saving). In addition, city gas is used as the energy source for our production facilities, which is cleaner than other conventional energy sources.

In fiscal 2001, our efforts were centered mainly on the transfer of machinery from the old plant and on the establishment of maintenance and control operations of all the newly installed energy-saving equipment and systems. As for waste disposal, in spite of our efforts for reduction, reuse, and recycling of waste plastics that are the principal source of waste here, satisfactory results have not yet been achieved.

Faced with the predicted increase in energy prices and waste disposal costs in the future, we would like to go further with our environmental activities based on two guiding principles: the efficient operation



Nishinohon Division, Fukuoka plant No.1 (production plant in the Living Environment field)

of energy-saving systems (cogeneration system and equipment) and the reduction of the final disposal volume of waste plastics.

Fukuoka plant No.1 input/output data

INPUT	
Energy	
Total energy consumption	323,000 GJ
Water	
Water consumption	100,000 m ³
OUTPUT	
Air	
CO ₂ emission	15,497 t-CO ₂
Emission of substances destructive to the ozone layer	—
NOx emission	7 t
SOx emission	19 t
Emission of dioxins	0.000 g-TEQ
Water system and soil	
Total water discharge	86,000 m ³
Underground penetration	—
On-site evaporation	14,000 m ³
BOD discharge	3 t
COD discharge	1 t
Nitrogen discharge	—
Phosphorous discharge	—
Waste	
Total waste discharge	3,651 t

*The above data also include the figures of the old plant.

Prevention of Pollution

Toppan is striving to reduce its environmental burden and to prevent pollution through compliance with legal regulations and through the establishment of, and compliance with, more stringent original in-house control standards.

Fundamentals in pollution prevention

Toppan is currently developing activities designed to prevent pollution, with a view to minimizing the environmental burden involved in its production activities. Through these efforts, the company will attempt to acquire an accurate picture of the actual state of the various environmental burdens, and clarify these for each operational site. The company is endeavoring to decrease the environmental burden and to prevent pollution through compliance with in-house control standards (established by the Eco-protection Promotion Committee for each operational site) that are even more stringent than the legal regulations.

Furthermore, achievements of these activities are verified through a process of hearings and onsite inspections conducted in the course of the in-house environmental audit. The evaluation results are utilized to ensure continual improvement over the course of the subsequent fiscal year.

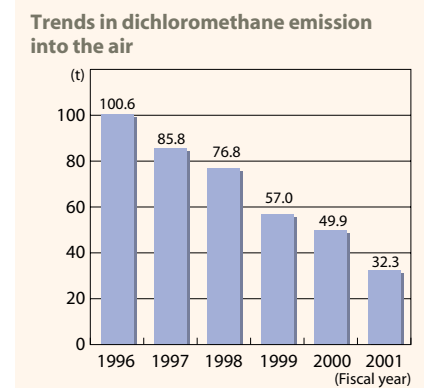
Prevention of air pollution

Toppan is currently operating a total of 11 incinerators nationwide. These are controlled under the *Law on Special Measures Against Emissions of Dioxins*, through the following means:

1. Operations management under appropriate combustion conditions.
2. Introduction of electrostatic precipitators^{*1}, bag filters, and other control machinery.

In fiscal 2001, the company reduced the emissions of dioxins by 0.711 g-TEQ by abolishing two incinerators.

To further strengthen these initiatives, Toppan is now seeking to put out of use six of the 11 incinerators by the end of fiscal 2002. For the remaining five incinerators,



Toppan will continue to utilize them with the following measures to be taken for alleviation of air pollution:

1. Sorting of waste materials to be incinerated.
2. Promotion of the RPF^{*2} (Refuse Paper and Plastic Fuel) process.
3. Renewal and reinforcement of the existing dioxin removing units.

^{*1} Electrostatic precipitator: An electrode is placed in exhaust gases, and the hazardous substances contained in the gases are absorbed by the negative ions generated by corona discharge as high pressure is applied.

^{*2} RPF (Refuse Paper and Plastic Fuel): High-calorie solid fuel, made of waste plastics and industrial waste paper.

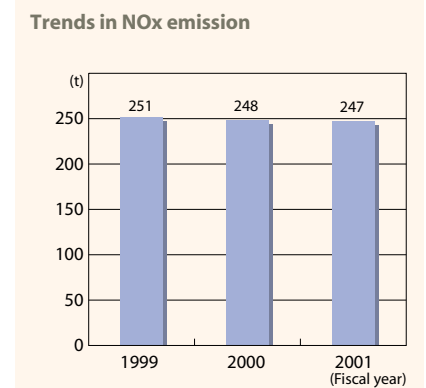
Volatile organic compounds

The company collects and reuses organic solvents from the printing process to prevent these from being released into the air. In this way we are able to use our own resources more efficiently. In addition, the volatile chemical substances that would otherwise be released into the air during the etching processes of electronic parts are dissolved in water, through use of a scrubber^{*3}. Proper treatment of this water allows us to avoid their discharge to the air and into public water systems.

^{*3} Scrubber: The hazardous substances are removed by adsorption as those substances are passed through a cleaning solution. Dust also can be removed along with the exhaust gases. The scrubber requires the use of large quantities of water and a device capable of treating water that contains hazardous substances.

Reduction of dichloromethane

Based on the *Guidelines for the self-imposed control of the Hazardous Air Pollution Substance* (Ministry of Economy, Trade and Industry), Toppan is striving to reduce the use and emissions of dichloromethane, a substance controlled under the said guidelines.



^{*}Method of calculation: The methods of calculation have been changed since fiscal 2001; according to the *Environmental Activities Evaluation Program* (compiled in March 2001 by the Environmental Agency, now called the Ministry of the Environment), the measured value is of discharged gas and NOx concentration. The data in the past have been estimated on the basis of the discharge volume of this year for reference.



Collecting and recycling equipment for organic solvents



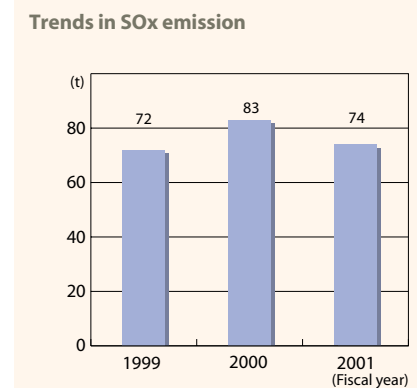
Scrubber

In fiscal 2001, the company succeeded in cutting back on the air emissions of dichloromethane by 35.3 percent relative to the previous fiscal year, by both partially switching to an alternative substance and by reducing the consumption of the dichloromethane still in use.

Prevention of water pollution

Toppan endeavors to prevent water pollution at its plants by installing wastewater treatment facilities to reduce the environmental burden imposed by the production processes. The company has also introduced a 24-hour monitoring system for treatment facilities to cope with seasonal changes in BOD (biological oxygen demand) and COD (chemical oxygen demand) values.

In fiscal 2001, no major nonconformity with the laws and regulations that could have directly led to a grave accident was found.



^{*}Method of calculation: The sulfur (S) content of the fuel used in each operational site is employed as the basis and is converted into the quantity corresponding to SO₂.
^{*}The methods of calculation have been changed from fiscal 2001; the sulfur (S) content of the fuel used in an operational site (values of the achievements) is employed as the basis and is converted into the quantity corresponding to SO₂.

Closed-circuit wastewater system

In the plate-making process of gravure printing (Living Environment), the company is internally treating wastewater by building a closed-process water system, thus avoiding, should any leak happen, the discharge of wastewater off-site and allowing Toppan to employ water resources more effectively.

Wastewater (drainage) treatment by oil-water separator

It is necessary to use oil-water separators for treating compressor-generated emulsive wastewater (drainage), in which water and oil are intermixed. Toppan has installed oil-water separator equipment, developed with proprietary technology, at each operational site. Since the function of this system is characterized by a combination of specific gravity separation and metal substitution, without the use of chemical agents or energy, it implements efficient and low-cost oil-water separation.



Oil-water separator equipment

Prevention of soil pollution

Toppan's preventive measures against soil pollution mainly consist of preventing leakages and outflows from storage tanks containing fuels, chemicals, and waste liquids. As tangible measures, the company has constructed concrete walls around the storage tanks. Moreover, workers check the tanks and piping regularly to detect cracks and aging early, before soil pollution can occur. Furthermore, when expanding, modifying, or removing buildings, Toppan conducts investigations into soil pollution.

Status of investigation for fiscal 2001

In fiscal 2001, there were two soil-pollution investigations conducted for an old plant site redevelopment project. At the site located in the premises of the old plant of Sakashita (Itabashi ward, Tokyo), the measured values proved to exceed the standard limits imposed for the treated soil by the municipality for lead, mercury, and cyanogens. About 2,000 m³ of polluted soil was exca-



Wastewater treatment facility/underground leakage inspection pit

vated and backfilled with healthy soil. At the site in the premises of the old plant of Koishikawa (Bunkyo ward, Tokyo) also, the measured value for lead was found to exceed the allowed value by the Tokyo Metropolitan government's standard for soil treatment; approximately 200 m³ polluted soil was excavated and backfilled. Through the above operations however, the polluted soil was adequately treated and disposed in conformity with the Waste Disposal and Public Cleaning Law.

Measures to protect the ozone layer

In March 1994, Toppan totally abolished the use of specific CFCs and 1,1,1-trichloroethane, both ozone-layer depleting substances that were mainly used in cleaning processes. Also, for the 22 refrigerating machines (four units renewed in fiscal 2001) using specific CFCs that still remain at our facilities, we are proceeding under a schedule to replace them or to install substitute systems.

CFC Substitute

In fiscal 2001, due to active reduction of use and discharge of dichloromethane, the volume of HCFC, which is its substitute, increased considerably. For slashing the volume of the CFC substitute this time, Toppan is studying new measures and striving to clarify targets for fiscal 2003 as to continually tackle these problems.

Environmental activities at the Kumamoto plant



Hiroshi Nishimura
Plant Manager
Chairman of the
Eco-protection Promotion
Committee

The Kumamoto plant (Kumamoto Prefecture), surrounded by mountains and pastoral landscapes, is manufacturing for the Group's Electronics field display-related devices and semiconductor products. These include, among others, shadow masks for CRT display, lead frames for semiconductor products, and CCD color filters. Under the slogan of "Think of the community and the environment, strive for active production and R&D, and make our company gentle and friendly to the Earth!", our plant was awarded ISO 14001 certification for its environmental management in November 1998.

We have established on our system more stringent criteria than those legally required. We are also seeking observance of these self-imposed requirements. For wastewater from the plant, thorough quality control management enables the plant to discharge treated water via River Kikuchi to the Ariake Sea. While endeavoring to recycle used chemical substances, the reuse/recycling ratio, compared to the total volume of waste materials, stood at 97.9 percent in fiscal 2001. For fiscal 2002, we are planning to publish a *Site Report*, to efficiently utilize the area's water resources and to slash further the remain-



Electronics Division, Kumamoto plant (Production plant in the Electronics field)

ing (2.1 percent) waste materials to realize the zero emissions of the plant.

Kumamoto plant input/output data

INPUT	
Energy	
Total energy consumption	640,000 GJ
Water	
Water consumption	1,615,000 m ³
OUTPUT	
Air	
CO ₂ emission	26,890 t-CO ₂
Emission of substances destructive to the ozone layer	—
NOx emission	5 t
SOx emission	17 t
Emission of dioxins	0.030 g-TEQ
Water system and soil	
Total water discharge	1,615,000 m ³
Underground penetration	—
On-site evaporation	—
BOD discharge	8 t
COD discharge	9 t
Nitrogen discharge	18 t
Phosphorous discharge	0 t
Waste	
Total waste discharge	13,969 t

Management of Chemical Substances

Based on the PRTR Law, Toppan actively promotes the management of chemical substances. The company's initial step in fiscal 2001 was to attempt to understand the present status and to study the use of alternatives.

Management of chemical substances and philosophy

Toppan is conducting its management of chemical substances in conformity with the PRTR* Law (*Law Concerning Reporting, etc. of Releases to the Environment of Specific Chemical Substances and Promoting Improvements in Their Management*) which went in force in July 2000.

As its first step in fiscal 2001, management systematically studied the present status. It continues to explore the possibility of using alternatives in further efforts to accomplish our targets.

*PRTR (Pollutant Release and Transfer Register): Registration system of releases and transfers of environmental pollutants that registers and publicly announces the amounts of hazardous chemical substances released into the environment and the transferred amounts contained in waste. The law regarding the introduction of this system was approved in the Diet on July 7, 1999, and was promulgated on July 13, 1999, as the *Law Concerning Reporting, etc. of Releases to the Environment of Specific Chemical Substances and Promoting Improvements in Their Management*.

Understanding of the status of releases to the environment of chemical substances

In fiscal 2001, Toppan investigated the present situation and the process of discharge of harmful chemical substances into the environment, using the data acquired in fiscal 2000. As a result, the existence of ethylbenzene, HCFC-141b, and other substances that had not been confirmed until fiscal 2000 were found. This was caused by, among other factors, an improvement in precision of the MSDS information on raw materials. Furthermore, due to improvements in the accuracy of the calculations of analysis adopted this year, the volume of toluene

proved to have increased this year. For more detailed process calculations, the number of points subject to the calculations was increased, rather than using the material balance that was adopted until the previous year.

Study on the possibility of substitution of the current chemical substances

In operational sites where the designated substances have been released, Toppan identified the process of discharge for each of the substances and explored the possibility of using substitutes for them. As for the promising prospects of the lead used in the soldering plating process, Toppan has decided to convert the process by substitution of the lead by October 2002. For 2-aminoethanol and ethylene glycol monoethyl ether, which are released in large quantities to the atmosphere, the company is now studying alternative substances to end the evaluation before the end of fiscal 2002 and to set up target values for the fiscal 2003 for respective substances to reduce the current environmental burden.

Achievements in fiscal 2001

For fiscal 2001, Toppan set up the following targets to reduce the volumes of release of hazardous chemical substances:

1. Discharge of toluene (basis of the target: reduction of aromatics): Reduction by 10 percent, relative to the fiscal 2000 level (in the six gravure printing plants in the Film field).
2. Discharge of dichloromethane (basis of the target: reduction of hazardous air pollutants): Reduction by 20 percent, relative to the fiscal 2000 level.
3. Use of HCFC (basis of the target: reduction of substances destructive to the ozone

layer): Reduction by five percent, relative to the fiscal 2000 level.

Against the above targets, the results of the activities show the following:

1. Discharge of toluene: Reduction by 2.1 percent, relative to the fiscal 2000 level.
2. Discharge of dichloromethane: Reduction by 35.3 percent, relative to the fiscal 2000 level.
3. Use of HCFC: Increase by 376.7 percent, relative to the fiscal 2000 level.

The above results indicate that, of the three targets, two were missed. The failure to reduce the amount of released toluene at the six gravure printing plants in the Living Environment field was caused by the delay of substitution by conversion into "non-toluene ink" (substitute of the ink currently in use) and also by an increase of production compared to the previous fiscal year. Toppan aims to reduce the release by 30 percent in fiscal 2002 (from fiscal 2001 levels) by actively promoting the conversion into non-toluene ink.

As for the sharp increase observed in the use of HCFC, the cause resides in the fact that some products (containing HCFC-141b) have been added as regulated substances due to disclosure of more detailed manufacturers' MSDS information and to an increase of volume, in production, used as a substitute of dichloromethane. For fiscal 2002, management is now exploring the possibility of substitution of dichloromethane and HCFC-141b, two chemicals currently in use, especially in the cleaning process. The company will seek to layout specific targets for reduction of these substances for fiscal 2003.

PRTR investigation at Toppan and results for fiscal 2001

PRTR No.	Chemical substances	Released amount	Transferred amount in sewerage system			Transferred amount for disposal	Transferred amount for recycling
			1. Air	2. Water	3. Soil		
16	2-aminoethanol	210,716	0	210,716	0	0	
40	Ethylbenzene	72,958	72,958	0	0	5,705	
44	Ethylene glycol monoethyl ether	14,976	14,976	0	0	7,352	
63	Xylene	105,305	105,305	0	0	28,327	
68	Chromium and chromium (III) compounds	62	0	62	19	17,936	
69	Chromium (VI) compounds	1	0	1	8	4,790	
132	1,1-dichloro-1-fluoroethane (HCFC-141b)	23,079	23,079	0	0	8,736	
145	Dichloromethane	19,180	19,180	0	0	5,676	
179	Dioxins	(253.857mg)	(253.819mg)	(0.0379mg)	—	(4,093.728mg)	
207	Water-soluble copper salt	930	0	930	97	73,062	
227	Toluene	6,662,215	6,662,215	0	0	300,126	
230	Lead and its compounds	58	0	58	0	10,532	
231	Nickel	0	0	0	0	178,134	
232	Nickel compounds	438	0	438	0	43,828	
254	Hydroquinone	0	0	0	0	12,275	
309	Poly (oxyethylene) = nonylphenyl ether	6,799	6,799	0	0	14	
310	Formaldehyde	3,710	3,134	576	0	1	
311	Manganese and its compounds	200	0	200	0	3,000	

*Period of computation: April 1, 2001 to March 31, 2002.

*Operational sites covered: Operational sites with 5.0 t/year or more of annual handling amounts of Type-I designated chemical substances (and 0.5 t/year or more of annual handling amounts for Type-II especially designated chemical substances). Overseas subsidiaries are not included in the calculations.

