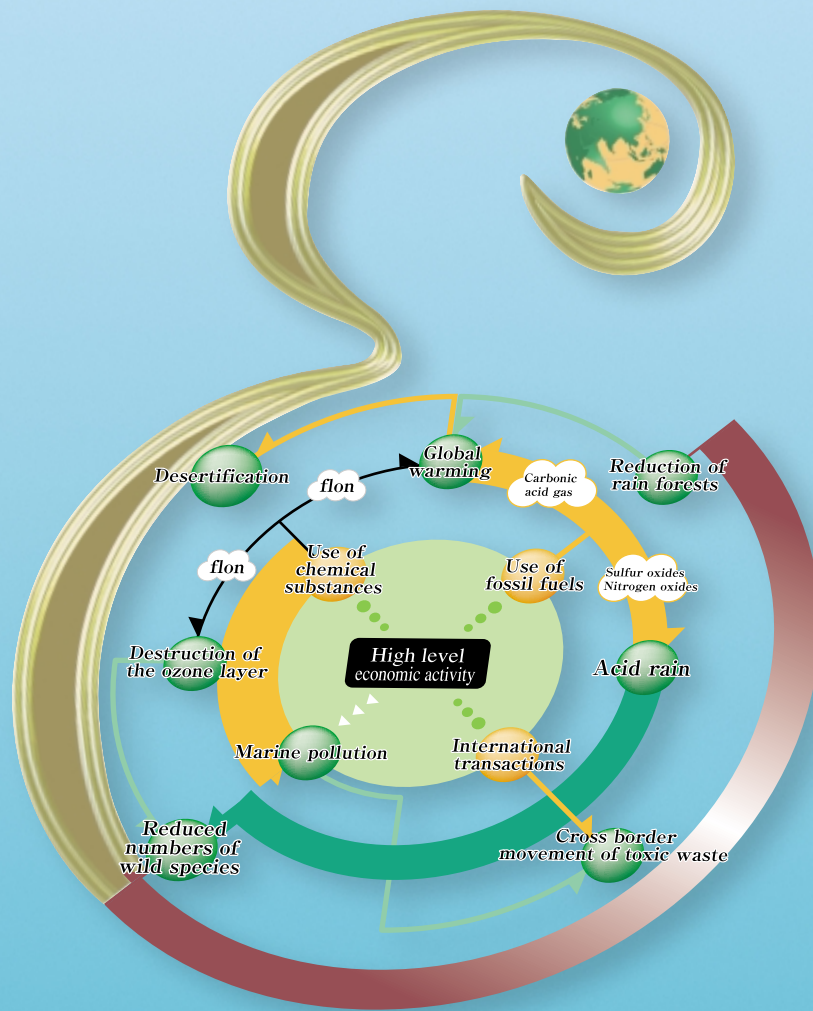


TOPPAN

ENVIRONMENTAL REPORT 2003

Toppan Group's Environmental Conservation Activities



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Editorial Policy

Toppan Printing Co., Ltd. uses its Environmental Report as a tool to convey two types of important information to stakeholders: the company's environmental efforts, and the actual environmental burden that the company's business activities impose.

In keeping with this purpose, Toppan has closely abided by three editorial guidelines in producing the Environmental Report for 2003.

1. The information in the report should be easy to compare with environmental information from other sources

The company referred to the guidelines below to facilitate comparisons by business categories and business operators:

- *Environmental Reporting Guidelines (fiscal year 2000 version)* of Ministry of the Environment
- *Environmental Performance Indicators for Businesses (fiscal 2002 version)* of Ministry of the Environment
- *Environmental Accounting Guidelines (2002 version)* of Ministry of the Environment
- *Sustainability Reporting Guidelines 2002* of GRI (Global Reporting Initiative)

Environmental Report 2003

■ Period covered

April 1, 2002 to March 31, 2003

- Notes:
- Data on key items may include information acquired through August 2003 as well as future projections.
 - Some data previously reported in the *Environmental Report 2002* may be corrected or modified in the current report due to revised methods for calculation, or for other reasons.

■ Publication details

Published December 2003
(Published annually since fiscal 1998)

■ Next scheduled publication

December 2004

2. The report must be reliable

The *Environmental Reports* have been subjected to third-party examinations and independent audits since fiscal 2001.

3. The report should be easy to understand

In setting the editorial policy and pinpointing prospective readers, Toppan referred to a set of reporting guidelines issued by the Ministry of Economy, Trade and Industry in 2001 (*Environmental Reporting Guidelines 2001—With Focus on Stakeholders*).

The framework and layout adopted in the *Environmental Report 2002* have been substantially revised to improve the readability of this report for 2003. The company has also added new feature articles and laid the report out in a column format to enhance understandability visually.

Toppan's *Environmental Report* is issued annually, in Japanese and English as a printed matter, in accordance with the one-year period adopted under the Environmental Management System. The report is also released on the internet, where it is regularly updated to provide the latest data on environmental performance by site, Toppan's progress towards ISO 14001 certification, and more.

■ Scope of coverage

Please refer to the Scope of Toppan Group Companies in the *Environmental Report 2003* (See P.3).

■ Department in charge of publication

Please direct inquiries on the contents of this report to:

Ecology Center

Toppan Printing Co., Ltd. (Tokyo, Japan)

Phone: +81-3-3835-5549

Fax: +81-3-3835-0847

E-mail: eco@toppan.co.jp

About the cover

The cover design incorporates the same environmental motifs condensed into Toppan's Environmental Logo. The background colors have varied from year to year: pale brown representing the earth in the fiscal 2000 report, green for the trees and grass in fiscal 2001, and pink for flowers and fruits in fiscal 2002. To highlight our theme of 'water' this year, the cover depicts a replenishing cycle of water that circulates back to the ocean.



Message from the President



A handwritten signature in black ink that reads "N. Adachi" with a horizontal line underneath.

Naoki Adachi
President & CEO

As both a corporate citizen and member of society, Toppan Printing Co., Ltd. advocates a recycling-oriented society. From this year, the company introduced the Environmental Efficiency Index, a tool by which to measure our business activities as we work to align the dual goals of business expansion and environmental preservation. The company also continues to establish mid-term targets to minimize environmental burden and pollution while maximizing economic value. These efforts, we believe, represent environmental management in its truest sense. In the years to come, nothing will undermine our commitment to achieve these targets.

To heighten environmental awareness throughout the whole of the Toppan Group, this report has been expanded to cover group-wide environmental activities since last year.

Our fundamental principle of environmental preservation was first expressed in Toppan's *Declaration on the Global Environment* in 1992. Later, the principal took shape as *Toppan Vision 21* in 2000. Under this set of definitive environmental policies, Toppan implements three categories of environmental activities: Eco-protection Activities to reduce or eliminate the environmental burden of business activities, Eco-creativity Activities to promote our environmental business through providing environmentally-friendly products and services, and Environmental Communication Activities to share eco-awareness with other Toppan Group companies and people outside the Group.

The principal targets of our Eco-protection Activities are to save energy and reduce both wastes and the emissions of chemical substances. In order to pinpoint the environmental burden of our business activities, we disclose all environment performance data on our three business fields—Information & Networks, Living Environment, and Electronics. When setting our targets for coming years, we use these data to more effectively reduce the environmental burden of our production processes.

Toppan's Eco-creativity Activities are undertaken to develop more environmentally-friendly features in Toppan's eco-brand products, as well as to provide higher-quality products and services in general. Through these activities, we hope that customers will understand our policies toward environmental issues.

Among Toppan's various Environmental Communication Activities, I am proud to mention *ecollable 2002, Environmental Communication Exhibition*, an exhibition organized in November 2002 at the PLAZA21 showroom of the Toppan Koishikawa Building in collaboration with the Nikkei Business Publications Eco Management Forum & Nikkei Ecology and Global Environment Information Centre, with support from Ministry of the Environment. Companies, local governments, and citizen organizations visited the exhibition to discuss the environment and reinforce their recognition of the ongoing need to take cooperative action for environmental causes.

For Toppan itself, the exhibition represented an opportunity to hear from a wide sampling of people involved in environmental issues from across the country. Our experience at the exhibition deepened our understanding of the importance of our environmental mission and responsibilities to society.

We publish this report in the hopes of informing both customers and the greater public of the intensive efforts of the Toppan Group to conserve the environment. In the future we look forward to receiving your frank opinions and comments, as well as kind guidance and support.

September 2003

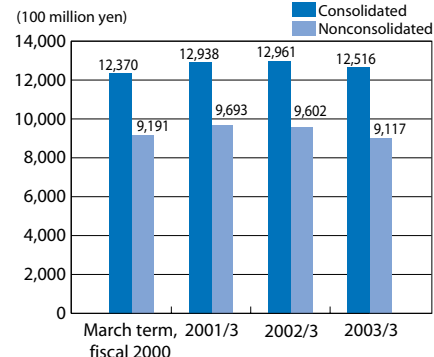
Corporate Profile & Scope of the Environmental Report

| | |
|----------------------------|---|
| 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) | 12,053 (end of March, 2003) |
| (Consolidated) | 33,292 (end of March, 2003) |
| Capital | |
| (Nonconsolidated) | 104.9 billion yen (end of March, 2003) |

Consolidated Result
The business environment has been quite severe in the printing industry. Though net income has increased and some progress has been achieved in creating new businesses and reducing costs, Toppan's consolidated sales, operating profit, and ordinary profit all fell below the fiscal 2002 levels.

Non-consolidated Result
In spite of ongoing sluggishness in the economic climate, Toppan sought to bring in higher revenues by reinforcing its business structure and promoting businesses that utilize its high IT and marketing abilities. Nevertheless, non-consolidated sales, operating profit, and ordinary profit fell below the previous year's figures.

■ Sales

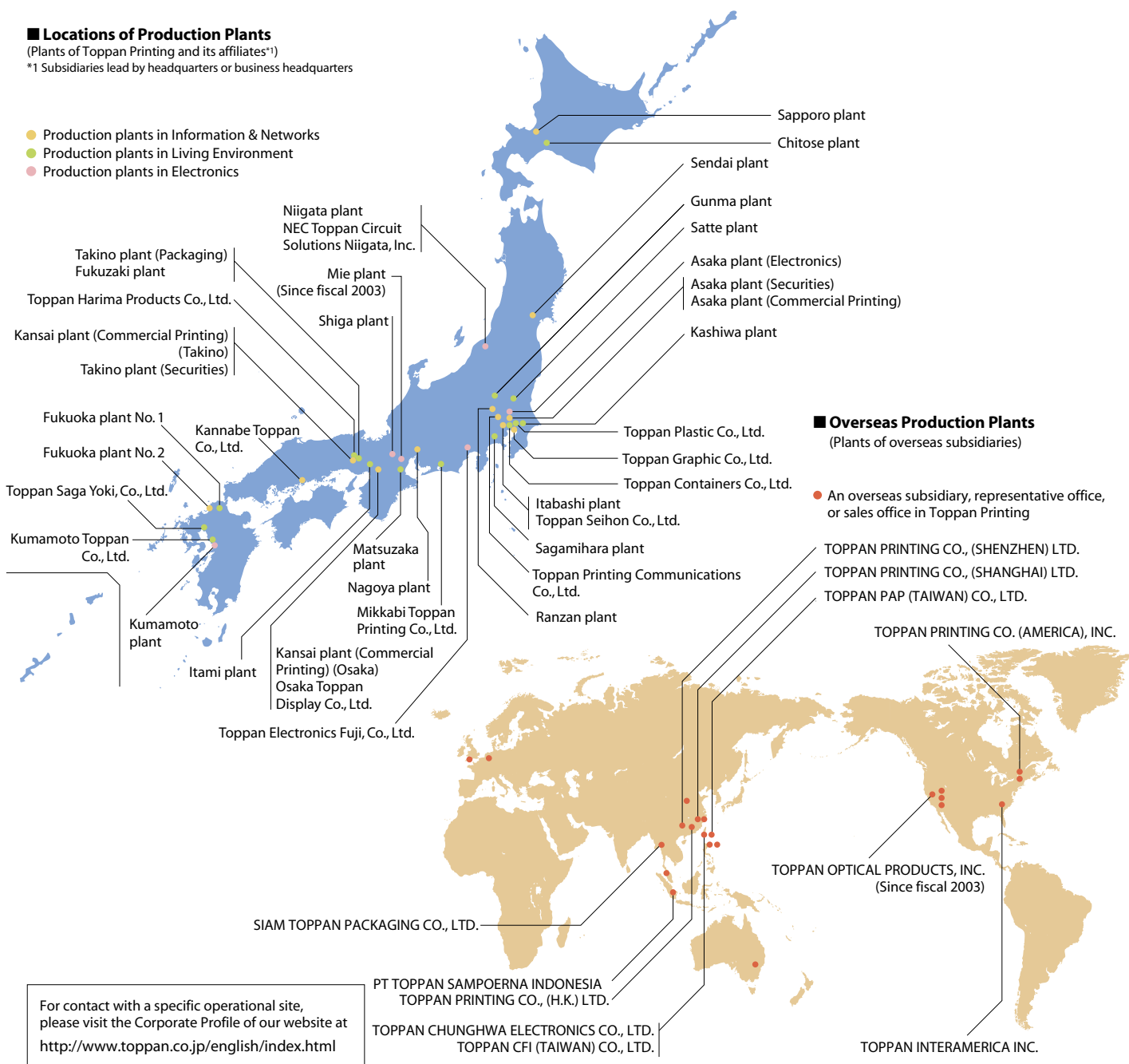


■ Locations of Production Plants

(Plants of Toppan Printing and its affiliates*1)

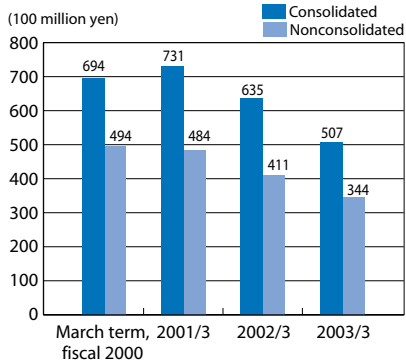
*1 Subsidiaries lead by headquarters or business headquarters

- Production plants in Information & Networks
- Production plants in Living Environment
- Production plants in Electronics

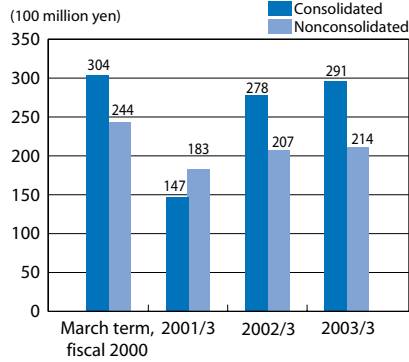


For contact with a specific operational site, please visit the Corporate Profile of our website at <http://www.toppan.co.jp/english/index.html>

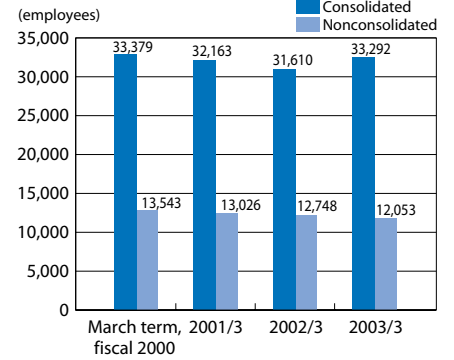
■ Ordinary profits



■ Net income

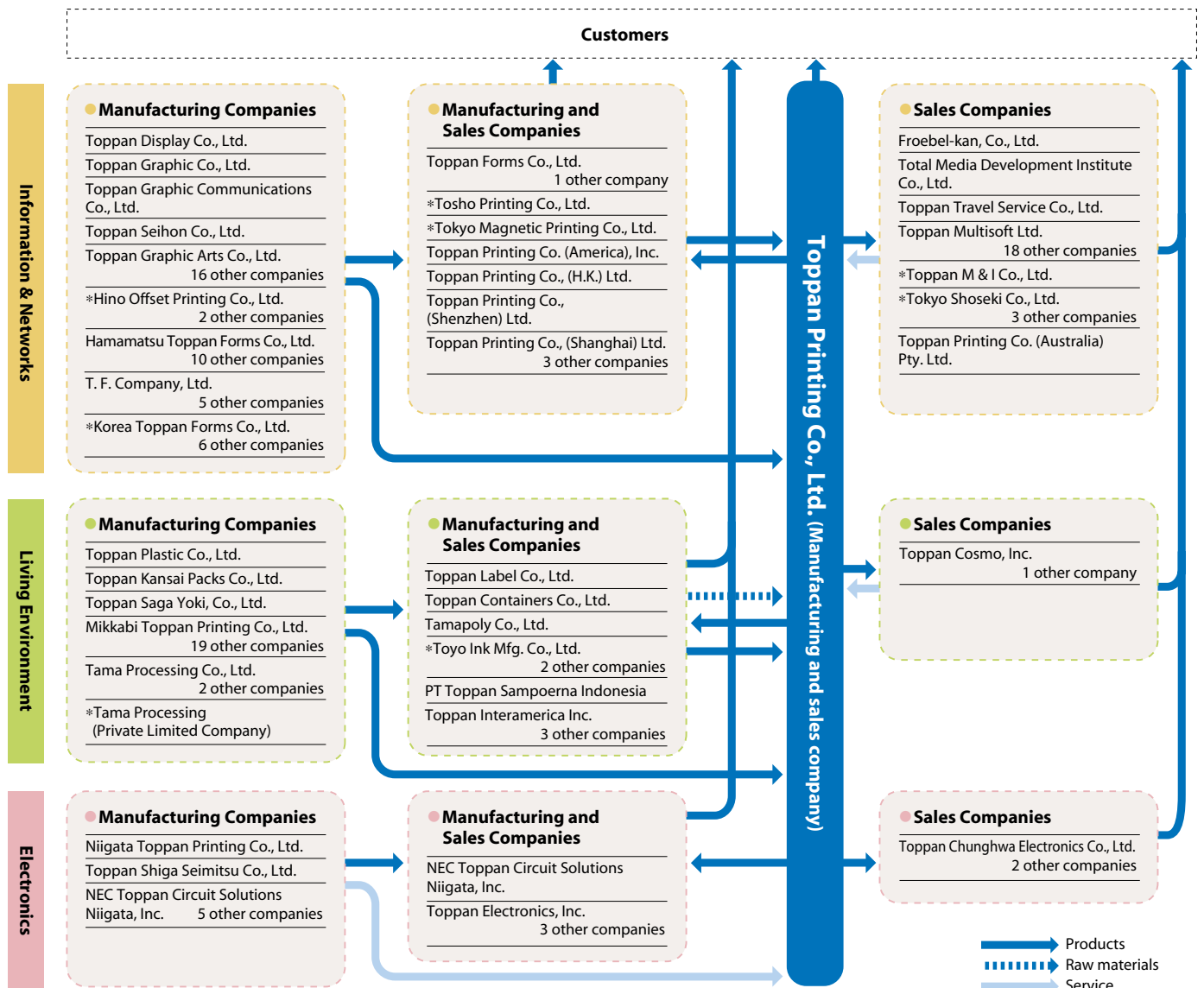


■ Number of employees



Notes: • Amounts shown were rounded off, discarding figures below the 100 million yen mark.
 • Consolidated accounting reflects the results of all subsidiaries and affiliates, with consolidated subsidiaries numbering 122 and companies subject to the Equity Law numbering 21.

■ Scope of Toppan Group Companies in the Environmental Report 2003



Notes: • No symbol: Subsidiary—122 companies; *(asterisk): Affiliate—21 companies (March 31, 2003)
 • While Toppan's business operations activities are actually divided into five fields, only three main categories are presently adopted for consolidated environmental accounting. This decision was made in view of the actual scale of sales.
 • Among 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 is determined based upon the importance of each subsidiary in terms of environmental conservation.

Management Policy & Environmental Activities of the Toppan Group

Toppan's future role is that of a model global citizen and printing company that focuses closely on fulfilling its responsibilities of sorting information and conveying culture. It places top priority on the environment in its business management and promotes its environmental activities in all facets of its business.

Toppan—Information Communication Industry Roles as an "information communication industry"

Since its foundation in 1900, Toppan Printing Co., Ltd. has established high grades of technology and knowledge in plate-making and printing, with ever deepening ties to information, lifestyle, and culture. Having crossed over into the 21st century, the company is now applying its most sophisticated knowledge and technology in printing to new uses 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.

TOPPAN VISION 21

The centennial anniversary of Toppan in 2000 was proclaimed as the *Second Renaissance* of the company. To mark the event, the company announced its *Toppan Vision 21*, a statement of corporate concepts and business fields. Under the policy enunciated in *Toppan Vision 21*, employees throughout the company shall work to establish new technologies and business with a shared sense of purpose, to promote activities

related to safety and the environment, and to comply strictly with company ethics as responsible members of society.

These policies are clearly described in the *Corporate Creed*. The company is continuously taking appropriate measures to fulfill its social responsibility. This is a stance shared by all Toppan employees as they go about their daily business.

Declaration on the Global Environment

In 1991, Toppan established the Ecology Center and assigned it the role of controlling environmental activities. The following April, the company promulgated *Toppan's*

■ Toppan's Management Policy

TOPPAN VISION 21

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 shall continue to play a central role in supporting information and culture as a leading information communication company.

■ Toppan's Business Fields

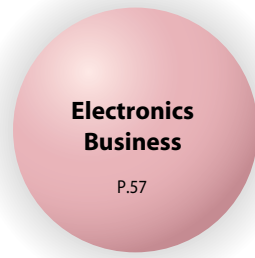
Internet

Development and sales of content distribution network

Wireless LAN connection services

In-house Entrepreneurial Ventures

Establishment of character production, counseling and mental health services companies



Electronics

Design and manufacturing electronic components and devices; manufacturing LSI (large-scale integrated circuit) package-related products, including photomasks and lead frames, shadow masks for CRTs, color filters for LCDs (Liquid Crystal Displays), and printed wiring boards

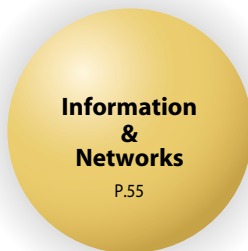
Declaration on the Global Environment, a comprehensive environmental philosophy appended with explanations of methods to be used to translate that philosophy into actions. Since that time, the declaration has guided the efforts of all employees as they work together to advance Toppan's environmental activities.

Toppan is now developing the information communication industry in five business fields newly specified in *Toppan Vision 21*. As Toppan undertakes its activities in all these business fields, its efforts are based on *Toppan's Declaration on the Global Environment* as a comprehensive environmen-

tal policy. In September 2000, this Declaration was actually modified in several comprehensive efforts to revamp the management policy. More specifically, Toppan has regularly reviewed the Environmental Action Plan, refined the company's Environmental Targets as an index of environmental management, and adopted the targets as commitments for the continuous improvement of the company's activities.

Corporate Creed

1. To build our customers' trust through sincerity, enthusiasm, and creativity in all our corporate endeavors.
2. To strive for total innovation from a global perspective by conducting marketing and technological development rich in originality.
3. To conduct fair and open business operations while acknowledging our social responsibilities and aspiring for harmony with our global environment.
4. To create a positive working environment by maximizing our individual talents and strengths as a team.
5. To enhance our corporate standing and promote the continual development of the Toppan group through the exploration of new possibilities.



Securities and Cards

Producing various types of securities (share-certificates, bonds, gift vouchers, etc.) and cards (credit cards, prepaid cards, etc.)

Commercial Printing

Producing various types of commercial printed materials such as advertising tools (catalogs, pamphlets, flyers, posters, calendars, etc.)

Publications Printing

Producing a variety of publications, including magazines, books, encyclopedias, dictionaries, and art books



Packaging

Producing packaging materials, including cardboards, paper ware, plastic films, plastic containers, different types of cups, and paper containers for liquids

Industrial Materials

Producing industrial materials, including various sheets for the interior decoration of houses and shops, wallpapers, woodwork products, building fittings, and flame-retardant materials for interiors and exteriors



Environmental conservation policies in all business fields
Declaration on the Global Environment

Environmental Targets under the *Declaration on the Global Environment*

Toppan specifies a concrete action policy on the basis of its Environmental Action Plan to achieve the targets of the *Declaration on the Global Environment*. The company has also reviewed and established Medium- and Long-term Environmental Targets, and Environmental Targets for the current every fiscal year.

Development of the *Declaration on the Global Environment* Environmental Action Plan and Environmental Targets

Toppan specifies a concrete action policy for all business fields on the basis of its Environmental Action Plan to achieve the targets of the *Declaration on the Global Environment*.

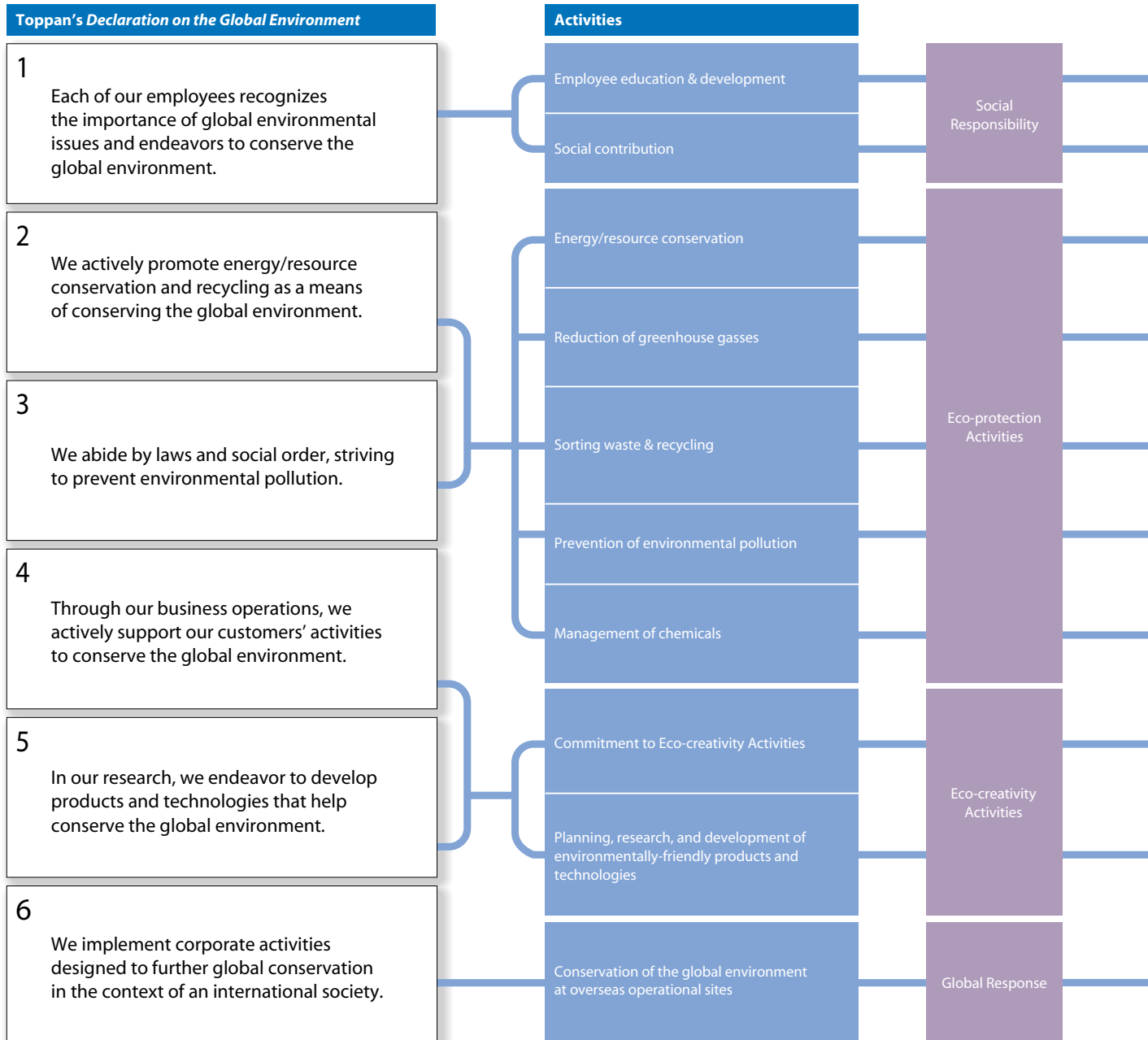
The Environmental Action Plan specifies Medium- and Long-term Environmental

Targets and Environmental Targets for the current fiscal year. The company expands its environmental activities through its business activities that comply with *Declaration on the Global Environment* Toppan.

The company considers one fiscal year as one cycle for its environmental activities and reviews its environmental activities within that time frame. Once records on the activities for the year are collected at the Ecology Center, the Chief Environmen-

tal Manager evaluates the results, reviews the Medium- and Long- term Environmental Targets, and sets up specific environmental targets for the following year. When social trends to do with the environment undergo significant changes, the company may revise the *Declaration on the Global Environment* in the interests of continual improvement.

Toppan's Environmental Action Plan



*Partially applicable to overseas production plants. Not applicable to independent subsidiaries.