*Released amount + (Amount of consumption and removal disposal (consumption/disposal)) + Transferred amount in sewerage system + Transferred amount for disposal + Transferred amount for recycling = Amount of handling.

*The amount transferred out of operational sites as waste was entered under the "Transferred amount for disposal" and the amount delivered to a recycling contractor was entered under the "Transferred amount for recycling" column.

Waste Management

Through its skillful management of waste materials, Toppan has reduced its final landfill disposal volume by approximately 30 percent compared to the previous fiscal year. The number of zero-emission operational sites has increased to a total of 11.

Philosophy of waste management

Refuse paper, derived primarily from the Information & Networks and Living Environment fields, comprises 73.9 percent of the total waste discharge of Toppan's operational sites. Waste acids (such as waste etchant

from plants of the Electronics field) and waste plastics (from plants of the Living Environment field) are added to this type of material.

Toppan is tackling waste management problems by setting targets to reduce final landfill disposal volume (direct landfill dis-

posal volume + landfill disposal volume of residues from intermediate treatment) by 90 percent in fiscal 2010, relative to the figures for fiscal 2000. To realize this goal, the company has set up the following means of waste disposal to be applied in the following order of priority:

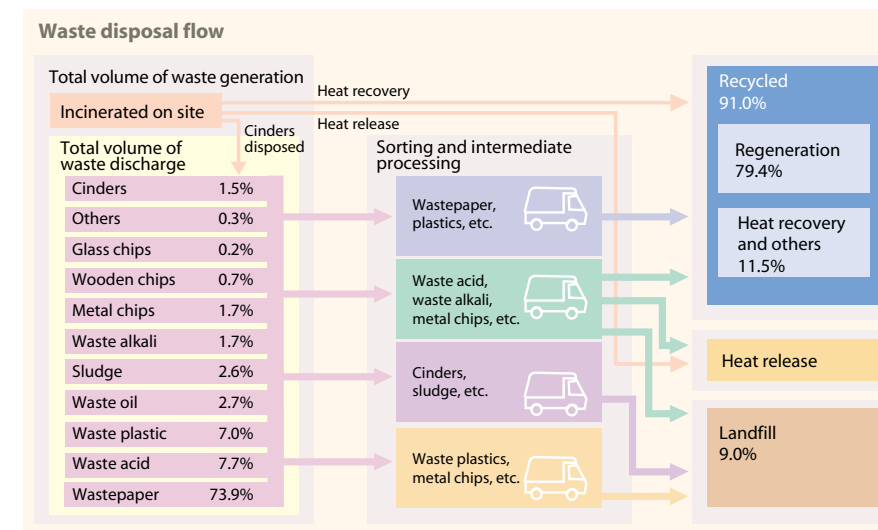
1. Reduction (in waste generation)
2. Reuse
3. Recycling
4. Heat recovery

Waste that continues to be generated despite these efforts will be appropriately and carefully disposed, and meticulous records of that disposal will be kept.

Achievements for fiscal 2001

Through its company-wide efforts, Toppan achieved an important target in fiscal 2001: the company reduced final landfill disposal volume by 30.6 percent relative to fiscal 2000 level. This performance significantly outperformed our target of a 5 percent reduction.

While the total volume of waste discharge in fiscal 2001 was 314,700 tons, which represents a decrease of 7.2 percent compared to



Environmental activities at the Sakado plant



Takashi Sasaki
Plant Manager
Chairman of the Eco-protection Promotion Committee



Akihiko Oshinomi
Assistant Plant Manager
Assistant Chairman of the Eco-protection Promotion Committee

The Sakado plant manufactures catalogues, pamphlets, calendars, books, magazines and many other printed materials. It located in the Nissai area in the city of Sakado in Saitama Prefecture, a place that uses "a town of verdure and babbling streams" as its urban development slogan. Since its inauguration in 1997, our plant has approached environmental management from the viewpoint of both conservation of the global environment and harmony with the community environment. This style of management led to the award of ISO 14001 certification in October 2000.

The strong concern for the environment among all employees resulted in setting up the Eco-protection Promotion Committee and Audit Committee, which establish guidelines for environmental pol-

icy and environmental objectives and targets. It is also unfolding its comprehensive environmental management programs.

Management has adopted various measures aimed at saving energy. These measures include centralized control in the central monitoring room, management based on individual departments, active introduction of inverter-controlled instruments, installation of automatic lighting systems, reuse of wastewater, installation of automatically-controlled water valves, and other measures. In waste management, we actively promote the reuse, recycling and regeneration of recycled waste materials, which led to the recognition of our production facilities as the first zero-emissions designated plant of the entire Toppan Group.

Through these activities, we met our targets for both energy saving and waste discharge reduction for fiscal 2001 in terms of unit plant output, although some items, including odors and water quality, need further improvement. We are thus seeking for fiscal 2002 to further improve our environmental management system through a program that issues specific *Site Reports*.

Moreover, we are planning the creation of a richer environment, including planting a total of 5,000 trees and flowers. We seek to harmonize our facilities with the beautiful cityscape of the community.



Publications/Commercial Printing Division, Sakado plant (Information & Networks)

Sakado plant input/output data

INPUT	
Energy	
Total energy consumption	747,000 GJ
Water	
Water consumption	145,000 m ³
OUTPUT	
Air	
CO ₂ emission	29,427 t-CO ₂
Emission of substances destructive to the ozone layer	0
NO _x emission	4 t
SO _x emission	—
Emission of dioxins	—
Water system and soil	
Total water discharge	59,000 m ³
Underground penetration	—
On-site evaporation	86,000 m ³
BOD discharge	14 t
COD discharge	—
Nitrogen discharge	—
Phosphorous discharge	—
Waste	
Total waste discharge	20,348 t

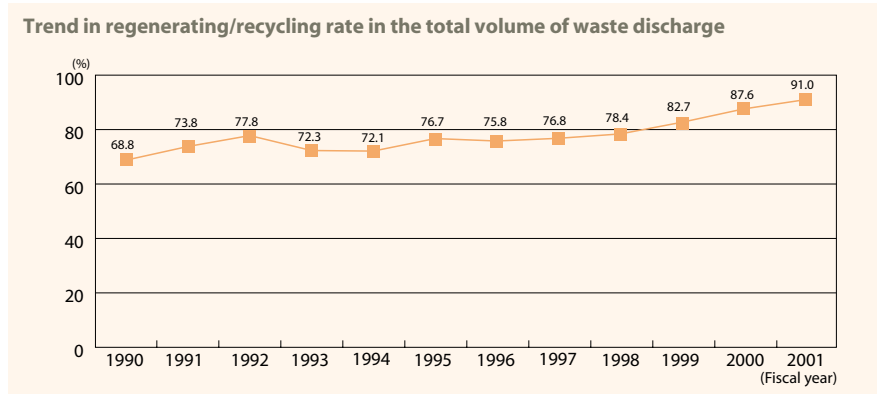
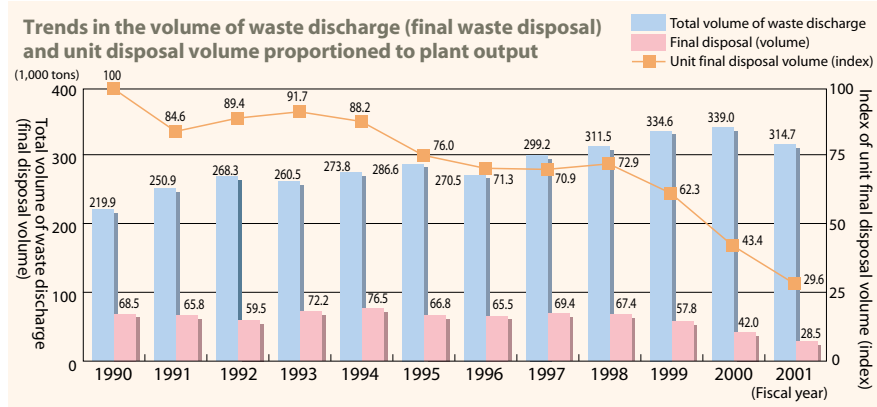
fiscal 2000 levels, the volume of final disposal was 28,500 tons, down 32.2 percent. Toppan believes that the reasons for this success stem from its efforts to execute increasingly thorough waste sorting and recycling.

The company will proceed with waste management in the following two important areas: sludge treatment in the Electronics field (which is continually working on recycling and reuse of generated waste), and promotion of recycling and efficient use of paper/plastic-layered materials in the Living Environment field.

Reuse of waste as recycled resources

Toppan considers the sorting waste materials as the most important and essential step for the reuse of waste as a recycled resource. The Group has set up sorting criteria of waste according to the situation of each operational site. Management is thus constantly striving to educate employees on the importance of continually improving the sorting process, and to explore possibilities for the maximum reuse and recycle of waste materials as usable resources.

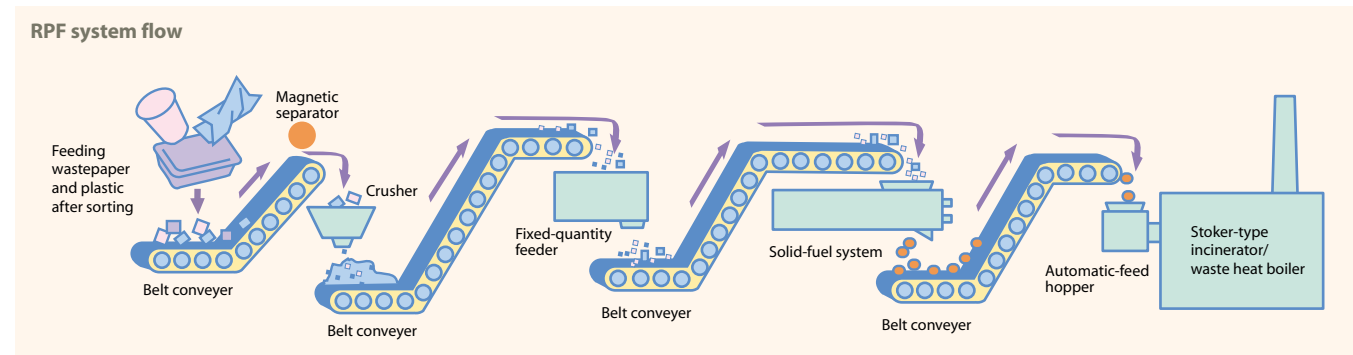
The majority of waste at Toppan is represented by refuse paper. For this reason, Toppan is regenerating 92.6 percent of refuse paper as recycled paper. Efforts are also still being made to utilize the remaining 7.4 percent of refuse paper as a recycled resource. The recycling ratio of refuse paper currently stands at 97.8 percent, including all recycled resources.



RPF system

The RPF (Refuse Paper and Plastic Fuel) system introduced at the Sagami-hara plant of the Living Environment field in March 1999 is designed to regenerate the composite materials of paper and plastics as solid fuel. The waste-converted solid fuel from this system can be reused for thermal energy in

incinerators. The deployment of RPF allowed the Sagami-hara plant to improve the combustion efficiency of its incinerators to a point where fuel consumption by stabilizing burners was slashed to approximately one-tenth the previous figure, and the weight of the cinders was reduced to about one-third.



RPF system



Waste storage



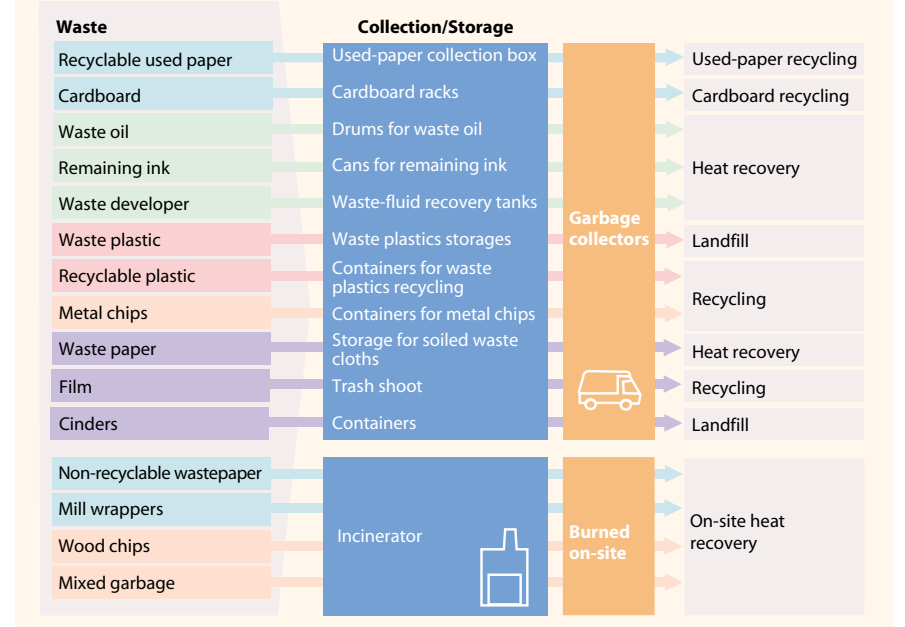
Signboard for waste storage

Development of zero-emissions target

Toppan continues to devote a great deal of attention to waste management. It aims for the achievement of its ultimate target of zero-emissions, with the intention of reusing waste as recycled resources. In 1999, model plants for zero-emissions were chosen, and the corresponding activities have since been carried out, with the goal of achieving the zero-emissions target at the selected plants. Through these efforts, Toppan has been able to certify 11 plants as zero-emissions operational sites as of November 2001.

Selection method for zero-emissions sites
Achieving this target required a solution to a major problem: because the recycling rate was largely dictated by external factors, and achieving the target inevitably required the cooperation with outside recycling partners. Toppan then proceeded to review the selection criteria of the zero-emissions plant, redefining this as a "plant with a recycling rate (regeneration and reuse) of 95 percent or more, which is certified as such by the head office Ecology Center." For the 18 operational sites that achieved a 95 percent or more recycling rate according to results for fiscal 2000, specific issues that were blocking achievement of the zero-emissions target were examined in technical, economic, and regional terms. Eleven of them were certified at the National Eco-protection Meeting held in November. From now, more efficient efforts will be developed, with a target of 15 sites for fiscal 2002. Zero-emissions will be achieved by making maximum use of the Toppan Group's network.

Flow of waste separation and collection at the Asaka plant (Commercial Printing)



Plants certified for zero-emissions

Plant	Total waste generated (tons) Fiscal 2000	Total recycled waste (tons) Fiscal 2000	Recycling ratio (percent) Fiscal 2000
1 Asaka plant (Commercial Printing)	15,993.0	15,578.8	97.41
2 Sakado plant (Commercial Printing)	10,399.9	10,360.1	99.62
3 Kumamoto plant (Electronics)	18,375.0	17,894.8	97.39
4 Sakado plant (Publications)	6,455.5	6,445.6	99.85
5 Toppan Graphic Co., Ltd. (Nishigaoka site)	2,220.8	2,154.3	97.00
6 Toppan Seihon Co., Ltd.	31,769.6	31,628.8	99.56
7 Toppan Graphic Co., Ltd. (Oji plant)	4,929.5	4,767.5	96.71
8 Sagami-hara plant (Packaging)	26,182.8	25,245.5	96.42
9 Osaka Toppan Display Co., Ltd. (Oyodo plant)	3,886.9	3,881.9	99.87
10 Kansai Commercial Printing plant, Takino site (Commercial Printing)	9,922.1	9,823.7	99.01
11 Takino Packaging plant (Packaging)	4,384.2	4,383.4	99.98

A plant visited by spot-billed ducks and wagtails

All Toppan plants are making efforts for promoting eco-protection activities to contribute to preserving the global environment. Because the results of such activities are evaluated mainly by numerical figures, this gives ordinary Toppan employees a sense of achievement. Nonetheless, it is sometimes difficult for employees to feel that the achievements are real.

Welcoming the wildlife that often visits the plant gives us special pleasure and raises company morale. At our Asaka plant (Commercial Printing) for example, every year in May flocks of *karugamo* (spot-billed ducks) congregate with their chicks around a pond on the premises. When we see them fitting about and

enjoying themselves, the importance of environmental activities really hits home.

Many flying birds, including wagtails and great reed warblers, flock to the premises of the Sakado plant. The Nissai area of Sakado, where the production facilities are situated, is promoting a city development plan that promotes increased greenery throughout the city. It even changed its town name to "Nissai Hanamizuki" ("Nissai flowers-water-trees") in September 2002. In cooperation with this movement, we are deploying a plantation campaign of dogwood, crape myrtles, magnolia stellata, and many others. The visits to the plant by the "tenants" of the trees are just some of the fruits of the steady efforts made every day by Toppan environmentalists.



A *karugamo* (spot-billed duck) family, visitors to the Asaka plant



Planted trees in the Sakado plant

Office Eco-protection

Environmental activities in the offices, referred to as Office Eco-protection, focus on recycling, energy-saving, and resource-saving activities. This kind of movement usually begins with a change in awareness among all participants.

Efforts in the Offices

Toppan promotes environmental activities in its offices (indirect departments) as Office Eco-protection activities, with an emphasis on recycling, energy saving, and resource saving. Office Eco-protection encompasses the head office and buildings in Akihabara attached to the Toppan head office, the Toppan Koishikawa Building, the Shibaura building, the Honjo GC building, the Hiroshima sales office building, the Nishinohon building, and the offices of Toppan production plants and research centers.

Recycling activities in the offices

As a result of the recycling activities promoted in fiscal 2001, the recycling rate at Toppan's buildings was 74.5 percent.