Environmental targets for fiscal 2003

Based upon the achievements for fiscal 2002, Toppan set 36 new environmental targets—16 for the medium and long terms, and 20 to be achieved within fiscal 2003. The following table condenses the main objectives in setting the targets for fiscal 2003:

- Create Medium- and Long-term Environmental Targets to reduce toluene and dichloromethane emissions into the air

- Revise the definition of unit energy consumption
- Revise Medium- and Long-term Environmental Targets for Eco-creativity Activities
- Set Sales targets for environmental businesses
- Set Medium- and Long-term Environmental Targets for environmental management systems overseas

| Medium- and Long-term Environmental Targets | Environmental targets for fiscal 2003 |
|---|--|
| <ul style="list-style-type: none"> • Enhanced employee awareness regarding environmental issues and the promotion of corporate-wide activities to preserve the environment | <ul style="list-style-type: none"> • Expanded e-learning system (members: 5,000 employees) |
| <ul style="list-style-type: none"> • Voluntary participation in social activities and active contribution to the cause of environmental conservation | <ul style="list-style-type: none"> • Funding of forestation activities and participation in forest protection fund (continued) |
| <ul style="list-style-type: none"> • 30% reduction (compared to fiscal 2000) of unit energy consumption by fiscal 2010, per unit of internal production | <ul style="list-style-type: none"> • Sales of unit energy consumption: maintain fiscal 2000 levels * Review of Medium- and Long-term Environmental Targets by December 2003 (internal amount → sales amount) |
| <ul style="list-style-type: none"> • 7% reduction (compared to fiscal 2000) of CO₂ emission by fiscal 2010 | <ul style="list-style-type: none"> • CO₂ emissions: Maintenance of fiscal 2000 levels → measures by energy-saving activities and fuel replacement * Review of Medium- and Long-term Environmental Targets by December 2003 (absolute figure → unit) |
| <ul style="list-style-type: none"> • 90% reduction (compared to fiscal 2000) of final waste landfill disposal by fiscal 2010 | <ul style="list-style-type: none"> • Final waste landfill disposal: 10% reduction (compared to fiscal 2002) |
| <ul style="list-style-type: none"> • Realization of zero-emissions target in all domestic operational sites by fiscal 2010 through the effective use of industrial waste generated in production | <ul style="list-style-type: none"> • Realization of zero-emission sites: 20 sites |
| <ul style="list-style-type: none"> • Compliance with in-house control standards that embody the legal regulations | <ul style="list-style-type: none"> • Compliance and review of in-house control standards in all operational sites → checked by in-house environmental audit |
| <ul style="list-style-type: none"> • Appropriate communication with stakeholders | <ul style="list-style-type: none"> • Expanded site report publishing plants: 9 plants |
| <ul style="list-style-type: none"> • 90% reduction (compared to fiscal 2001) of toluene emissions by fiscal 2005 | <ul style="list-style-type: none"> • Emissions of toluene into the air: 40% reduction (compared to fiscal 2002) |
| <ul style="list-style-type: none"> • Realize zero-emission of dichloromethane by the end of fiscal 2005 | <ul style="list-style-type: none"> • Emissions of dichloromethane into the air: 10% reduction (compared to fiscal 2002) |
| <ul style="list-style-type: none"> • Expanded proposals on environmentally-friendly printing technologies, products, and services | <ul style="list-style-type: none"> • Sales proceeds from Environmental Business: 53.5 billion yen (10% increase compared to fiscal 2002) • Sales proceeds from Environmental-related Activities: 115.0 billion yen (10% increase compared to fiscal 2002) |
| <ul style="list-style-type: none"> • Expanded environmental communication activities | <ul style="list-style-type: none"> • Environmental communication through participation in Eco Products 2003 • Deploy recycling plants for Cartocan (paper-based beverage containers) in plants located in Tokyo region |
| <ul style="list-style-type: none"> • Participation and operation of <i>the Green Standard guideline for the Printing Industry</i> | <ul style="list-style-type: none"> • Relevance ratio to Toppan's Green Procurement Standard: 5 point increase (compared to fiscal 2002) |
| <ul style="list-style-type: none"> • Development of environmentally-friendly products and disclosure environmental information | <ul style="list-style-type: none"> • Development of LCA evaluation of environmentally-friendly products in 3 business fields (Information & Networks, Living Environment, Electronics) • Registration of 3 more environmentally-friendly products (total: 60 products) |
| <ul style="list-style-type: none"> • Compliance with local regulations, international conventions, etc. | <ul style="list-style-type: none"> • In-house environmental audits: 3 plants in Asia and 2 plants in the United States • Compliance with local regulatory standards, monthly report on environment-related information |
| <ul style="list-style-type: none"> • Establishment of environment management systems in overseas production plants | <ul style="list-style-type: none"> • Introduction and operation of environmental management systems at 11 production plants overseas |

Toppan's Environmental Targets & Evaluation of Achievements in Fiscal 2002

Toppan set a total of 18 environmental targets for fiscal 2002 and undertook various programs and activities to attain them. This chapter describes and evaluates the company's achievements and activities for the year. From fiscal 2003, Toppan has also incorporated the Environmental Efficiency Index to achieve environmental management.

Achievements in fiscal 2002

Evaluation of Toppan's progress in achieving its environmental targets

Toppan laid out a total of 18 environmental targets for fiscal 2002 (one of the targets was added after reviewing in December) and undertook various programs and activities to attain them. As of the end of the year, 13 of the targets were reached and five were missed.

For the second year running, the company failed to achieve two Environmental Targets set to curb CO₂ emissions, one directly and one through reductions in

energy consumption. The major obstacles to CO₂ reduction were the construction and extension of production plants, and the introduction of new equipment and environmental conservation systems for new businesses. In the current fiscal year Toppan will be establishing a special group-wide division to speed up the measures taken to achieve these targets.

The company's expanded zero-emission activities significantly reduced the amount of final waste landfill disposal. Toluene emissions were reduced by around 20% from the fiscal 2001 level, but this reduc-

tion fell short of the company's target. The company still faces difficulty in introducing toluene alternatives in the production of some of its products.

In spite of the severe economic conditions for the year, new registrations of environmentally-friendly products under Toppan's Eco-creativity Activities generated approximately 48.6 billion yen in sales, marking an almost 9% increase compared to fiscal 2001. Though several targets were not achieved, the company was therefore deemed to have made steady progress for the year. In the area of Environmental com-

Progress Check Sheet on Environmental Targets for Fiscal 2002

| Toppan's Declaration on the Global Environment | Medium- and Long-term Environmental Targets | Environmental targets for fiscal 2002 |
|--|---|--|
| Declaration 1 Social Responsibility | ● Enhancement of employee awareness and knowledge of environmental issues and the promotion of corporate-wide activities to preserve the environment | ● Restructuring the system for environmental education |
| | ● Voluntary participation in social activities and active contributions to the cause of environmental conservation | ● Participation in forestation activities |
| Declarations 2 & 3 Eco-protection Activity | ● 30% reduction (compared to fiscal 2000) of unit energy consumption by fiscal 2010, proportioned to the financial amount of plant production | ● Unit energy consumption: Maintaining fiscal 2000 levels |
| | ● 7% reduction (compared to fiscal 2000) of CO ₂ emission by fiscal 2010 | ● CO ₂ emissions: Maintenance of fiscal 2000 levels |
| | ● 90% reduction (compared to fiscal 2000) of final waste landfill disposal by fiscal 2010 | ● Final waste landfill disposal: 10% reduction compared to fiscal 2001 |
| | ● Realization of 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 |
| | ● Compliance with in-house control standards, exceeding the legal regulations | ● Review and establishment of in-house control standards |
| | ● Appropriate management of chemical substances and the reduction of toxic chemical substances | ● Emissions of toluene: 30% reduction compared to fiscal 2001 ● Emissions of dichloromethane: 10% reduction compared to fiscal 2001 |
| Declarations 4 & 5 Eco-creativity Activity | ● Active proposal for proprietary technologies, products, and services to our customers | ● Sales proceeds from environmental business: 12.1% increase compared to fiscal 2001 |
| | ● Active cooperation to serve the needs of our customers and society | ● Disclosure of environmental-related information |
| | ● Involvement in businesses that can contribute to environmental conservation through Toppan's own environmental activities | ● Reinforcement of efforts for Environmental Support Business |
| | ● Planning and proposals for community-based recycling systems | ● Continued operation and promotion of a recycling system for printed materials |
| | ● Promotion of corporate activities that take into account 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: 1 case ● Increase of registered environmentally-friendly products |
| Declaration 6 Global Response | ● Compliance with local regulatory standards, international conventions, etc. | ● In-house environmental audits at overseas production plants: 5 plants in Asia |
| | ● Active promotion of local environmental conservation activities | ● Introduction of environmental management system at 9 overseas production plants |

Note: Partly applied to overseas production plant. Not applicable to independent subsidiaries.

munication, the participation in Eco-Products 2002 and the hosting of the Environmental Communication Exhibition 2002 were both successful.

Review from evaluation result and introduction of Environmental Efficiency Index

Toppan reviewed its Environmental Action Plan for fiscal 2003 based on the evaluation result of environmental targets (See P.6 and P.7). The company reviewed six Medium- and Long-term Environmental Targets and set another four. Activities to achieve those

targets will continue in full force.

Moreover, Toppan will bring in its new Environmental Efficiency Index to assess progress in the company's continuous development of environmental management. Examination results on environmental efficiency, including secular changes, will be reflected in environmental progress management. The company will implement a trial in fiscal 2003 and set up new environmental targets in fiscal 2004.

● Definition of Environmental Efficiency

$$\text{Environmental efficiency} = \frac{\text{Economic value}}{\text{Environmental burden}}$$

● Toppan's Orientation of Environmental Efficiency One of the means for assessing progress of environmental management

1. Guideline for setting targets to promote environmental activities
2. Factor for assessing progress of environmental activities by comparing secular change

● Toppan's Indexes

1. Improvement efficiency of environmental burden
2. Economic efficiency of environmental burden
3. Eco-business index
4. Logistics index

See P.39

Evaluation criteria S: Achievements significantly above target A: Target fully accomplished B: Tackled actively, but missed the target C: Insufficient effort

| Progress made and present status in fiscal 2002 | Evaluation | Page in report |
|---|------------|-----------------|
| ● Introduction of e-learning system to the environmental education system: 499 employees finished (99.8% course completion) | A | P.22 |
| ● Donation to the Global Citizen's Forest fund for tree planting activities: 1.305 million yen ● Contribution to the forestation joint company (continued) | A | P.53 |
| ● 5.1% increase compared to fiscal 2000 level (absolute energy consumption: 5.6% increase compared to fiscal 2000 level, 14.942 million GJ) | C | P.38–P.39 |
| ● 3.7% increase compared to fiscal 2000 level: 655,000 t-CO ₂ | C | P.38 |
| ● 16.7% reduction compared to fiscal 2001 level: 14,021 t | S | P.42–P.43 |
| ● Zero-emission accreditation sites: 17 sites *12 sites based on reviewed standards (recycling rate 95% → 98%) | A | P.43 |
| ● Confirmation by in-house environmental auditing for compliance with the in-house control standards at 50 operational sites | A | P.18 |
| ● 19.9% reduction compared to fiscal 2001 level: 5,343.2 t *Calculations based on the production plants that achieved 1.0 t or greater toluene per year | B | P.41 |
| ● 21.1% reduction compared to fiscal 2001 level: 25.6 t | A | P.41 |
| ● 8.9% increase compared to fiscal 2001 level: 48,576 million yen | B | P.28–P.34 |
| ● Organizing and hosting the Environmental Communication Exhibition 2002 ● Disclosure of information through participation in Eco-Products 2002 | S | P.10–P.13, P.51 |
| ● Continued investigation and research | B | P.32–P.33 |
| ● In-house deployment of the Cartocan recycling system | A | P.34 |
| ● Investigation of suitable products for Toppan's Green Procurement Standard | A | P.45 |
| ● Execution of LCA on clear deposition film | A | P.27 |
| ● New registration of environmentally-friendly products: 8 products (total 57 products) | S | P.26, P.28–P.29 |
| ● Execution of in-house environmental audits at overseas production plants: 5 plants in Asia | A | P.19 |
| ● ISO 14001 certification: 3 production plants | A | P.19 |



ecollable

Feature: Environmental Communication Exhibition New communication to forge links outside the company

Toppan holds practical environmental and community events for participants from companies, local governments, and citizen groups in order to provide hints on environmental issues and establish resource networks. The company also works toward the creation of a sustainable society by encouraging its members to communicate and collaborate with parties outside the company as it introduces its environmental business.

From November 11 to 29 in 2002, Toppan held the ecollable 2002 Environment Communication Exhibition at the PLAZA21 showroom of the Toppan Koishikawa Building (in collaboration with Nikkei Business Publications Eco Management Forum & Nikkei Ecology and Global Environment Information Centre, and sponsored by Ministry of the Environment). This was the second exhibition in the series following the Environmental Communication Exhibition 2000 held in the same plaza in autumn 2000.



A Japanese-language abstract of the seminars held at the first exhibition (Environmental Communication Exhibition 2000—ecollable) is available. Presenters: Lester Brown, Ryoichi Yamamoto, and others



- ① A Visual History of Society and the Environment—on the relationship between society and the environment
- ② New Society System—on methods to create a sustainable society
- ③ Exhibition of the information and publication fields—on the development of environmentally-friendly ink and bookbinding adhesive
- ④ Exhibition of environmentally-friendly products in the packaging field

ecollable

(What does it mean?)

Ecology

(a sustainable, ecologically sound society)



Collaboration

(through collaboration)



Able

(can be achieved)

A sustainable, ecologically sound society can be achieved through collaboration



⑤



⑥



⑦



⑧

- ⑤ Commemorative photograph with "Green Santa Claus," an ambassador of "environmental goodwill" from Denmark
- ⑥ Exhibition of approximately 300 environmental reports issued by Japanese companies
- ⑦ "ecollable city"—Toppan's vision of a Utopian city in complete harmony with its environment
- ⑧ The exhibition saw many visitors daily

Exhibition Contents

ecollable Zone as "Society and Environment"

- Visual History of Society and the Environment (a chronology)
- Advanced activities of companies, governments, and citizens

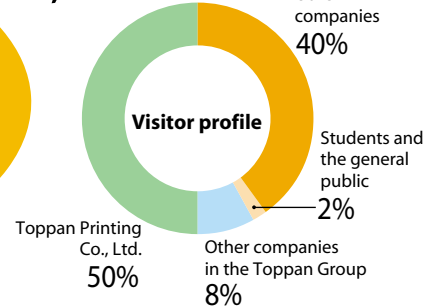
Business & Collaboration Zone Status of Environmental Activities

- Growing eco-material
- "New society system" to create a sustainable society
- "Forestation" to preserve an environmental asset
- Communication to promote environmental activities



Total Visitors

2,359



The exhibition was conceived as a showcase and forum for common environmental agenda that require the collaboration of companies, governments, and citizen groups.

Actual products were exhibited in the ecollable Zone (a zone with practical examples of environmental concepts) and the Business & Collaboration Zone (a zone with practical examples of environmental activities). As a supplementary activity, Toppan also held seminar workshops on the following themes:

- The Environmental Brand of companies,
- Eco-material,
- Environmental Report Analysis,
- Practical Examples from Environmentally Advanced countries, and other topics.

To energize the exhibition and lift spirits, the event featured Green Santa Claus, a jolly environmental conservationist who moonlights as an ambassador of environmental goodwill. Toppan will continue to organize presentations under the ecollable concept.

Comments from Visitors

- Toppan has a strong environmental awareness and powerful environmental technologies. I'm looking forward to Toppan's future expansions in environmental activities, especially in environmental support businesses. (Newspaper)
- I learned a great deal about the good works and environmental commitment of many companies. In the future I think they should make more of an effort to hold exhibitions like this for the public. (Local government)
- When it comes to environmental activities, the printing industry is far, far ahead of my industry. (Electronics manufacturer)
- Environmental communication is an important, near-future task for my company. My experience here will serve as a very good reference. (Ad agency)

A Word from the Coordinator

Yuko Yamamoto
(Environmental Solutions Team, Commercial Printing Division)



Visitors to the ecollable Exhibition offered many helpful comments, suggestions, and questions. I learned a great deal on every day of the event.

By lucky accident, Green Santa Claus and TV crews showed up at the event. This added entertainment value to our environmental communication event. We would like to extend our thanks for the cooperation and visits of the companies, associations, and general visitors for coming. All of us at Toppan will be taking up the ecollable concept in our future environmental activities.

Seminars at ecollable 2002

Introduction of three of five seminars

Future Visions and Strategies for Environmental Management in Northern Europe

An introduction to the activities of two environmentally progressive countries, Sweden and Denmark

The first of the seminars was entitled "Future Visions and Strategies for Environmental Management in Northern Europe—Environmental Education and Environmental communication." The purpose was to introduce concepts and activities to achieve a sustainable society in companies and local governments in Sweden and Denmark, two environmentally progressive countries. Sachiko Takami, the director of a nonprofit organization (NPO) known as The Natural Step*, gave a presentation on the concepts and activities undertaken by her organization to achieve a society capable of conserving the environment while sustaining steady economic development. The presentation also included detailed descriptions of advanced environmental strategies and the methods for adopting them in Japanese companies.

*The Natural Step is a globally active environmental education founded in 1989 by Dr. Karl-Henrik Robèrt, a specialist in childhood cancer. The organization holds that corporate environmental action represents not just the fulfillment of social responsibility, but a survival strategy and a means to establish competitive advantage.



Sachiko Takami delivered a highly understandable lecture with concrete examples

Dreaming of a Green Christmas

Green Santa stopped by for a visit at the PLAZA21 showroom on November 21, 2002 to trumpet the causes of environmental conservation forest protection as a goodwill ambassador (guardian of the green forest) from Denmark, an environmentally progressive country. In keeping with the seminar theme, the advanced environmental protection activities in Northern Europe, he presented visitors with lotus flower seeds on a card with a brief message on environment and forest protection. Visitors warmly welcomed Green Santa.



Red-pencil the Environmental Report!

Put on your editors caps and make your own changes and comments to the environmental report

This was a hands-on editorial workshop where participants made their own changes to the Asahi Breweries' *Environment Communication Report 2002*. The event was held for the second year in a row in the "ecollable café" (the eco-products organizer project zone) in collaboration with the event facilitator, Hideto Kawakita, director of IIHOE (International Institute for Human, Organization and Earth). After responding to the facilitator's questions on personalized answer sheets, the participants

"checked" the report based on their personal criteria and exchanged opinions. Through their thorough readings, the participants gained a fuller understanding on the content, format, understandability, and other features of the report. The shrewd and compelling topics posed by Kawakita roused a spirited exchange of opinions.



Hideto Kawakita's smooth facilitation and performance were a delight to workshop participants

Final Seminar

Defining and realizing environmental communication

The final seminar, basically a wrap-up and summary for the whole exhibition, included presentations with wise messages from two guest speakers Norio Fukao (chief editor of *Nikkei Ecology*) and Tsutomu Iijima (representative of CO-WORKS). In comments on the overall concept of communication, Fukao advised listeners to "Make allies in your companies. Talk with various people in various situations. Make sure you know what we communicate, and why." Iijima also opined

that "Environmental management is a set of comprehensive creative activities for companies. Communication should be approached from the points of co-understanding, co-connecting, and co-supporting. Most important of all, we have to enjoy communicating." Both presenters offered concrete examples to illustrate their opinions.



Tsutomu Iijima (left) and Norio Fukao (middle) enlighten listeners on the essence of communication

Environmental Communication in Other Areas



ecollable 2003 Environmental Communication Exhibition

Osaka

Toppan followed up the Tokyo seminar with an ecollable 2003 Environmental Communication Exhibition in Osaka. This was the first Toppan seminar held in the Kansai region since the Toppan Environmental Exhibition 2000, held three years ago (from January 22 to 24, 2003 at TOPPAN PLAZA21 KANSAI).

The exhibition showcased various examples of Toppan's involvement in environmental communication and related activities, in order to encourage visitors to consider environmental issues more deeply and take their own actions.

Exhibition visitors learned the concepts of environmental business, as well as details on the status of environmental activities conducted jointly by Toppan and corporate customers.



The environmental activity exhibits provided by Toppan and corporate customers were highly rated for their nuts-and-bolts approaches and plenitude of concrete examples

Eco Products 2002

Tokyo

Toppan exhibited its products at the Eco Products 2002 convention held from December 5 to 7, 2002 at Tokyo Big Sight (organized by The Japan Environmental Management Association for Industry and Nihon Keizai Shimbun, Inc.).

Toppan positions Eco Products 2002 as a good opportunity to introduce its environmental activities to all stakeholders, a very important mission for the company.

To enlighten visitors on the scope of application, Toppan divided its exhibits of environment-friendly products and services into three categories: indoors, shops and outdoors.

Many visitors commented, "It was amazing to learn how many of Toppan's environmentally-friendly products I actually encounter in daily life."



Visitors appreciated the exhibitions of environmentally-friendly products on display in each living category, as well as Toppan's comprehensive coverage of the products

Toppan Communication Fair

Hokkaido

Toppan Communication Fair was held from July 2 to 5, 2003 to commemorate the completion of the Hokkaido Division's new headquarters.

The exhibition highlighted four strengths of Toppan's latest products: brand power, creativity, technology, and applicability to next-generation solutions.

At the fair's Ecology zone, Environmental Management, Eco-protection and Eco-creativity Activities were introduced with a focus on environmentally-friendly products.

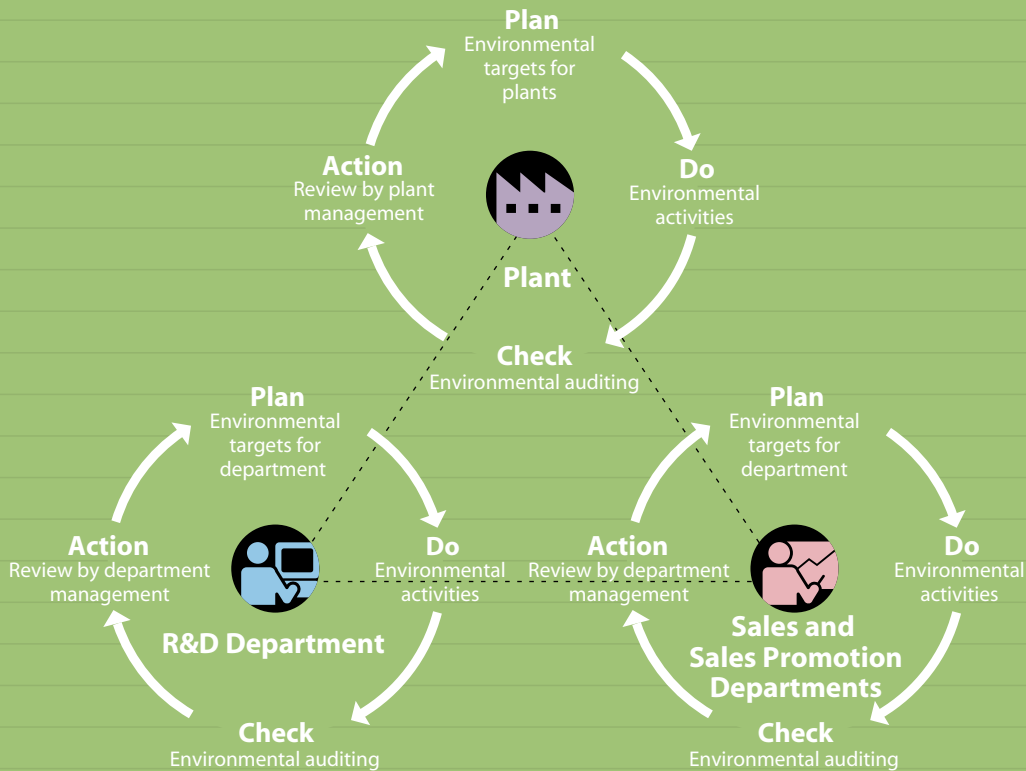
Many visitors and corporate companies who visited the zone gained a deeper understanding of Toppan's environmental communication activities.



Besides environmentally-friendly products, the exhibits featured educational materials and books related to Toppan's broad-based environmental activities

Environmental Management Activities

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



Activity Topics for Fiscal 2002

TOPIC 1

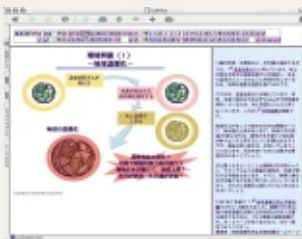
ISO 14001 certification at three overseas production plants



In fiscal 2002, Toppan obtained ISO 14001 certification at three overseas subsidiaries, Siam Toppan Packaging Co., Ltd. in Thailand (the first of Toppan's overseas subsidiaries), Toppan Printing Co., (H.K.) Ltd. in Hong Kong, and Toppan Printing Co. (America), Inc. in the U.S.

TOPIC 2

e-learning adopted for environmental education



To better provide environmental knowledge for all employees, Toppan has been running a WBT (Web Based Training) e-learning system for environmental education since fiscal 2002. This new channel for education provides a two-way communication structure free from the constraints of a conventional educational environment. e-learning makes it possible to provide all employees with a fully operative, time-efficient education on the environment.

TOPIC 3

Toppan Group Environment Meeting to build up the Group's environmental management structure



Toppan commenced the Toppan Group Environment Meeting from this fiscal year. The presidents of all of the affiliate companies gather at this meeting to build up the comprehensive strength of the group by reviewing the environmental management structure and making arrangements for the sharing of environmental tasks. Ten manufacturing companies will come to participate in the meeting twice each year.

Environmental Management Structure & Promotion System

Toppan is building up an ISO 14001-based environmental management system as a framework for its Eco-protection and Eco-creativity Activities. Toppan also started the Toppan Group Environment Meeting in fiscal 2003 to reinforce the environmental management structure of the Toppan Group.

Environmental Management Structure

Features of Toppan's environmental management

In every production plant, R&D department, and sales and sales promotion department inside and outside of Japan, Toppan has set up an environmental management system under the control and leadership of the President and the Chief Environmental Manager. The Ecology Center, a part of the Corporate Manufacturing, Technology & Research Division at the head office, is directly responsible for the system employed to inform the company's various divisions and production plants of Toppan's environmental policies and environmental measures, as well as to convey environmental information from the divi-

sions and production plants back to central management.

To push Toppan's Eco-protection and Eco-creativity Activities efficiently forward, the company has established an internal Eco-protection Promotion System and internal Eco-creativity Promotion System, both of which are now deploying specific environmental activities under the direction of the Ecology Center.

Reinforcing the comprehensive strength of the Group

Toppan reviewed its environmental management structure as a corporate group and started the Toppan Group Environment Meeting in June 2003. Heads of affiliated companies gather for the meeting to discuss the sharing of environmental tasks

and to plan or implement measures to harness their comprehensive strength.

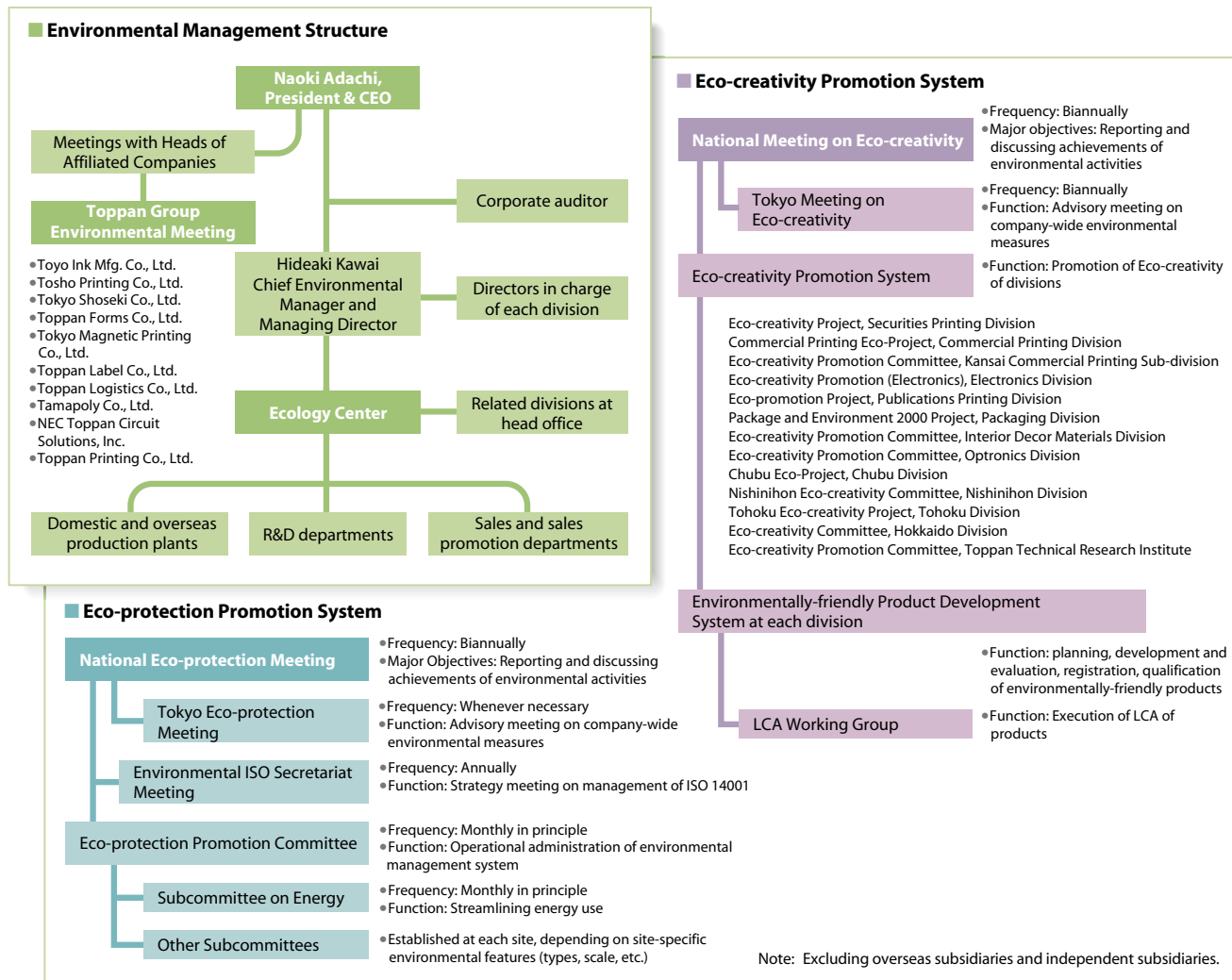
Environmental Activities Promotion System

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.

Eco-creativity Promotion System

In each Toppan division, an Eco-creativity Promotion System has been established to develop environmentally-friendly products and environmental support business.



Introduction of Environmental Management

The core function of Toppan's environmental management is to promote environmental activities by PDCA (Plan-Do-Check-Action) cycle activities. The Chief Environmental Manager evaluates and verifies the results of annual environmental activities and conveys them to an environmental management review.

Environmental Management System and PDCA Cycle

Toppan environmental management review

Toppan establishes and manages its environmental management structure using PDCA cycle activities. The "environmental management review" remains in perpetual operation to enhance the effectiveness of environmental improvements.