Employees at the Toppan Koishikawa Building, which produces the largest quantities of office waste among Toppan's buildings, are encouraged to separate and dispose of waste in the 11 categorized recycling bins situated on each floor. The sorted waste is

then brought to an underground collective recycling area, where it is compacted and delivered to garbage collectors for disposal. Recycling activities conducted in 2001 have resulted in an improved recycling rate of 91.6 percent, surpassing the fiscal 2000 level of 88.5 percent.

Energy saving

Toppan is now working on, among other measures, the installation of energy-saving fluorescent lamps and motion sensors in lighting as part of our energy-saving endeavors in the offices. Ice-thermal-storage system* heat pumps were introduced in the sales office building in the Akihabara area and in the Shibaura building as part of our

efforts to cut back on electricity consumption. The Office Eco-protection activities are thoroughly carried out by each one of our employees, since everyone has acquired a variety of daily energy-saving habits, which include temperature management via air-conditioning adjustments, powering-down of lighting and office-automation equipment during lunch breaks, alternating "lights out" periods in hallways, encouraging employees to use the stairways in lieu of the elevators, and so forth.

*The ice-thermal-storage system runs as a heat source machine at night, converting cold water into ice. The ice is stored and then used in the daytime for air-conditioning.

Evolution of waste paper recycling rate in office buildings (%)

Fiscal 2000	Fiscal 2001
63.4	74.5

Standards for office refuse sorting at the Toppan Koishikawa Building

Office refuse sorting	Location of categorized recycling bins on each floor	Disposal method	
Empty cans	Refreshment lounge	Crushed	
Paper cups	Categorized recycling bins	Sorted	
Used paper recycling storage*	Freight elevator area	Sorted	
General inflammable garbage	Bins with lids	Disposed of by garbage collectors	
Newspaper	Bins with pulleys		
Magazines	Recycling storage on each floor		
Cardboard			Categorized bins
PET bottles			Crushed
Glass bottles	Categorized bins	Sorted	
Disposal lunch boxes and vinyl objects		Sorted	
Metals and batteries		Sorted	

*Color copies, carbon paper, and processed vinyl goods are categorized as general inflammable garbage



Paper sorting station in offices (Akihabara office building)



Container sorting station (Akihabara office building)



Heat pumps operated by the ice-thermal-storage systems (Shibaura building)



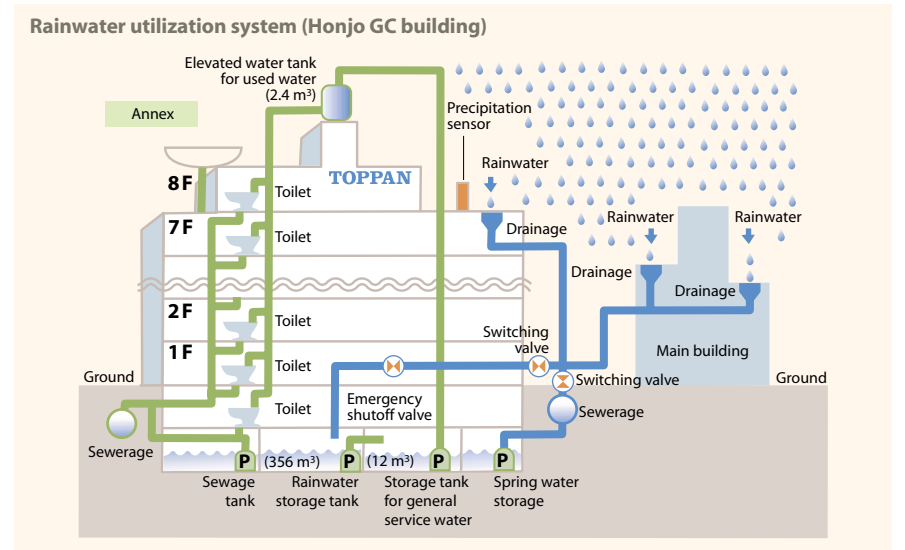
Recycling bin on each floor (Toppan Koishikawa Building)

Conservation of water through use of rainwater

At the Honjo GC building, the company was able to cut the consumption of service water by 2,754 m³ in fiscal 2001, thanks to a system designed to utilize rainwater, introduced in April 1994. The Toppan Koishikawa Building also introduced a used-water treatment/recycling system that collects water from washbasins and cafeterias and then applies BOD treatment to reuse the water for flushing toilets. This system, which began operations in May 2000, contributed to an annual savings of 7,701 m³ of water during fiscal 2001.

Utilization of rainwater (m³/year)

Office buildings	Fiscal 1999	Fiscal 2000	Fiscal 2001
Honjo GC building	3,175	3,258	2,754
Toppan Koishikawa Building	—	4,651	7,701



Used-water recycling facility (Toppan Koishikawa Building)



Rainwater piping (Toppan Koishikawa Building)

Green Purchasing

Basic policy and in-house standards

Toppan believes that the realization of a recycling-oriented society necessarily requires that the company give priority to the purchasing of environmentally-friendly products. Management therefore established the

Green Purchasing for internal printed materials

- Internal publications, corporate brochures, business reports, environmental reports, annual reports, and company tools, including calendars
 - Produced from 100-percent recycled paper
- Company envelopes
 - Produced from 100-percent recycled paper
- Employee diaries
 - Main body: Produced from 100-percent recycled paper
 - Covers: Made of olefin resin
- Business cards
 - Produced from 70-percent recycled paper

Basic Policy on Green Purchasing in January 1999, and initiated corporate-wide Green Purchasing. In addition, from fiscal 2001 Toppan began building up a Green Procurement system; we are striving for full operations from fiscal 2002.

Scope of Green Purchasing

Under the policy of Green Purchasing, we select and purchase products that meet our in-house Green Purchasing standards, especially for designated product categories: office paper, copiers and printers, personal

computers, stationery and office supplies, and toilet paper.

Achievements for fiscal 2001

In fiscal 2001, Toppan was able to improve all targets for Green Purchasing as a result of expanding environmental management to office operations and of raising the awareness of Green Purchasing. The ultimate goal of the company is 100-percent Green Purchasing.

In-house Green Purchasing standards and achievements

Designated products	Purchase standards	Rate achieved	
		Fiscal 2000	Fiscal 2001
Office paper	Must be made of 70-percent or more recycled paper, with a white-sheen of 80 percent or less.	98.3%	99.2%
Copiers and printers	Must have an automatic sleep or shutdown function after remaining idle for a specified period.	79.9%	97.6%
Personal computers	Must have an automatic sleep or shutdown function after remaining idle for a specified period, with limited electricity consumption in sleep mode.	98.2%	99.8%
Toilet paper	Must be made of 100-percent recycled paper, with a white-sheen of 80 percent or less.	100.0%	100.0%
Stationery and office supplies	Must have an appropriate certification (Eco-Mark, Green Mark, etc.) or be classified in the catalogue by the manufacturer as an environmentally-friendly product.	67.2%	85.7%

Efforts in Logistics

The Toppan Group considers the reduction of CO₂, NO_x, and other gas emissions from its trucks as issues to be addressed by its logistics departments. Introduction of a new transportation system and eco-driving activities are being promoted to tackle these problems.

Issues and efforts in logistics departments

To reduce the environmental burden imposed, the logistics departments of the Toppan Group are developing activities primarily aimed at reducing air pollutants, such as CO₂ and NO_x emitted by trucks, which are indispensable for logistics.

Building up a distribution system for higher efficiency

Toppan Logistics Co., Ltd., which heads Toppan's logistics, has introduced a new transportation system referred to as WARTS (Wide Area Relay Trucking System). This system receives consolidated delivery instruction information and then coordinates cargoes from the various plants and operation bases in a given area, thus allowing for the transportation of multiple cargoes from each specific area. It offers the following advantages:

1. Reduction of the number of trucks operating by an average of about 135 units (on a 4-ton truck basis) per month.
2. Considerable reduction in packing materials.

Currently, this system is utilized to transport products from the packaging departments in Tokyo to the Kansai district. The company hopes to make use of the same system for transportation to other areas of the country in the future; it will boost efficiency in logistics and reduce the environmental burden.

Promotion of eco-driving

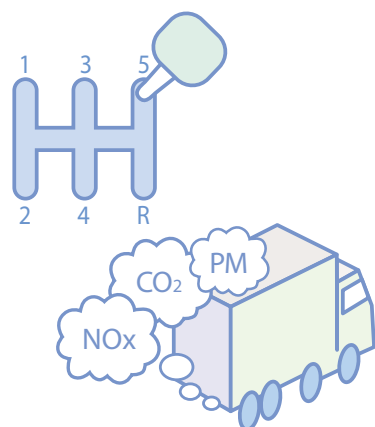
In its action plan, Toppan Logistics Co., Ltd., has projected an annual increase of fuel efficiency by 1 percent relative to the previous fiscal year. To achieve this target, the company is adopting an eco-driving movement that is considered the most effective means to minimize the environmental burden imposed by the trucking industry.

The campaign has six main points:

1. Stopping the habit of engine idling
2. Driving at an economic speed
3. Driving at a constant speed
4. Reducing loads on vehicles
5. Maintaining appropriate tire pressure
6. Maintaining adequate levels of engine oil

The company is making every possible effort to promote initiatives through driver training and education. Driving techniques of diesel-engine trucks, including constant-speed driving on highways, a strict ban on gunning the engine and sudden acceleration, early shifting-up of gears, utilization of engine braking, and strict observance of the legal speed limit are just part this education.

The company has also established a daily maintenance system that covers an engine oil, tire pressure, air cleaner sweeping, and other regular checks.



Introduction of low-noise tires

The company has also introduced low-noise tires. These tires, also known as vertical-groove tires, make less noise on the roads and generate less frictional heat, thereby helping to prevent global warming. Toppan Logistics Co., Ltd. achieved a 41 percent usage rate of low-noise tires in fiscal 2001.

Battery-powered forklifts

Toppan is promoting the conversion from fuel-operated forklifts to battery-powered units. While the former type consumes approximately 400 liters of gasoline per month, a battery-powered forklift both eliminates gasoline consumption and exhaust gases and reduces waste (consisting of engine oil) and maintenance parts. In fiscal 2001, Toppan Logistics Co., Ltd. achieved an 82.5 percent usage rate for battery-operated forklifts.

Introduction of low-emission vehicles

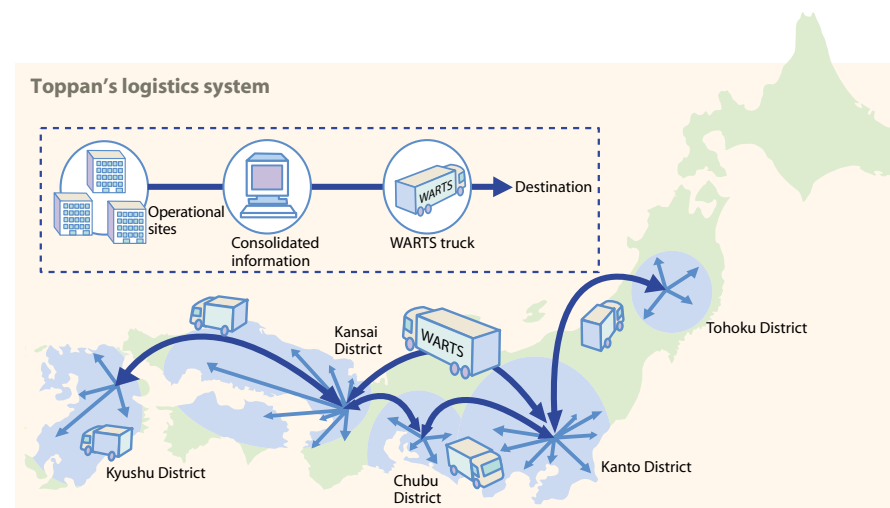
The conversion of company cars to low-emission vehicles is steadily underway. In fiscal 2001, two more of these cars were introduced, bringing the total to 14 environmentally-friendly cars now in our fleet.



"Stop Idling" sticker, posted on a truck



Facilities in drivers' lounge



Topic

Green Procurement

From fiscal 2002, Toppan introduces Green Procurement and endeavors to begin its full operation.

Growing awareness of Green Purchasing

Enactment of the Green Purchasing Law

The Green Purchasing Law (*Law Concerning the Promotion of Procurement of Eco-friendly Goods and Services by the State and Other Entities*) was enacted in April 2001. This law obliges the state and national organizations to abide by the clauses of Green Purchasing from the standpoint of environmental friendliness. Local governments, the private sector, and the general public are also expected to pursue Green Purchasing. The basic policy of the Green Purchasing Law defines the criteria for determining the type of printed materials to be delivered. Moreover, at the local government level, criteria for ordering printing materials are steadily being established.

Order Guidelines for Offset Printing Services

The Green Purchasing Network (Toppan became a member in 1996) that is promoting Green Purchasing announced its *Order Guidelines for Offset Printing Services* in December 2001. These guidelines were designed and published for the first time in Japan for the benefit of orderers of offset printing services to be utilized by many organizations and companies that are tackling the issues involved in Green Purchasing.

Self-standard of the printing industry

In response to calls for increasingly careful consideration from environmental movements, the Japan Federation of Printing Industries established the *Green Standard for Offset Printing Services* on its own initiative and judgment in August 2001. This standard has clarified the entire printing industry's stance and role in building a recycling-oriented society.

The document is accessible at their website, at <http://www.jfpi.or.jp/>

Toppan's philosophy on Green Procurement

Since April 2002, the Toppan Group, as a member of the Federation, has introduced a Green Procurement system that conforms to JFPI's *Green Standard for Offset Printing Services*. The Green Standard comprises the Green Rules and the Green Standards to be applied to "Procurement," "Processing" and "Efforts of Printing and Printing-related Companies." Of these two criteria (Green Rules and Green Standard), Toppan intends to meet the requirements through its Eco-protection Activities and Environmental Management Activities for "Processing" and

Introduction of Green Procurement

Green Purchasing Law: Basic policy on promotion of environmentally-friendly products

- Printing-related items: Printing paper, printing (service)

Green Purchasing Network: Order Guidelines for Offset Printing Services

Eco-label: Certification standard for eco-label products

- Main printing-related product categories

- ▶ Product categories: Paper-printed material, offset printing ink, printing paper

JFPI's Green Standard for Offset Printing Services



Toppan's Green Procurement Standard

Paper	Level 1	Level 2	Remarks
1. Use of recycled paper	Must be made of 100-percent recycled paper	Must be 70 percent or more	Treefree paper is also included in the calculation of the percentage of recycled paper
2. Consideration of white-sheen	Must be approximately 70 percent or less (up to + 4 percent)	Must be approximately 80 percent or less (up to + 4 percent)	Excluding colored high-quality paper and special paper
3. Consideration of coating	Must be 12 g/m ² or less (8 g/m ² max. for one side)	Must be 30 g/m ² or less (17 g/m ² max. for one side)	
Offset printing ink*	Level 1	Level 2	Remarks
1. Non-use of substances harmful to human body	Must conform to the NL (Negative List) designated by the Japan Printing Ink Manufacturers' Association		
2. Non-use of chlorinated resin	Must not include chlorinated resin		
3. Consideration of PRTR-designated substances	Must not include PRTR-designated substances	Must identify the PRTR-designated substances used (MSDS to be prepared)	
4. Limitation of VOC (Volatile Organic Compound) emission	The proportion of petroleum solvent is 15 percent or less (except for rotary press ink)	Must be aromatic-free ink, soy ink, or recycled vegetal-oil ink	

*Excluding gold, silver and pearl ink

the "Efforts of Printing and Printing-related Companies."

As for the Green Rules for "Procurement," Toppan set up its Green Procurement Standard, covering the items of which Toppan can evaluate its targets and executed activities.

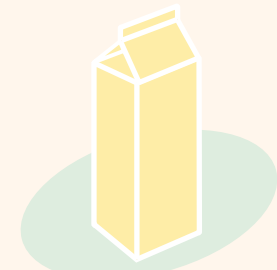
Basic policy on Purchasing

1. Toppan treats fairly all bidders, domestic or overseas, including those wishing to start new dealings that conform to the company's specific standards
2. Toppan undertakes to conduct business, with consciousness and responsibility, in conformity with the Monopoly Prohibition Law and other pertinent laws and regulations
3. Toppan selects suppliers by using evaluation standards that are based on economic rationality
4. Toppan undertakes to strictly control and keep confidential all information obtained through all procurement operations
5. Toppan makes purchases only when necessary and in necessary quantities
6. Toppan reviews its suppliers, regularly or as necessary
7. Toppan takes into consideration the protection of resources and environmental conservation in its procurement activities

ECO-CREATIVITY ACTIVITIES

Toppan is now striving to reform its business structure. Its management resources are selectively invested in the three major business areas of E-business, Environmental Business (Eco-business), and Electronics.

Of those three, Eco-business denotes “business that contributes to realizing an recycling-oriented society through the supply of products, technologies, and services, based on environmentally-friendly production activities.” It covers the in-house R&D of environmentally-friendly products and comprehensive support activities for environmental conservation.