Results of environmental activities are collected at the Ecology Center, evaluated and verified by the Chief Environmental Manager, reported to management for

confirmation, and finally passed on to all parties concerned.

Eco-protection Activities

At production plants all environmental activities are led through the environmental management system at each operational site. For more information see P.17 and P.18.

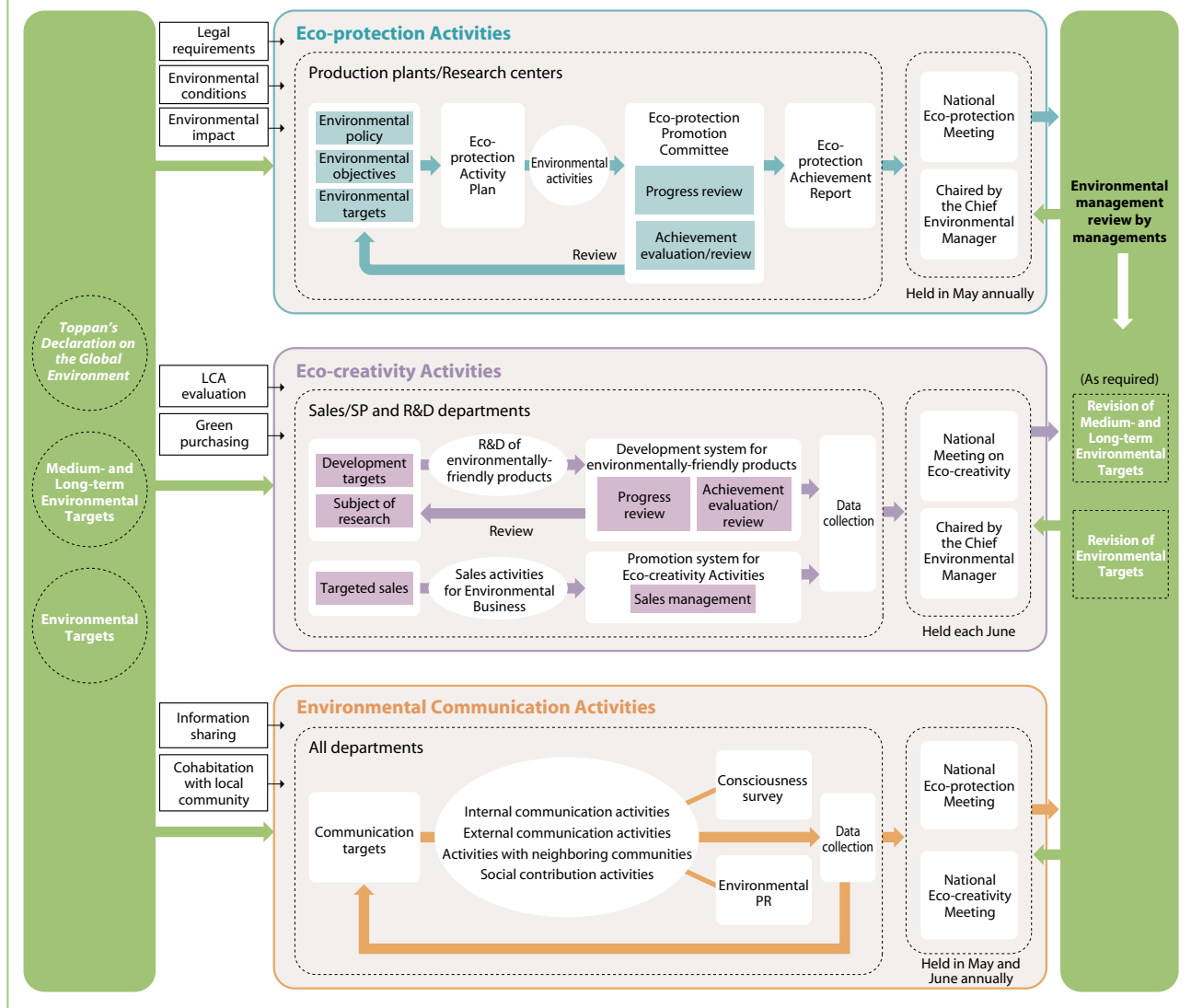
Eco-creativity Activities and environmental communication activities

In planning the Eco-creativity Activities of the Sales/SP and R&D departments, Toppan

sets sales targets for environmental business and numerical targets for environmentally-friendly products to be newly developed. During the phases of implementation, managers in charge check the progress towards the targets set.

In the area of environmental communication, all departments concerned strive to achieve targets set for the planning and execution of communication activities.

Outline of Environmental Management



Environmental Management System

The environmental management system deploys environmental activities at each production plant. In addition, Toppan promotes comprehensive in-house environmental auditing covering all operational sites of the company. In fiscal 2002, six domestic and three overseas production plants were awarded ISO 14001 certification.

Toppan's Environmental Management

A unique environmental management system

Toppan's environmental management system is uniquely structured. At every operational site, the company's PDCA (Plan-Do-Check-Action) Cycle concept is put into practice irrespective of ISO 14001 certification.

Forty-seven production plants and two R&D departments in Japan are pushing their environmental activities forward to achieve the targets set under the Eco-protection Activities Plan.

Toward continual improvement

Once each year, Toppan management confirms and reviews the company's environmental activities, collecting basic data for laying out our Environmental Policy and Environmental Objectives and Targets for the following year.

In addition, each of Toppan's operational sites submits an Eco-protection Achievement Report and Environmental Performance Data based on calculations and analyses of environmental efficiency at the end of each fiscal year. Feedback on this information is provided at Toppan National Eco-protection Meeting 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.

ISO 14001 Certification within the Toppan Group (Domestic)

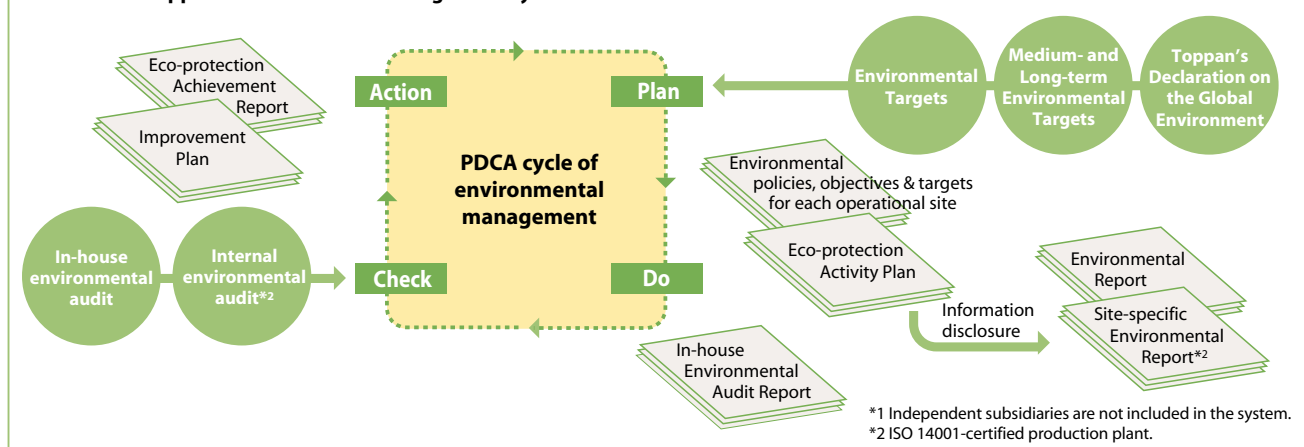
(16 systems/21 sites as of July 31, 2003)

| Division | Operational site | Main product | Registrar | Registration date |
|--|--|--|-----------|------------------------------------|
| Electronics | Shiga | Electronics products | JQA | 1998.7 |
| Electronics | Kumamoto | Electronics products | JQA | 1998.11 |
| Interior Decor Materials | Satte/Kashiwa | Wallpapers, decorative paper/film, for furniture, decorative sheets | JQA | 2000.3 (revised in June 2000) |
| Electronics | Niigata and NEC Toppan Circuit Solutions Niigata, Inc. | Electronics products | JQA | 2000.4 (revised in October 2002) |
| Commercial Printing | Toppan Printing Communications Co., Ltd. | Books, magazines, catalogs | JQA | 2000.10 (revised in December 2002) |
| Securities and Cards | Ranzan | Credit cards, IC cards | JQA | 2000.11 |
| Packaging | Akihabara office/ Ebie office | Planning, development, design, sales, prepress of packages | JQA | 2001.3 |
| Publications Printing | 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 |
| Commercial Printing/ Securities and Cards/ Packaging | Takino | Commercial printed materials, securities, paper containers for liquids | JQA | 2002.10 |
| Packaging | Gunma | Soft packaging materials | JQA | 2003.7 |

| 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 |
| Toppan Label Co., Ltd. | Fukushima | Self-sealing labels | JQA | 2001.11 |
| Toppan Logistics Co., Ltd. | Kawaguchi site | Storage and transportation of products | JQA | 2002.10 |

Note: Plans for obtaining certification: six operational sites are slated to be certified by the end of March 2004.

Outline of Toppan's Environmental Management System^{*1}



Status for obtaining ISO 14001 certification

The 16 operational sites awarded ISO 14001 certification before the previous fiscal year included seven sites for Information & Networks, six sites for Living Environment, and three sites for Electronics. With the new ISO acquisitions in fiscal 2002, the number of the Toppan employees (including subsidiaries engaged in production activity) working under ISO 14001 certification reached approximately 12,000. Member companies of the Toppan Group certified in fiscal 2002 by ISO 14001 included Toppan Logistics Co., Ltd. (Kawaguchi site).

Environmental Audit

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 provisional auditors of the Environmental Management System and internal environmental auditors. 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, a document specifying any necessary improvements pointed out during the auditing, and submit it to the director in charge. These auditors also review the in-house environmental audits within the same fiscal year with the objective of raising the level of compliance for the following fiscal year.



In-house environmental audit hearing

In-house environmental audit results from fiscal 2002

A total of 327 required improvements were pointed out in the in-house environmental audits. The main weaknesses included the following.

1. Poor conformity between the Improvement Plan and remediation measures executed to improve weaknesses pointed out in the environmental audit of the previous fiscal year (fiscal 2001)
2. Excess value specified by the In-house Management Standard
3. Insufficient progress in management for environmental conservation targets

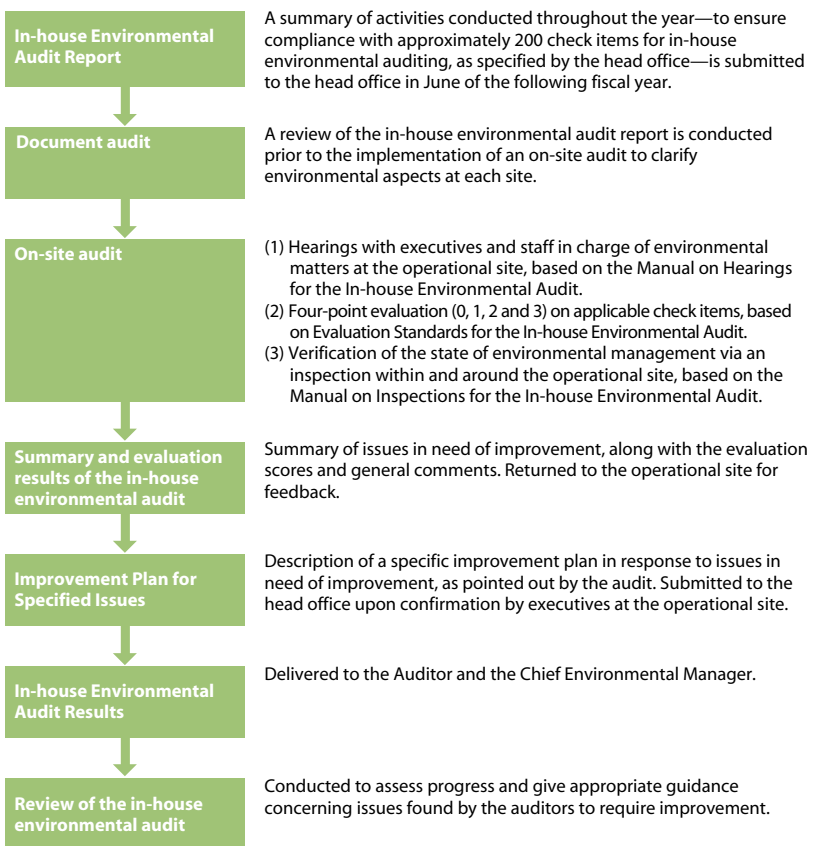
Registered Internal Environmental Auditors

(as of June 30, 2003)

| Position | Personnel |
|-------------|-----------|
| Managers | 140 |
| Supervisors | 90 |
| Employees | 50 |
| Total | 280 |

Toppan created an *Improvement Plan* to rectify these weaknesses through specified methods over a scheduled period. To verify the progress status of remediation actions, the in-house environmental audits were reviewed for 129 problems identified at 13 operational sites.

Structure of In-house Environmental Audit



Number of Issues Pointed Out under ISO 14001 (Fiscal 2002)

(Survey period: April 2002–March 2003)

| Item | Contents | Number of issues pointed out |
|-----------------------|--|------------------------------|
| Minor nonconformance | Partial conformance with the standard | 1 |
| Point for observation | Efforts may be required for improvement for full conformity with the standard | 136 |
| Excellent point | Notable achievement, as an action, made from the point of view of environmental management | 18 |

Activities in Oversea

In-house environmental audits

Local hearings and inspections are carried out every other year at overseas production plants in the United States and Asia.

In fiscal 2002, local environmental auditing was carried out at the following operational sites (five production plants in Asia):

1. PT Toppan Sampoerna Indonesia
2. Siam Toppan Packaging Co., Ltd.
3. Toppan PAP (Taiwan) Co., Ltd.
4. Toppan Chunghwa Electronics Co., Ltd.
5. Toppan CFI (Taiwan) Co., Ltd.

The company examines the status of environmental management and operations. Three major items were examined:

- 1) The understanding, operation, and confirmation of compliance with local environment-related laws and regulations;
- 2) The environmental impact on air and water; and
- 3) The daily control of waste materials.

In the annual surveillance inspection, 54 operational conditions were designated to require further improvement. To improve the operational conditions designated to require improvement at Toppan's overseas production plants, those plants have used the same procedures employed under the Improvement Plan for domestic plants.

Status for obtaining ISO 14001

Outside of Japan, Siam Toppan Packaging Co., Ltd., (packaging business) became the first overseas subsidiary to earn 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 an Asian printing company outside of Japan. Later, in December 2002, Toppan Printing Co. (America), Inc. also earned an ISO 14001 certificate.



Hearing in Toppan Sampoerna Indonesia



Inspection in Siam Toppan Packaging

ISO 14001 Certification Overseas

(3 systems/3 sites as of March 31, 2003)

| Companies incorporated overseas | Main product | Registrar | Registration date |
|-------------------------------------|---|-----------|-------------------|
| Siam Toppan Packaging Co., Ltd. | Paper containers, decorative corrugated cardboard | MASCI | 2002.4 |
| Toppan Printing Co., (H.K.) Ltd. | Books, magazines, printed commercial materials | DNV | 2002.5 |
| Toppan Printing Co. (America), Inc. | Printed commercial materials | DNV | 2002.12 |

Note: Two operational sites are slated to be certified by the end of March 2004.

“Our bottom line is green”—ISO 14001 and ISO 9002 As basics of marketing activities at Toppan Printing Co. (America), Inc.

Toppan Printing Co. (America), Inc., Toppan's American subsidiary, discloses its concepts on the environment on its website for customers and the general public. In its printing operations, the company works ceaselessly to deepen its understanding of its environmental impacts.

Since its ISO 14001 certification in December 2002, Toppan America has actually increased its corporate-wide activities for environmental improvement, fully aware of their ongoing importance for the environment and

as a marketing tool. Manufacturing divisions, production divisions, and the sales division at the company regularly pool their efforts to promote environmental activities for higher goals.

One such activity is the Eco-shield program to provide customers with environmentally-friendly printing materials using recycled paper and non-VOC ink. At the same time, management at Toppan America sustains environmental commitment in the corporate culture outside the company.



PR poster for simultaneous qualification of ISO 14001 and ISO 9002

Environmental Accounting

Toppan introduced environmental accounting in fiscal 1998 as a tool for effective decision making in environmental management. The company began to include affiliates abroad in its environmental accounting from fiscal 2001 in order to enrich the contents of this accounting and disclose more detailed information to stakeholders.

Results for Fiscal 2002

Environmental conservation cost

Compared to the previous fiscal year, the results of the aggregation for fiscal 2002 show an increase of investment by 295 million yen and a reduction of cost by 1,157 million yen.

This increase mainly stems from the introduction of equipment to treat exhaust gas from the printing and drying processes at Information & Networks and Living Environment production plants, and equipment to treat wastewater generated at production bases in Electronics production plants. The introduction of equipment to prevent air pollution and equipment for wastewater treatment at newly established production bases abroad also contributed.

The cost reduction during fiscal 2002 was mainly the result of renewed efforts to promote the sorting of wastes from production processes. Besides reducing costs in waste treatment, these efforts substantially improved the recycling rate within the company. Cost reductions were also brought about by revisions in the company's R&D themes pending the completion of technology transfers and the achievement of targets for previously established themes.

Economic effect and environmental conservation effect

The economic effect of environment-related business increased by 912 million yen (14%) in fiscal 2002, chiefly through the increased sales of environmentally-friendly products.

In the area of environmental conservation, Toppan successfully reduced dioxin emissions by 30% through the remodeling of incinerators (including shutdown) in compliance with the Law Concerning Special Measures against Dioxins. Toppan's efforts to reduce dioxins will continue in the future.

The emissions of water pollutants increased overall due to the establishment of new production bases leading to an increase in the number of sites to be measured.

Both energy consumption and carbon dioxide emissions increased overall, in spite of various measures such as implementation of energy saving diagnosis and horizontal deployment of energy saving examples. The company will continue to introduce more measures at both facility and administrative levels to redouble the effects of the conventional measures to reduce energy consumption already underway in fiscal 2003.

Future Challenges

Using data to calculate the Environmental Efficiency Index

Toppan will be making use of the data achieved from environmental accounting and introducing an index to measure environmental efficiency from fiscal 2003. When setting specific targets, the company can promote its environmental activities and control the progress of its environmental management by examining the changes of environmental efficiency over long periods of time.

Calculation Standards for Environmental Accounting for Fiscal 2002

1. Reference guidelines

Ministry of the Environment *Environmental Accounting Guidelines (2002 version)*

2. Calculation standards for environmental conservation cost

- a) Investment: Based on the prices of the environmental protection facilities obtained in fiscal 2002.
- b) Cost: Depreciation of environmental protection facilities (according to ordinary accounting), operational costs (including electricity, fuel and repairs), and other maintenance costs.
- c) Composite cost: For a fuller grasp of the portion related to environmental works, the percentage related to environmental conservation is defined in the in-house guidelines for aggregation.

3. Calculation standards for economic effect

The economic effect (effect on business) is based solely on the actual effect and does not include surmised effects.

- a) Energy saving: energy savings (converted to annual amount) × unit price
- b) Environmental business: sales of environmentally-friendly products × profit margin

4. Calculation standards for environmental conservation effect

The environmental conservation effect is a value calculated by comparing the amount of business activities quantified during a stable period (a period with average fluctuation in business) with the amount quantified during the targeted period. The following equation is used:

Reduction (reduction of environmental burden):

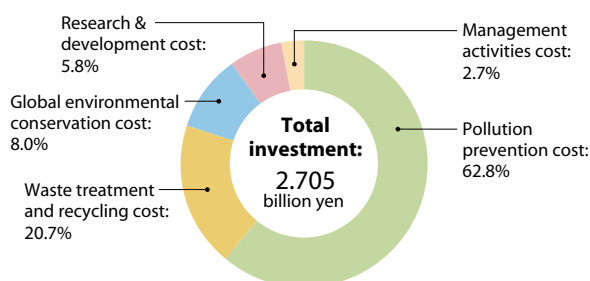
$$\text{environmental burden for fiscal 2001} \times (\text{internal financial production amount for fiscal 2002} / \text{internal production amount for fiscal 2001}) - \text{environmental burden for fiscal 2002}$$

Note: The "▲" symbol denoting a negative value indicates an increase from the previous year.

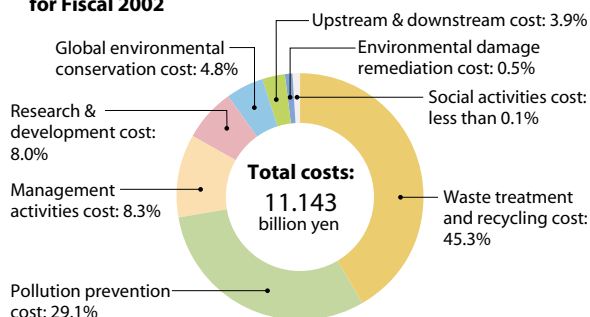
5. Basic changes during 2002

- a) We expanded production abroad and included two more affiliates in the scope of environmental accounting for fiscal 2002. (The affiliates were not included in the accounting for fiscal 2001 since they had not yet commenced operations as production bases.)
- b) The calculation method was slightly revised for more precise accounting, and the results for fiscal 2001 were recalculated by the new method.

Breakdown of Environmental Conservation Investment for Fiscal 2002



Breakdown of Environmental Conservation Cost for Fiscal 2002



■ Toppan Group's Environmental Accounting for Fiscal 2002

Environmental Conservation Cost

(unit: millions of yen)

| Item | Description of major contents | Current term | | Change (current term–previous term) | |
|--|--|-------------------|----------|-------------------------------------|----------|
| | | Investment amount | Expenses | Investment amount | Expenses |
| (1) Total internal cost | | 2,475 | 8,832 | 610 | ▲606 |
| 1. Pollution prevention cost | Cost for pollution prevention, such as air pollution prevention | (1,698) | (3,243) | (256) | (▲149) |
| 2. Global environmental conservation cost | Cost for global environmental conservation, such as global warming prevention | (216) | (536) | (▲36) | (▲81) |
| 3. Waste treatment and recycling cost | Cost for adequate treatment and recycling of waste materials | (562) | (5,052) | (390) | (▲376) |
| (2) Upstream/downstream cost | Cost for green procurement, containers/packages recycling, and others | — | 433 | — | 90 |
| (3) Administration cost | Cost for obtaining certification for environmental management systems and maintenance, planting trees at sites, and others | 73 | 927 | ▲7 | ▲13 |
| (4) R&D cost | Cost for research and development of environmentally-friendly products, and others | 157 | 886 | ▲308 | ▲552 |
| (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 | — | 54 | — | ▲76 |
| Total | | 2,705 | 11,143 | 295 | ▲1,157 |
| Total investment amount for the period covered | | | 83,312 | | ▲508 |

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 | 106 | ▲36 |
| (2) Sales proceeds of valuables | Sales amount of the waste from plants | 1,513 | 177 |
| (3) Environmental business | Profit amount related to sales of environmentally-friendly products | 7,447 | 912 |
| (4) Subsidies | Subsidies related to countermeasures for resources | — | ▲85 |

Environmental Conservation Effect

| Item | Reduction | Environmental burden for fiscal 2002 | Page number | |
|---|---|--------------------------------------|---------------------------|---------------------------|
| Energy | ▲725,000 GJ | 17,784,000 GJ | P.38 | |
| Water | ▲1,230,000 m ³ | 14,127,000 m ³ | P.57 | |
| Air | CO ₂ emission | ▲25,000 t-CO ₂ | 804,000 t-CO ₂ | P.38 |
| | Emission of substances destructive to the ozone layer | 0.04 ODP-t | 5.18 ODP-t | P.40 |
| | NO _x emission | 11 t | 269 t | P.40 |
| | SO _x emission | 9 t | 83 t | P.40 |
| | Emission of dioxins | 0.09 g-TEQ | 0.20 g-TEQ | P.41 |
| | Water system and soil | Total water discharge | 90,000 m ³ | 11,303,000 m ³ |
| Underground penetration (water) | | 194,000 m ³ | 52,000 m ³ | — |
| On-site evaporation (water) | | ▲521,000 m ³ | 1,775,000 m ³ | — |
| Discharge of water-polluting substances | | ▲218 t | 598 t | P.40 |
| Waste | Total generation | 3,000 t | 376,000 t | P.42–P.43 |

Notes: • Entities covered: Toppan Group (See P.3)
 • Period covered: April 2002 to March 2003 (January 2002 to December 2002 for overseas subsidiaries)
 • Total values may not match, as decimals were rounded up or down.
 • The "▲" symbol denoting a negative value indicates an increase from the previous year.

Environmental Education, Environmental Compliance & Emergency Response

Toppan carries out thorough environmental education designed to maintain and improve the quality and scope of the company's environmental activities. As a matter of course, the company emphasizes environmental compliance, i.e., compliance with all laws and regulations related to the environment. The company also conducts emergency training and drills to prepare for accidents that may have an impact on the environment.

Philosophy and Structure Review of Environmental Education

Raising consciousness by environmental education

In maintaining and improving the quality and scope of our educational activities, Toppan believes that all Toppan employees need to reach a new level of awareness. For this purpose, the company provides a variety of educational opportunities to raise the environmental consciousness of the entire workforce, from new recruits to top managers.

Reinforcing the structure

Toppan provides various environmental education opportunities for the training of new recruits and new managerial staff through elective programs. Moreover, Toppan provides employees at each site with environmental training focused on the environmental burden of the specific production activities in which they engage. This training also encompasses countermeasures to deal with specific impacts, as well as the environmental conservation activities undertaken by the company to heighten the environmental consciousness of the Toppan workforce.

Mindful of 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 the entire Toppan workforce to receive effective training within short periods of time.

The company has been continuously reviewing and building up its environmental education structure in fiscal 2003. Among other changes, we have scaled up the target range for e-learning to more than 5,000 people and expanded the menu of environmental courses in Toppan's elective education program.



Environmental Education at Toppan Electronics Fuji, Co., Ltd.

Toppan Environmental Education System

Training for new recruits (General environmental education (primary))

New recruits compulsorily undergo this program. Conducted twice a year to convey basic knowledge of global environmental problems and a brief summary of Toppan's environmental activities. A total of 240 employees participated in fiscal 2002.

Training for new managerial staff (General environmental education (intermediate))

New managers compulsorily undergo this program. Conducted once a year to convey the various environmental trends and countermeasures in general business activities, as well as a brief summary of Toppan's environmental activities. A total of 123 employees participated in fiscal 2002.

e-learning (Environmental problems surrounding companies and Toppan Group's activities)

The e-learning system supported by WBT (Web-Based Training). In the first fiscal year of 2002, a total of 499 employees, new managerial staff, and supervisors completed a course entitled "Environmental problems facing Toppan and corporate activities deployed". (Course completion rate: 99.8%)



Toppan business school

This training supports the career development of interested employees by educating them in specialized skills. Three types of training services are offered to improve individual skills: Elective training, The Challenge School, and the Video library.

Elective training Introduction to ISO 14001 (primary)/introduction to environment-related law (primary)/LCA practical (intermediate)/energy saving (intermediate)

Short-term programs that employees can select individually. One course with 15 participants was held in fiscal 2002. Another three environmental courses were newly added in fiscal 2003 (total of four courses).

The Challenge School Four environment-related courses

This program helps employees pursue further training on their own by offering correspondence courses with incentive payments upon completion. Ninety-six employees participated in the four environmental courses offered in fiscal 2002.

Video library Two environment-related titles

This program introduces and lends video materials for self study and workplace education. As of April 2003, two environment-related titles were made available.



Training to become an in-house environmental auditor

To reinforce in-house environmental audits, the Ecology Center conducts training in in-house environmental audits at the company headquarters. In fiscal 2002, a total of 192 participants attended the four courses held and became qualified to perform in-house environmental audits at the business sites to which they belong.

Education to raise environmental awareness at each site

Special environmental courses and social contribution activities are undertaken at each site based on characteristics of the surrounding communities and regions. Examples include new employee assignment, energy saving month, and Earth Month. In fiscal 2002, four sites provided environmental education to all of their employees as an activity to obtain ISO 14001 certification for two systems.

Guidance and evaluation through in-house environmental audit

In its annual environmental audit of all Toppan production plants, the Ecology Center confirms and reviews the activities at each site under the audit categories of local community activities, as well as environmental education and awareness-raising activities.

Status for Environmental Compliance

Compliance status for environment-related laws and regulations

Toppan's production plants comply with all environmental laws, regulations and agreements set by national and local governments. The plants also comply with Toppan's anti-pollution guidelines, which are usually stricter than those set by government.

Major Environment-related Laws involving the Printing Industry in Japan

| Basic Stance & Rules | P.4-P.7 |
|--|----------------------|
| The Basic Environment Law | |
| Law for Promotion of Nature Restoration | |
| The Basic Law for Establishing the Recycling- Based Society | |
| Legislation to Implement a Basic Law on Energy Policy | |
| Eco-protection Fields | P.36-P.53 |
| Air Pollution Control Law | |
| Water Pollution Control Law | |
| Sewerage Law | |
| Septic Tank Law | |
| Law Concerning Special Measures for Conservation of the Environment of the Seto Inland Sea | |
| Soil Contamination Countermeasures Law | |
| Offensive Odor Control Law | |
| Noise Regulation Law | |
| Vibration Regulation Law | |
| Industrial Water Law | |
| The Law concerning the Rational Use of Energy | |
| Law Concerning Promotion of the Development and Introduction of Alternative Energy | |
| Law Concerning Promotion of the Use of New Energy | |
| Waste Disposal and Public Cleaning Law | |
| Law for the Control of Export, Import and Others of Specified Hazardous Wastes and Other Wastes | |
| Construction Materials Recycling Act | |
| Law Concerning Special Measure against PCB waste | |
| Law Concerning the Reporting, etc. of Releases to the Environment of Specific Chemical Substances and Promoting Improvements in their Management | |
| Law Concerning Special Measures against Dioxins | |
| Law concerning Special Measures for Total Emission Reduction of Nitrogen Oxides from Automobiles in Specified Areas | |
| Law Concerning the Protection of the Ozone Layer through the Control of Specified Substances and Other Measures | |
| Law Concerning the Promotion of the Measures to Cope with Global Warming | |
| Factory Location Law | |
| City Planning Law | |
| City Green Zone of Conservation Act | |
| Law Concerning the Improvement of Pollution Prevention Systems in Specific Factories | |
| Eco-creativity Fields | P.24-P.35, P.48-P.53 |
| Law Concerning the Promotion of Procurement of Eco-Friendly Goods and Services by the State and Other Entities | |
| Law for Promotion of Effective Utilization of Recyclable Resources | |
| Law for Promotion of Sorted Collection and Recycling of Containers and Packaging | |
| Law for the Conservation of Endangered Species of Wild Fauna and Flora | |

Note: Compliance status with each law is shown on respective pages.

Compliance status is reported to headquarters in the form of Eco-protection Achievement Reports every April and the status is checked by in-house environmental audits.

In the audit on compliance with control standards for water and air, auditors found no major nonconformity with the laws and regulations that could have directly led to a grave accident. Regarding the protection of the soil, the environmental standards for soil were exceeded in two cases in fiscal 2001 and one case in fiscal 2002. Toppan dealt with these problems by soil renovation (excavation and backfilling). Regarding noise pollution, Toppan received administrative notifications twice in fiscal 2002 for exceeding the noise standards. Both cases were caused by malfunctions in outdoor units. Toppan immediately installed noise insulation materials and reported the matters to the relevant local government.

No court cases, penalties or non-penal fine were filed or imposed in fiscal 2002.

Response to requests from stakeholders

The communities around Toppan's plants filed a total of 40 complaints and inquiries in fiscal 2002. Though this marks a decline from the number filed in fiscal 2001, Toppan feels compelled to apologize to some of the neighborhoods. The main complaints had to do with noise and odor, two forms of urban pollution. While most of the problems related to production activities were promptly solved, several require further work. Toppan will continue to make capital investments and communicate with neighborhoods for the purposes of improvement.



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

Emergency Response

Preventive emergency-response measures

Chemical solvents are used and handled on a daily basis at each site. In some cases, accidents during handling and use involve the risk of soil and water pollution (for example, during the transfer of solvents from tank trucks into storage tanks). At operational sites subject to any possibility of environmental impact, the company is now 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 or similar accident.

Periodic drills are also carried out so that necessary actions can be taken in case of emergencies. At the same time, the procedural manuals are regularly evaluated and updated to ensure they remain effective for actual emergencies.

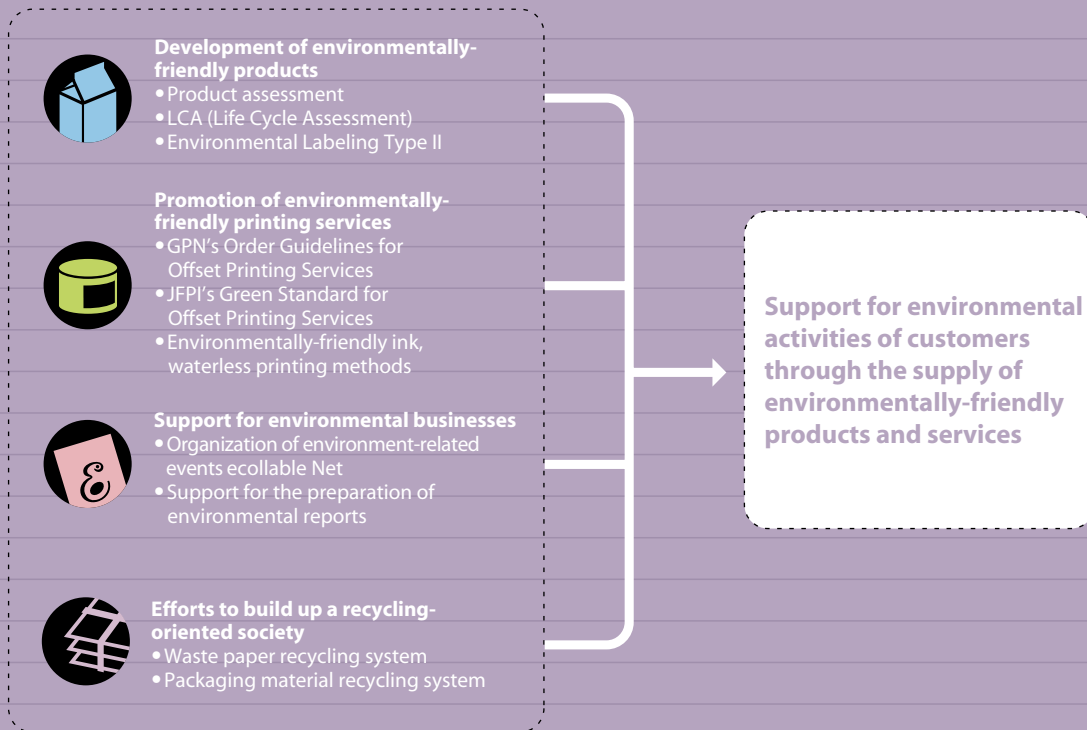


Board displaying emergency equipment (Ranzan plant)

Eco-creativity Activities


Environmental business is “business that helps realize a recycling-oriented society through the supply of products, technologies and services, based on environmentally-friendly production activities.” Toppan’s Eco-creativity Activities promote environmental business.

Eco-creativity



Activity Topics for Fiscal 2002

TOPIC 1
LCA on Clear Deposition Film



Toppan conducted an inventory analysis on clear deposition film, one of its main products, to assess its influence over global warming. The company will disclose all LCA information required by customers and society for the evaluation of environmental impacts.

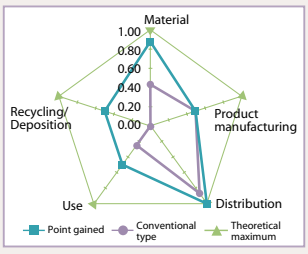
TOPIC 2
Environmentally-friendly Line-up Increases to 57 Products



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

All products that meet in-house standards are marked with Toppan’s Label for Environmentally-friendly Products to provide information on environmental friendly features. The labels are actively attached to product samples and booklets.

TOPIC 3
Radar Chart Product Assessment



A qualitative environment evaluation system was structured to estimate material selection, use, and disposition for products in the commercial printing field such as brochures and POP displays. Customers appreciate the radar charts for their clear depictions of the environmental burdens of Toppan products.

Overview of Eco-creativity Activities & 13 Environmental Claims

Eco-creativity Activities constitute Toppan's environmental business conducted through the supply of products and services. The product life cycle from production to disposal is classified into 13 steps, each with its own environmentally-friendly features. These features are explained below.

What are Eco-creativity Activities?

Support for customers and NPOs through two activities

Environmental Business (Eco-business) is a priority business at Toppan, designed to help create a recycling-oriented society

through the supply of environmentally-friendly products, technologies and services based on the environmentally-friendly business activities conducted by the company globally. Each Toppan division undertakes activities to promote this business, which Toppan calls Eco-creativity Activities.

Eco-creativity Activities are broadly categorized into two different areas. The first covers research and development of environmentally-friendly products. Product developers begin by preparing evaluation standards and guidelines that duly consider the overall lifecycle of the product, and follow up with evaluations on the basis of those standards and guidelines.

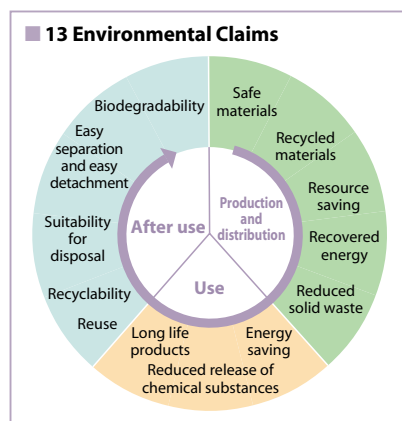
The second area supports environmental conservation. Eco-creativity Activities in this area are intended as supports for environmental conservation activities conducted collaboratively with customers and NPOs.

Basic Philosophy for Environmentally-friendly Products

Label displays environmentally-friendly features

Toppan plans 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 Label for Environmentally-friendly Products for easy understanding of the applicable environmental considerations.

Toppan plans, develops, and supplies products friendly to the environment at every stage of the product lifecycle, from the raw material stage through to manufacture, distribution, use, and after-use.



Principal Environmentally-friendly Products and Environmental Claims

See P.28 and P.29 for more information on each product.

| 13 Environmental claims | | PURE ALL | Recycled vegetable-oil ink | Ecogloss | Eco Pack Stand | 101 Coordination Floor | NaturArt | TP-Tray | Cerap | Low-halogen printed wiring board | Card for ETC |
|-----------------------------|--|----------|----------------------------|----------|----------------|------------------------|----------|---------|-------|----------------------------------|--------------|
| Production and distribution | Safe materials | ● | | | | ● | ● | | ● | ● | ● |
| | Recycled materials | | ● | ● | ● | | | ● | | | |
| | Resource saving | | | ● | ● | | | | | | |
| | Recovered energy | | | | | | | | | | |
| | Reduced solid waste | | | | | | | | | | |
| Use | Energy saving | | | | | | | | | | |
| | Reduced release of chemical substances | ● | | | | ● | ● | | | | |
| | Long life products | | | | | ● | ● | | | | |
| After use | Reuse | | | | | | | | | | |
| | Recyclability | | | ● | ● | | | ● | | | |
| | Suitability for disposal | ● | | | | ● | ● | | ● | ● | ● |
| | Easy separation and easy detachment | | | | | | | ● | | | |
| | Biodegradability | | | | | | | | | | |

● Main environmental claim ● Related environmental claim Note: As of March 31, 2003, Toppan manufactures and sells 57 registered environmentally-friendly products.

Development & Evaluation of Environmentally-friendly Products

Toppan has established an original set of evaluation standards based on the concepts of the ISO 14021 self declaration labeling system for planning, development, and evaluation. The products developed on the basis of those standards are highly evaluated in the market.

Eco-creativity

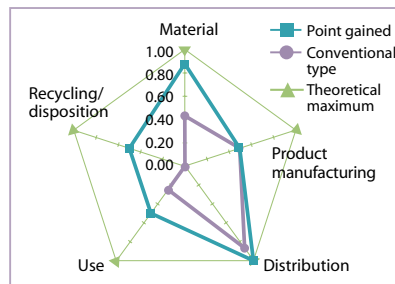
Formulating Toppan's Guidelines and Standards for Environmentally-friendly Products Considering the standards from the planning stage

Toppan's Evaluation and Standards for Environmentally-friendly Products are used for guidance in the planning and development of products. The guidelines consist of 13 items; ten based on the ISO 14021 standards and three added by Toppan itself (safe materials, reduced emissions of chemical substances, and suitability for disposal).

The products developed in keeping with the above guidelines are evaluated according to the control procedure for environmentally-friendly products.

Efforts toward a Product Assessment Method Control and evaluation of environmental impact

Toppan developed and utilizes its own method of qualitative evaluation using radar charts to illustrate the environmental burden of catalogs and POP displays.



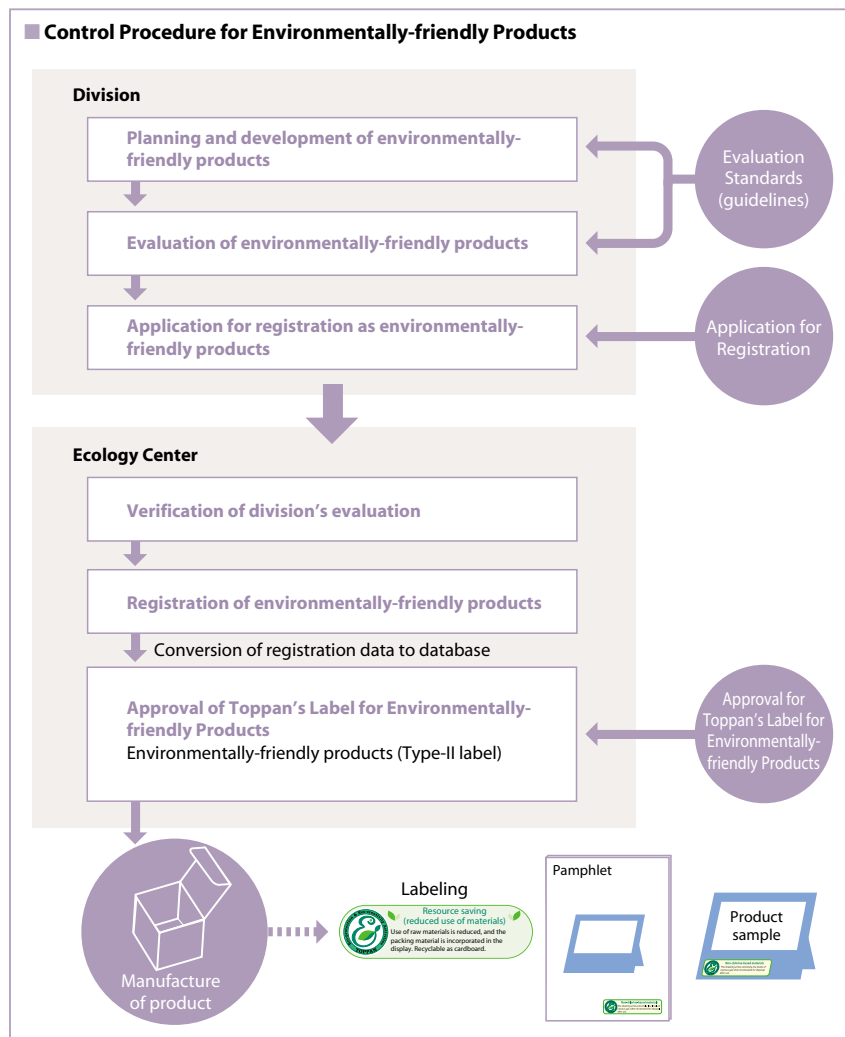
Next-generation Environmentally-friendly Products

Development of electronic paper

Toppan is now developing electronic paper in collaboration with E Ink Corporation (U.S.A.). This effort may bring environmental benefits, as the adoption of electronic paper is expected to reduce paper consumption in companies and households.



Prototype of E Ink Electronic paper
(Cooperation: E Ink Corporation, Koninklijke Philips Electronics N.V., and Printing Museum, Tokyo)



Note: As of March 31 2003, Toppan's produces and sells 57 registered environmentally-friendly products.

Efforts by Toppan Group Companies

Products based on original standards

Toppan Group companies are also working to achieve a sustainable society through productive activities that conserve the global environment. Each Group company is committed to the development of environmentally-friendly products based on its original standards in its field of operation.



One-Pack Mail envelopes made from biodegradable film by Toppan Forms Co., Ltd.



Environmental education video series, *Looking into the Immediate Environment* (five volumes): Tokyo Shoseki Co., Ltd.

Introduction to LCA (Life Cycle Assessment)

Toppan places great importance on understanding the environmental influences of its products in quantitative terms. Toppan's LCA analyses improve the company's accountability to customers and society by establishing credibility, upgrading processes in the design and development divisions, and reducing environmental burdens.

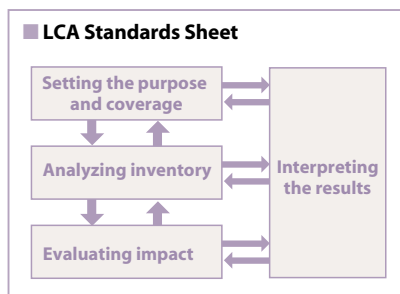
Toppan's LCA Activities

Quantitative evaluation based on ISO 14040

All companies need to understand the degree to which products burden the global environment.

In the LCA analyses by Toppan, the company evaluates the life cycle of its environmentally-friendly products according to 13 environmental criteria applied at three different stages of the life cycle, or what the company calls environmental claims throughout three life cycle processes: Development & Distribution, Use, and After-use. (See P.25)

To grasp the quantitative environmental burden of our products on a global scale, Toppan employs an LCA based on ISO 14040 in its evaluation.



The purpose of LCA for Toppan

The LCA activities at Toppan generally have two purposes:

- (1) To establish credibility through complete accountability to customers and society (full disclosure of the quantitative environmental burdens imposed by the products).
- (2) To improve design and development processes and reduce environmental burden for each product by providing detailed feedback on LCA results to the design & development department.

Actual examples of LCAs

Toppan conducts LCA activities for each product family. One of the LCAs in fiscal 2002 covered clear deposition film, a major Toppan product. The assessments were supported by the National Institute of Advanced Industrial Science and Technology/Research Center for Life Cycle Assessment (Tsukuba city, Ibaraki Prefecture).

Inventory analyses was performed to assess greenhouse gasses per unit area (m²) and impact on global warming.

The scope for this LCA started with the mining of the materials used in clear deposition films, then proceeded to the later stages of ingredient manufacture at the material maker and the various processes of product manufacture at Toppan.

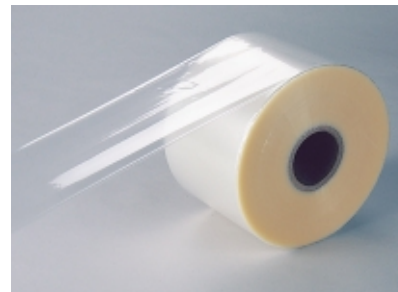
Results and evaluation of LCAs

The inventory analysis revealed that CO₂ (85.9 g/m²) was the main gas among the greenhouse gases emitted through the steps up to manufacturing.

The total impacts were quantified at 70.3 g/m² and 89.4 g/m² (CO₂ conversion) up to the completion of material manufacture and product manufacture, respectively.

Toppan concluded that 78% of the environmental impact originates in the materials. Accordingly, the company has concluded that the selection of materials that generate less greenhouse gas is effective to reduce the impact on global warming. Toppan will actively use such materials in the future.

Toppan will promote LCAs on other products and use its results to reduce environmental burden in manufacturing.



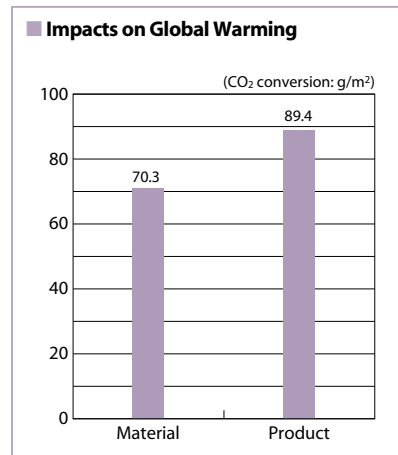
Clear deposition film



LCA data and report

Inventory Results of Clear Deposition Film

| Greenhouse gas | Emissions |
|------------------|---------------------------|
| CO ₂ | 85.9 g/m ² |
| N ₂ O | 0.0128 g/m ² |
| CH ₄ | 0.000734 g/m ² |



Note: Coefficient for greenhouse effects impact evaluation is GWP (CO₂ = 1) Eco95.

Toppan's Environmentally-friendly Products in Daily Life

Toppan plans and develops products that conserve environmental resources and increase recycling rates in all of its business fields. Toppan's Label for Environmentally-friendly Products intelligibly describe environmental features and their benefits.

Eco-creativity

Interior



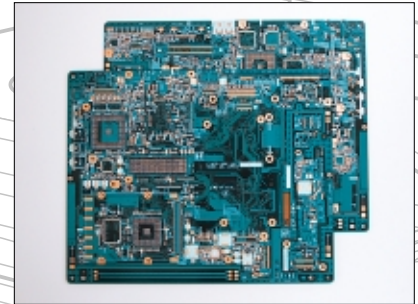
PURE ALL
 PURE ALL is a mirror-finished non-vinyl decorative film. It is most commonly used as a surfacing for closets, kitchens, and cabinet doors.

Non-chlorine-based materials
 The film emits extremely low levels of noxious gas when incinerated for disposal after use.



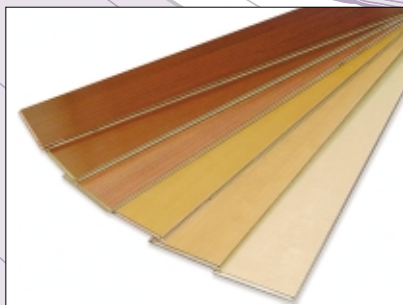
Recycled vegetable-oil inks
 This ink for offset printing is made from repurified waste oil from school kitchens and food service providers.

Recycled vegetable oil
 Two types of aromatic-free inks are made from recycled vegetable oils, the rotary type and offset sheet-fed type. The former contains at least 7% recycled vegetable oil; the latter, at least 20%.



Low-halogen printed-wiring board
 This wiring board contains no halogen material, a potential source of toxic gas when incinerated. The board is incorporated in notebook personal computers.

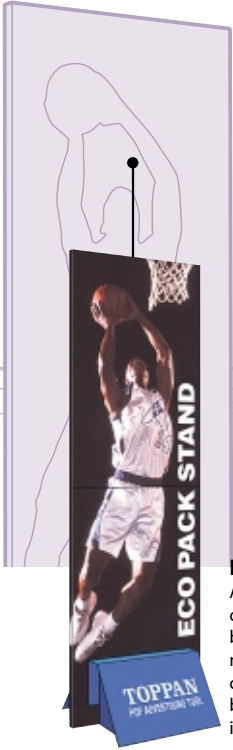
Low-halogen material
 Uses material with low-halogen flame-retardant and emits minimal noxious gases when incinerated.



101 Coordination Floor
 Household flooring materials with reduced formaldehyde emission.

Reduced release of chemical substances
 Flooring materials with reduced levels of the substances known to cause 'Sick-House' syndrome. Also designed for longer product life with improved protection against water and sunlight.

Shops



Eco Pack Stand

A life-size POP display for commercial use. The POP body and packaging are made of recycled paper and cardboards. Packaging can be used as a base, resulting in resource savings.



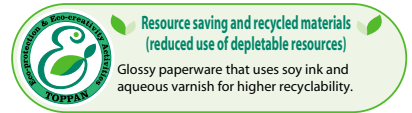
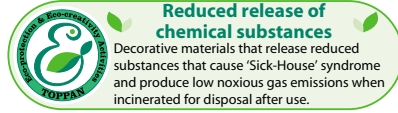
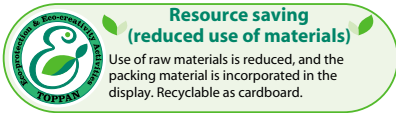
NaturArt

Special natural-wood product that combines thinly sliced wood from systematically logged forests with Toppan's unique printing technology. It is mainly used for walls or furniture.



Ecogloss

Paper containers using aromatic-free soybean oil ink and aqueous varnish with reduced petroleum solvents. This shiny paper has an excellent de-inking property.



Outdoors



Cerap

A decorative sheet for car bodies, made from polyolefin sheeting coated with a ceramic material. Cerap has superior soil resistance and antibacterial properties.



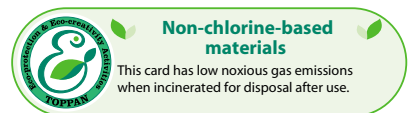
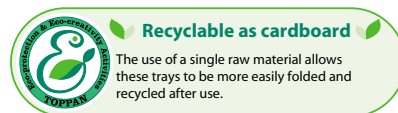
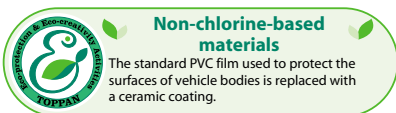
TP-Tray

An excellent cushioning material made from corrugated cardboard. The use of only a single material makes the product easy to recycle.



Cards for ETC

Heat-resistant IC card made of polyester plastic. Used in ETC systems on expressways.



Promoting Environmentally-friendly Printing Services


Moving forward from its success with environmentally-friendly papers and inks, Toppan now provides printing services that conserve environmental resources from the design stage.

Conformity with GPN's Order Guidelines for Offset Printing Services

Environmentally-friendly from paper to production

As a member of the Green Purchasing Network (GPN), Toppan strives to minimize the environmental burdens of printing based on the *Guidelines for Ordering Offset Printing Services*, Japan's first set of environmental criteria for customers who order printing services. The guidelines are already adopted by municipalities and corporations now practicing Green Purchasing and working on other environmental issues.

With a host of environmentally-friendly technologies at its command, Toppan offers versatile proposals for customers seeking quality printing services in all the fields covered in the Guidelines: paper, ink, surface coating, bookbinding, and other finishing processes.



Green Purchasing Network (GPN): A nationwide network founded in 1996 to promote Green Purchasing. As of June 26, 2003, membership totaled 2,802 organizations, including 2,167 companies, 366 administrative organizations, and 269 private organizations. Announced *Order Guidelines for Offset Printing Services (GPN-GL14)* in December 2001.



Marks for environmentally-friendly printing products

Tangible Examples of Environmentally-friendly Printing Services

Toppan's environmentally-friendly paper

Printing paper is a material that directly relates to the protection of forest resources. Nowadays there are two categories of paper that help to conserve forest resources: recycled paper and treefree paper.

Toppan offers a variety of treefree papers with different textures and printability, including kenaf, bagasse, and bamboo pulp.

Using environmentally-friendly inks

The petroleum-based solvents of offset printing inks contain aromatics, a family of compounds that may be harmful to the air and human body. Fortunately, a solvent almost completely free of these presumably hazardous aromatics (aromatic-free solvent) has now been developed. This advance has enabled the development of an aromatic-free soy ink made by combining this solvent with soybean oil ink.

To take progress one-step further, Toppan is developing a more recyclable form of these aromatic-free inks by reusing other resources. Already the company has succeeded in practically applying a process that refines used soybean oil recovered from school catering services and the restaurant industry for use in printing ink. Besides offering the same performance as traditional offset printing inks, this recycled vegetable-oil ink features a de-inking property (required for paper recycling) even better than that of conventional inks.



Petroleum-free ink for rotary press

The high volatility of petroleum-based solvents imparts a rapid-drying property important for offset rotary press printing. Yet the environmental deficits of these inks are now perceived as unacceptable. In response to the growing demand for printing methods even friendlier to the environment, Toppan has developed an ink made from 100% vegetable oil. By adjusting the printing conditions and energy for optimal drying, this new ink has realized petroleum-free printing.

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 receptive to oil at the time of plate-making and forms ink-adhesion areas by adding moisture (dampening water) to the plate at the time of printing. The dampening water used in traditional offset printing processes contains IPA (isopropyl alcohol), an organic solvent that needs to be more strictly controlled and treated in order to reduce the levels of volatile organic compounds released into the atmosphere.

Meanwhile, in lieu of water, the waterless printing system uses a silicone layer that repels water. This eliminates the need for dampening water and the discharge of liquid waste as a result.



Butterfly mark for waterless printing products

Environmental-friendly bookbinding and finishing processes

Fragmentation-resistance hot-melt is an adhesive suitable for used paper recycling. Besides offering strong cohesion, it can be removed entirely from printed materials without fragmenting, even during the process of desegregation during recycling. Toppan has also developed Eco-binding and other bookbinding and manufacturing processes that require no stitching (wire), thereby enabling the company to use binding processes with outstanding recyclability.

Environmental Consideration in Design Production and Plate Making

Environmental consideration in the prepress process

The design production and plate making prepress processes must be as environmentally-friendly as the printing process itself.

Most printed materials nowadays are prepared using DTP (Desktop Publishing) software and hardware—computerized systems for editing and design.

However, DTP systems were designed to compose layouts using photographic images requiring film development and color proof printing.

Toppan further developed conventional DTP using an in-house digital processing system based on our highly efficient, environmentally-friendly color management system (CMS).

Photography by digital camera

The great advantages of digital photography, no film and no liquid waste, are key to



Designed using DTP

the tremendous popularity the technology now enjoys. Yet color correction is difficult without color-positive film. Toppan provides stable color reproduction using its integrated color management system for photography and plate making.

Replacement of color proofs with DDCP

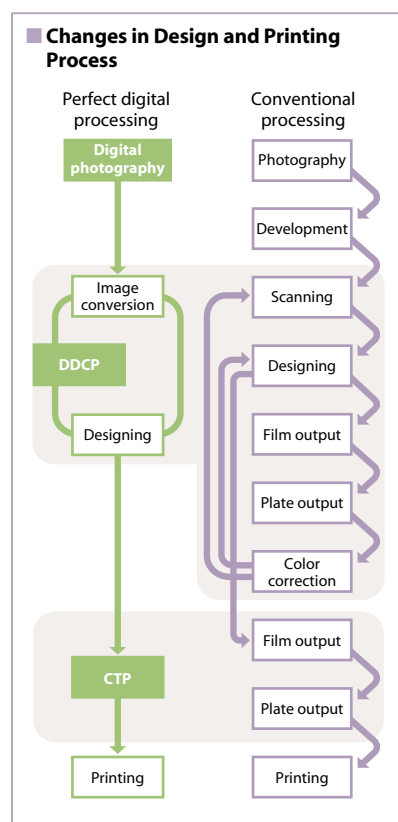
Toppan substitutes color proofs, an indispensable process in producing final proofs, with DDCP (Direct Digital Color Proof). This significantly reduces the amount of film consumed in the prepress process.

Film-free plate with CTP

CTP is an acronym for Computer To Plate. In conventional plate making, plates are printed from films. In CTP, plates are printed directly from computers. This streamlines the process and stabilizes quality.



Design correction by DDCP



Environmental Considerations in this Report

Toppan actively applies various environmentally-friendly technologies and methods in the printing services used to print the *Toppan Environmental Report*. In addition to carefully selecting paper and printing methods, the company has focused closely on formerly overlooked prepress processes in the production of the current report.

Environmental Considerations in the *Toppan Environmental Report 2003*

| Process | Specific measures | Environmental consideration | Comments |
|-------------------------|--|--|--|
| Photography | Use of digital photography whenever possible | Elimination of filming and development processes | Photographic image data can be used for other purposes |
| Design & editing | Digital processes by DTP | Reduction of mid-process materials | |
| Color correction | Correction by DDCP | Elimination of films and plates for color proofs | |
| Plate making | Plate-making by CTP | Elimination of films for plate making | |
| Printing | Sheet-fed press | Reduction of IPA use | IPA content: 5% or less |
| Paper | FSC-certified paper | Forest resource saving | Consider color matching with DDCP |
| Ink | Recycled vegetable-oil ink | Resource saving | |
| Bookbinding & finishing | Fragmentation-resistance Hot-Melt (EVA-base) | Improved recycling efficiency | |

Note: This report is printed on FSC-certified paper. The inks used for printing and all other materials are based on the *Green Standards for Offset Printing Services (level 2)* established by the Japan Federation of Printing Industries.