Development of environmentally-friendly products

- Product assessment
- LCA (Life Cycle Assessment)
- Environmental Labeling Type II



Promotion of environmentally-friendly printing services

- GPN's Order Guidelines for Offset Printing Services
- JFPI's Green Standard for Offset Printing Services
- Environmentally-friendly ink, waterless printing methods



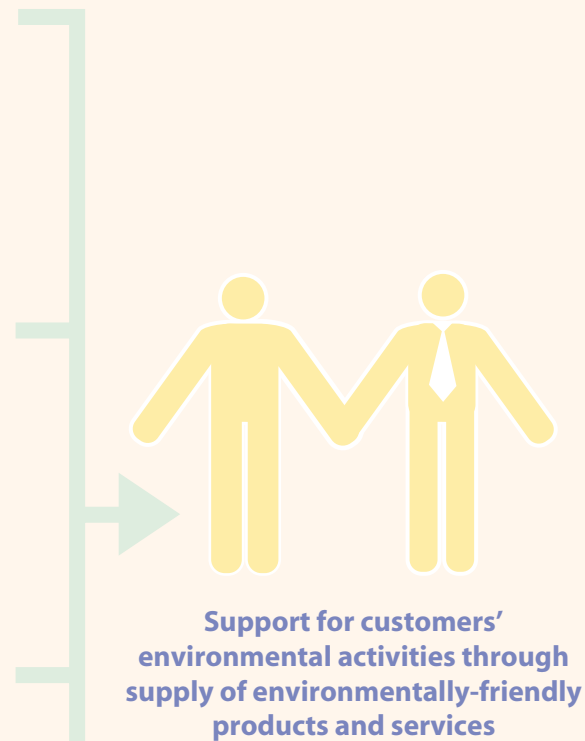
Support for environmental businesses

- Organization of environment-related events
- *ecollable Net*
- Support for preparation of environmental reports



Efforts for building up a recycling-oriented society

- Waste paper recycling system
- Packaging material recycling system



Overview of Eco-creativity Activities

Eco-creativity activities constitute Toppan's environmental business conducted through the supply of products and services.

What are eco-creativity activities?

Environmental Business (Eco-business) is one of three priority businesses at Toppan. Based on environmentally-friendly production activities, it is designed to help create a recycling-oriented society through the supply of products, technologies, and services. Activities to promote this business are referred to as Eco-creativity Activities; they involve aggressive efforts at each Toppan division.

Eco-creativity activities are broadly categorized into two different areas. The first covers research and development of environmentally-friendly products. To develop a product, evaluation standards and guidelines that duly take into account the overall lifecycle of the product are prepared. An evaluation on the basis of those rules is then performed. The second area supports environmental conservation; they are intended to support customers' environmental conservation efforts and to carry out environmental conservation activities through cooperation and collaboration with other companies and NPOs.

Basic philosophy for environmentally-friendly products

Toppan intends to raise the accuracy of its accountability to customers and to actively support the environmental claims made on behalf of its products. The company performs prior evaluations at each division during the design and development of products, and registers these developed

products at the Ecology Center. These products are marked with Toppan's Labels for Environmentally-friendly Products for easy understanding of the applicable environmental consideration.

Toppan is planning, developing, and supplying environmentally-friendly products that give due consideration to the environment throughout the product's life cycle, from the raw material stage through manufacture, distribution, use, and after-use stages.

At Toppan, products are developed during all stages with the environment in mind. "Use of recycled materials" and "resource saving" are paramount for the production and distribution stages, and "reduced release of chemical substances" is considered for the usage stage. "Reuse," "recyclability" and "easy separation and easy detachment" are factors kept in mind for the after-use stage.

Introduction of LCA (Life Cycle Assessment)

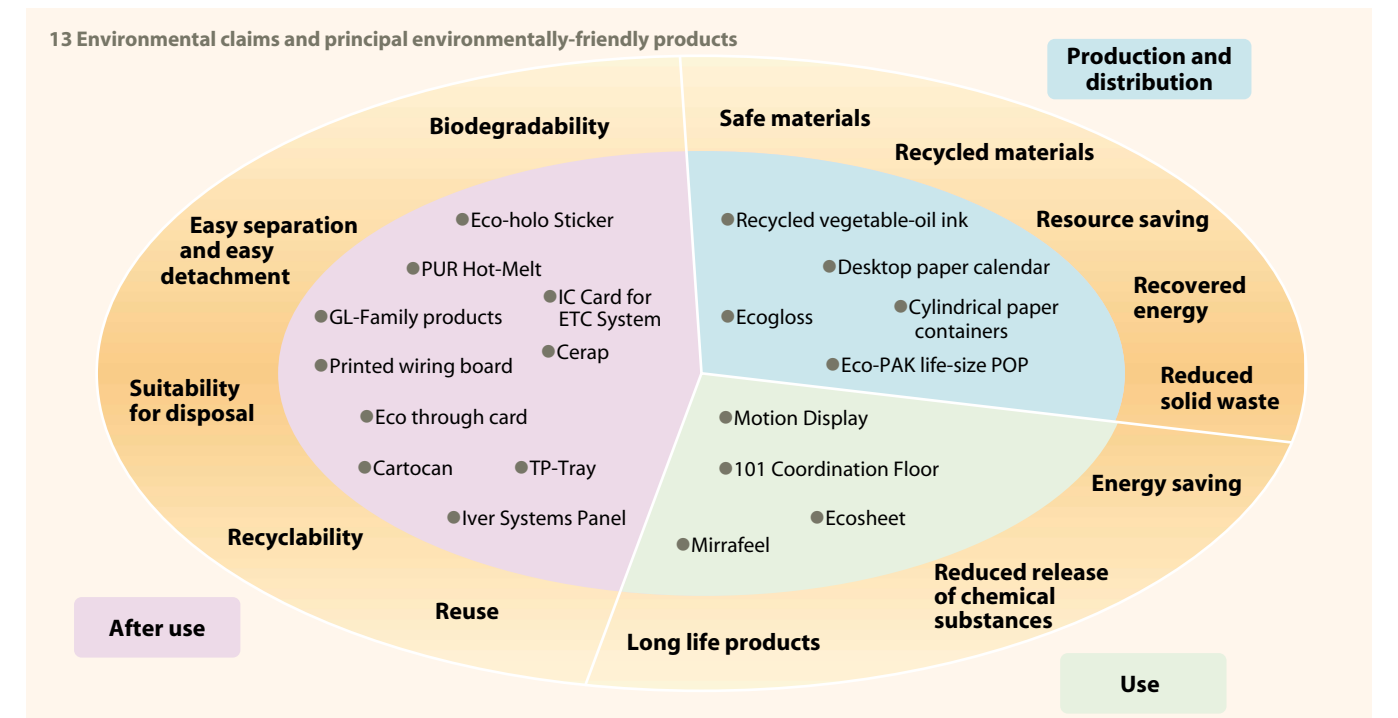
Toppan believes that the concept of Life Cycle Assessment (LCA)* is important in allowing us to quantitatively grasp environmental burdens at each stage, from acquisition of raw materials to production, distribution, use, recycling, and disposal. To this end, the company has set up an in-house committee concerning LCA and have initiated studies designed to spread a common, in-house concept of the way internal data are to be understood, the importance of data accuracy in general, and other related areas.

Philosophy for Toppan's environmentally-friendly products

Lifecycle stage	Environmental merit
Production and distribution stages	<ul style="list-style-type: none"> • Safe materials • Recycled materials • Resource saving • Recovered energy • Reduced solid waste
Usage stage	<ul style="list-style-type: none"> • Energy saving • Reduced release of chemical substances • Long life products
After-use stage	<ul style="list-style-type: none"> • Reuse • Recyclability • Suitability for disposal • Easy separation and easy detachment • Biodegradability

The company is currently working toward feeding the information obtained in the project back into the design and development departments, leading to further process improvement and to a reduction of the environmental burden posed by the products. Furthermore, management releases this information at the request of customers and of outside parties for use as data for the evaluation of environmental impact.

*LCA (Life Cycle Assessment): A method that quantifies the burden placed on the environment by a product throughout its lifecycle, through all stages, from raw materials through manufacture, distribution, use, and disposal, thereby permitting evaluation of the environmental impact of the product.



Development and Evaluation of Environmentally-friendly Products

Toppan has established its own original evaluation standards for the development and supply of environmentally-friendly products. The products developed on the basis of those standards are highly evaluated in the market.

Evaluation of Guidelines and Standards for Environmentally-friendly Products

Toppan has set up its Guidelines and Standards for Environmentally-friendly Products by product category and carries out their evaluation and registration. This system allows each division to efficiently develop environmentally-friendly products by following the evaluation guidelines from the planning and development stages of a new product. At the time of establishing the guidelines and standards for evaluation, Toppan adopted as a basis the ISO 14021 Environmental Labeling Type II, to which the company added three more original items for evaluation (safe materials, reduced release of chemical substances, and suitability for disposal) as complements, for a total of 13 criteria.

The products developed in line with the above guidelines are evaluated according to the control flow of the environmentally-friendly products.

Efforts for environmentally-friendly products by Group companies

Each member of the Toppan Group strives for the development of environmentally-friendly products based on its own standards and in sync with overall company objectives.



Labels made of recycled paper from waste tack sheets (Toppan Label Co., Ltd.)

Efforts toward a product assessment method

In commercial printing, Toppan developed a system for qualitative environmental impact evaluation using a product assessment method to evaluate the impact of our POP sales promotion products. This system is intended to evaluate environmental burden and to determine the methods of reduction of this burden in the design and development stages of a product. It is also intended to convey the results of this evaluation to customers in an easy-to-understand manner. It first performs a simple primary screening evaluation. Product assessment is then made of products that pass the screening, and the evaluation results are plotted on a graph.



Eco-PAK integrates the packaging in life-size POP

Environmental Category Prize awarded at the Big Hit Goods Grand Prix for Fiscal 2001

The *Kewpie Variety Sauce* (five types of pouch-packed pasta sauce) using Toppan-developed packaging GL film was awarded for the *Environmental Category Prize at the Big Hit Goods Grand Prix for Fiscal 2001* sponsored by Tokyu Agency Inc. GL film is a ceramic deposition barrier film with the same product contents preservation capabilities as an aluminum pouch.



Kewpie Pouch-packed pasta sauce using Toppan's GL film packaging

Examples of Environmentally-friendly Product Development

Of the many environmentally-friendly products developed by Toppan, two are discussed here: the IC Card for ETC and NaturArt industrial material.

Development of the IC Card for ETC

The ETC (Electronic Toll Collection) System is expected to create one of the most attractive business areas on the ITS* (Intelligent Transport System)-development-related market, due mainly to the advantage of a cashless method of paying for tolls on expressways.

The conditions of use of this card are, however, more stringent than other similar IC cards, such as credit cards and cash cards, due to the closed space of vehicles. This limitation makes it necessary to improve heat resistance and the environmental friendliness of the material of the card.

It is reported by many study cases that this type of card, when left on the dashboard in a car, is distorted as a result of direct solar heat and becomes mechanically unreadable by its card reader. Moreover, because of ISO/JIS standards, which specify the card material to be of PVC-base, the need for material change made it more difficult to maintain a quality similar to that of the conventional PVC-based material. It also required certain operations, including embossing, surface printing, hologram attachment, and so forth. These factors represent high hurdles for development of these cards.

However, in April 2000, we were able to



Hiroyasu Sakata
Development Section,
Security Product
Department,
Securities and
Cards Division



IC Cards for ETC

manufacture it with a 90-degree Celsius heat resistance and antibacterial coating made from a non-PVC-based material (PETG). In October 2001, we succeeded in developing a commercial production system for these cards using an improved type of non-PVC material resistant to 105 degrees Celsius. Toppan is thus making continuous efforts to further improve the convertibility of the product.

Among our clients, many financial businesses—especially banks and credit card companies affiliated with the distribution and electric appliance manufacturing industries—are very interested in our environmentally-friendly products. As environmental concerns mount, these and other compa-

nies have studied and understood our efforts and proposals for environmentally-friendly products, and decided to choose these newly designed products.

In view of the fact that the products currently available are not yet perfect, we intend to continue our bid to seek further improvement and customer satisfaction. We will always take into account the necessary cost consciousness and the present trends toward standardization seen both domestically and internationally.

*ITS (Intelligent Transport System): The extent of the expected economic effect of the ITS is assumed to reach some 50 trillion yen. ITS is currently seen as the most promising field of all multimedia businesses in Japan.

Interior Veneer Materials NaturArt

We at the Industrial Material Division produce all kinds of products related to living space. Some of those include wood-grain decorative sheets, wallpaper, and so forth. The company has developed many new products, including Toppan Ecosheet, Toppan Ecowall and others, with top priority always given to safety in terms of the environment and health.

The newly marketed NaturArt is an environmentally-friendly decorative sheet. It has a high-grade natural texture, made by combining sliced veneers and Toppan's original printing technology and is applied to furniture, walls, and other interior surfaces. It is composed of veneer, made from timber, and supplied from a sustainable forest with planned plantation and logging.

Conventional veneer products pose the following disadvantages:

1. Consistent wood-grain texture is difficult to obtain.
2. VOC (Volatile Organic Compound) emission countermeasures are difficult because a coating process is needed after assembly.

However, NaturArt presents the following characteristics:

1. No coating process is required.



Norio Kato
Development &
Marketing Team,
Development
Promotion Section,
Interior Decor
Materials Division



Furniture made of NaturArt

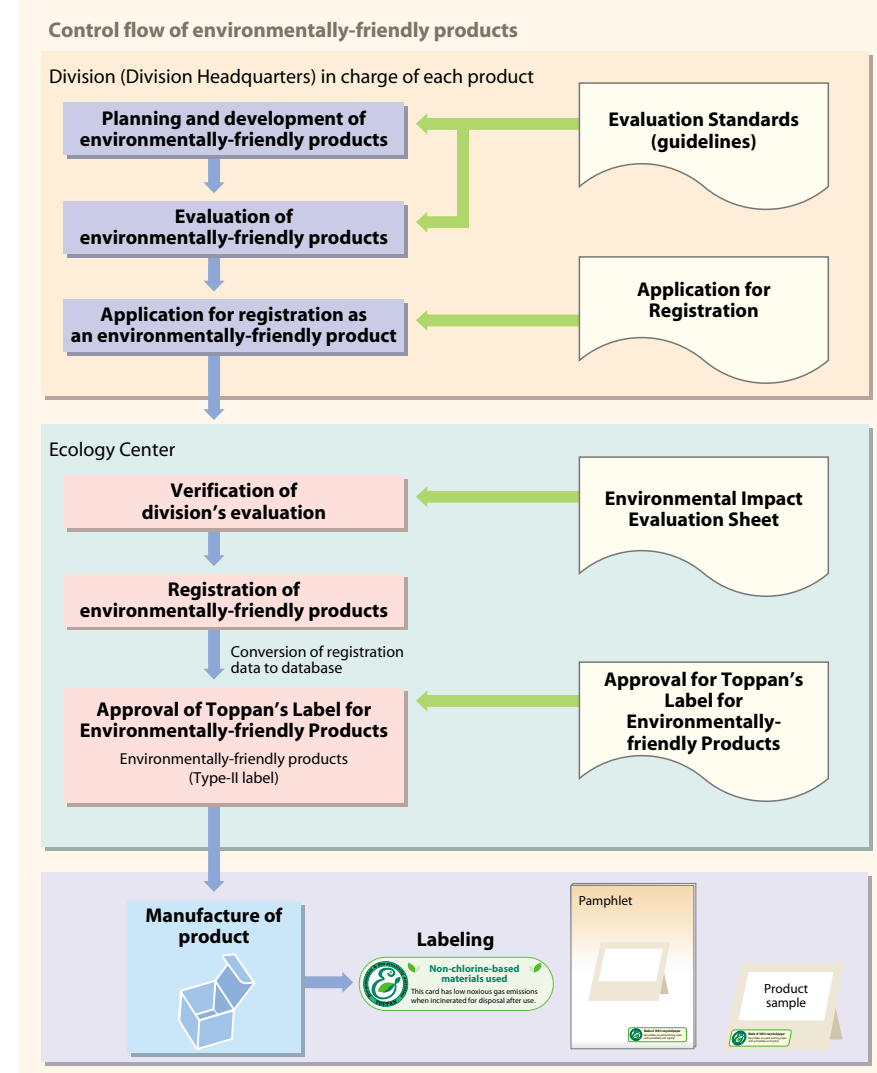
2. The natural texture and luster are unique to real wood.
3. A certain level of uniform quality can be obtained to ensure a stable supply of the product.

NaturArt can thus present excellent features in terms of the environment, quality, and elaborate design as a veneer product.

In developing this product, the company aimed above all to maintain its quality as natural wood as much as possible. This proved to be very difficult, especially for aesthetically and naturally aligning the wood grain textures of the surface. We finally succeeded mainly through extensive trial-and-error. But consolidating all the efforts of the different departments and groups involved

—marketing, development, design, and production, each of which had diverting opinions and expectations—we were finally able to come up with a harmonious product.

With its genuine wood feel and stable quality, the product has earned high praise and a favorable reputation since its appearance on the market in April. Toppan has received many inquiries from different sectors of business, ranging from the housing industry (houses, apartments, condominiums, etc.) to hotels, hospitals, social welfare facilities, and business offices. In this regard, we are constantly striving toward opening up new markets by extending the scope of development of our environmentally-friendly products.



*As of March 2002, Toppan offers a total of 49 environmentally-friendly products.

Toppan's Environmentally-friendly Products

Toppan is planning and developing environmentally-friendly products across all its business fields in contributing to environmental conservation and creating a recycling-oriented society.

Information & Networks

Eco through card



Non-chlorine-based materials
This card has low noxious gas emissions when incinerated for disposal after use.

IC card for ETC



Non-chlorine-based materials
This card has low noxious gas emissions when incinerated for disposal after use.