Development of Environmental Support Business

The company supplies ample solutions for customers seeking to expand their own environment activities, in the form of paper, CD-ROM, online content, and other media. The solutions are based on the knowledge Toppan has accrued in developing and supplying environmentally-friendly products.

Miru-navi

Flexible operation and search

Toppan developed an integrated CD-ROM browser software package called *Miru-navi* for its release of the *Toppan Environmental Report 2002* on CD-ROM. *Miru-navi* is capable of browsing multiple file formats, indexing content across media, and executing high-speed searches through all content.

In addition, *Miru-navi* can read character data and image data formatted for printing and reproduce the layout faithfully on computer monitors and CD-ROM. As the same data can be used for both printed matter and CD-ROM, *Miru-navi* drastically reduces CD-ROM production costs.

Besides its use for environmental reports, *Miru-navi* can also be used as a communication tool for enterprises disseminating business reports, annual reports, corporate profiles, recruitment brochures, and many others types of information.



Miru-navi screen



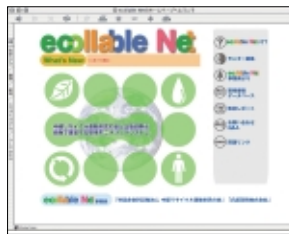
Toppan Environmental Report 2002 Miru-navi version

ecollable Net Environmental Monitoring System

Evaluating environmental activities online

Toppan's ecollable Net is a network-based environmental monitoring system designed to bridge the gaps between businesses and Green Consumers (consumers who take an interest in environmental activities) by soliciting the latter to respond to polls on the Web. The network was developed in collaboration with the Chubu Recycle, an environmental NPO that continues to work with Toppan in the network operation.

Environmental activities conducted solely from the viewpoints of business and administration have their limits. Only with the support and approval from Green Consumers can environmental activities achieve balanced growth.



ecollable Net website

ecollable Net URL
<http://ecollable.eal.or.jp/>
 (in Japanese)

sumers can environmental activities achieve balanced growth.

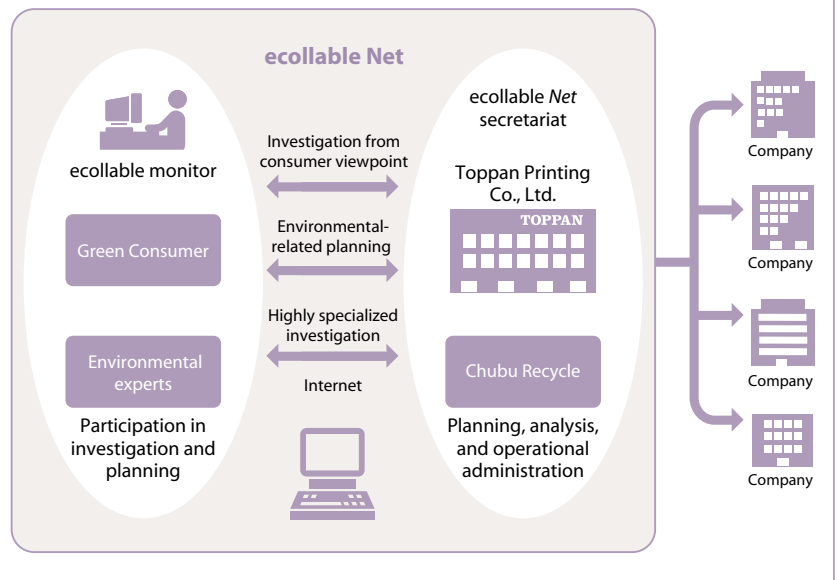
Activities in fiscal 2002

In fiscal 2002, Toppan communicated with many people by surveying the environmental awareness of Green Consumers and hosted an environmental communication seminar for companies. The company also carried out several field investigations.



Environmental communication seminars

ecollable Net system



Support in Preparing Environmental Reports Paving the way for environmental reports in the future

More companies consider environmental issues as an administrative activity, and a growing number of environmental reports are being published each year. In fiscal 2003, over 1,000 companies are said to be publishing environmental reports of their own. The reports themselves are expanding in content and evolving into what can better be described as "sustainability reports" covering aspects of economy (financial data, project outlines, etc.) and social roles (company philosophy, working safety and sanitation, etc.), as well as the environment itself.

Based on the knowledge it has acquired in preparing environmental reports, including research results on social currents concerning environmental issues and trends in environmental reporting, Toppan has supported approximately 70 companies in preparing their own environmental reports. In many cases Toppan proposes the combined use of hardcopy (paper copies) and other media to generate synergistic effects, such as Internet linkage and CD-ROM development. Toppan deploys communication support services as a partner of customers.



Environmental reports assisted by Toppan

Win the FSC CoC Certification

Toppan's Commercial Printing Division was awarded the Chain of Custody (CoC) certification by the Forest Stewardship Council (FSC), an international environmental NGO, in May 2002. This was the first such authorization awarded in the printing business sector in Japan. Since the achievement, the FSC CoC certification has gained attention in many fields and has been awarded to several other Japanese organizations as well.

The Commercial Printing Division was also awarded the FSC CoC certification in wooden processing in February 2003. All wooden POP displays, novelties, display booths in showrooms, and business-use furniture are now produced using wood lumbered from FSC-certified forests.

Toppan will continue to print materials and manufacture wooden products bearing the FSC logo. The products bearing the FSC logo embody three themes: environmental communication between companies and customers, forest management support, and the creation of Toppan businesses. The integration of these themes is expected to align the goals of environmental conservation and economic development.

Many companies order FSC-certified environmental reports, catalogs, and

environmental education tools from Toppan's Commercial Printing Division. Toppan will continue making proposals for wooden products.

Note: The FSC forest administration certification is a system to certify well-managed forests on the basis of principles and standards established by the FSC (Forest Stewardship Council). The FSC CoC (Chain of Custody) certification gives assurance that FSC-certified wood is never mixed with non-certified lumber in the course of production.



Personnel from the division handling the field development of products manufactured with FSC-approved materials

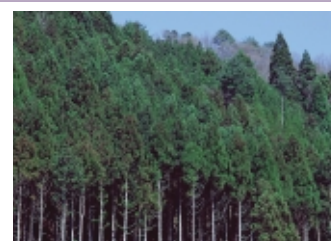


FSC SUPPLIER
SA-coc-1196

FSC TRADEMARK © 1996 FOREST STEWARDSHIP COUNCIL, A.C.

Examples of Wooden Products

- Tables, chairs, and benches
- Sales stands, display racks
- Display furniture for showrooms ● objets d'art
- Speaker boxes ● Racks ● Fancy boxes ● Coasters
- Stationery (rulers, penholders, bookends)
- Trays ● Signboards (plates, nameplates)



Efforts to Create a Recycling-oriented Society

Toppan is fully aware of the importance of taking the initiative in reducing, reusing and recycling to achieve a sustainable society. The company undertakes a host of activities in these areas.

Establishment of the Printed Material Recycling System Recycling printed materials into original printing paper

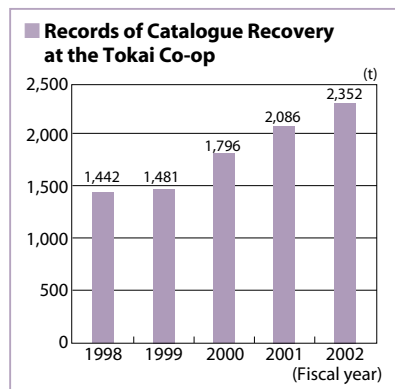
Recycling must be promoted ceaselessly in order to build a recycling-oriented society. Toppan has been promoting a self-completing recycling system for printed materials that encourages activities conducive to resource conservation.

Yet this is a system that can only bear fruit if the paper manufacturers share Toppan's goal of creating a recycling-oriented society. Discarded printed materials recovered from consumers by the paper manufacturers are recycled as Toppan's original recycled printing paper, then re-delivered to consumers in the form of new printed materials.

Up to now, our collection activities have centered on the recycling of catalogues and other printed materials. From here, however, Toppan will explore the possibility 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, and Co-op Mie. During fiscal 2002, the system recovered 2,352 tons of used paper, an approximately 13% increase over the previous fiscal year.

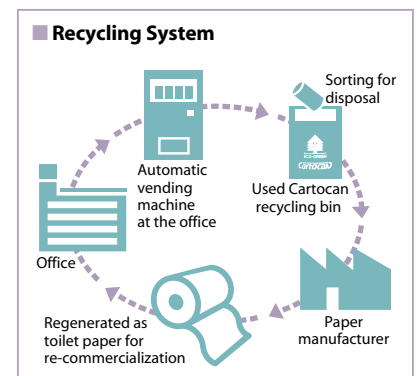
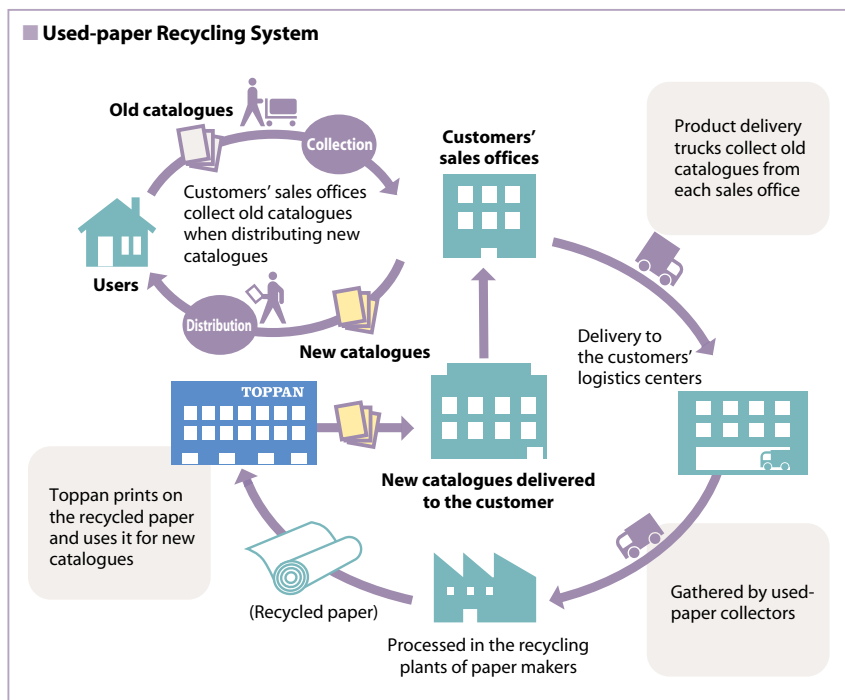


Cartocan Recycling In-house paper recycling

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

In cooperation with trading companies dealing in raw materials in the paper manufacturing industry, the Packaging Division worked out a recycling system to manufacture toilet paper from used Cartocans in January of 2002. The company engages in production and filling operations for Cartocan, one of Toppan's main packaging products.

The system has the capability to recycle unwashed cans and then re-commercialize the recycled material. In fiscal 2002, Toppan became the biggest consumer of ECO-GREEN toilet paper, a product made of approximately 50% used Cartocans, by purchasing 647 cases (60 roles per case) for office use. Toppan employees are using the high-quality ECO-GREEN.



Toilet rolls recycled from Cartocans as a re-commercialized product

AP Carton—Environmentally-friendly Products Born from Communications with Customers



AP cartons used in local fisheries markets in Hokkaido (front left) are significantly lighter than existing wooden cases (back right)



Fishery port in Hokkaido

Resource saving (reduced use of logistics energy)
 This carton weighs 60% less than a wooden carton with the same capacity. Made of waterproof paper for recycling after use.

The AP carton was developed by the Hokkaido Division at the request of customers in the fisheries industry. Conventional wooden fish-transport cartons are replaced with boxes made of an environmentally-friendly paper box impermeable to water.

Troubles that had to be fixed

Conventional fish-transport cartons made of wood consume high energy in transportation due to their leaden weight. Disposal of the used cartons is another serious problem in the stores where the fish are ultimately sold.

One alternative to the wooden carton is a waterproof cardboard box coated with paraffin. This alternative is seriously flawed, as the waxy coating makes the cardboard non-recyclable and produces a thick black smoke when incinerated.

Development of the AP carton

It all started when a customer approached us and asked, "Do you have any fully disposable waterproof boxes

that are sturdy like wood yet light like cardboard?" In ensuing months we thought long and hard over the problem. The AP carton was the culmination of numerous trials and errors with new materials and processing techniques.

The carton is made of a PE (polyethylene)-coated cardboard held together using a special cementing technique. It weighs 60% less than a wooden box, can be easily recycled as paper, and produces little smoke when burned.

The environmentally-friendly AP carton was born from customers' needs. The customer's voice will continue to guide the company as it develops more environmentally-friendly products.



Development Division
 Kazuo Togashi
 "The selection of a cardboard processing method is a major obstacle to both development and material selection. We made samples manually with an old fold line extruder."



Sales Representative
 Shinji Kakugen
 "What convinced us to develop the AP carton? A trip to the fish market to listen to our customers."



Marketing and Sales Promotion Division Manager
 Tomota Kiya
 "The old wooden boxes absorbed water, weighed boats down, and generated vast amounts of garbage. Our customers were at a loss."

Voices of the Customers



Sapporo city Fishery Company Manager
 Mr. Funaki

When we bring out the frozen crabs in summer, the cardboard boxes absorb the heavy condensation.

Cardboard with a paraffin coating effectively resists the water, but those boxes are too difficult to discard after use. In addition, the paraffin coating also makes them environmentally unsound.

The AP cartons are waterproof and easy to discard. They're the perfect solution for summer.



Sapporo city Fishery packaging company Manager
 Mr. Suzuki

Waste disposal is one of the most serious problems in the fishery distribution process (fishery company → market → brokerage → merchandiser). Merchandisers strongly dislike cardboard boxes coated with paraffin, as they produce a thick black smoke when incinerated.

When we consulted with Toppan, they immediately recommended the AP carton.

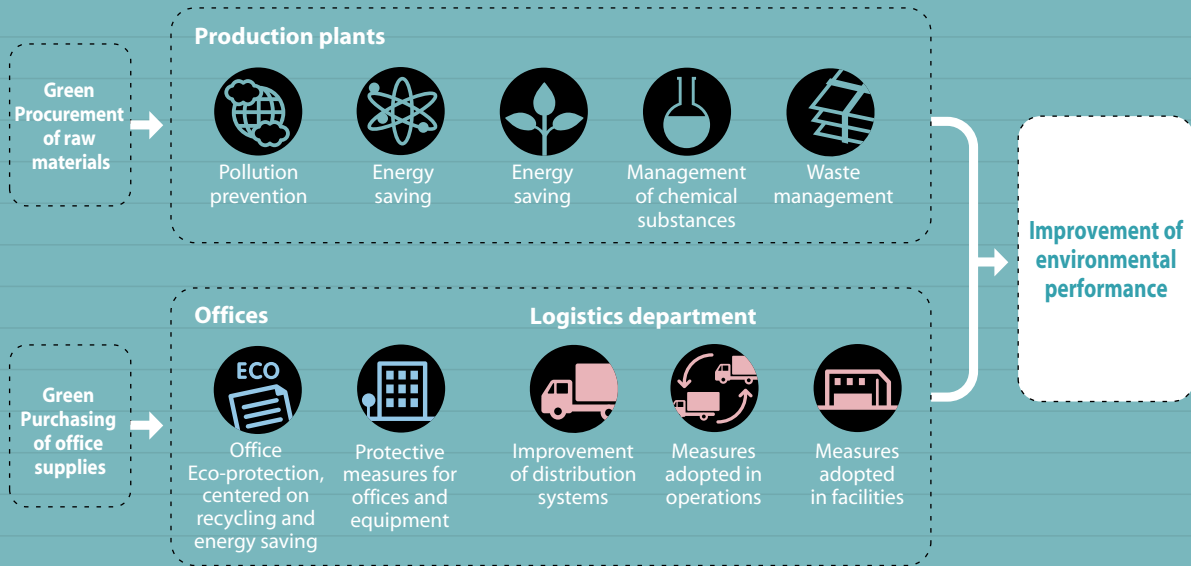
The cartons are waterproof, highly resistant to pressure, and emit very little toxic gas. The AP carton is a fantastic packaging product.

*AP is an acronym for Aqua Proof, an industry synonym for waterproof.

Eco-protection Activities

The efforts at Toppan to reduce the environmental burden of business activities are called Eco-protection Activities. All of the people working at Toppan—at the logistics department, at every plant, at every office—aspire to conserve the global environment and foster a recycling-oriented society.

Eco-protection



Activity Topics for Fiscal 2002

TOPIC 1

Toluene emissions into the air have been reduced by the widening use of environmentally-friendly ink



Toppan achieved an approximately 1,500 t reduction of toluene emissions in fiscal 2002 through the use of environmentally-friendly non-toluene ink. Though this marks good progress, the company must continue to vigorously adopt the use of non-toluene ink and commission new waste gas processing equipment in order to meet its target of a 90% reduction in toluene emissions (fiscal 2001 level) by fiscal 2005.

TOPIC 2

Twelve zero-emission sites now in operation

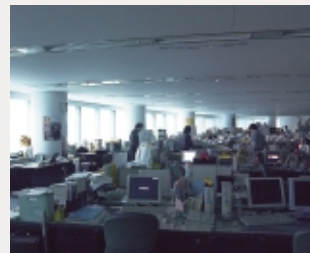


To qualify as a zero-emission site, a plant has to recycle over 98% of the resources that it consumes through the effective use of wastes both inside and outside the site premises. In fiscal 2002, Toppan operated as many as 12 certified zero-emission sites.

Henceforth, the company is pursuing further efficiency enhancements in an effort to increase the number of zero-emission sites to 20 in fiscal 2003. The company will make maximum use of the Toppan Group network in order to achieve its zero-emission targets.

TOPIC 3

Promotion of energy saving activities in all departments



In addition to its Eco-protection Activities in production plants, Toppan also promotes Office Eco-protection Activities in its offices. The Office Eco-protection Activities prioritize energy saving and reduction of CO₂ emissions. The logistics department has substantially reduced CO₂ emissions by introducing low-emission vehicles and improving its logistic systems.

Overview of Eco-protection Activities

To reduce the environmental burden generated by production activities, every Toppan production plant and research center has set up its own Eco-protection Promotion Committee.

Environmental Conservation Activities in Production Fields Activities led by the Eco-protection Promotion Committee

Each operational site has established and organized an Eco-protection Promotion Committee in conformity with the company's Eco-protection Committee Operational Policies to direct activities to reduce the environmental burden at the site level. The sites also organize their own Energy Subcommittees and other sub-committees to deliberate environmental challenges of specific types. The principal aim of these activities is to reduce environmental burden.

- (1) Pollution prevention: Combating the pollution of air, water, and soil; acting to protect the ozone layer.
- (2) Energy saving: Reducing energy consumption and improving the efficiency of energy use.

- (3) Resource saving: Protecting natural resources.
- (4) Management of chemical substances: Reducing the use and emission of hazardous chemical substances and facilitating their proper management.
- (5) Waste management: Acting to achieve zero-emissions.

Sharing data on environmental activities

The Ecology Center compiles and processes the data reported by production plants in their "Eco-protection Achievement Reports," then conveys the data to management. Toppan shares its knowledge of Eco-protection Activities with every person within the company through two channels, Toppan National Eco-protection Meeting (held semiannually) and the Toppan Environment Link intranet.

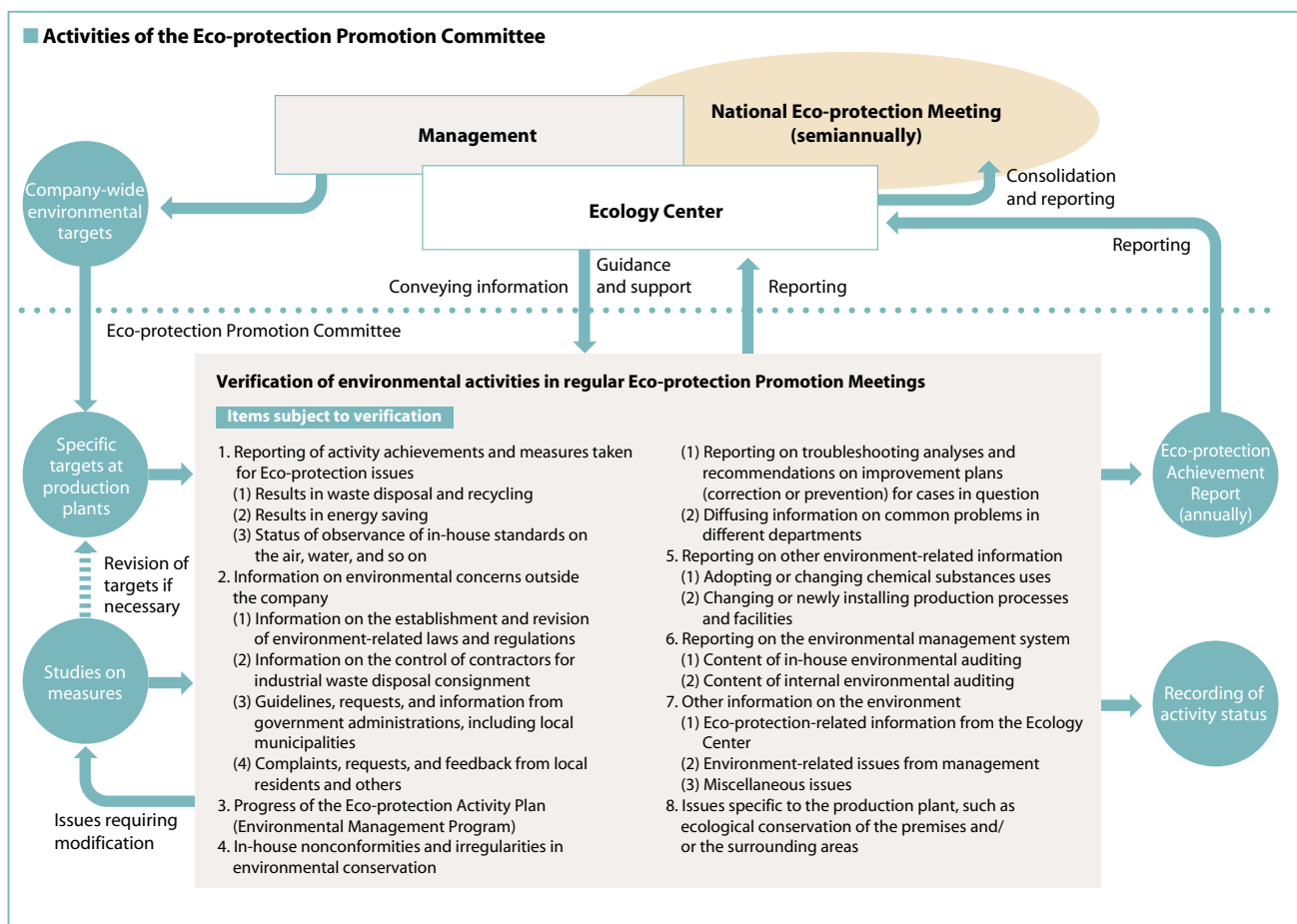
Offices

The offices at each operational site continue their efforts to work smarter. Besides the expansion of Green Purchasing, their efforts focus on the following:

- (1) Office Eco-protection centered on recycling and energy saving.
- (2) Conservation measures for facilities and equipment, such as the adoption of rainwater utilization systems at new buildings, ice thermal-storage systems, motion-sensors for lighting equipment, and so on.

Logistics department

Toppan Logistics Co., Ltd., the logistics specialist in the Group, promotes eco-driving by encouraging the introduction of low-emission vehicles, a "Stop Idling" campaign, economic-speed driving, and other environmentally-friendly practices in the transportation operations of the Group.



Energy Saving & Prevention of Global Warming

In fiscal 2002, Toppan failed to attain its environmental targets related to energy saving and CO₂ emissions. For this reason, the Group is redoubling efforts to achieve its energy saving targets laid out for fiscal 2003.

Toppan is upgrading its Subcommittees on Energy and performing Energy-saving reviews at each of its production plants.

Activities for Energy Saving

Basic policy

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 the following Medium- and Long-term Environmental Targets:

- (1) To reduce energy consumption by 30% per unit of output (financial amount of internal production) in fiscal 2010, relative to fiscal 2000 figures.
- (2) To reduce CO₂ emissions by 7% in fiscal 2010, relative to fiscal 2000 figures.

To achieve the above values, Toppan sets up the Group's company-wide targets for the next fiscal year. Each operational site also lays out its own targets using the financial amount of production, production values, and substitute production values (energy consumption per unit of production volume) for evaluation purposes.

Achievements in fiscal 2002

Toppan set the following targets for energy consumption and CO₂ emissions in fiscal 2002:

- (1) Energy consumption: Maintain the fiscal 2000 level (in terms of financial value per unit of internal production).
- (2) CO₂ emissions: Maintain the fiscal 2000 level.

Actual results for the year fell slightly short of the targets:

- (1) Energy consumption: 5.1% increase compared to fiscal 2000.
- (2) CO₂ emissions: 3.7% increase compared to fiscal 2000.



Energy saving inspection at site

For the last few years, Toppan has funneled its efforts into the building of new production sites, the restructuring of old plant buildings, and other infrastructure developments for new businesses. Major efforts have also been made to enhance working environments and introduce environment conservation equipment in order to improve the bases for Toppan's production systems. In spite of these efforts, the company fell short of achieving its environmental targets for energy consumption in terms of the financial value per unit of internal production.

According to production site evaluations by unit production volume, however, the company has made some progress. Daily management and upgraded production processes have improved efficiency at some of Toppan's production plants in the Living Environment field, and expansions in production quantities have improved efficiency at most of the company's plants in the Electronics field.

Consolidation of energy management system

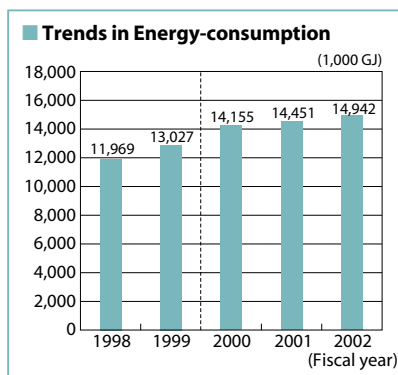
Since fiscal 2003, Toppan has been reviewing its management system for the rationalization of energy use. As first steps to reinforce its rationalization efforts, the company is overhauling its Energy Management Policy, appointing personnel to handle energy management at each production plant, and holding regular meetings of the new Energy Subcommittee (monthly in principle).

The company is also reviewing its equipment-management activities at each production plant to ensure compliance with the Energy-saving Law. Part of this effort includes the Energy-saving Review, a specialized review to identify and correct wasteful practices and processes. To provide access to ample expert knowledge, the subcommittee is held in corporation with the Ecology Center and affiliates in charge of Toppan's Facility Division.

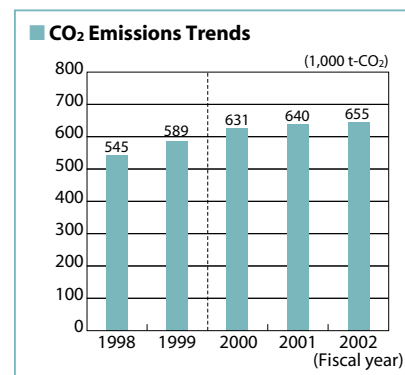
Through the above efforts, Toppan is consolidating and restructuring its energy management system for rationalized energy use.



Energy saving review



Notes: • Calculation base: the values were taken as reference from the Law Concerning the Rational Use of Energy.
• Standards for the scope of data acquisition were changed in fiscal 2000.



Notes: • Calculation base: values taken from the Law Concerning the Promotion of Measures to Cope with Global Warming.
• Standards for the scope of data acquisition were changed in fiscal 2000.

Medium- and Long-term Environmental Targets and Environmental Efficiency Index

Review of Medium- and Long-term Environmental Targets

Under *Toppan Vision 21* in 2000, Toppan has grouped its businesses into five separate fields and promoted activities in each.

Toppan has been actively starting new businesses and expanding existing ones over the past several years. In its environmental monitoring, however, the company has encountered difficulties in evaluating two environmental indices of company-wide activities used since the 1990s, namely, energy consumption and CO₂ emissions.

To improve its grasp of the actual levels, the company will be reviewing Medium- and Long-term Environmental Targets by December 2003.

Environmental Efficiency Index

Toppan will introduce a series of Environmental Efficiency Indices to facilitate the sustainable development of its environmental businesses.