Eco-holo Sticker



Biodegradable plastic
This sticker is made of a biodegradable plastic, derived from vegetables.

Eco-PAK life-size POP



Resource saving (reduced use of materials)
Use of raw materials was reduced, and the packing material is incorporated in the display. Recyclable as cardboard.

Motion Display



Natural energy
A solar battery is used as a power source.

Desktop paper calendar



70-percent recycled paper
Paper is used for both the calendar and its case to eliminate the need of sorting and separation for disposal. Recyclable as used paper.

Cerap



Non-chlorine-based materials
The conventionally used PVC film for body surface protection of vehicles is replaced with ceramic coating.

Recycled vegetable-oil inks



Recycled vegetable oil
Aromatic-free inks, with 20-percent or more of recycled vegetable oil mixed in offset sheet-fed printing ink, or seven percent or more in rotary printing ink.

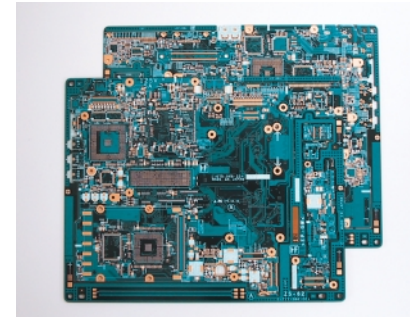
PUR Hot-Melt



Bookbinding glue suitable for recycling
Hot melt adhesive for perfect binding is 100-percent removable during paper regeneration processes.

Electronics

Low-halogen printed wiring board



Low-halogen material
Uses material with low-halogen flame-retardant and emits minimal noxious gases when incinerated.

Living Environment

Ecogloss



Resource saving and recycled materials (reduced use of depletable resources)
Glossy paperware that uses soy ink and aqueous varnish for higher recyclability.

Cylindrical paper containers



Weight-saving paperware containers
Foldable tubular paperware, lighter than conventional products.

TP-Tray



Recyclable as cardboard
The use of a single raw material allows these trays to be more easily folded and recycled after use.

Cartocan



Recyclable as paper packs
Can be recycled as paper packs by cutting and processing after use.

GL-Family



Non-chlorine-based materials
These packing films emit few noxious gases when incinerated for disposal after use.

Toppan Ecosheet



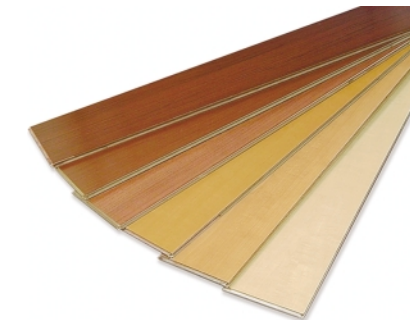
Reduced release of chemical substances
Decorative sheets with reduced substances that cause 'Sick-House' syndrome, and produces low noxious gas emissions when incinerated for disposal after use.

Mirrafeel



Non-chlorine-based materials
These packing films emit few noxious gases when incinerated for disposal after use.

101 Coordination Floor



Reduced release of chemical substances
Flooring materials with reduced substances causing 'Sick-House' syndrome with improved water and sun protection, aiming for a longer product life.

Promotion of Environmentally-friendly Printing Services

In promoting environmentally-friendly printing services as required by today's society, Toppan conforms to the GPN (Green Purchasing Network's) Order Guidelines for Offset Printing Services and actively forwards proposals to our customers based on them.

Conformity with GPN's Order Guidelines for Offset Printing Services

The Green Purchasing Network (GPN)* is an amicably linked organization of companies, administrations, and general consumers that was founded in February 1996 to promote efforts toward Green Purchasing.

The GPN announced in December 2001 its *Order Guidelines for Offset Printing Services* (GPN-GL14) for the first time in the field of services. They are indicators for orders of printing services concerning the environment and have already been adopted by many municipalities and corporations working on environmental issues, including Green Purchasing.

Toppan, as a member of the GPN, is striving for environmentally-friendly printing. In this regard, the company employs its environmentally-friendly technologies and offers printing-service customers a wide variety of proposals in each of the fields defined by the Guidelines:

1. Paper
2. Ink
3. Surface coating
4. Bookbinding and other converting processes.



GPN printing services logo

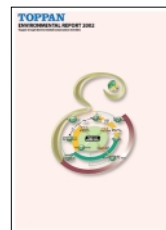
This logo is used widely to promote companies and administrations that are taking systematic initiatives in dealing with Green Purchasing of printing services in line with the GPN's Guidelines.

*Green Purchasing Network (GPN): A nation-wide network, promoting Green Purchasing. As of June 20, 2002, membership totaled 2,668 organizations, including 2,038 companies, 362 administrative organizations, and 268 private organizations.

Tangible examples of environmentally-friendly services

Toppan actively recommends to its clients environmentally-friendly printed materials conforming to the GPN's Guidelines to ensure environmental friendliness through

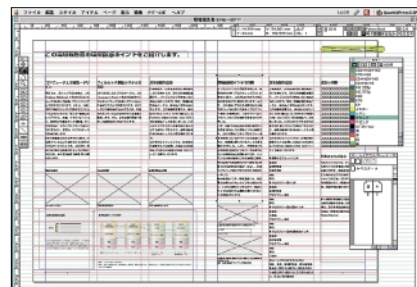
choosing paper for their printing orders. The following examples will show readers the environmental considerations taken during the preparation of this *Environmental Report*.



Environmental Report 2002

Computer editing and design

Today, most publications are prepared by editing and design systems that use computers, referred to as DTP (Desktop Publishing). DTP performs composing processes that were traditionally done with type and photo-settings, and arranges photographs, illustrations, charts, and other image data in layout format on the monitor screen. Once the data are created, the system outputs proofs to a color printer for checking and corrections, and then delivers these data in digital format.



The biggest role played by DTP in terms of the environment lies in the creation of digital data designed for subsequent prepara-

tion of press plates. In addition, DTP also helps minimize the number of color proofing operations, since it allows verification in the preparation stage.

Using treefree paper

Printing paper is a material that directly relates to the protection of forest resources. At present, there are two types of environmentally-friendly paper in this sense: recycled paper and treefree paper.

For treefree paper, kenaf and bagasse are well known, but bamboo pulp is also drawing attention these days. The use of treefree paper made of bamboo pulp is advantageous in terms of its aesthetic and antibac-

terial properties. Toppan has selected Take Bulky GA (100-percent bamboo pulp) for the material of this *Environmental Report*.



FSC-certified paper used for questionnaire form

In May 2002 Toppan's Commercial Printing Division (Information & Networks) was awarded the Chain of Custody (CoC) certification by a Mexico-based international environmental NGO, the Forest Stewardship Council (FSC). This was the first authorization for the printing business sector in Japan. With this certification, the awarded is entitled to use the FSC's approval logo to make an appeal for the fact that the paper used for the material is made of materials from a forest controlled by the FSC. The Commercial Division is continuing its efforts for obtaining the FSC certification for timber processing by the end of fiscal 2002 so that Toppan can meet the paper and wood needs of its customers.



FSC SUPPLIER SA-coc-1196 FSC TRADEMARK © 1996 FOREST STEWARDSHIP COUNCIL, A.C.

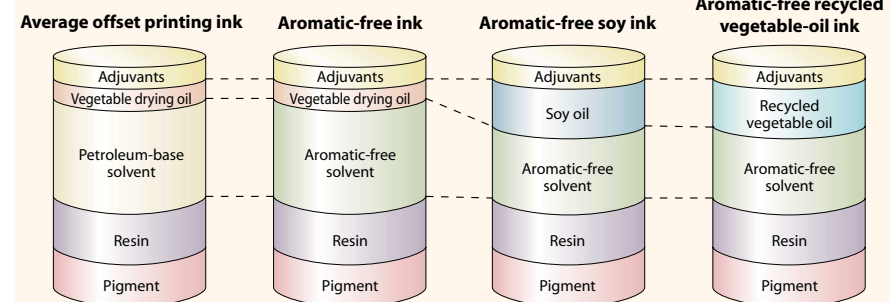
The FSC Logo

The FSC logo indicates that the material used was supplied from a forest where sustainable forest management is being carried out. For our *Environmental Report 2002*, FSC-certified paper is used for the questionnaire form.

Using environmentally-friendly inks

The petroleum-base solvents of offset printing inks contain aromatics, which are said to exert adverse effects on the air and the human body. A solvent with these presumably hazardous aromatics almost completely removed (aromatic-free solvent) has been developed and used as an aromatic-free ink at many printing plants. On the other hand, a soy ink made from soybean oil was developed in the United States with the objective of foregoing the use of petroleum-based solvents. Today, an aromatic-free soy ink made with the soybean oil ink and an aromatic-free solvent is attracting attention as an environmentally-friendly ink. However, Toppan began developing an ink made from recycled vegetable oils while pursuing the reuse of resources. Toppan succeeded in practice in applying a process that refines used soybean oil, recovered from school

Ingredients of environmentally-friendly inks



*Pigment: Ingredient that gives color to the ink.
*Others: Ingredients that provide the adjuvants and pigment with dispersibility and fluidity and that serve to fix the pigment on the printed surface and their adjuvants.

catering services and the restaurant industry, and recycles this as a printing ink.

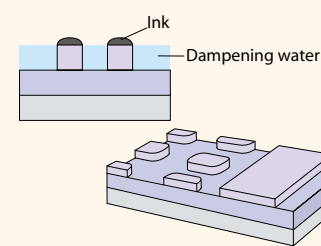
The recycled vegetable-oil ink, used in the present *Environmental Report 2002*, offers the same performance as traditional offset

printing inks. Moreover, it features a de-inking property (needed in the paper recycling process) that is superior to that of conventional inks.

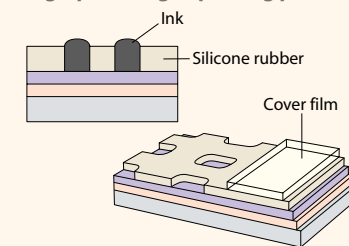
Adopting a waterless printing system

Traditional offset printing consists of lithographic printing that makes use of the interaction between water and oil. The system leaves the printing area oily at the time of plate-making and forms ink-adhesion areas by adding moisture to the plate at the time of printing. Meanwhile, in lieu of water, the waterless printing system uses a silicone layer that repels water, and therefore does not require the use of dampening water, with no discharge of waste liquid as a result.

Plate with water (Lithographic relief printing plate)



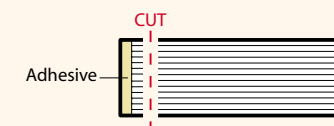
Waterless plate (Lithographic intaglio printing plate)



Binding with PUR Hot-Melt

PUR hot-melt is a binding method suitable for recycling, since it offers strong cohesion, and can be removed entirely without fragmenting, even during disaggregation in the recycling process. This method is used in the bookbinding process of this *Environmental Report 2002*. It enables 100-percent removal of the adhesive in the waste paper recycling processes, provides higher adhesive strength, higher resistance to hot and cold temperatures, and better double-page spreadability than traditional adhesives.

With traditional adhesives



*When a conventional EVA-base adhesive is used, the back portions of printed materials are cut off before they are delivered to the paper manufacturer.

Improved working conditions brought about by environmentally-friendly printing

Environmentally-friendly printing is useful for reducing the environmental burden on air and soil, and for improving working conditions in printing factories and other working environments.

For example, the aromatics present in petroleum-based solvents added to inks include some polluting substances for the air and soil, and are also said to exert harmful effects on people. However, the introduction of aromatic-free solvents has contributed to improving the working conditions at a site in a printing plant where many workers must carry out their duties.

In addition, the dampening water used in traditional offset printing processes contains IPA (isopropyl alcohol), an organic substance for which an adequate control and treatment have been urged in view of the health management of workers and the reduction of VOC released into the atmosphere. Waterless printing is an effective means to tackle this problem.



Waterless printing plant

Development of Environmental Support Business

The company is actively involved in supplying solutions to our customers' environmental activities, using the knowledge accumulated through activities for environmental conservation and for development and supply of environmentally-friendly products.

MIRU-navi

Toppan developed an integrated CD-ROM browser software package called *MIRU-navi*, used mainly as a corporate communication tool for environmental reports and many other uses. For browsing, *MIRU-navi* is capable of dealing with multiple files of different file formats (text files, spreadsheet files, document files, HTML files, image files, and so on). It also allows such functions as indexation across media of the content included and high-speed searches over the entire content that cannot be conducted by conventional CD-ROM browser software.

The newly developed software can be used as a communication tool for all types of businesses, covering business reports, annual reports, corporate profiles, recruitment brochures, and many others, in addition to environmental reports, in which a wide variety of information must be sent out to all people concerned.

Due to differences peculiar to each file format, conventional software has had many restrictions, including, among others:

1. Activation of the browser software each time a content file is opened.
2. The need to install browser software.
3. Inability to search the entire contents with the same keyword search.

However, *MIRU-navi* can include various file types integrally and utilize them together with text and image data for printing. This combined use has drastically cut down on the production cost of such software, as compared to conventional CD-ROM based software of this genre.



MIRU-navi image screen (Demo version utilizing the information of the Environmental Report 2001)

ecollable Net environmental monitoring system

Environmental activities conducted solely from the viewpoints of businesses and administrations have their limits. Environmental activities can achieve a balanced growth only when they are evaluated and supported by "Green Consumers" (consumers who take an interest in environmental activities). For this reason, Toppan created the *ecollable Net**, a mechanism that should serve as a bridge between businesses/administrations and Green Consumers. This was made possible with the collaboration of the environmental NPO Chubu Recycle.

ecollable Net is an Internet-based environmental monitoring system designed to solicit Green Consumers to respond to polls on the web. This represents an unprecedented experimental undertaking, a joint operation between a company and an NPO. It is our intent to implement two-way communications linking companies to consumers.

We believe that well-balanced environmental activities can be carried out through tie-ups between Toppan, which has specialized market-research functions and an inter-company network, and the environmental NPOs that convey the voices of citizens to society.

Activities in fiscal 2001

In fiscal 2001, Toppan conducted a workshop for Green Consumers and participated in an environmental event hosted by the city of Nagoya. The company also carried out some field investigations.

*Ecollable is a term coined from "ecology + collaboration + able." It expresses the concept of achieving environmental goals, which cannot be managed by single organizations, through collaboration of collective awareness.



ecollable Net website

Support Business for Preparation of Environmental Reports

Efforts on environmental issues are becoming one of the main tools for society to evaluate companies. With this trend, more and more companies consider active disclosure of information to be a key factor to survive in the twenty-first century; they regard environmental issues as an administrative activity, and a growing number of environmental reports are being published each year. The reports continue to become more substantial in content, covering environmental aspects, economic aspects (financial data, project outlines, etc.) and social aspects (working safety and sanitation, relationships

with stakeholders, etc.), resulting in a continually higher-quality report.

Moreover, environmental reports have come to occupy a central position among the communication tools of companies. Toppan management makes offers to customers for both the design and the content of such reports; it maintains reliability and takes into consideration the originality and corporate character of each client. For preparation of these reports, Toppan also proposes the combined use of hardcopy (paper copies) and other forms of media to generate synergistic effects, such as Internet linkage and CD-ROM development.

Based on the knowledge acquired through

the preparation of environmental reports, social currents regarding environmental issues, and the recent trends for environmental reports, Toppan has created a plethora of relevant supporting business. Just one of the company's achievements in fiscal 2001 was its support in the preparation of environmental reports for approximately 60 companies. The company will continue to support environmental communication activities by making maximal use of that knowledge, and through joint work with audit firms and other entities.

Topic

Cooperation for Eco-Products 2001

Eco-Products 2001

Toppan participated in *Eco-Products 2001*, sponsored by JEMAI (Japan Environmental Management Association for Industry) and the Nihon Keizai Shimbun, Inc., held December 13–15, 2001 at Tokyo Big Sight, as a participant in the management of its Environmental Communication Zone—*Ecollable Café*, a site event held by the organizers.

Design concept of Ecollable Café

"Ecollable" is a word coined from "ecology + collaboration + able," meaning that environmental goals that cannot be managed by single organizations can be achieved only through collaboration of collective awareness of all parties concerned.

In addition, "Environmental Communication" is based on the concept that the environmental activities of companies and organizations must include the mutual understanding of and communication with all parties concerned. These parties, also known as stakeholders, include citizens, administrations, and many others. This has become a very important notion in business management, with the objective of building a recycling-oriented society.

In view of this philosophy, management has endeavored to perform the zoning of the site, the display layout, and workshop planning so as to inspire all visitors to voluntarily and actively participate in the event.