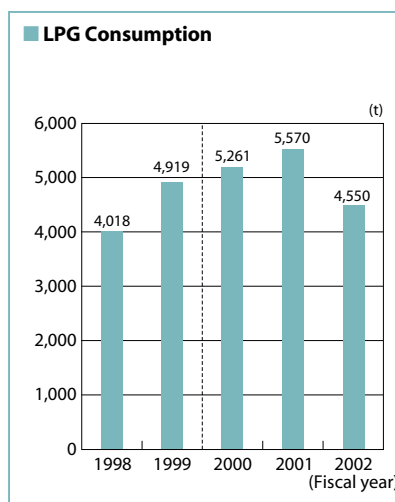
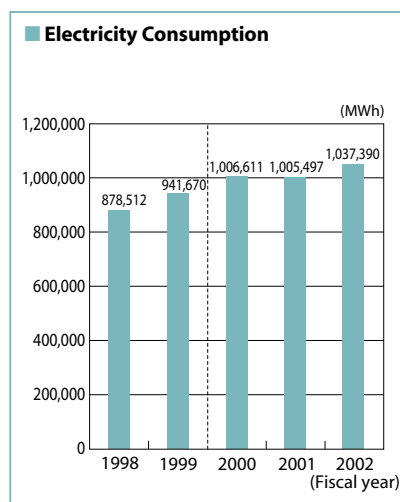
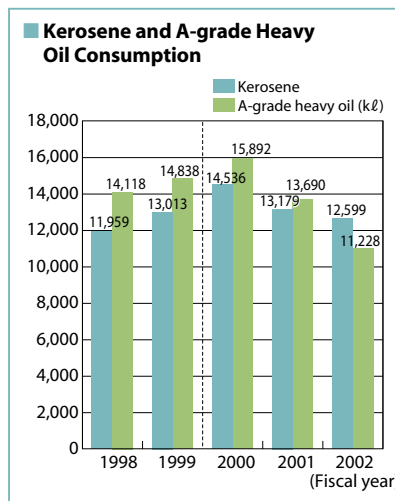
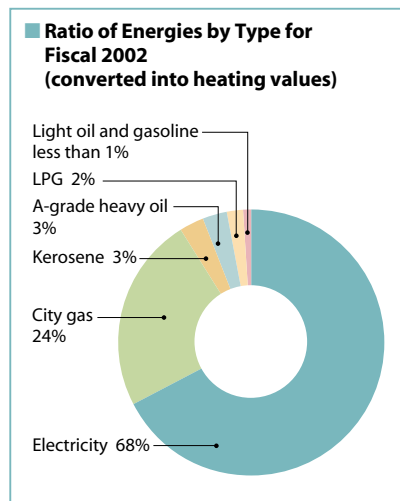
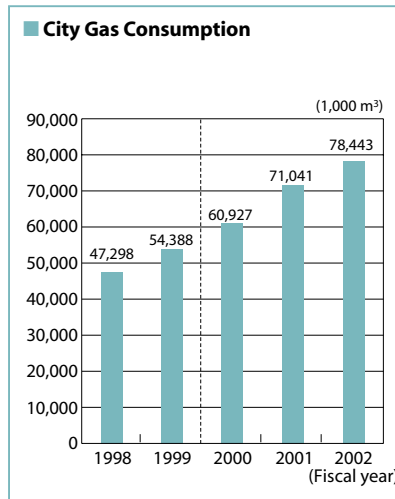
Upon a completion of a trial period in fiscal 2003, the indices will be set up as targets in fiscal 2004.

Toppan has established four main Environmental Efficiency Indices, as described on P.9. Targets have already been set to improve the efficiency with which environmental burdens are reduced.

In fiscal 2003, for example, the company aims to obtain a value of 1.54 for Sales amount/CO₂ emissions, indices of the efficiency with which environmental burdens are reduced. A ratio of 1.39 was achieved in fiscal 2002.

Concepts for Greenhouse Gases Utilizing Kyoto Mechanisms

Toppan's CO₂ emissions are expected to increase as businesses expand. Among energy-saving measures now implemented throughout the company, those implemented in-house are still expected to fall short of their desired effects. To address the problem, Toppan has been directing its eyes outward. In addition to participating in the greenhouse gas emission permit transaction workshops held by Ministry of the Environment, the company is considering adoption of the Kyoto Mechanisms for future emission transactions.



Note: Standards for the scope of data acquisition were changed in fiscal 2000.

Prevention of Pollution & Management of Chemical Substances

Toppan is reducing its environmental burden and preventing pollution by complying with legal regulations and establishing more stringent control standards of its own.

Based on the PRTR Law, Toppan actively promotes the management of chemical substances.

Activities for Pollution Prevention

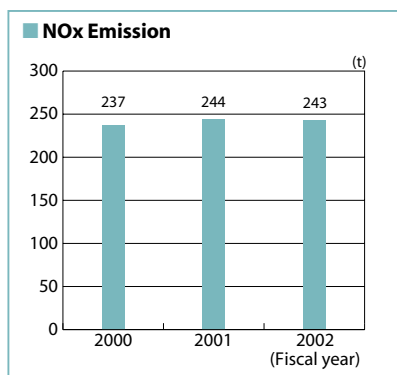
Basic policy

Toppan is now developing activities to prevent pollution and minimize the environmental burden of its production activities. Through these efforts, the company will acquire an accurate picture of the actual state of the various environmental burdens and clarify these burdens for each operational site. The company is decreasing its environmental burden and preventing pollution by complying with in-house control standards (established by the Eco-protection Promotion Committee for each operational site) even more stringent than the legal regulations.

Preventing air pollution

To prevent air pollution, Toppan controls smoke-producing facilities such as boilers and incinerators by switching fuels and managing operations under appropriate combustion conditions. At the same time, the company introduces waste gas treatment facilities for thorough control of air pollution prevention.

In addition, Toppan has abolished seven of its 11 incinerators in order to reduce dioxin emissions in fiscal 2002. The four incinerators still in service have been updated and fitted with advanced dioxin-removal equipment.



Notes: • Calculation base: values taken from the *Environmental Activities Evaluation Program (April 2002)*.
• The calculations methods have changed since fiscal 2002. Data from previous years has been re-estimated using new methods.

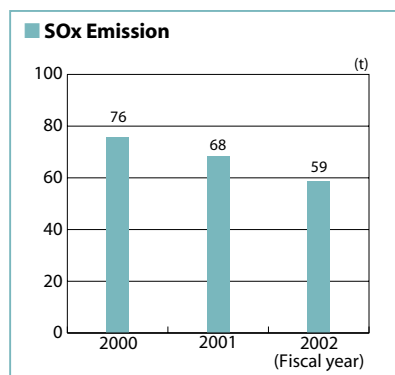
Protecting the ozone layer

In March 1994, Toppan abolished the use of specific CFCs (chlorofluorocarbons) and 1,1,1-trichloroethane, two ozone-depleting substances that were mainly used in cleaning processes. In addition, Toppan regularly updates the 17 of its refrigerating machines throughout the company that still use CFCs (five units abolished in fiscal 2002). Measures to reduce HCFCs (Hydro chlorofluorocarbons), a CFC-substitute used in cleaning processes, will be determined in fiscal 2003, and targets will be set from fiscal 2004 onward.

Preventing water pollution

Toppan reduces water pollution at its plants by installing wastewater treatment facilities tailored 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. The environmental audits performed in fiscal 2002 identified no major nonconformities with laws or regulations that could have directly led to grave accidents.

Toppan is treating wastewater internally by building closed-process water systems at sites for electronics production and plating processes, operations that consume large amounts of water for chemical pro-



Notes: • Calculation method: sulfur (S) content of the fuel used at each operational site is employed as the basis. After converting the value into the quantity corresponding to SO₂, the quantity of SOx emissions from in-house incinerators is added thereto.
• The calculations methods have changed since fiscal 2002. Data from previous years has been re-estimated using new methods.



Twenty eels have been living in water discharged from the Kumamoto Electronics plants for the last three years

cessing and cleaning. In addition to actively reducing water intake and discharge, the company is making more effective use of its water resources with its efficient recycling systems.

Preventing soil pollution

Toppan's principal safety concern in managing its chemical solution storage tanks is to block the leakage of fluids. Walls have been constructed around the storage tanks, and workers regularly inspect the tanks and piping in order to detect cracks and aging before soil pollution can occur.

The company also investigates the potential for soil pollution when expanding, modifying, or removing buildings. At the old plant site in Fukuoka, the measured values proved to exceed the standard limits imposed for the treated soil by the municipality in fiscal 2002. Upon consultation with the Prefecture and city, about 300 m³ of polluted soil was excavated and back-filled with healthy soil. Through the above operations, the polluted soil was adequately treated and disposed in conformity with the Waste Disposal and Cleaning Law.



Waste gases combustion facility

Managing Chemical Substances

Basic policy

Toppan is managing its chemical substances in conformity with the PRTR* Law since the law went into force in July 2000. Management has systematically studied the present status in considerable detail, and it continues to explore the possibility of using alternatives in further efforts to accomplish Toppan's targets.

* PRTR (Pollutant Release and Transfer Register)

A system to register and publicly announce the amounts of hazardous chemical substances released into the environment and the transferred amounts contained in waste.

Achievements in fiscal 2002

For fiscal 2002, Toppan set up the following targets to reduce the amounts of hazardous chemical substances released:

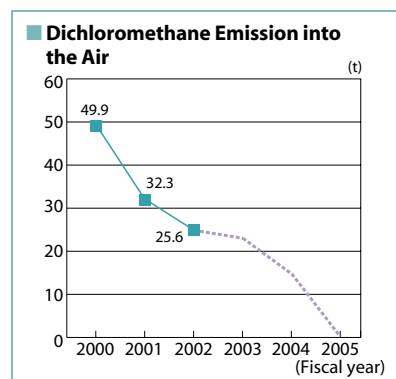
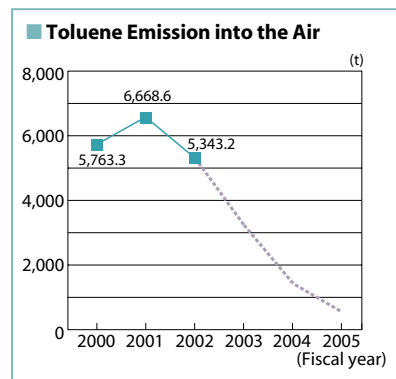
- (1) Toluene emissions into the air: 30% reduction relative to the fiscal 2001 level.
- (2) Dichloromethane emissions into the air: 10% reduction relative to the fiscal 2001 level.

The results of the activities show the following:

- (1) Toluene emissions into the air: 19.9% reduction.
- (2) Dichloromethane emissions into the air: 21.1% reduction.

While Toppan successfully reduced dichloromethane emissions to below the targeted level, it failed to reach its goal in reducing toluene emissions. The main obstacle to reduction efforts was an increase in products that cannot be easily be printed with non-toluene inks. In fiscal 2003, Toppan reestablished the following Medium- and Long-term Targets: reduce dichloromethane emissions to zero, and reduce toluene emissions by 90% relative to the fiscal 2001 level by fiscal 2005.

Toppan improved the accuracy of its measurement and analysis, wastewater processing, and reviews of raw materials. These improvements helped the company achieve reductions in the emissions of eight types of chemicals.



PRTR Investigation at Toppan and Results for Fiscal 2002

(unit: kg/year)

| PRTR No. | Chemical substances | Released amount | Released amount | | | Transferred amount in sewerage system | Transferred amount for disposal |
|----------|---|-----------------|-----------------|----------|---------|---------------------------------------|---------------------------------|
| | | | 1. Air | 2. Water | 3. Soil | | |
| 16 | 2-aminoethanol | 0 | 0 | 0 | 0 | 0 | |
| 24 | n-alkylbenzenesulfonic acid and its salts | 479 | 0 | 479 | 0 | 11,005 | |
| 40 | Ethylbenzene | 66,355 | 66,355 | 0 | 0 | 9,800 | |
| 44 | Ethylene glycol monoethyl ether | 50 | 50 | 0 | 0 | 90 | |
| 63 | Xylene | 80,922 | 80,922 | 0 | 0 | 10,964 | |
| 68 | Chromium and chromium (III) compounds | 49 | 0 | 49 | 0 | 19,193 | |
| 69 | Chromium (VI) compounds | 0 | 0 | 0 | 5 | 2,656 | |
| 132 | 1,1-dichloro-1-fluoroethane (HCFC-141b) | 14,337 | 14,337 | 0 | 0 | 8,288 | |
| 145 | Dichloromethane | 13,186 | 13,186 | 0 | 0 | 5,391 | |
| 179 | Dioxins | — | (172.9 mg) | — | — | (0.3 mg) | (2,349.9 mg) |
| 207 | Copper salts (water-soluble) | 55 | 0 | 55 | 0 | 34 | 345,421 |
| 227 | Toluene | 5,342,119 | 5,342,119 | 0 | 0 | 0 | 933,910 |
| 230 | Lead and its compounds | 30 | 0 | 30 | 0 | 0 | 8,020 |
| 231 | Nickel | 0 | 0 | 0 | 0 | 0 | 0 |
| 232 | Nickel compounds | 236 | 0 | 236 | 0 | 0 | 658,612 |
| 254 | Hydroquinone | 0 | 0 | 0 | 0 | 0 | 12,888 |
| 309 | Poly (oxyethylene) = nonylphenyl ether | 5,953 | 5,953 | 0 | 0 | 0 | 28 |
| 310 | Formaldehyde | 199 | 199 | 0 | 0 | 0 | 337 |
| 311 | Manganese and its compounds | 173 | 0 | 173 | 0 | 0 | 3,719 |

Notes: • Period of computation: April 1, 2002 to March 31, 2003.

• Subjects of notification: 19 chemicals above.

• Operational sites covered: Operational sites that handle 5.0 t/year or more of specified class I designated chemical substances annually (and 0.5 t/year or more of class I designated chemical substances). Overseas subsidiaries and independent subsidiaries are not included in the calculations.

• The amount of transported outside of the operational sites as wastes (including inverse onerous contract and charge-free recycling) is accounted for as a transferred amount for disposal.

Managing Waste

Through its skillful management of waste materials, Toppan has reduced its final landfill disposal amount by 16.7% compared to the previous fiscal year. An increase to 12 zero-emission operational sites has been achieved. Toppan will continue to actively promote the reuse of waste as recycled resources.

Waste Management Activities

Basic policy

Wastepaper, a waste product derived primarily from Toppan's Information & Networks and Living Environment fields, comprises 73.9% of the total waste discharged from Toppan's operational sites. Waste acids (such as waste etchant from plants in the Electronics field) and waste plastics (from plants in the Living Environment field) also make up substantial portions of the total waste discharge.

As an incentive for improved waste management performance, the company has set a target to reduce its final landfill disposal (direct landfill disposal amount + landfill disposal amount of residues from intermediate treatment) by 90% in fiscal 2010, relative to the figure for fiscal 2000. The company uses the following waste-disposal methods to realize this goal (listed in the order of priority):

- (1) Reduction (in waste generation)
- (2) Reuse

- (3) Recycling
- (4) Heat recovery

The company will carefully dispose of any waste that continues to be generated in spite of the foregoing efforts. Manifests of that disposal will also be kept.

Achievements in fiscal 2002

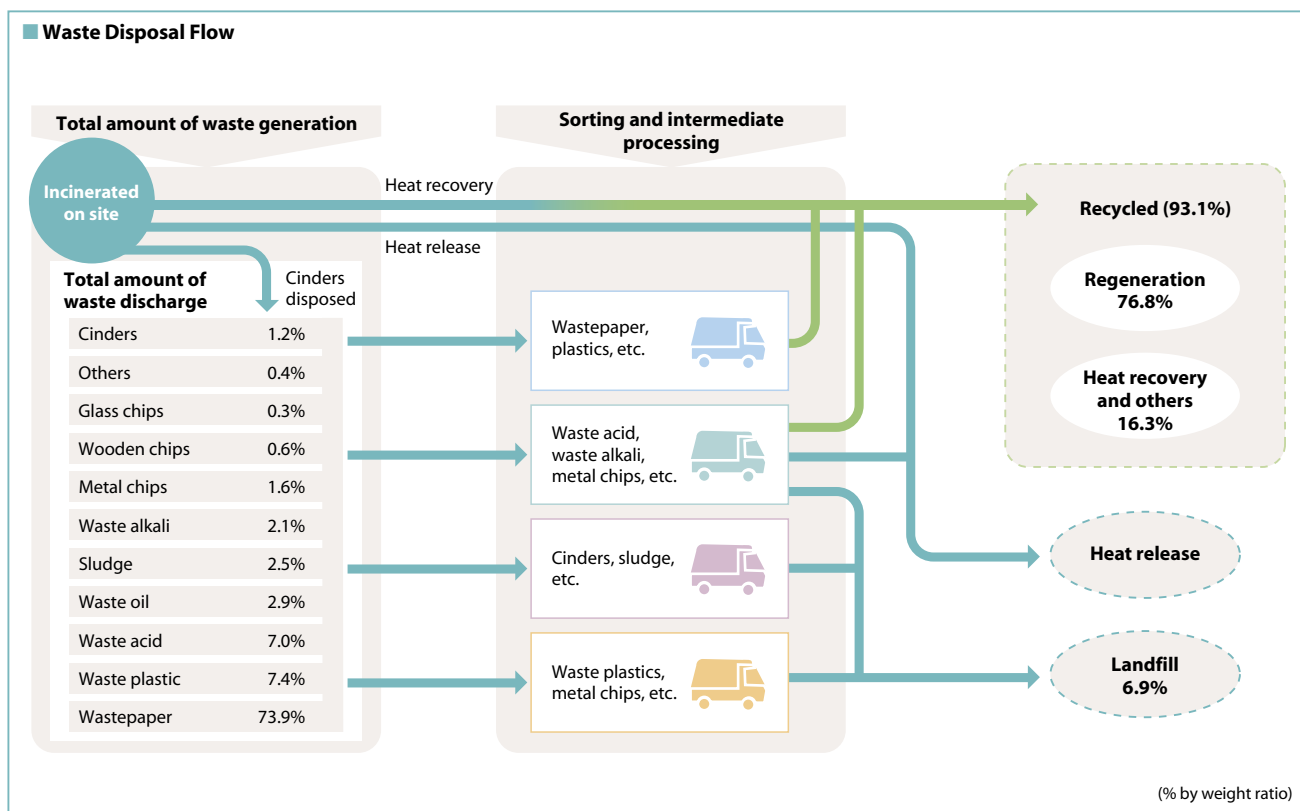
In fiscal 2002, through company-wide efforts, Toppan reduced its final landfill disposal amount by 16.7% relative to the fiscal 2001 level, far surpassing the 10% reduction targeted for the year. The company attributes this success to its more thorough approach to the sorting and recycling of wastes. Further efforts in waste management will focus on two important areas, sludge treatment in the Electronics field (which is continually working on recycling and reuse of generated waste) and the more efficient use and recycling of paper/plastic-layered materials in the Living Environment field.

Reusing Waste as Recycled Resources

Sorting wastes and recycling wastepaper

Toppan considers the sorting of waste materials as the foremost step in the process to reuse waste as a recycled resource. The Group has set up several sets of waste-sorting criteria suited to the conditions at each operational site. To instill greater awareness of the waste sorting process and its importance, management develops educational materials and activities that encourage employees to explore methods for maximizing the reuse of waste materials.

Most of the waste generated at Toppan is wastepaper. The company is already recycling 92.5% of that wastepaper, and efforts are underway to recycle the remaining 7.5% as a recycled resource. The recycling ratio of wastepaper currently stands at 98.9%, including all recycled resources.



Development of Zero-emissions Target

Starting point of activities

Toppan continues to devote a great deal of attention to waste management in order to maximize its reuse of waste as a recycled resource and to achieve its ultimate target of zero-emissions. In 1999 the company chose a number of plants as zero-emission models and launched activities to achieve zero-emissions targets at those facilities. Based on the results achieved at its model plants, Toppan started to certify zero-emission plants in November 2001 (plants that achieve zero-emissions targets.)

Definition of zero-emission

Toppan encountered a major obstacle in achieving this target. As the recycling rate was largely dictated by external factors, progress inevitably required cooperation with outside recycling partners. In a review of its certification criteria, Toppan redefined a zero-emissions plant as a plant with

a recycling rate (regeneration and reuse) of 95% or more, and certified as such by the Ecology Center in the head office. Eleven sites were certified under the new criteria in November 2001.

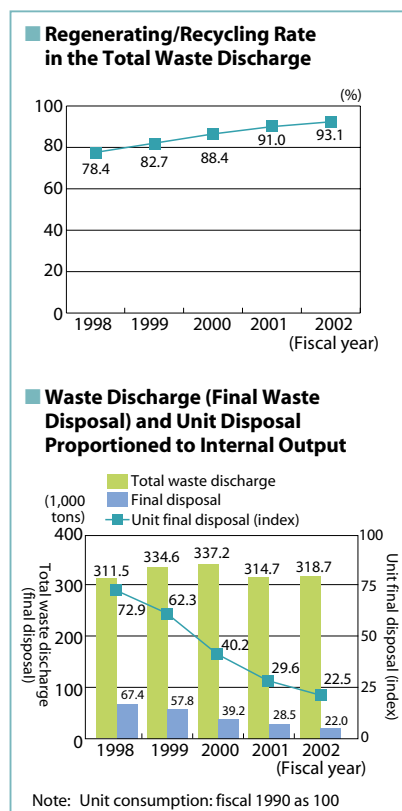
In 2002, besides the modification in the criterion for the recycling rate, one of the zero-emissions criteria was tightened from 95% to 98%, in keeping with the social forces pushing for a recycling-oriented society. To further improve performance at the 17 operational sites that achieved recycling rates of 98% or more in fiscal 2001, Toppan examined specific issues blocking achievement of the zero-emissions target from technical, economic, and regional standpoints. Twelve of the sites were certified at the Toppan National Eco-protection Meeting held in November 2002.

Toppan targets the operation of a total of 20 zero-emission plants in fiscal 2003. Zero-emissions will be achieved by making maximum use of the Toppan Group network.

Reuse of waste as recycled resources

Two important tasks in the work towards zero-emission efforts are to use wastes more effectively in-house and to develop external communication on recycling. Toppan is committed to reusing the waste from each process throughout the company.

In fiscal 2002, Toppan reused 11,983 t of waste solvent and harnessed the heat from the incineration of 19,171 t of waste collected in-house. The company consigns the recycling of acids to third parties and distributes the recycled acid to suppliers. In fiscal 2002, 9,784 t of acid was recycled and put back into circulation.



Plants Certified for Zero-emissions

(Certified in November of 2002)

| Plant | Total waste generated (tons) Fiscal 2001 | Total recycled waste (tons) Fiscal 2001 | Recycling ratio (percent) Fiscal 2001 |
|--|--|---|---------------------------------------|
| 1 Asaka plant (Commercial Printing) | 15,365 | 15,118 | 98.39 |
| 2 Toppan Printing Communications Co., Ltd. | 20,348 | 20,289 | 99.71 |
| 3 Itabashi plant (Publications) | 17,297 | 17,172 | 99.28 |
| 4 Toppan Graphic Co., Ltd. | 54,851 | 54,682 | 99.69 |
| 5 Toppan Graphic Co., Ltd. (Plant No. 4) | 1,920 | 1,906 | 99.27 |
| 6 Toppan Seihon Co., Ltd. | 32,970 | 32,852 | 99.64 |
| 7 Toppan Plastics Co., Ltd. (Sagamihara plant) | 174 | 174 | 100.00 |
| 8 Osaka Toppan Display Co., Ltd. (Oyodo plant) | 3,851 | 3,845 | 99.84 |
| 9 Itami plant (Packaging) | 9,422 | 9,395 | 99.71 |
| 10 Kansai Commercial Printing plant, Takino site (Commercial Printing) | 9,978 | 9,891 | 99.13 |
| 11 Takino Packaging plant (Packaging) | 4,192 | 4,191 | 99.98 |
| 12 Kumamoto Toppan Co., Ltd. | 5,440 | 5,360 | 98.53 |



RPF (Refuse Paper and Plastic Fuel) equipment: facility for recycled solid fuel derived from wastepaper and waste plastics



Waste plastic compression machine

Office Eco-protection Activities

Office Eco-protection is the name Toppan has selected for the environmental activities it undertakes in its offices: chiefly recycling, energy saving, and resource saving. Office Eco-protection starts from the consciousness of the individual employees. The company has also been practicing Green Procurement since fiscal 2002.

Efforts in Offices Office Eco-protection

Toppan calls its environmental activities at offices Office Eco-protection Activities. Broadly speaking, these activities can be placed into three categories: recycling, energy saving, and resource saving.

Recycling activities

As a result of the recycling activities undertaken in fiscal 2002, the recycling rate at Toppan's buildings was 67.0%, about the same rate of the last fiscal year. At the Toppan Koishikawa Building, the single largest source of office waste among Toppan buildings, the rate was 89.2%. The waste sorting process continues to grow more thorough.

Energy saving

Among other energy-saving endeavors in Toppan offices, the company is now installing energy-saving fluorescent lamps and motion sensors for its lighting equipment.

Since the introduction of Toppan's Eco-protection Activities, every employee has acquired a host of daily energy-saving habits, including the adjustment of air-conditioning to manage temperatures, the powering-down of lighting and office-automation equipment during lunch breaks, the use of stairways instead of elevators, and so forth.

Conservation of water through use of rainwater

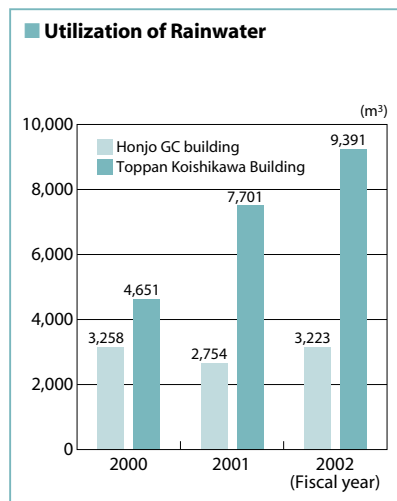
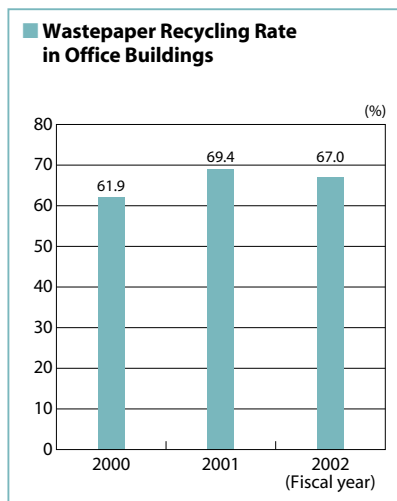
Toppan introduced rainwater use systems in Honjo GC building in April 1994. The Toppan Koishikawa Building also introduced a used-water treatment/recycling system that collects water from cafeterias to reuse for flushing toilets.

Green Purchasing and Green Procurement

The Green Purchasing approach

If Toppan is to contribute meaningfully to the achievement of a recycling-oriented society, the company believes that it must place priority on environmentally-friendly products as a purchaser. Management established its Basic Policy on Green Purchasing in January 1999 and promptly initiated Green Purchasing throughout the corporation.

Under the Green Purchasing policy, Toppan selects and purchases products that meet its in-house Green Purchasing standards, especially for designated product categories: office paper, copiers and printers, personal computers, stationery, office supplies, and toilet paper. Toppan uses 100% recycled paper for internal printed materials, company envelopes, and employee diaries, and 70% recycled paper for business cards.



In-house Green Purchasing Standards and Achievements

| Designated products | Purchase standards | Rate achieved | |
|--------------------------------|---|---------------|-------------|
| | | Fiscal 2001 | Fiscal 2002 |
| Office paper | Must be made of 70% or more recycled paper, with a white-sheen of 80% or less. | 99.2% | 98.6% |
| Copiers and printers | Must have an automatic sleep or shutdown function after remaining idle for a specified period. | 97.6% | 97.9% |
| Personal computers | Must have an automatic sleep or shutdown function after remaining idle for a specified period, with limited electricity consumption in sleep mode. | 99.8% | 100.0% |
| Toilet paper | Must be made of 100% recycled paper, with a white-sheen of 80% or less. | 100.0% | 100.0% |
| Stationery and office supplies | Must bear an appropriate certification (Eco-Mark, Green Mark, etc.) or classification as an environmentally-friendly product in the manufacturer's catalogue. | 85.7% | 86.6% |



Paper sorting station in offices (Akihabara office building)



Used-water recycling facility (Toppan Koishikawa Building)

Approach for Green Procurement

Since April 2002, the Toppan Group has introduced a Green Procurement system that conforms to the Green Standard for Offset Printing Services established by the Japan Federation of Printing Industries.

Toppan has been setting a Toppan Green Procurement Standard based on its Basic Policy on Green Purchasing since fiscal 2002. Under recent trial examinations, 19% of all paper (level 2) and 88% of all offset ink (level 2) purchased were rated as adequate products. Toppan will be reviewing its aggregation standards in fiscal 2003 and pushing its targeted rates for adequate products up by 5%.

Toppan's Green Procurement Standard

| Paper | Level 1 | Level 2 | Remarks |
|---|--|---|--|
| 1. Use of recycled paper | Must be made of 100% recycled paper | Must be 70% 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% or less (up to + 4%) | Must be approximately 80% or less (up to + 4%) | Excluding high quality colored 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 | Consideration of 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% or less (except for rotary press ink) | Must be aromatic-free ink, soy ink, or recycled vegetal-oil ink | |

*Excluding gold, silver and pearl inks.

New Office Friendly to Environment and Ecosystem

Toppan Forms Co., Ltd established a new office at Shiodome, Tokyo, an extremely modern and ambitious urban redevelopment project. The office has been open since June 2003.

The redevelopment is near the Hamarikyu Garden, a famous public garden in Tokyo inhabited by many plants and animals. Companies participating in the redevelopment considered environmental effects imposed on the ecological system around this area in the design and construction of the buildings and city block, based on an environmental impact assessment conducted by the city of Tokyo.

Toppan Forms developed green spaces around its building by planting Japanese kerria and bush clover.

Toppan Forms will continue to audit environmental impact by checking the growth of trees planted in the Hamarikyu Garden. (The Tokyo Metropolitan Government uses the secular changes of these plants as an index of environmental burden within the area.)

The 18th floor of the new Toppan Forms building has an open-terrace designed with environmentally-friendly



Offices in the building



The Shiodome building

features, including planted trees to provide fresh, natural air.

The rest of the building is environment friendly as well, designed for optimal energy saving and resource efficiency using advanced systems modeled after the outstanding energy-saving features of the Toppan Koishikawa Building.

The air-conditioning system incorporates three sub-systems that work together to limit daytime electricity consumption: a gas conditioning system, ice thermal storage system, and building frame thermal storage system.

The "Low-e double glass" adopted for the windows increases thermal efficiently by shielding the building from external heat through multiple design features, including a curtain of air circulating over the glass surface.



Open rooftop terrace

Efforts in Logistics

Toppan Logistics Co., Ltd. handles the logistics of the Toppan Group. The main environmental challenge in logistics is to reduce environmental burden caused by transportation. Among other activities, this subsidiary is actively introducing low-emission vehicles, eco-driving, and other new systems.

Issues and Efforts in Distribution Departments

Reducing air pollutants

To reduce the environmental burden imposed, the logistics departments of the Toppan Group are undertaking and developing various activities to reduce air pollutants, including the CO₂, NO_x and PM emitted by the company trucks. All measures are promoted based on the environmental management system.