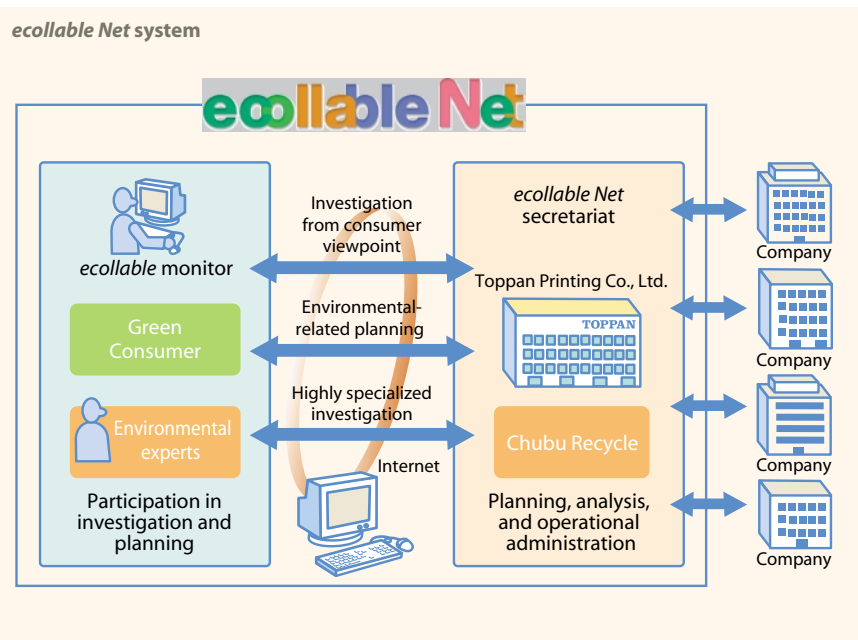
Content of the display

At the Environmental Communication Zone—*Ecollable Café*, Toppan put on various forms of displays and events, which included a Chronological Table of Social Environmental History (list of environment-related historic events and incidents), a case study on the supply of environmental information (environmental reports, environment-related advertisements, etc.), the Environmental Report Corner (principal environmental reports issued to date and currently available), public discussions, a workshop on specific issues, and many other activities. In those open discussions and workshops, the visitors from different sectors including companies, organizations,

and NPOs who were kind enough to attend came to understand the kinds of ideas and activities now taking place in fields outside their own sector.

One concrete example of one of the more popular events was something called, "Let's check environmental reports with a red pen!" Participants discussed how to make a report easy-to-read (use as many graphs and photos as possible, add a detailed glossary, and so on). Participants included readers who came to visit the Zone, comprised of various people from the business world and from the general public.

The Environmental Communication Zone—*Ecollable Café* is accessible also on the web at <http://www.ecollable.com>



Eco-Products 2001

Efforts for Creating a Recycling-oriented Society

With an emphasis on “reduce,” “reuse,” and “recycle” as a basic policy, Toppan is tackling its tasks of making efficient use of finite resources through establishing, among other efforts, a printed material recycling system.

Establishment of the printed material recycling system

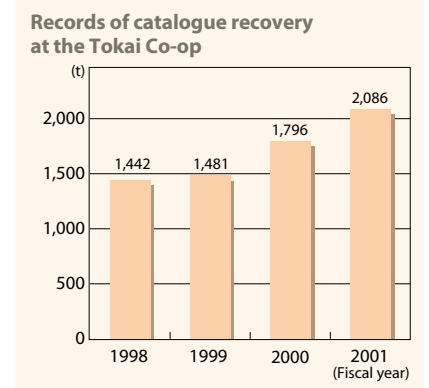
Promotion of recycling is an indispensable element for creating a recycling-oriented society. Toppan has accordingly established a self-completing recycling system for printed materials that encourages activities conducive to resource conservation.

However, this system can only bear fruit when the awareness of the objective to create a recycling-oriented society is shared by paper manufacturers. Unnecessary printed materials recovered from consumers are recycled as Toppan original recycled printing paper via the paper manufacturer, and finally delivered again to the consumers in the form of new printed materials.

Toppan's collection activities have until now been centered on the recycling of catalogues and other print material. From here, however, the company plans to explore the possibilities of expanding the system to other areas as well.

Activities in the Chubu Region

The Chubu Division of Toppan is presently operating the printed material recycling system in collaboration with the Tokai Co-op Consumers' Co-operative Federation, along with its member co-ops: Meikin Coop, Co-op Gifu, Mikawa Citizens' Co-op, Mie Prefectural Citizens' Co-op, and Mie-Kita Citizens' Co-op. During fiscal year 2001, the system recovered 2,086 tons of used paper, a 16 percent increase over the previous fiscal year.



Questionnaire on containers and packaging

In 2000, the Packaging Division set up four environment-related projects within the framework of the Packaging Environment 2000 Project. One was the Environmentally-friendly Product Development Project. The objective of this project is to identify environment-related market and customers' needs, so that these needs can be reflected in the development of new environmentally-friendly products.

As part of these activities, the Division conducted in fiscal 2001 a questionnaire on users' environmental consciousness for containers and packaging according to the 13 items laid out in Toppan's Environmental Impact Evaluation criteria. The questionnaire attempts to clarify how users intend to address “environmental issues regarding containers and packaging.” Choices in the questionnaire were: “from now on,” “from what viewpoint and on the basis of what policy,” “the users,” “intend to address,” “environmental issues regarding containers and packaging.” About 130 people from 100 companies responded.

The Project classified the survey results into nine business categories and six function groups and worked out a booklet in line with the 13 environmental merits defined in Toppan's Environmental Impact Evaluation criteria. Moreover, for each respondent to the questionnaire, Toppan prepared and

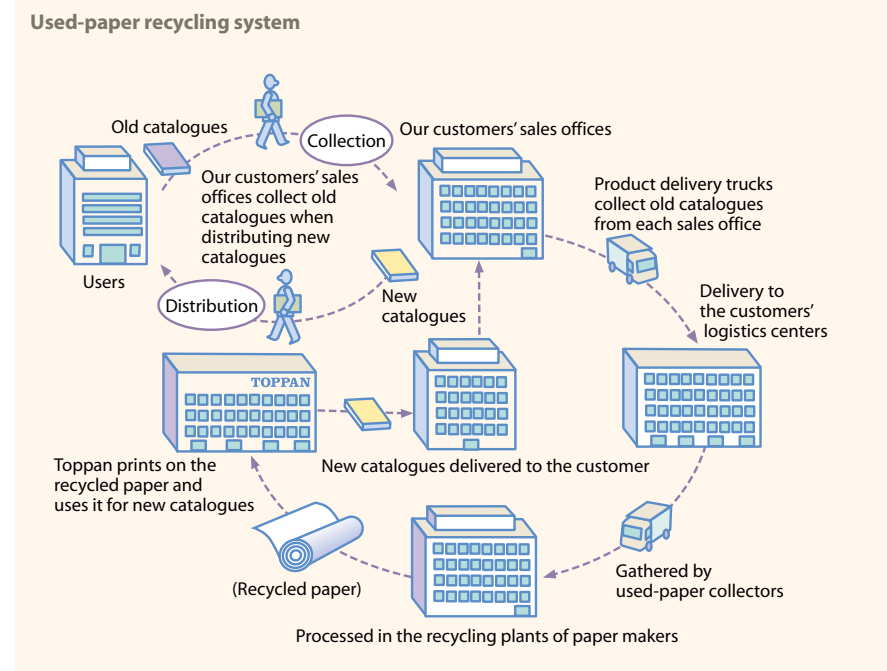
sent to the respondent specific individual data, together with the booklet.

After analyzing the results of the investigation, the Packaging Division has determined the following five points, which constitute the main targets of its efforts for further improvement:

1. Development of environmentally-friendly products
2. Thorough pursuit of safety
3. Active supply of information
4. Support for recycling systems
5. Environmental communication



Questionnaire on users' opinions on containers and packaging



Topic

Establishment of the Office Cartocan Recycling System

EMS activities and waste materials at the offices

Since its award of ISO 14001 certification for its office departments in March 2001, the Packaging Division has set up a thorough system of sorting waste in the office and improving the recycling rate—two important environmental objectives and targets.

One example is the recycling system for Cartocan waste generated at offices. The system is conducted not by the vending machine operator, but by Toppan, who as a package manufacturer employs an effective method to ensure the recycling process for re-commercialization.

What is Cartocan?

The company is engaged in the production and filling operations for Cartocan, one of Toppan's main packaging products. Though it is a paper-base beverage container, Cartocan can be sold in automatic vending machines that use other conventional steel and aluminum beverage cans.

Establishment of a recycling system

In cooperation with trading companies dealing in raw materials in the paper manufacturing industry, Toppan has worked out a recycling system designed to manufacture toilet paper from used Cartocans as a raw material. The system is characterized by the capability of recycling and re-commercialization using unwashed containers. That is normally a difficult operation, but the company succeeded after a series of experiments at a paper manufacturer with waste Cartocans that still contained some leftover contents.

To ensure the volume of raw materials necessary for this process of recycling and re-commercialization as toilet rolls, Toppan collected all used Cartocans from its Akihabara office and other possible materials such as spoilage from the Cartocan processing plants, unwashed test samples from the filling process, and other materials.

Utilization for Green Purchasing and sales promotion campaign

The biggest consumer of the recycled toilet paper ECO-GREEN is Toppan itself. High quality ECO-GREEN, made of approximately 50-percent used Cartocans (made from 100-percent recycled paper and other raw materials), is very popular among the employees. The procurement cost can also be minimized by making use of group-wide purchasing of this product.

ECO-GREEN toilet paper is also adopted by customers in their sales promotion campaigns as it also acts to promote Cartocan.



Toilet rolls recycled from Cartocans, as a re-commercialized product

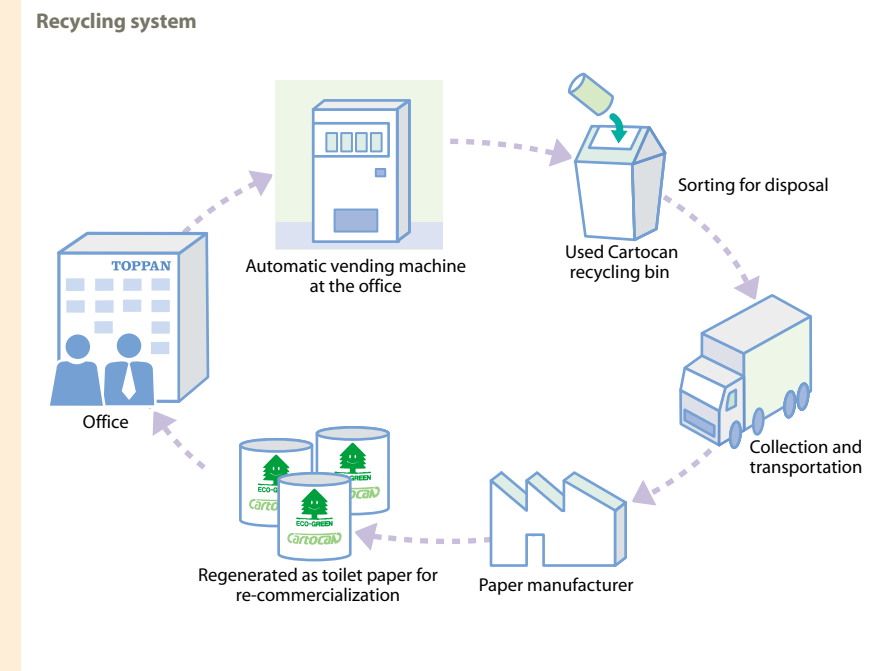
Further promotion of the Cartocan recycling system

For customers who wish to promote the Cartocan recycling system using their waste paper containers generated at offices and to conduct Green Purchasing of toilet rolls, Toppan introduces recycling routes and supports their purchase of ECO-GREEN.

As a packaging manufacturer, Toppan places importance not only on the sale of containers but also on involvement in their recycling after use.

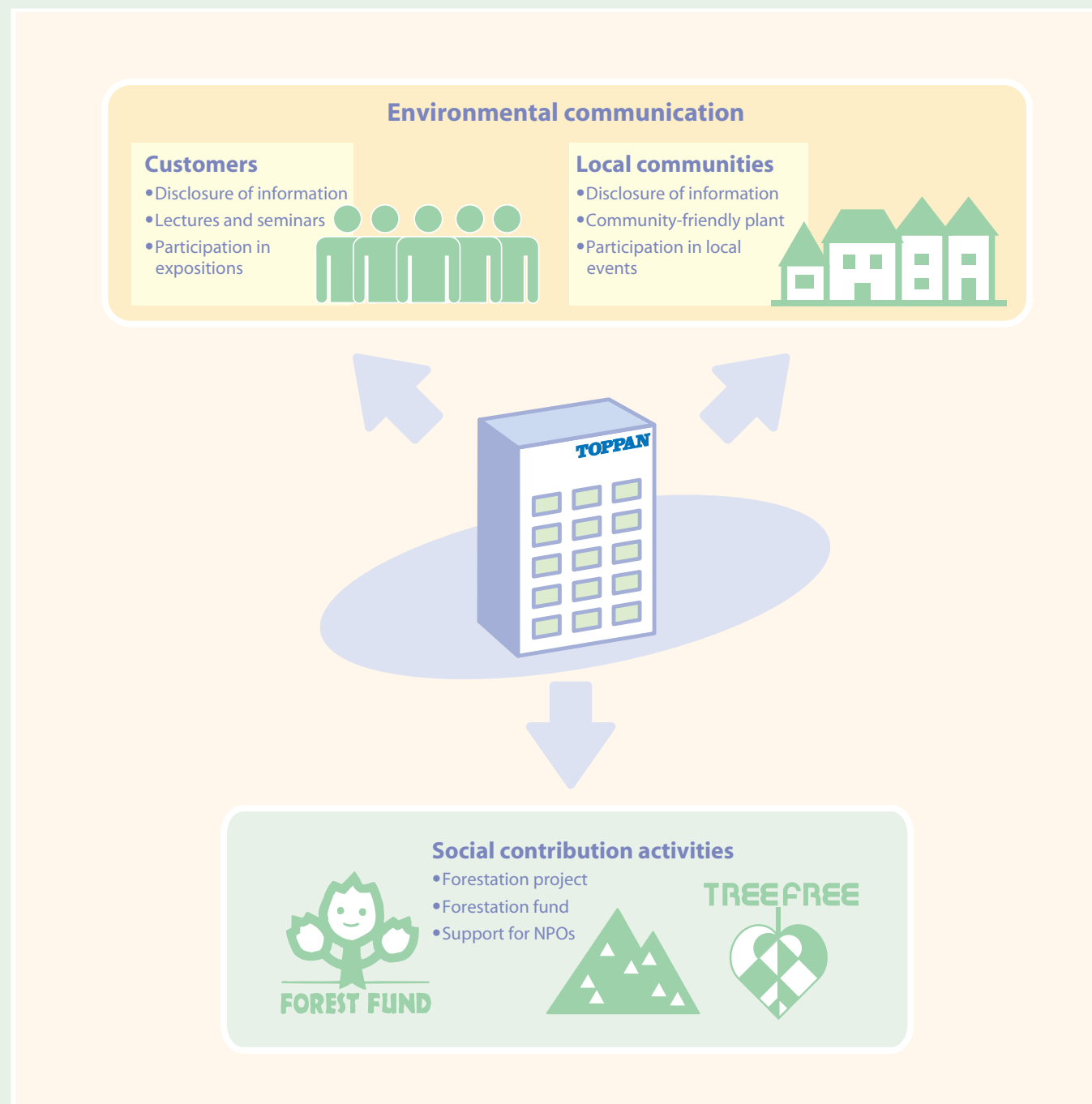


Categorized recycling bins (Akihabara office building)



5 COMMUNICATION ACTIVITIES

To make our environmental activities more substantial, it is important to develop an awareness of working on the environment not only among our employees, but also among the many people who we deal with throughout a wide range of fields. To accomplish this, the Toppan Group is conducting communication activities on a variety of levels. These include awareness-raising efforts both inside and outside the company, collaborative activities with local communities, and many other efforts.



Communication Activities Inside the Company

By building up an information sharing system using the in-house intranet, Toppan strives to raise employee consciousness on environmental issues and to share its basic philosophy on the environment.

Adoption of Toppan's Environmental Logo

To make ourselves fully aware of the environmental impact imposed by our production activities and to promote environmental activities throughout the company, it is essential to create fresh environmental awareness among every employee. For this purpose, in 1999 management adopted what is now referred to as Toppan's Environmental Logo. This logo is now printed on in-house publications, business cards, and the like to fully enhance environmental awareness in all of us.



Toppan's Environmental Logo

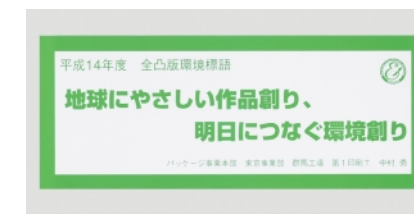
Through its eco-protection activities and eco-creativity activities, Toppan is aspiring to become a company that gives increasing consideration to the global environment. This corporate philosophy and conduct are expressed in the logo, which represents Toppan's environmental efforts and actions as a seed that will germinate and grow. The stalk shooting out of the seed symbolizes the "E" of ecology, and its two leaves represent Toppan's eco-protection and eco-creativity activities.

Principal communication activities inside the company

Environmental month and energy-saving month

To promote participation throughout the entire company, each year June is set as "environmental month," and February and August are designated as "energy-saving months." Prior to the applicable activities, the company sponsors a contest to select the Toppan Group's overall environmental slogan. For the energy-saving months, each operational site posts awareness-raising posters and slogans. The details of these and other activities are presented to other sites through activity reports prepared at the end of the months in question, to expand awareness of inspirational activities nationwide.

Moreover, management tries to enhance the environmental awareness of employees



Slogan poster for environmental month

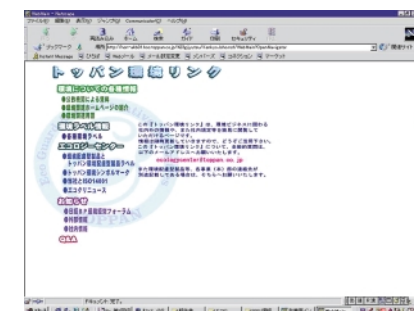


Reported eco-protection activity cases (November, 2001)

by inviting outside experts to give lectures. The company also offers talks by our own personnel, who give business lectures at our operational sites and plants.

Toppan Environmental Link

For the purpose of raising environmental awareness among our employees, the company has built up an information-sharing system using the in-house intranet. This *Toppan Environmental Link*, which was established in May 2001, shows various types of environmental information from



Toppan Environmental Link

both inside and outside of the company. It also displays information on Toppan's environmentally-friendly products and other content to promote the general sharing of information.

Ecology Awards

We added Ecology Awards to our biannual President's Awards and Divisional Awards as a means to stimulate employee efforts. The *Environmental Report 2001* was selected for the Ecology Award during the fiscal 2001 President's Award ceremony.



Award given to editorial staff of the *Environmental Report*



Toppan's *Environmental Report 2001*, chosen for the Excellent Performance Prize at the *Environmental Report Awards 2001*

Lecture on LCA held for Toppan employees

In December 2001, Toppan held a lecture on the LCA (Life Cycle Assessment) system to raise employee awareness, as part of a project to quantitatively evaluate the environmental burden of this system in the scope of environmental management.

We invited Mr. Atsushi Inaba from the Research Center for Life Cycle Assessment of the "AIST" (National Institute of Advanced Industrial Science and Technology) to give a lecture. Mr. Inaba covered the relationship between the ISO

Atsushi Inaba
Center Director



14000 series standards and the LCA, general methods of analysis, Type III Labeling, and environmentally-friendly design.

The conference was animated with the participation of many people from different divisions, who showed heated interest and actively addressed the lecturer with questions on the subject.

Communication Activities Outside the Company

Disclosure of Toppan's environmental information is actively made through its *Environmental Reports*, *Labels for Environmentally-friendly Products*, and other means. Toppan is also promoting activities involving participation in seminars and exhibitions of an environmental nature.

Basic policy behind Toppan's efforts

Toppan believes in the importance of establishing partnerships with various stakeholders in pursuing our goal of achieving a sustainable society. We are thus actively proceeding with communication efforts designed to share information and to deepen mutual understanding with all parties concerned.

Disclosure of environmental information

Adoption of Toppan's Labels on environmentally-friendly products

In fiscal 2000, the company began applying its Labels for Environmentally-friendly Products to products that meet Toppan's in-house standards for environmental friendliness; these labels explain our efforts toward the environment in plain language.

By the end of March 2002, a total of 49 products were internally qualified for use of the Labels for Environmentally-friendly Products.



A sample marking of a Toppan Label for Environmentally-friendly Products

Continual publication of environmental reports

Toppan has been busy working on environment-related information disclosure through the annual publication of its *Environmental Report*, which began in 1998. Besides being

published in booklets as the *Environmental Report*, the same information is also posted on our website, so that as many people as possible can share it.

http://www.toppan.co.jp/aboutus/tech_info/environment02/index.html

Issuance of Site Reports

Since fiscal 2000, our ISO 14001-certified operational sites have been issuing the *Site Reports*, directed to the municipalities and residents of neighboring areas. To obtain a copy of these *Site Reports*, please send e-mail to the following address:



Site Reports

eco@toppan.co.jp

Due to limitations of space, the present *Environmental Report* deals only with environmental performance data on a company level. Site-specific* environmental performance data can also be obtained from Toppan's Web site, shown above.

*Production plants of Toppan Printing Co., Ltd.

become professionals, Toppan offers on a regular monthly basis the chance to perform in front of an audience that often includes other amateur musicians from the neighborhood.



Other communication activities

Participation in symposiums

To promote a broad understanding of our environmental efforts outside our organization, the company conducts a wide variety of lecture and seminar activities, including participation in and dispatching lecturers to symposiums and conferences for various trade and industrial organizations. We believe that it is important that the opinions shared on those occasions be reflected in the environmental activities deployed at Toppan.



Lecture given at the Toyo Ink Mfg. Co., Ltd. seminar in Kansai

Participation in and hosting of environment-related exhibitions

Toppan participated in *Eco-Products 2001* in December 2001. At this exhibition, held at Tokyo Big Sight, Toppan's environmentally-friendly POP, original recycled printing paper, environmentally-friendly packages, and other items were displayed. This gave the company an opportunity to provide an introduction to Toppan's environmental efforts. (See page 49)

At the *Eco-Products 2001*, the company made a joint display with Toppan Forms Co., Ltd. to introduce to visitors the environmental initiatives taken by the Toppan Group.



POSTEX-ECO (Toppan Forms Co., Ltd.)

Activities Working with Local Communities

To facilitate collaboration with local residents, Toppan carries out a wide range of activities at the company's operational sites and plants nationwide to enhance harmony with local communities.

Basic policies behind Toppan's efforts

To facilitate collaboration with local communities, management is working to enhance mutual communication by organizing plant tours and other events for local residents and people from neighboring facilities. In fiscal 2001, all Toppan operational sites invited their neighbors to a Beer Fest over a period from July to August, which is held every year as a continuing event. The event was well regarded as an informal opportunity for mutual communication.

In fiscal 2001, there were 67 cases of complaints by the residents of neighboring areas of our production plants. The majority of the complaints were related to noise and offensive smells, which are urban types of pollution. While most of the complaints were resolved with immediate remedial actions, complaints involving some of our production activities still need to be ironed out. Management will continue its efforts to facilitate extensive communication with local residents and to execute remedial measures, including active investments in equipment.



Soundproof wall installation (Toppan Seihon Co., Ltd.)



Plant tour (Sagamihara plant)

Principal activities to seek coexistence with neighboring communities

Disaster-relief emergency water wells

Since 1996, at the request of the Environmental Bureau of Nagoya, the Nagoya plant has been cooperating with the bureau to supply water from the wells on plant premises in case of emergency. These wells can

supply drinking water during emergencies, including major earthquakes, and are indicated in the *Evacuation Areas in Your Town map* prepared by the Firefighting Bureau of Nagoya.

The wells successfully underwent regular water quality inspections in January 2002, five years after the previous check. They proved suitable for supplying drinking water. The plant is willing to cooperate further with the city in providing these wells as a source of emergency water.

Multi-purpose facilities opened to local residents

The multi-purpose facility Yuai Plaza (Fraternity Plaza) at the Asaka plant is used for employee club activities. The facility is also open to the local community; it is popular with neighborhood residents. Yuai Plaza offers a space for sporting events such as volleyball and basketball to local community members and a place of practice for orchestra and other music club members working at the plant.

Participation in flower plantation

The Fukuzaki plant participates three times a year in the Flower Plantation Campaign organized by the town of Fukuzaki. Employees plant pansies, salvias, and many other flowers in the flowerbeds of the plant. As members of the community, they also actively participate in local events, including blood donation campaigns and sports festivals.

Space opened at the Toppan Koishikawa Building

The premises of the Toppan Koishikawa Building (Tokyo), which was completed in May 2000, encompass a green, open space of approximately 3,000 m², home to approx-

imately 200 mature trees and 30,000 shrubs, offering a space for relaxation to our employees and local residents.



Space open to the public at the Toppan Koishikawa Building

Participation in local events

As part of our activities to facilitate local communication, Toppan is participating in, and supporting, events held in the local communities. Each of our operational sites plans and organizes events aimed at enhancing mutual friendship among our employees and at encouraging exchanges between our employees and local residents.



Participation in a clean-up campaign on Lake Biwa Day

Cleaning campaign around the Kumamoto plant

In February 2002, the Kumamoto plant conducted a local clean-up campaign for beautification of the area, along the municipal roads surrounding the facilities. A total of 31 participants collected garbage, including empty cans, bottles,



PET bottles, and many others.

With the slogan "Make our town clean by our own hand!", the plant intends to actively continue local clean-up activities as a member of the community.



Social Contributions and Awards

As a member of the printing industry, handling large quantities of paper, Toppan is developing activities leading to the protection of forest resources and conservation of the global environment.

Social contributions

Forestation activities

In January 1997, Toppan set up a joint corporation for forestation in southeast Australia with Oji Paper Co., Ltd. and the Nissho Iwai Corporation. The joint venture mainly plants early-maturing eucalyptus and other broadleaf trees. The goal is to cover an area of 10,000 hectares by the year 2007.

The venture has also joined a research project cosponsored by the Japanese government and private enterprises that intends to develop a concrete method of measuring the amount of CO₂ absorbed by forested trees. Toppan is thus striving to develop within fiscal 2002 a scientific measuring method that can be later adopted as an international standard in this field.



Forestation activities in southeast Australia

Product sales to fund forestation

With the generous support of numerous beverage companies, Toppan was able to reserve some of the profits from the sales of its Cartocan paper-based beverage containers and donate them to the Forest Fund for forestation in Indonesia, via the Global Citizens' Forest, by the Japan Ecology Foundation. The company started this program in February 1999, and contributed 2.38 million yen in fiscal 2001.



Cartocan

Promoting treefree paper

As a member of the Treefree Fund Project, Toppan is working to increase the use of treefree paper in printing, and thus to enhance the protection of precious forest resources.

One percent of the cost of treefree paper is reserved in the Treefree Fund, earmarked for forest protection. Since fiscal 1995, this money has been awarded to forestation

projects and NPOs. In fiscal 2001, donations totaling approximately 10 million yen were distributed to 14 NPOs, which actively tackled the problems through tree planting and other natural preservation programs. Since these activities need steady support, Toppan is determined to continue its cooperation for the Treefree Fund Project.



Treefree Logo

Main awards received for Toppan's environmental conservation activities

For its environmental conservation activities, Toppan has received the following awards and prizes.



Commendation ceremony in the Environmental Report Awards

Main awards received for Toppan's environmental conservation activities

Awards	
July 1991	Minister of International Trade and Industry's Award for Plants Distinguished in Greening Activities—Fukuzaki plant
February 1992	Director's Award, Kanto Bureau of International Trade and Industry for Plants Distinguished in Energy Management—Itabashi plant
February 1995	Encouragement Award, Saitama Prefecture Global Environmental Awards—Toppan Graphic Co., Ltd.
April 1996	Fuji Sankei Group Award, the Fifth Global Environment Awards
February 1999	The Highest Award, Chairman's Awards, Committee on the Rationalization of Energy Consumption in the Kanto Region
December 2001	The Excellent Performance Prize, Environmental Report Awards 2001

Toppan's participation in environment-related organizations

Organization	Organization
Nikkei BP Eco Management Forum	Environmental Study Group, Japan Environment Association
Green Purchasing Network	Network for Environmental Reporting
UNU Zero Emissions Forum	Study Group on Practical Matters about Introducing Environmental Accounting
Japan LCA Forum	Collect-and-Use Recycling Association
ECOMATERIALS Forum, The Society of Nontraditional Technology	World Wildlife Fund Japan [WWF]
Society for Chemical Risk	Japan Ecology Foundation, others

Donating notebooks recycled from remaining paper rolls to Laotian children

Last summer, in collaboration with Co-op Hiroshima and Oji Paper Co., Ltd., Toppan carried out a project of manufacturing notebooks, making use of the remaining paper rolls of flyer printing, for donation to developing countries. A total of 60,000 notebooks recycled from remaining paper were donated through the Hiroshima-Laos Friendship Association to elementary and junior high school pupils and students of local mountain tribes living in outlying regions of Laos. In March 2002, Toppan received a certificate of appreciation through the Association from the Ministry of Education, Laos, for this project.



Certificate of appreciation sent from the Laotian government and the donated notebooks

Toppan's Environmental Chronology

Beginning in the 1960s as pollution-prevention activities, Toppan's environmental efforts have broadly evolved since then. The company is now a true "global citizen."

Beginning with the installation of recovery equipment for organic solvents in the 1960s, Toppan began introducing a series of pollution-prevention measures that continued through the 1980s.

These measures responded to the nature and degree of discharge from the production plants. Back in 1971, under the leadership of its head office, the company began auditing operations to broaden and improve the management of pollution prevention.

The movement toward global environ-

mental conservation became widespread in the 1990s, and accordingly expanded the range of issues with which enterprises must deal. In 1991, Toppan established the Ecology Center, which was given the role of controlling environmental activities. While establishing an environmental conservation system on a national level, the company recently introduced its In-house Environmental Audit System as a means of preparation for future international standardization of environmental management systems.

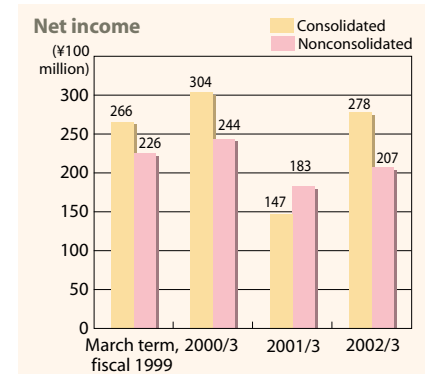
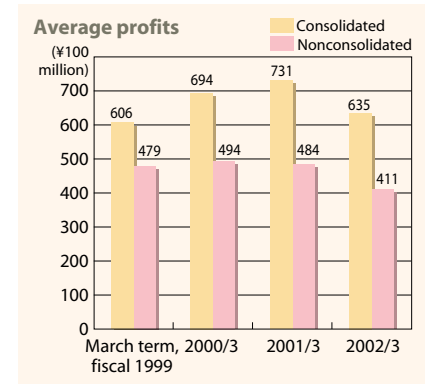
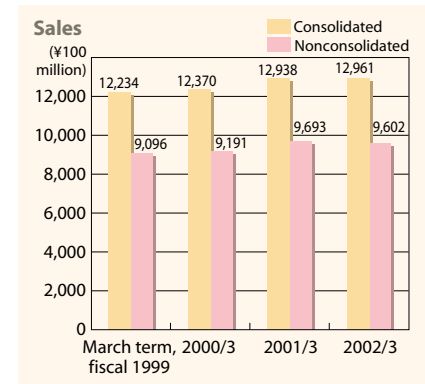
As a result of refinement of environmental management activities, the Shiga plant (Electronics Division) obtained ISO 14001 certification in July 1998, the very first for Toppan. Thereafter, activities aimed at obtaining the same certification were continuously carried out mainly at production plants. In February 2002, the Itabashi site (Information & Networks) was awarded certification for its "plate-making, printing, and manufacturing of books, magazines, and related products."

Environmental chronology

Activities at Toppan Group	Year	Societal developments
• Introduction of environmental facilities, including equipment for the prevention of pollution	1960	
• Established the Environmental Management Division at the head office, and set up an environmental maintenance department at each plant	1971	• Environment Agency created
• Introduction of pollution-prevention audits		
• Establishment of a system within the Central Research Institute for the analysis of environmental data	1972	• United Nations Environmental Programme (UNEP) established
	1985	• Vienna Convention for the Protection of the Ozone Layer held
	1987	• Montreal Protocol on Substances that Deplete the Ozone Layer adopted
	1988	• Eco-Mark adopted, Control Law on CFCs enacted
	1989	• Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal adopted
• Introduction of a cogeneration system	1990	
• Establishment of the Ecology Center within the head office	1991	• Keidanren established the Global Environment Charter
• Restructure of the corporate-wide environmental management system		
• Establishment of an environmental research group in the Technical Research Institute		
• Establishment of Toppan's Declaration on the Global Environment as a basic philosophy for environment efforts	1992	• Hosting of the U.N. Conference on the Basic Environment (Global Summit)
• The Ecology Award added to Toppan's in-house awards		
• Establishment of the Toppan Voluntary Plan on the Global Environment as a basic conduct guideline	1993	• Basic Environment Law enacted
• Halted the use of specific CFCs and trichloroethane	1994	
	1995	• Containers and Packaging Recycling Law enacted
• Received the Fuji Sankei Group Award at the Fifth Global Environmental Awards	1996	• Commencement of the ISO 14000 Series (Environmental Management System)
• Joined the Green Purchasing Network		• Green Purchasing Network established
• Introduction of an environmental management system conforming to ISO 14001 at all production plants	1997	• Hosting of the Third Conference of Member Countries to the United Nations Framework Convention on Climate Change (COP3)
		• Kyoto Protocol adopted
• Established the self-developed LCA method for packaging products	1998	• NPO Law enacted
• The Shiga and Kumamoto plants (Electronics) obtained ISO 14001 certification		• Home Appliance Recycling Law enacted
• Commencement of publication of the Environmental Report		
• Introduction of the system for the promotion of Green Purchasing, covering entire company	1999	• Revised Energy Conservation Law put into force
• Introduction of the RPF system at the Sagami plant (Packaging)		• PRTR Law enacted
• Introduction of Toppan's Environmental Logo		• Law on the Promotion of Countermeasures against Global Warming enacted
• Introduction of environmental accounting		• Environmental Impact Assessment Law enacted
• The Sakado plant (Publications) achieved its zero-emissions target	2000	• Green Purchasing Law enacted
• The Niigata plant (Electronics), Sate and Kashiwa plants (Industrial Materials) obtained ISO 14001 certification		• Construction Recycling Law enacted
• The Sakado plant (Publications/Commercial Printing) and Ranzan plant (Securities Printing) obtained ISO 14001 certification		• Basic Law for Promotion of a Recycling-Oriented Society enacted
• Toppan organized and hosted the Environmental Communication Exhibition 2000		• Food Recycling Law enacted
• Exhibited at Eco-Products 2000		
• Akihabara and Ebie offices (Packaging) obtained ISO 14001 certification	2001	• Environment Agency renamed the Ministry of Environment
• Introduction of the Toppan Group Consolidated Environmental Accounting		• Revised Waste Disposal and Public Cleaning Law
• The Environmental Report 2001 selected for the Excellent Performance Prize at the Environmental Report Awards 2001		• Fluorocarbons Recovery and Destruction Law enacted
• Exhibited at Eco-Products 2001		• Law concerning Special Measure Against PCB Waste enacted
		• Revised Automobile NOx Law put in force
• The Itabashi site (Publications) obtained ISO 14001 certification	2002	
• The Toppan Group Consolidated Environmental Accounting extended to its overseas subsidiaries		