Introducing low-emission vehicles

Company cars are being converted to low-emission vehicles (adapted to standards of eight municipalities surrounding Tokyo) throughout the company. As of July 2003, the introduction rate was 30%. In addition, CNG (compresses natural gas) cars have been in service since August 2003.



Low-emission vehicle

Eco-driving

Toppan Logistics Co., Ltd., increased the fuel efficiency of its operations by around 10% from the fiscal 2001 level by actively promoting eco-driving. To meet its target of a 20% reduction in fiscal 2003, the subsidiary holds training sessions for all of its employees and training in practical eco-driving skills for employees individually (semiannually). Both measures will be deployed to partner companies this year.

System operation for CO₂ reduction

Toppan Logistics Co., Ltd., has expanded its Environmentally Balanced Logistics Management system in order to further reduce CO₂ reduction. As an initial goal for fiscal 2010, the subsidiary targets a 10% reduction of CO₂ by unit energy consumption compared to the fiscal 2002 level. The three principal strategies to reach this target are

to reduce the number of vehicles, utilize different types of transportation vehicles, and shorten transportation distances.

Toppan Logistics Co., Ltd., has introduced a new transportation system called WARTS (Wide Area Relay Trucking System). Based on consolidated delivery instructions it receives from logistics departments, WARTS coordinates cargoes shipped out from plants and operational bases in different areas, allowing the consolidated shipment of multiple cargoes from operational bases in specific areas. The system offers the following advantages:

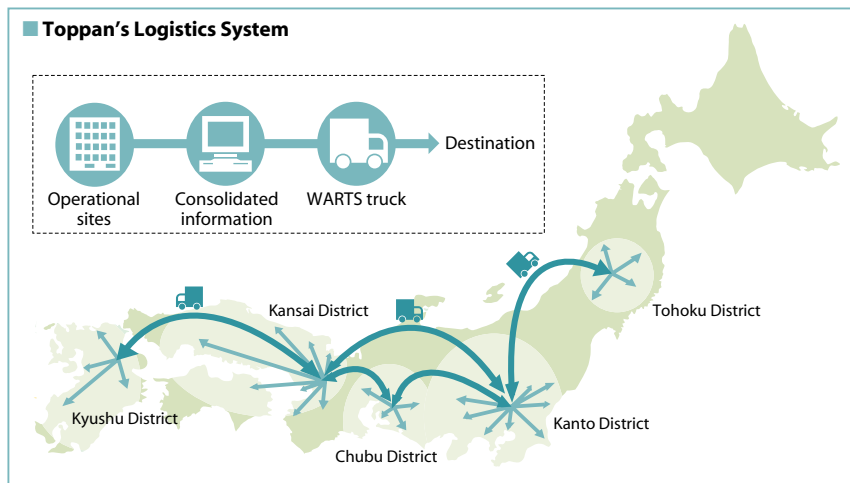
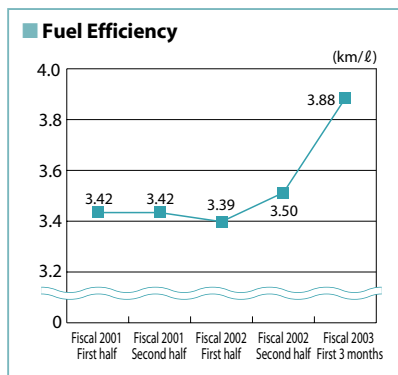
- (1) Reduces the number of trucks operating by an average of about 200 units per month (on a 4-ton truck basis).
- (2) Considerably reduces packing materials.

The system is currently deployed not only in Tokyo, but also the Kansai and Chukyo districts.

Circuit transportation is also adopted to increase the scale of the loads. Trucks driving the circuit can transport consolidated shipments to plural delivery locations.

The second strategy for CO₂ reduction, the shortening of transportation distances, is achieved by increasing the scale of loads using the dispatch support system. Toppan Logistics checks the dispatch schedule to determine the daily shipment amounts, then reduces the transportation distances by calculating the most efficient transportation routes on the transportation schedule, separating via- and direct transportation, and employing various other logistical techniques.

The third activity, conversion of transportation vehicles, is taking place through a modal shift at Toppan Logistics. This modal shift is a conversion from mainline transportation by car to rail transportation, a more energy-efficient method for the transport of goods. The modal shift rate in fiscal 2003 is 22% by cargo weight. Toppan Logistics will continue promoting the modal shift in the future.



Toppan's Satte Plant—Seeking Profits through Environmentally-friendly Businesses

The Satte plant (Interior Decor Materials Division) manufactures wallpaper and decorative sheeting (Ecowall, Ecosheet, and so on) as environmentally-friendly products entirely without the use of polyvinyl chloride. Since earning its ISO14001 certification in March 2000, the plant has continued to expand its activities for improved environmental friendliness and efficiency in the use of resources.

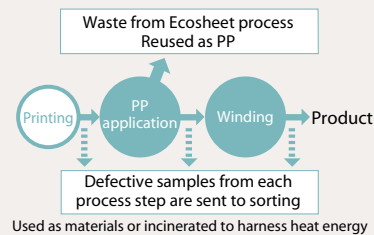
Precision sorting of waste at the Satte plant

The plant generates two major recyclable wastes, the first from the Ecosheet process and the second from the wallpaper process.

The waste from the Ecosheet process consists of pure polypropylene from the so-called clear layer used to cover printed decorative sheeting. Once processed by a simple crushing treatment, the waste material is immediately ready for reuse at an overall expense that the plant expects to recover.

The waste from the wallpaper process consists of defective rolled samples after many process steps such as printing, application of PP, and winding. This waste is difficult to reuse and has a poor recycling efficiency.

Recycling Process and Items



Vibration cutter

Several steps have been taken to improve the recycling process at the Satte plant. Foremost among them is the introduction of a vibration cutter and volume reducer. The cutter cuts the sheet at lengths that dramatically reduce the loading space in transportation, and the volume reducer minimizes paper tubes and other paper before sorting.

New business opportunities through better communication with recycling manufacturers

The Satte plant used to have a simple relationship with recycling manufacturers: it asked them to take away materials. The relationship grew more complex when it began rationalizing recycling costs.

More specifically, the plant seeks to bring in recycling profits by enhancing added values. This can be accomplished by preparing the materials before handing them over, or employing stricter criteria when selecting manufacturers.

As a result of the efforts described so far, the Satte plant has improved its recycling rate from 34.4% to 77.1% within the last two years. Moreover, it expects to attain a recycling rate of 87.0% or better in fiscal 2003 and aims at zero-emission in fiscal 2004.



Sorting of waste (into 8 types) at manufacturing site



Volume reducer

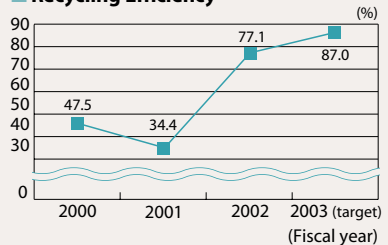


Environment Section Manager of Satte plant: Masashi Amano

Environmental communication with suppliers and the public

The lobby of the Satte plant building is decorated with panels displaying environment-related data. Visitors on business or from the public are free to request any of the environmental reports, site eco-reports, and eco-improvement declarations that Toppan has issued, and to examine the actual products and recycled materials that Toppan produces at the Satte plant. These measures help the company improve its communication with others.

Recycling Efficiency



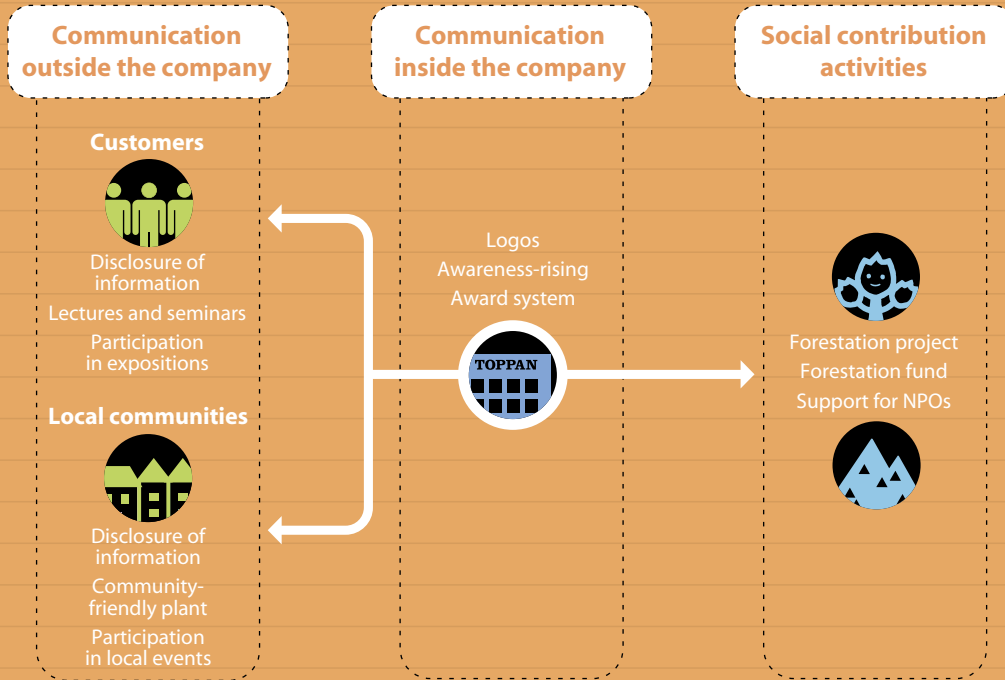
Environmental communication space in the lobby



Waste, recycled materials and products

Environmental Communication Activities

To add substance to Toppan's environmental activities, the company must develop an awareness of environmental practices not only among its employees, but among the many people outside the company with whom Toppan employees do business. 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 and collaborative activities with local communities.



Activity Topics for Fiscal 2002

TOPIC 1

Participation in a regional trade show, Made for the Environment



Toppan supports and participates in regional events for better communication.

The Itabashi plant, a facility specialized in the Information & Networks businesses, presented its environmentally-friendly products and panel displays of its environmental activities at Made for the Environment, a trade show held by the Itabashi Environment Conference Committee, a local environmental group in Itabashi.

TOPIC 2

Environmental workshop support program Eco-Workshop



More and more children are learning about environmental problems in environmental lessons integrated in their school curricula.

Toppan would like to connect children with companies and associations actively engaged in environmental works. As a first step, Toppan suggests the development of special children's workshops on the environment.

TOPIC 3

Two environmental activities cited at the President's Awards ceremony in fiscal 2002



In fiscal 2002, Toppan's CEO cited two outstanding achievements.

The first citation was conferred in recognition of the increased brand power achieved through the certification and rapid construction of the in-house management system leading up to it. The second was conferred to laud the men and women who voluntarily introduced the outstanding system for reducing the environmental burden of gravure plating.

Overview of Environmental Communication Activities

Environmental communication plays an important role in all of Toppan's Environmental Management, Eco-creativity, and Eco-protection Activities.

Toppan promotes environmental management through environmental communication.

Concept of Environmental Communication

Three environmental stages

Toppan believes that environmental management should be promoted in three separate stages.

In the first stage, Environmental Corporatization, the company needs to develop environmentally-friendly products and technologies, reduce environmental burden through manufacture, distribution, sales, and clarify the activities possible with an environmental management system. Collaboration with other Group companies and in-house departments is vital in this first stage.

During the second stage, Environmental Citizenship, the company defines its roles as a member of the society, establishes its relationship with the general public, and engages in environmental and community-oriented activities outside the company in collaboration with citizens.

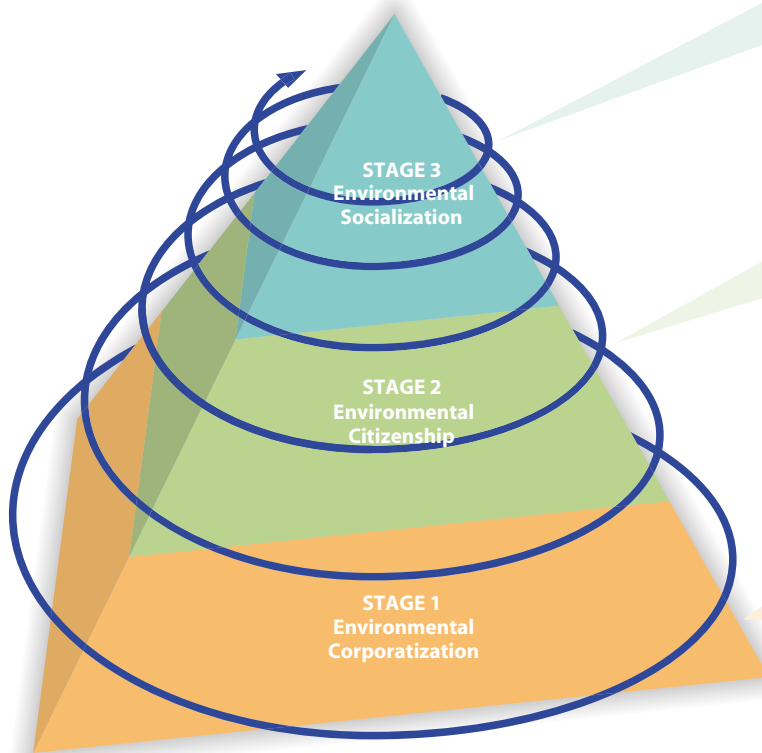
In the third stage, Environmental Socialization, the company forges its strategy to promote a sustainable and recycling-oriented society outside of its in-house framework. Fields of collaboration engage industry, academia, government, and the public at large.

Promotion of environmental management

Environmental communication links Toppan with the various stakeholders involved in these three stages, both inside and outside the company.

Toppan believes that environmental communication is the engine to establish relationships and promote environmental management.

Categories of Environmental Communication Activity



- Organized and hosted the Environmental Communication Exhibition 2002
- Exhibitions at Eco-Products 2002
- Operated the Environmental monitoring system, ecollable Net
- Operated the Tokai Co-op catalog recycling system
- Operated the Cartocan recycling system
- Donated to the Forest Fund (forest saving and environmental education funds)
- Invested in a joint forestation venture in Australia

- Issued the *Environmental Report* and *Site Reports*
- Environmental declaration through Toppan's Label for Environmentally-friendly Products
- Production of Phase of Environmental Communication
- Risk communication
- Activities for symbiosis with local areas
- Ecosystem-saving activities

- Established *Toppan's Declaration on the Global Environment*
- Established the Ecology Center
- Structure and operation of environmental management system
- Environmental Accounting, environmental education, environmental compliance
- Eco-protection Activities at production sites
- Office Eco-protection Activities
- Introduced Low-emission vehicles; Promoted eco-driving
- Developed Toppan Environmentally-friendly Products
- Evaluated products based on LCA and prior products assessment
- Promoted environmentally-friendly printing service
- Promoted support business for preparing environmental reports
- Adopted Toppan's Environmental Logo
- Introduced Toppan Environmental Link
- Established the President's Ecology Awards

Communication inside the Company

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

The President's Ecology Awards are bestowed to commend outstanding environmental activities.

Adoption of Toppan's Environmental Logo Environmental awareness of every employee

Every employee within Toppan must share an awareness of environmental issues if the company is to fully understand its own impact on the environment and promote comprehensive environmental activities. To help propagate this environmental awareness, Toppan adopted an environmental logo in 1999. This logo is now printed on in-house publications, business cards, stationery, and so on to provide a ubiquitous reminder of the environment.

■ Toppan's Environmental Logo



Through its Eco-protection and Eco-creativity Activities, Toppan aspires to devote increasing attention to the global environment. This corporate philosophy and conduct are expressed in the logo. Toppan's environmental efforts and actions are symbolized 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 Earth Month and energy-saving months

To promote participation throughout the entire company, the employees designate each June as Earth Month, and February and August as energy-saving months.

To prepare for the various activities conducted during Earth Month, Toppan sponsors a contest to select environmental slogans corporate-wide. The winning slogans are printed on posters and distributed corporate-wide for display throughout the month. In the fiscal 2003 contest, the company chose eight winning slogans in three categories, from among 3,902 proposed slogans sent in by employees: the No. 1 slogan for the month, two outstanding slogans, and five exemplary slogans.

During the energy-saving months, each operational site posts inspirational posters and slogans to promote energy-saving activities. To expand awareness of these inspirational activities throughout the company, the details of these and other activities are presented to other sites through activity reports prepared at the end of each energy-savings month.



Poster for Earth Month

■ Prizewinning Slogans in Fiscal 2003

| | |
|---|---|
| <p>● No. 1 Slogan</p> <p>An environment declaration to myself: Think always with an eco-certified mind.</p> | Kyosuke Fuji (Hokkaido Division) |
| <p>● Outstanding Slogans</p> <p>Resources are limited. Efforts are not. Act now for the environment.</p> <p>Change comes from attitude. Make Toppan the No. 1 friend to the environment!</p> | <p>Keiji Okazaki (Toppan Graphics Communications Kansai Co., Ltd.)</p> <p>Takehiko Yanagawa (Publications Printing Division)</p> |
| <p>● Exemplary Slogans</p> <p>Designing products with reduced waste. Efficient and effective production.</p> <p>Two hands are better than one; 10,000 hands are better than two. Thinking environment? Think network!</p> <p>Waste nothing as you work, and throw nothing away. Keep the Earth clean. Regenerate the Earth with wise ideas.</p> <p>A beautiful Earth is a gift to the future! Take the first small steps now.</p> <p>If each of us saves a little energy, we'll have a whole lot for tomorrow.</p> | <p>Masaru Oda (Packaging Division, Kansai Division)</p> <p>Yoshio Kawaguchi (Toppan Hokkaido Insatsukako Co., Ltd.)</p> <p>Yoshimi Todate (Toppan Printing Communications Co., Ltd.)</p> <p>Mitsunori Yoshino (Electronics Division, Display Dept., Kumamoto plant)</p> <p>Yoichiro Tsuna (Packaging Division, Kansai Division, Takino plant (Packaging))</p> |

Toppan Environmental Link

The Toppan Environmental Link was set up on the in-house intranet in May 2001 as a channel through which to share environmental information. Links are provided to environmental information and data on environmentally-friendly products both inside and outside the company in order to raise the environmental awareness of employees.

Toppan began reviewing the system in fiscal 2003 and has provided interactive input to activate in-house communication activities.



Toppan Environmental Link

President's Ecology Awards

Toppan newly incorporated the Ecology Awards in its biannual lineup of President's Awards as a strategy to stimulate the environmental efforts of employees. Two achievements were selected and awarded in fiscal 2002: the first FSC-CoC certification in the printing business sector and the introduction of an environmentally-friendly gravure plating system.



FSC-CoC certification awarded at the President's Ecology Awards

Communication outside the Company

Toppan discloses its environmental information through its *Environmental Reports*, *Site Reports*, Label for Environmentally-friendly Products, and other means.

The company also promotes participatory activities such as seminars and exhibitions on environmental themes.

Disclosure of Environmental Information

Continual publication of Environmental Reports

Toppan has been disclosing environment-related information in its *Environmental Report* since 1998.

With the globalization of business activities, the company has also been disclosing environmental data in English since 2000. The same information published as the *Environmental Report* in booklet form is posted on our website, where it can be seen by as many people as possible.

Issuance of Site Reports

Since fiscal 2000, Toppan's ISO 14001-certified operational sites have been issuing the *Site Reports*, periodic communications directed to municipalities and residents in surrounding areas. To obtain copies of the *Site Reports*, e-mail eco@toppan.co.jp.

This *Environmental Report* deals only with environmental performance data on a Group level. Environmental performance data on specific sites can also be found on Toppan's website.



Site Reports in 2003

Environmental Report URL

<http://www.toppan.co.jp/english/index.html>

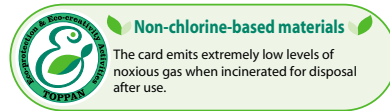
Contact address for Site Reports

eco@toppan.co.jp

Adoption of Toppan's Label for Environmentally-friendly Products

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

By the end of March 2003, a total of 57 products were internally qualified to bear Toppan's Label for Environmentally-friendly Products. (See P.26 to P.29.)



Label for Environmentally-friendly Products

■ Captions on Toppan's Label for Environmentally-friendly Products (a few examples)

- Non-chlorine-based materials
- 30% recycled paper
- Biodegradable plastic
- Resource saving (reduced use of materials)
- Use of recycled materials
- Weight-saving paper containers
- Reduced release of chemical substances
- Low-halogen material
- Recyclable as cardboard
- Recyclable as paper packs

Eco Workshop

Toppan invited Eriko Teranishi, a skilled creator of recycled handicrafts and industrial arts, to hold an Eco workshop for parents and children on December 15, 2002. To prepare for the holiday celebrations shortly ahead, participants made their own Christmas wreaths from advertising catalogs.

Participants began by rolling printed advertising leaflets tightly into thin tubes of paper, then weaving the tubes together to form frames for their wreaths. Next they

Other Communication Activities Symposiums

To promote a fuller understanding of the environmental efforts outside the company, Toppan participates in a wide variety of lectures and seminars, including both its own programs and the symposiums and conferences of trade and industrial organizations.

Environment-related exhibitions

Toppan believes that hosting and participating in environmental exhibitions puts environmental communication into practice. (See P.10 to P.13.)

In December 2002, Toppan and Toppan Forms Co., Ltd. set up a joint exhibit at Eco-Products 2002 to introduce visitors to the many environmental initiatives taken by the Toppan Group.



Eco-Products 2002



decorated their frames with knick-knacks and ornaments, and colored them vividly with lacquer spray. Participants returned home with beautiful wreaths for their Christmas celebrations.

Toppan will continue to organize fun and rewarding workshops in the future.

Working with Local Communities

Toppan carries out a wide range of activities at the company's operational sites nationwide in collaboration with local residents and communities.

The company also began developing its risk communication system in compliance with the newly enforced PRTR law.

Communication with Local Communities

Basic risk communication policy

Conventionally, Toppan has each of its sites respond to local inquiries. The newly enforced PRTR law requires companies to more transparently account for the environmental impacts imposed by their business activities. Toppan has met this requirement by conducting environmental assessments to elucidate the current status of its environmental activities and by reviewing its methods to communicate with people outside of the company through risk communications.

Toppan's headquarters prepares guidelines for the communication and holds Risk Communication Study Sessions to share information.



Environmental monitoring around a site

Principal Activities for Smoother Coexistence with Outlying Communities

Space opened at the Toppan Koishikawa Building

The Toppan Koishikawa Building in Bunkyo ward, Tokyo was completed in May 2000. The facility sits within an expansive area (about 3,000 m²) of open greenery encompassing about 200 mature trees and some 30,000 shrubs. The grounds are open to local residents as well as employees, and all are encouraged to come and relax whenever they please.



Space open to the public nearby the Toppan Koishikawa Building

Multi-purpose facilities open to local residents

Two of Toppan's multi-purpose club facilities are open to residents in their neighborhoods: the Yuai Fraternity Plaza at the

Asaka plant (Niiza city, Saitama Prefecture) and the gym in the Itabashi plant (Itabashi ward, Tokyo).

Organizing plant tours

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.

Mikkabi Toppan Printing Co., Ltd., a manufacturer of paper containers in Inasa, Shizuoka Prefecture, organized a plant tour in January 2003 for 45 third-graders from a social studies class at a nearby primary school. Tour hosts working at the plant introduced products, manufacturing processes, the plant history, and basics on general plant management such as measures for commuting.

In March 2003, a worker at the Mikkabi plant discovered a baby horned owl on the plant grounds. The worker informed the municipal government of the baby horned owl, and a civil servant came to the site to take care of strayed creature.

Toppan believes these responses are important symbiotic activities reflecting the company's commitment to local areas and nature.



Plant tour

Submission of Environmental Burden Reduction Plan to Saitama Prefecture

Toppan compiled and submitted an Environmental Burden Reduction Plan for its seven plants in Saitama Prefecture on the basis of the Saitama Living Environment Conservation Regulation. The plants are now disclosing their environmental protection activities under the plan, including their programs to reduce CO₂ and waste emissions. The company describes its



seven Saitama plants as Eco-up plants.

Toppan Graphic Co., Ltd. (Kawaguchi city), the biggest Information & Networks site in the prefecture, reconstructed its environmental communication system for obtaining ISO 14001 certification in August 2002. The company actively promotes communication with neighborhood associations by reporting their environmental activities through seminars and other channels.



Mikkabi Toppan Printing and a strayed baby horned owl

Social Contributions & Awards

As a major player in the printing industry and handler of vast quantities of paper, Toppan is pioneering activities to protect forest resources and conserve the global environment.

Toppan environmental activities have earned a long succession of awards and commendations.

Social Contributions

Forestation activities

In January 1997, Toppan set up a joint corporation for forestation in southeast Australia and western Victoria with Oji Paper Co., Ltd. and the Nissho Iwai Corporation. The three companies mainly plant early-maturing eucalyptus and other broadleaf trees, with the goal of covering a total area of 10,000 hectares by the year 2007. New sprouts will quickly take the place of trees felled when logging begins in 2008, and still newer sprouts will be planted. Toppan will continuously invest in this project.

The venture participants have also joined a research project cosponsored by the Japanese government and private enterprises seeking the development of a concrete method of measuring the amounts of CO₂ absorbed by forested trees. This project was started shortly after the Seventh Conference of the Parties to the U.N. Framework Convention on Climate Change. The absorption source monitoring method is being developed and monitored in the joint venture forests in the State of Victoria.



Six months after the start of forestation



Four years after the start of forestation

Product sales to fund forestation

Toppan reserves a portion of the revenue earned from sales of Cartocan (paper-based beverage container) to donate to "Environmental Funds for the Earth and



Cartocan

Future," an NPO that runs the Forest Fund, a fund for forestation and environmental education in Thailand. The company contributed 1.3 million yen in fiscal 2002.



Environmental Report 2001 awarded in the Fifth 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—Toppan head office, Akihabara |
| December 2001 | The Excellence Award at the Fifth Environmental Report Awards 2001 |

Toppan's Participation in Environment-related Organizations

| Organization | |
|--|--|
| Japan Ecology Foundation | Japan LCA Forum |
| WWF (the World Wide Fund for Nature) Japan | ECOMATERIALS Forum, The Society of Nontraditional Technology |
| Nikkei BP Eco Management Forum | Society for Chemical Risk |
| Green Purchasing Network | Environmental Study Group, Japan Environment Association |
| UNU Zero Emissions Forum | Network for Environmental Reporting |
| Global Reporting Initiative Forum Japan | Collect-and-Use Recycling Association, others |

Treefree Funds

Starting from 1995, the Japan Ecology Foundation has managed a forest saving fund as a part of its Treefree activities to develop and diffuse treefree paper. Fund revenue is mainly provided in the form of donations from participating companies, and grant money is additionally provided to support greening activities. In fiscal 2002 the foundation paid an NGO about 9 million yen to help save the environment around the Chiang Mai mountains in Thailand and provide environmental education to an ethnic minority dwelling in the area. Concurrent environmental con-



servations are underway in Mongolia, a landlocked country highly susceptible to global warming. The foundation promotes various joint projects with NGOs in providing various environmental services, including environmental education at the Ecology Center of the Mongolia University of Education and forestation of land stripped bare by devastating forest fires in Ulan Bator.

INPUT/OUTPUT DATA

Toppan's Business Fields and Environmental Impact

Three business fields

Toppan has positioned itself as a leading company in the information communication industry. To operate within this position, the company has classified its operations into five categories.

Toppan divides its operations into three fields of business—Information & Networks, Living Environment and Electronics—based on the scale of operations and other factors. Products are manufactured in each operational category, and comprehensive data on environmental burden is compiled in each field of business.

The environmental impacts of company operation

Given the very wide range of Toppan's

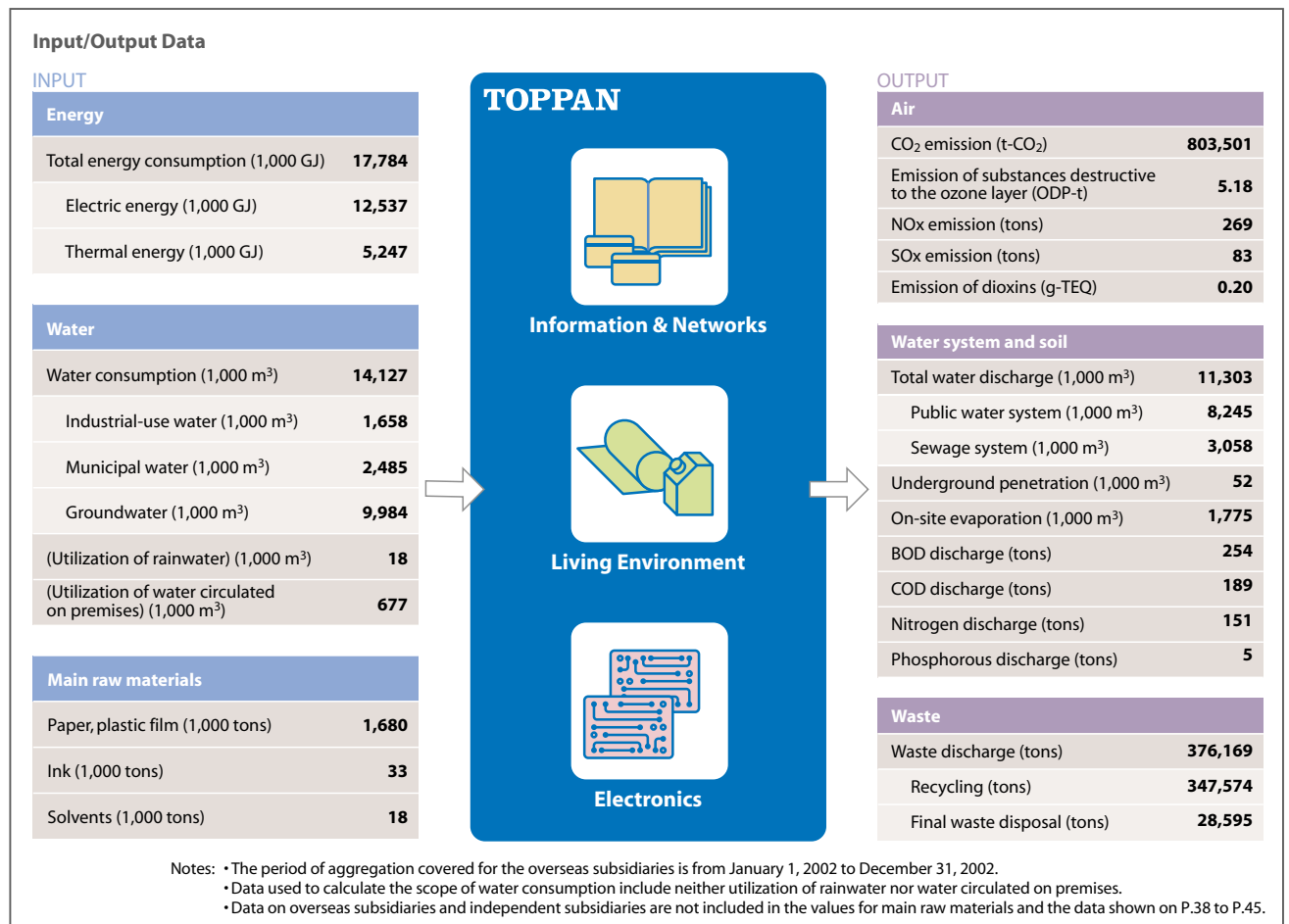
operations, it stands to reason that the company has an impact on the environment in various ways. The environmental burdens of the printing industry can be divided into input and output. Input refers to the raw materials and fuels whose consumption in the production of commodities such as paper, plastic film, ink, and solvents may deplete resources, encourage sequential logging, and cause acid rain.