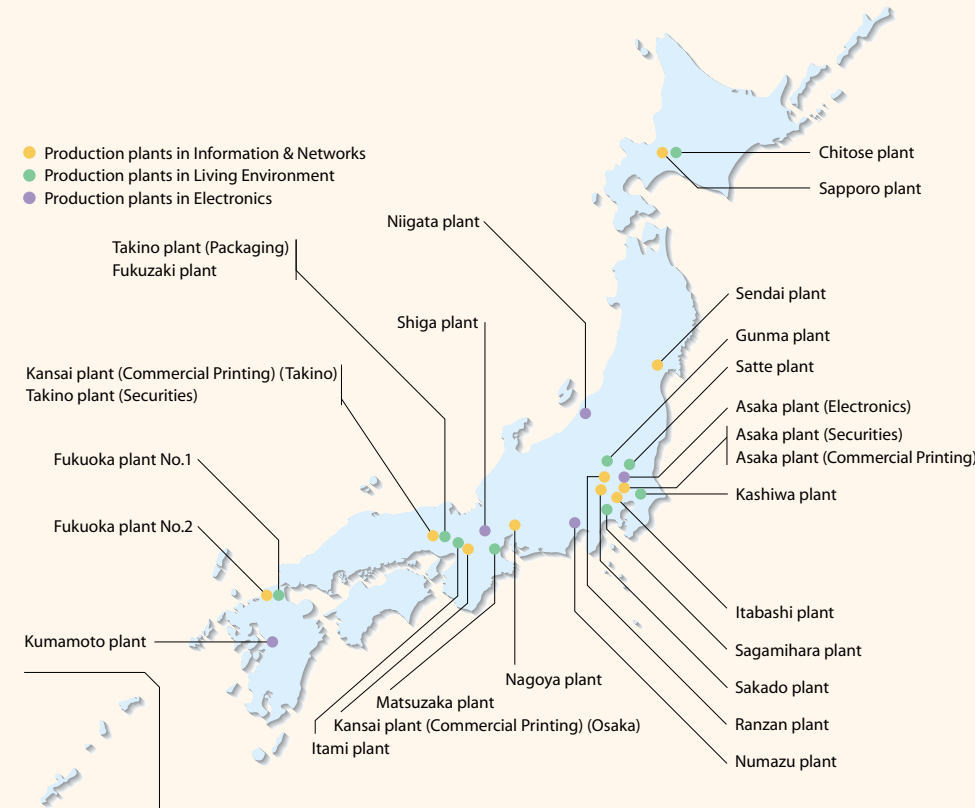
Corporate Profile and Scope of the Environmental Report

Corporate name	Toppan Printing Co., Ltd.
Head office	1 Kanda Izumi-cho, Chiyoda-ku, Tokyo 101-0024 Japan Phone +81-3-3835-5111
Established	January 17, 1900
President & CEO	Naoki Adachi
Number of employees (Nonconsolidated)	12,748 (as of the end of March, 2002)
(Consolidated)	31,610 (as of the end of March, 2002)
Capital (Nonconsolidated)	¥104.9 billion (as of the end of March, 2002)

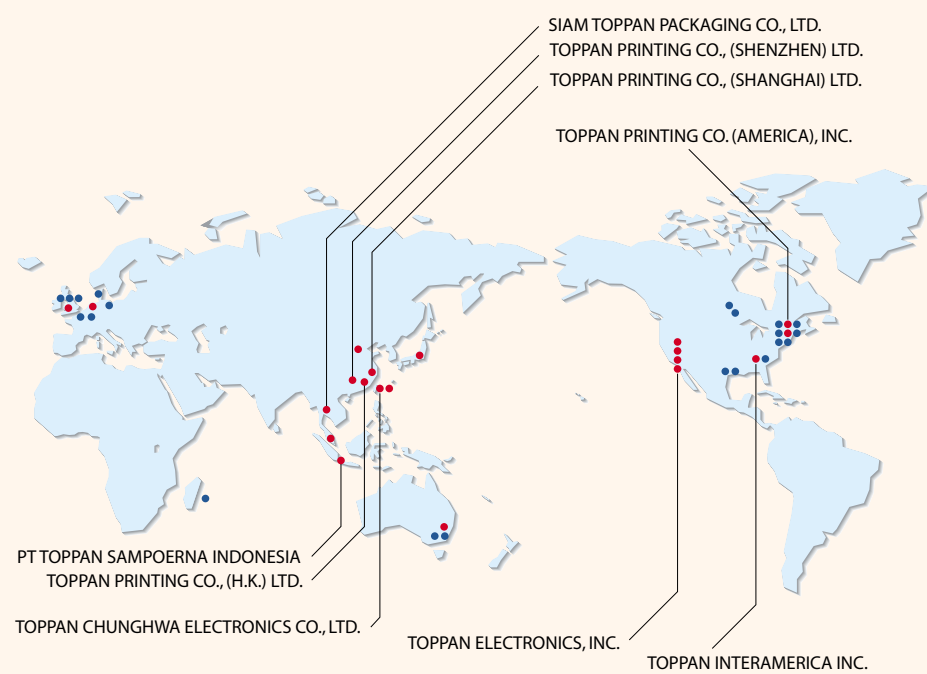


*Amounts shown were rounded off, discarding figures below the ¥100 million mark.
*Consolidated accounting reflects the results of all subsidiaries and affiliates, with consolidated subsidiaries numbering 113 and companies subject to the Equity Law numbering 21.

Locations of production plants (Toppan Printing Co., Ltd.)



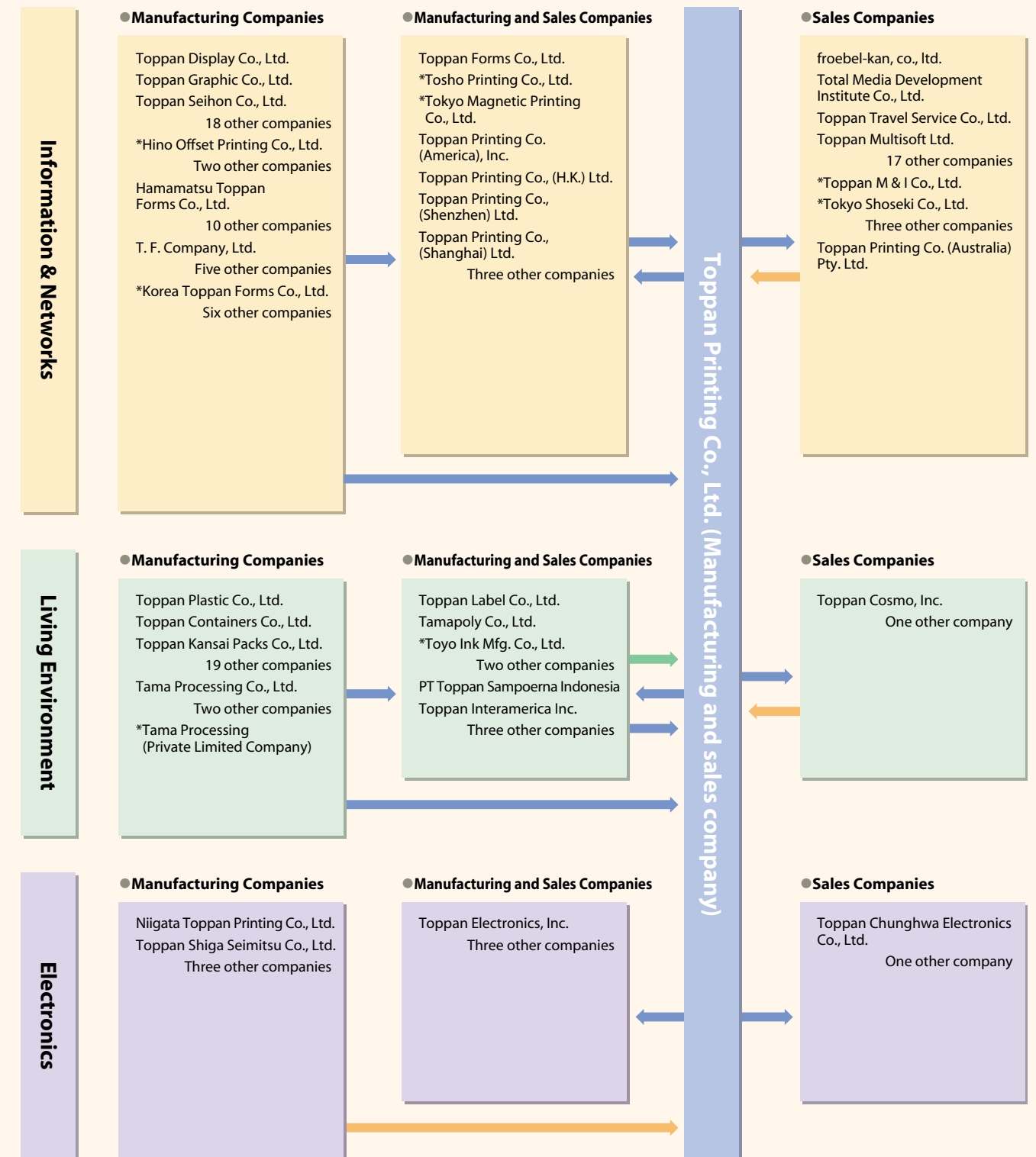
Overseas production plants (plants of locally incorporated companies)



For contact with a specific operational site, please visit the Corporate Profile of our website at <http://www.toppan.co.jp/>

● Toppan's locally incorporated company, representative office, or sales office
● Business partner with technical tie-up

Scope of Toppan Group Companies in the Environmental Report 2002



*From this consolidated fiscal year, the company's environmental accounting is classified into three categories according to Toppan's principal fields of activities (until the last fiscal year, just two were used). Though our business operations activities should in principle be divided into five fields of activities, only three main categories are presently adopted for the consolidated environmental accounting. This decision was made in view of the actual size of the sales.
*Of Toppan's subsidiaries, Toppan Forms Co., Ltd. is listed on the First Section of the Tokyo Stock Exchange.
*The scope of the environmental performance data and environmental accounting takes into consideration the importance each subsidiary in terms of environmental conservation.

Note: No symbol: Subsidiary 113 companies
*(asterisk): Affiliate 21 companies

→ Products
→ Raw materials
→ Service

Summary of Independent Review and Questionnaire Results

The following is an independent review of this *Environmental Report*, conducted by the independent examiner, Asahi & Co. Included are summarized results of a questionnaire utilized in the preparation of the *Environmental Report*.

Outline of Review Conducted by Asahi & Co.

To ensure the credibility of environmental performance indicators and environmental accounting indicators, Toppan Printing Co., Ltd. has undergone an independent review by Asahi & Co. on the *Environmental Report* since the fiscal 2001 version.

Toppan believes that a third-party review of the disclosed indicators in the *Environmental Report* is important for Toppan's activities to be properly understood.

Although the results of the independent review are presented in the following pages, some supplemental comments and remarks have been made in the course of the review. This information is abstracted and summarized as follows:

Improved points, compared to last fiscal year:

1. The range of items has been unified for the *Environmental Report*, environmental performance data, and environmental accounting. In addition, information on environmental performance and environmental accounting of nine overseas operational sites have been added to the calculations since fiscal 2001.
2. Based on the achievements gained in the environmental accounting of the last three fiscal years, we have revised Toppan's Guidelines for Calculation of Environmental Accounting Cost and Effect. As for composite costs, the company redefined the environmental conservation ratio of each item accordingly. In the internal auditing, all environmental conservation facilities at each operational site have been thoroughly checked and confirmed, which led to a more accurate consolidation of the environmental accounting.
3. For the unachieved targets in fiscal 2001, the specific causes and countermeasures to be taken for the subsequent year are disclosed.

Items that require consideration:

1. Data and information on the environmental activities of overseas operational sites, newly added from fiscal 2001, are included as a whole group. It is difficult to grasp the specific activities of each site functioning outside Japan.
2. With regard to the environmental performance of Toppan's overseas operational sites, which represent a small percentage of the entire Group, it is recommended that detailed explanations on specific methods of handling the data of overseas operational sites (such as method of data conversion, method of

obtaining data, etc.) be given in the *Environmental Report*. It is also necessary to confirm the content of the reporting of environmental accounting through an internal audit.

3. From the perspective of environmental management, it is recommended that integrated indicators be devised to correlate the environmental conservation costs with those effects (quantitative effect and economic effect) and that the environmental performance indicators and environmental accounting be utilized internally, including the supply of segmented information, evaluation for each specific measure, and so forth.

Results of Questionnaire

Toppan includes a questionnaire at the end of each copy of the *Environmental Report* to promote bilateral communication with readers. Starting from the last fiscal year, the company has conducted a survey on the content of the *Environmental Report* as part of the environmental education session held for new Toppan employees. In view of the fact that their responses and opinions turned out to be very close to those of general consumers, management has decided to continue adopting this survey for the evaluation of the *Environmental Report* this year.

As a result of the questionnaire sent from readers of the report and the questionnaire by our new recruits, 69.7 percent of the respondents chose "Easy to understand," as compared to 28.1 percent expressing "Average" for the descriptions of the *Report*. As for the content of the *Report*, 80.0 percent replied "Sufficient," while 19.6 percent selected "Average." According to the survey, the most three impressive items are, in

Particularly impressive subjects in the *Environmental Report 2001*

Eco-creativity Activities	147
Eco-protection Activities	113
Toppan's Businesses and Environmental Impact	109
Toppan Group's Commitment to the Environment	82

*Multiple Answers admitted

order, "Eco-creativity Activities," "Eco-protection Activities," and "Toppan's Businesses and Environmental Impact."

In addition, the following is a summary of representative opinions regarding points to be improved:

- Easily understandable explanations should be given for the activities conducted at each production plant.
- The efforts and communication activities conducted by overseas plants should be explained in more detail.
- Although what is going on and what has been done are understandable, the remaining items and the tasks to be tackled should also be clarified.
- For recycling, more details should also be given with regard to its system and specific operations, though the general idea is understandable.
- The report is too voluminous; it takes a lot of time to read the whole thing.
- Preparation of separate reports, designed for children or students, can be envisaged.
- A means of inquiry should be provided at Toppan's website.

Toppan plans to take into consideration the above remarks and endeavor to continually improve the *Environmental Report* and its environmental communication.

Editor's notes

In this *Environmental Report 2002*—our fifth report—we organized the material with one overriding principle in mind: to make it easy to read. We did it on the basis of the configuration and descriptions adopted in the production of last year's *Environmental Report*. We tried to avoid using technical terms as far as possible, and to employ more figures and graphs than we did last year. In response to one view that the reporting of last year's activities to be difficult to understand, we added pages entitled "Review of Environmental Activities of Fiscal 2001" for readers to recognize the relationships between the achievements and the evaluation/review of the targets. Because we still present a large volume of information, however, we'd like to work out separate booklets or pamphlets with simpler content.

To enhance the reliability of the *Environmental Report*, the present report was subjected to a third-party review, conducted again by Asahi and Co. The review procedures required more time than last year due to expansion of the scope of review of the documents. It was demonstrated that the consolidation of data and information could be further refined. We intend to review and continue to improve the data collection/calculation system next year.

We believe that "environmental communication" will become an absolutely key concept for our society. We are committed to publishing increasingly easy-to-read and reader-friendly *Environmental Reports* as tools for promoting the communication activities of the "Information Communication Industry."

Independent Review of the *Environmental Report*

Asahi & Co

Independent Review Report on the "Environmental Report 2002"

To the Board of Directors of Toppan Printing CO., LTD.

1. Purpose and Scope of our Review

We have reviewed the "Environmental Report 2002" (the "Environmental Report") of Toppan Printing CO., LTD. (the "Company") for the year ended March 31, 2002. The review consisted of performing certain procedures as described below in relation to the collection, compilation and calculation of the information included in the Environmental Report. As this is the second year of our review, any indicators for years prior to the year ended March 31, 2001 were not subject to these procedures.

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

2. Procedures Performed

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

- 1) Obtained the environmental information supporting the environmental performance indicators and the environmental accounting indicators for the purpose of understanding the processes and the procedures of the Company for collecting the data information used to compile the Environmental Report.
- 2) With respect to the environmental performance indicators and the environmental accounting indicators in the Environmental Report, tested quantitative accuracy of the indicators on a sample basis and compared them on a sample basis with the supporting data compiled from the information collected by the Company.

3. Results of the Procedures Performed

As a result of the procedures performed, we are not aware of any material modifications that should be made to the environmental performance indicators, or the environmental accounting indicators in the Environmental Report in order for them to comply with the Company's policies and procedures for gathering and reporting such information.

Tokyo, Japan
August 30, 2002



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1, Kanda Izumi-cho, Chiyoda-ku, Tokyo 101-0024 Japan



This paper was printed on treefree paper Take Bulky GA comprising 100-percent bamboo pulp, and with waterless printing aromatic-free soy ink AqualessEcoo New Soy (Toyo Ink Mfg. Co., Ltd.).