Output refers to the chemicals discharged from production processes and emissions of pollutants such as chlorofluorocarbons and CO₂ (carbon dioxide) from fuel consumption. The chief environmental impacts from output include ozone destruction, and global warming. Other factors to be taken into account include the environmental impacts on air, water, and soil, the generation of environmental

problems in the course of activities such as waste disposal, and indirect environmental impacts through the use and after-use of products.

To best reduce its environmental burdens, Toppan must accurately understand the impacts imposed by all company processes and operations. Each operational site at Toppan records its input and output of substances and utilizes these data to calculate its environmental burdens.

Once the burden is quantified at each site, the company sets environmental targets in priority areas and assesses the results of environmental activities conducted over the previous year.





Products and Environmental Impact of the Information & Networks Field

Environmental impact of production processes

Operations in the Information & Networks field employ a diverse range of information technologies for works in commercial printing, publications printing, securities printing, and the production of cards. Production plants in the Information & Networks field mainly undertake offset printing, a process broadly divided into plate-making, printing, and finishing.

The plate-making process includes the creation of positive films for printing and the production of press plates. The outputs of this process consist of wastewater, the developing and fixing solutions used in film processing, waste films, and other substances that pose environmental burdens.

Two methods are typically used for off-

set printing: sheet-fed and web offset (on an offset rotary press). The main distinction between these two methods resides in their drying methods. The web press performs vaporation drying via a hot-blast dryer, while the sheet-fed press utilizes an oxidative polymerization reaction that allows the ink to stick to the paper. 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.

Bookbinding is representative of the finishing process. This process generates wastepaper from cutting when it converts printed paper into books and the like. The output from bookbinding (consisting of spoilage) poses the greatest environmental burden.

Input/Output Data for the Information & Networks Field

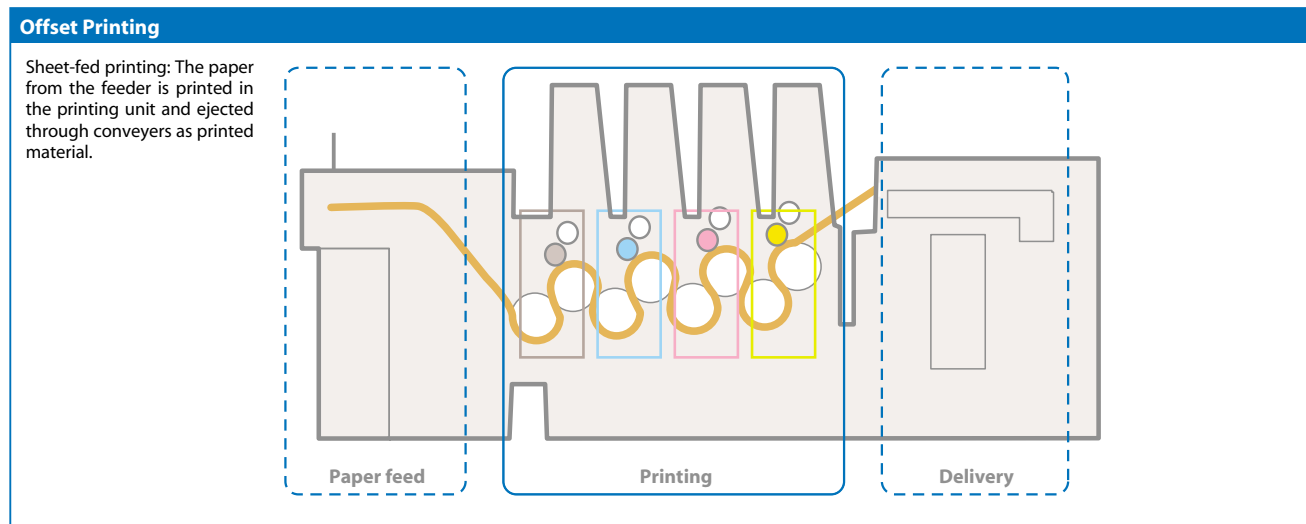
INPUT

| Energy | |
|---|--------------|
| Total energy consumption (1,000 GJ) | 6,965 |
| Water | |
| Water consumption (1,000 m ³) | 2,291 |

OUTPUT

| | | |
|-----------------------|---|----------------|
| Air | CO ₂ emission (t-CO ₂) | 308,078 |
| | Emission of substances destructive to the ozone layer (ODP-t) | 3.33 |
| | NO _x emission (tons) | 124 |
| | SO _x emission (tons) | 8 |
| | Emission of dioxins (g-TEQ) | 0.13 |
| Water system and soil | Total water discharge (1,000 m ³) | 1,704 |
| | Underground penetration (1,000 m ³) | 7 |
| | On-site evaporation (1,000 m ³) | 559 |
| | BOD discharge (tons) | 144 |
| | COD discharge (tons) | 45 |
| | Nitrogen discharge (tons) | 17 |
| Waste | Phosphorous discharge (tons) | 2 |
| | Total waste discharge (tons) | 227,883 |
| | Recycling (tons) | 221,100 |
| | Final waste disposal (tons) | 6,783 |

Information & Networks Production Process



The characters and images of a printed page are displayed on a computer monitor and edited by digital processing (DTP: Desktop Publishing). After mockups with layouts and color samples are printed and proofread, the data is corrected digitally and passed on to the plate-making process.

This process is used to produce press plates for printing (machine plates or stamps). An original film plate is prepared from the original data, then a machine plate is obtained via film printing to a PS plate (Presensitized Plate) and conveyed onto the development process. CTP (Computer To Plate), a process to directly produce machine plates from input data, is now becoming the mainstream process.

Four colored plates (yellow, magenta, cyan, and black) are placed within the offset printing machine, each color is printed, and the ink is allowed to dry. Two types of offset printing machines—sheet-fed machine and rotary machine—are used. The rotary machine can handle duplex print, which makes it more suitable for high-volume printing.

The printed material undergoes bookbinding processes (such as perfect binding, saddle stitching, side stitching, etc.) as needed, and is then subjected to gloss-finishing processes such as lamination, press-coating, coating, and so on.

Finished prints are delivered in various forms: magazine, book, catalog, booklet, flyer, poster, calendar, share-certificates, gift vouchers, and so on.



Products and Environmental Impact of the Living Environment Field

Environmental impact of the production process

Operations in the Living Environment field include packaging and the manufacture of materials for industrial use. The business itself is focused on the development of products that can contribute to more comfortable lifestyles. Most of the operations in this field involve gravure printing, a process mainly comprised of cylinder-making, printing and finishing.

The printing plate is usually a metallic cylinder made of steel or aluminum, surface coated with successive layers of copper and chrome plating. Though the wastewater is successfully treated and reused, environmental burdens are imposed by the sludge from the wastewater treatment and waste solutions derived from the

replacement of the electroplating solutions.

Gravure printing on a rotary gravure press is accomplished by diluting numerous colors of ink with organic solvents. When printing multicolored products, every color printed must be treated by vaporation using a hot air drying unit (dryer) to ensure that the ink adheres to the substrate surface. For this reason, the thermal energy used for drying (input) and the discharge gas from the dryer unit (output) pose a significant environmental burden in this type of printing.

The finishing process includes various steps such as lamination onto the printing substrate and die cutting. Input (thermal energy for melting resins and heat sealing) and output (waste plastic discharged as die-cutting scraps) both pose environmental burdens in this process.

Input/Output data for the Living Environment Field

INPUT

| Energy | |
|---|-------|
| Total energy consumption (1,000 GJ) | 5,302 |
| Water | |
| Water consumption (1,000 m ³) | 2,308 |

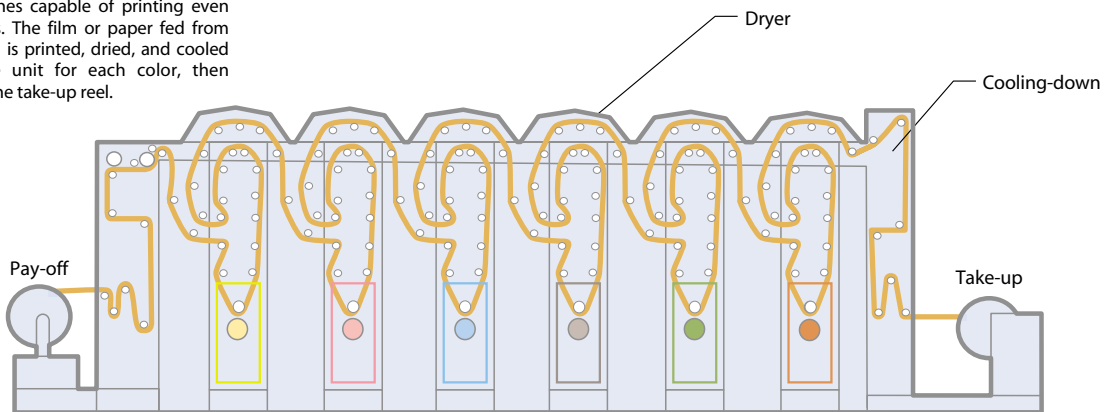
OUTPUT

| | | |
|-----------------------|---|---------|
| Air | CO ₂ emission (t-CO ₂) | 268,377 |
| | Emission of substances destructive to the ozone layer (ODP-t) | 1.86 |
| | NOx emission (tons) | 118 |
| | SOx emission (tons) | 60 |
| Water system and soil | Emission of dioxins (g-TEQ) | 0.05 |
| | Total water discharge (1,000 m ³) | 1,757 |
| | Underground penetration (1,000 m ³) | 42 |
| | On-site evaporation (1,000 m ³) | 476 |
| | BOD discharge (tons) | 45 |
| | COD discharge (tons) | 45 |
| Waste | Nitrogen discharge (tons) | 17 |
| | Phosphorous discharge (tons) | 2 |
| | Total waste discharge (tons) | 106,280 |
| | Recycling (tons) | 94,653 |
| | Final waste disposal (tons) | 11,627 |

Living Environment Production Process

Gravure printing

Gravure printing is often performed by rotary presses, machines capable of printing even on plastic films. The film or paper fed from the pay-off reel is printed, dried, and cooled on a separate unit for each color, then wound up on the take-up reel.



Editing
The characters and images of a printed page are displayed on a computer monitor and edited by digital processing (DTP: Desktop Publishing). After mockups with layouts and color samples are printed and edited, the data is corrected digitally and passed on to the plate-making process.

Plate-making
Fashioning the printing cylinder using image data. Based on the image data, an electrical graving machine engraves the image onto the surface of a cylinder. The cylinder surface is coated with copper beforehand to facilitate engraving, and a coat of chrome is applied after the engraving to fortify the surface. The engraved negative spaces are filled with ink for printing.

Printing
Cylinders for each color are set on the gravure printing machine, then ink diluted with organic solvent is used to print on base materials such as films. The process is completed once the ink settles onto the base materials through the processes of drying and cooling.
Recently developed environmentally-friendly inks have no organic solvents. The company plans to use water-based ink and biodegradable ink for gravure printing in the future.

Various finishing processes
Once printing is completed, most printed materials are converted through procedures such as pasting with films, extruder processing, embossing (making surface bumpy), die cutting, and slitting (to adjust the shape of products).
Converted prints are delivered to customers in various forms: films, packaging materials such as paper containers for liquids, decorative paper for buildings, decorative sheets, and wallpaper.

Delivery to the customer



Products and Environmental Impact of the Electronics Field
Environmental impact of the production process

Plants in the Electronics field mainly provide components used for the manufacture of semiconductors and displays. Toppan designs and manufactures a host of electronic components and devices, including photomasks used in the manufacture of semiconductors and LSI (large-scale integrated circuit) package-related products such as lead frames, shadow masks for CRTs, color filters for LCDs (liquid crystal displays), and printed wiring boards for various electronic units.

Production facilities in the Electronics field require extremely clean environments. Most of the products are produced in clean rooms, where air-conditioning equipment is used to maintain constant

temperature and moisture. The input of the energy consumed for this air-conditioning poses an environmental burden.

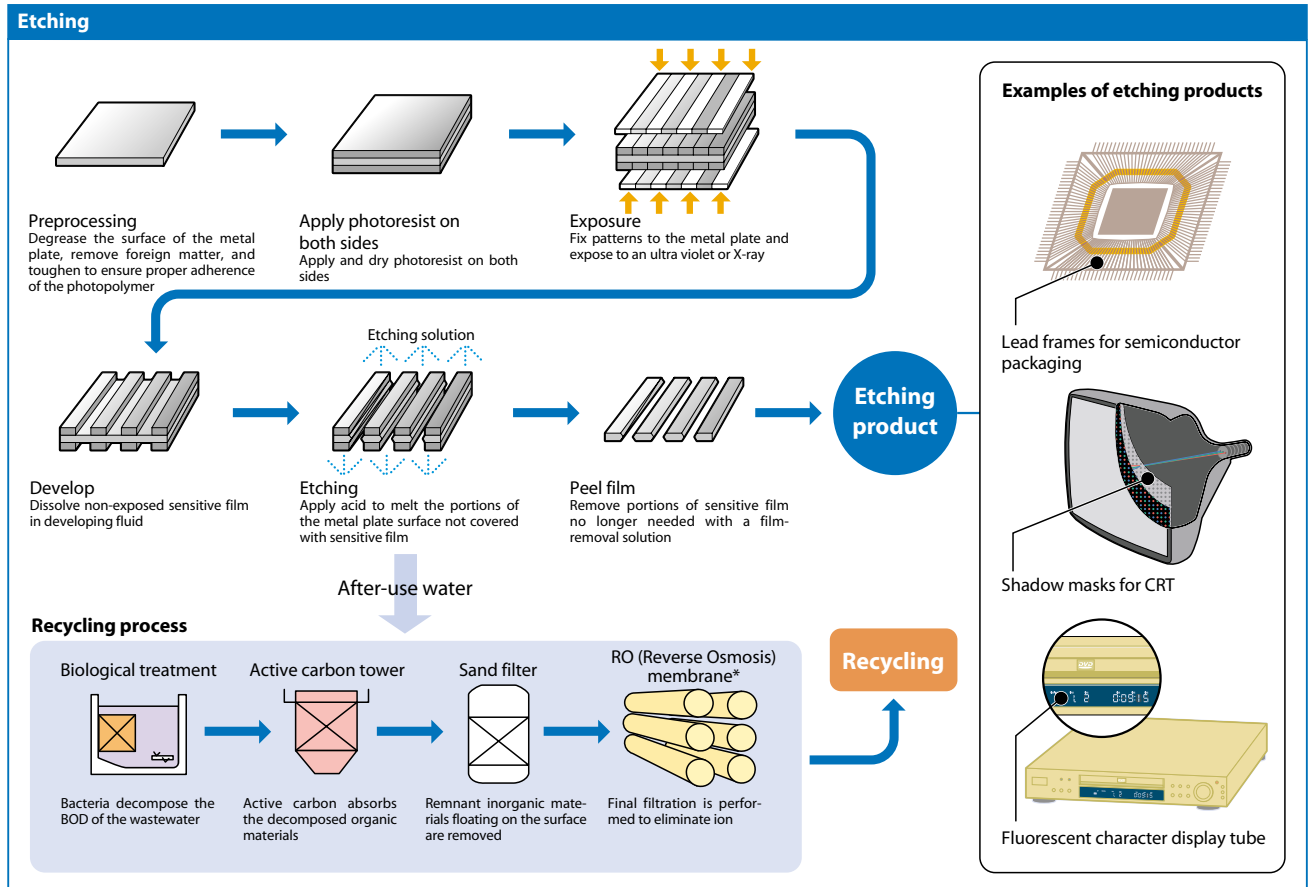
Among the many subprocesses employed in production, the etching metals with chemical etchants merits special environmental attention. The etching subprocess prints patterns onto a photoresist-coated metal, develops the print, rinses away elements other than the photopolymer in the etching solution, and finally applies a coating, for example, a metal plating, to produce a finished product. The wastewater derived from the repeated washing in this process is neutralized in treatment equipment and finally discharged into the public water system. This 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 the Electronics Field

| INPUT | |
|---|--------------|
| Energy | |
| Total energy consumption (1,000 GJ) | 4,864 |
| Water | |
| Water consumption (1,000 m ³) | 9,219 |

| OUTPUT | | |
|------------------------------|---|----------------|
| Air | CO ₂ emission (t-CO ₂) | 201,401 |
| | Emission of substances destructive to the ozone layer (ODP-t) | — |
| | NO _x emission (tons) | 23 |
| | SO _x emission (tons) | 15 |
| | Emission of dioxins (g-TEQ) | 0.02 |
| Water system and soil | Total water discharge (1,000 m ³) | 7,570 |
| | Underground penetration (1,000 m ³) | 2 |
| | On-site evaporation (1,000 m ³) | 691 |
| | BOD discharge (tons) | 57 |
| | COD discharge (tons) | 94 |
| | Nitrogen discharge (tons) | 115 |
| Waste | Phosphorous discharge (tons) | 1 |
| | Total waste discharge (tons) | 40,423 |
| | Recycling (tons) | 30,289 |
| | Final waste disposal (tons) | 10,134 |

Electronics Production Process



*RO (Reverse Osmosis) membrane: A membrane that traps almost all solutes but allows water to freely pass through.

Personal Services

Content distribution network *Bitway* on the Internet

To respond to the rapid spread of broadband into households, Toppan is vigorously promoting *Bitway*, Japan's largest content distribution service.

Since obtaining a patent on its business model for content distribution to PCs, the company has added to its existing services for PCs and PDAs with a new service for cell phones. Through its affiliation with Handango Inc., America, the world's largest content provider, Toppan's PDA service @*irBitway* now offers Japan's largest content menu. Toppan is also enriching the service menu for *HandyBitway*, the company's third-generation cell phone service.

Besides the company's original *Mapion* map search system, Toppan now deploys the *Chizu i-Mapion* service for cell phones (official site for NTT DoCoMo i-mode). Efforts are underway to attract more paying subscribers.



Bitway and Toppan's other content businesses

Next-generation Products

Constructed Technical Research Institute Experiment Center

Toppan is now building infrastructure to expedite the development of electronics and next-generation products in the fields defined in *Toppan Vision 21*. Base facilities have already been established to accel-

erate research and development for next-generation semiconductor technologies in a clean experimental environment. This project was commenced with the introduction of large projection screens, next-generation semiconductor parts, and other equipment for experimentation. The com-

pany will also press ahead with its current research in high-definition and high-density technologies for next-generation semiconductors.

Toppan established a facility to pioneer these R&D themes with the completion of the Technical Research Institute Experiment Center next to the company's main Technical Research Institute in Sugito town (Katsushika, Saitama Prefecture). Since the commencement of operations in January 2003, the center has placed top priority on research themes related to *Toppan Vision 21*. To streamline development, the center has prioritized themes related to *Toppan Vision 21* and set target dates for the acquisition of experimental results.

Employees can flexibly change the level of cleanliness in the experimental clean room from class 1,000 to class 100,000. This advanced feature provides researchers with the best possible experimental environment for business examinations.



Technical Research Institute Experiment Center

Toppan's Environmental Chronology

Toppan's first major environmental efforts came in the 1960s when the company launched activities to prevent pollution. The company has since evolved into a true global citizen.

| Activities in the Toppan Group | | Societal developments |
|--|------|--|
| <ul style="list-style-type: none"> Established the Environmental Management Division at the head office, established environmental maintenance departments at all production divisions, and introduced the pollution-prevention audits | 1971 | <ul style="list-style-type: none"> Ministry of the Environment established |
| | 1987 | <ul style="list-style-type: none"> Montreal Protocol on Substances that Deplete the Ozone Layer adopted |
| | 1988 | <ul style="list-style-type: none"> Eco-Mark adopted, Control Law on CFCs enacted |
| | 1989 | <ul style="list-style-type: none"> Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal adopted |
| <ul style="list-style-type: none"> Introduced the company's first cogeneration system | 1990 | |
| <ul style="list-style-type: none"> Established the Ecology Center within the head office (Reform the corporate-wide environmental management structure and management system) | 1991 | <ul style="list-style-type: none"> The Global Environment Charter established by Keidanren |
| <ul style="list-style-type: none"> Established <i>Toppan's Declaration on the Global Environment</i>, Toppan's basic philosophy for environmental action Added the Ecology Award to the Toppan President's awards | 1992 | <ul style="list-style-type: none"> Hosting of the U.N. Conference on the Basic Environment (Global Summit) |
| <ul style="list-style-type: none"> Established the Toppan Voluntary Plan on the Global Environment as a basic guideline for conduct | 1993 | <ul style="list-style-type: none"> Basic Environment Law enacted |
| <ul style="list-style-type: none"> Halted the use of specific CFCs and trichloroethane Started in-house environmental audits in oversea subsidiaries | 1994 | |
| | 1995 | <ul style="list-style-type: none"> Containers and Packaging Recycling Law enacted |
| <ul style="list-style-type: none"> Received the Fuji Sankei Group Award at the Fifth Global Environmental Awards Joined the Green Purchasing Network | 1996 | <ul style="list-style-type: none"> Commencement of the ISO 14000 Series (Environmental Management System) Green Purchasing Network established |
| <ul style="list-style-type: none"> Introduced an ISO 14001-compliant environmental management system at all production plants | 1997 | <ul style="list-style-type: none"> Hosting of the Third Conference of Member Countries to the United Nations Framework Convention on Climate Change (COP3) and adoption of the Kyoto Protocol |
| <ul style="list-style-type: none"> Developed an in-house LCA method for packaging products Obtained ISO 14001 certification at the Shiga and Kumamoto plants (Electronics) Commenced publication of the <i>Environmental Report</i> | 1998 | <ul style="list-style-type: none"> NPO Law enacted Home Appliance Recycling Law enacted |
| <ul style="list-style-type: none"> Introduced a system to promote Green Purchasing throughout the entire company Introduced the RPF system at the Sagamihara plant (Packaging) Introduced Toppan's Environmental Logo Introduced environmental accounting | 1999 | <ul style="list-style-type: none"> Revised Energy Conservation Law put into force PRTR Law enacted Law on the Promotion of Countermeasures against Global Warming enacted Environmental Impact Assessment Law enacted |
| <ul style="list-style-type: none"> Established <i>Toppan Vision 21</i> Established Toppan's certification standards for environmentally-friendly products Achieved zero-emissions target at the Sakado plant Obtained ISO 14001 certification at the Niigata, Sate, Kashiwa, Sakado and Ranzan plants Organized and hosted the Environmental Communication Exhibition 2000 Exhibited products in Eco-Products 2000 | 2000 | <ul style="list-style-type: none"> Green Purchasing Law enacted Construction Recycling Law enacted Basic Law for Promotion of a Recycling-Oriented Society enacted Food Recycling Law enacted |
| <ul style="list-style-type: none"> Obtained ISO 14001 certification at the Akihabara and Ebie offices Introduced the Toppan Group Consolidated Environmental Accounting The <i>Environmental Report 2001</i> selected for the Excellent Performance Prize at the Environmental Report Awards 2001 | 2001 | <ul style="list-style-type: none"> Revised Waste Treatment Law put into force Law concerning Special PCB-related Measures enacted Revised Automobile NOx Law put into force Establishment of the "Offset Printing Services" Green Standards by the Japan Federation of Printing Industries |
| <ul style="list-style-type: none"> Obtained ISO 14001 certification at the Itabashi site, Fukuzaki plant, Takino site, and Toppan Graphic Co., Ltd. (Kawaguchi) Obtained ISO 14001 certification at three overseas plants (Siam Toppan, Toppan Hong Kong, Toppan America) Extended the Toppan Group Consolidated Environmental Accounting to the company's overseas subsidiaries Introduced e-learning into Toppan's environmental education system Established the Toppan Green Procurement Standards Revised the company's zero-emission certification standards | 2002 | <ul style="list-style-type: none"> World Summit on Sustainable Development (Johannesburg Summit) held Soil Contamination Countermeasures Law established Disclosure of report data commenced based on the PRTR Law |
| <ul style="list-style-type: none"> Enhanced the group environmental management system through the Toppan Group Environmental Committee Obtained ISO 14001 certification at the Gunma plant | 2003 | <ul style="list-style-type: none"> The Law for Promotion of the Nature Restoration enacted Discussion for utilization of Kyoto Mechanisms accelerated Electric shortage in midsummer stirs social concern over energy saving requirements |

Independent Review of *Environmental Report* & Questionnaire Results

To ensure the credibility of the information reported herein, Toppan has had independent examiners review this *Environmental Report* since fiscal 2001. This section outlines the procedure and results of the review. At the end of this section, readers will find the results of a questionnaire submitted to persons who read last year's *Environmental Report*.

Toppan's Approach to the Review

Background

Toppan issued its first *Environmental Report* in 1998. This year's report is the third report to undergo an annual independent review by Asahi & Co.

In producing its *Environmental Report*, Toppan attempts to provide a clear source of information on the group's commitment to environmental preservation, with specific and demonstrative data on the results the group has achieved. To ensure the credibility of this data, the company has had the environmental performance indexes and environmental accounting results reviewed independently by Asahi & Co for the last three years in a row.

An independent review and PDCA cycle

Toppan relies on independent reviews not only for their evaluations of the various environmental performance and accounting indexes used, but also guidelines for continuous improvement of the indexes.

Once each independent review is finished, the reviewer issues a report on the results. In addition to the reviewer's assessments of Toppan's internal administration of data collection, calculation methods, reporting coverage, and calculation accuracy, this report includes advisory comments to effectively promote Toppan's environmental protection activities. The company closely studies the results as it prepares for actions to be taken in the following year using the PDCA (plan-do-check-action) cycle system.

Reporting on the Review Results Findings (points improved and points to be improved)

For an overview of the results, please refer to the report on the Independent Review of the *Environmental Report 2003* on P.61. Asahi & Co, the auditor, has also reported the details on the reviewers' findings in their examinations. A summary of the commentary follows.

As to the environmental performance, Toppan has set the medium- and long-term targets based on fiscal 2000, and strived to achieve them. In fiscal 2002, the scope for aggregation was expanded. To enable comparison with data from previous years, the earlier data were determined by estimation. The auditor evaluated this effort. Yet it also pointed out that there were some overseas sites that had not measured or aggregated water discharges. Toppan has started to collect data on CO₂ emissions based on the company's distribution activities. As this data has yet to be collected from some of the companies within the Toppan Group, the reviewers recommend data collection from the entire group and full disclosure of the results.



Review at Toppan Forms Co., Ltd.

■ Procedure of Independent Review

| | | |
|---|---|--|
| Planning | <ul style="list-style-type: none"> ● Discussion and planning | A hearing to review improvements from the previous year; examination of methods and scope of aggregation; determination of the schedule and the sites to be reviewed |
| Implementation | <ul style="list-style-type: none"> ● Top management interview | Interview with the president on the topics of Eco-protection, Eco-creativity and environmental communication activities for fiscal 2002 (preparations for the "Message from the President" for 2003), the stance of the Toppan Group toward environmental management, and the status of environmental reporting and environmental accounting |
| | <ul style="list-style-type: none"> ● Examination at head office Toppan Printing and members of the group | A hearing on data collection methods, including internal rules; examination of analytical methods and evidence (with questions and answers); examination of the calculation accuracy and appropriateness of methods; examination of consistency among data (including descriptions) |
| | <ul style="list-style-type: none"> ● On-site review | Shiga plant, Gunma plant, Toppan Forms (head office and Hino plant) |
| Final review of the <i>Environmental Report</i> (script) | <ul style="list-style-type: none"> ● Review at head office | Review of the draft of the <i>Environmental Report</i> (screening for negative information) |
| Internal review at Asahi & Co | <ul style="list-style-type: none"> ● Internal review meeting | Before submitting the independent review, Asahi reviewers uninvolved in the Toppan review examine the review procedure, examine the review results, and draw up their conclusions about the <i>Environmental Report 2003</i> |
| Submitting the Independent Review Report | <ul style="list-style-type: none"> ● Submission of the Independent Review Report | The independent reviewer submits the Independent Review Report |
| Meeting the examiner | <ul style="list-style-type: none"> ● Briefing on the findings in the independent review | The independent reviewer reports the findings in the review |

For aggregation of environmental accounting, the identification of environmental conservation costs related to the purchase and use of environmental protection facilities is important. The costs are, for instance, additional costs, expended for the difference between green products and conventional ones; and the other costs contained in operational facilities or products, and they should be deducted in relation to their rate for purpose of environmental protection. Toppan revised the cost classification and the environmental preservation ratio of some environmental protection facilities in response to items pointed out during the on-site reviews in the previous year. The revision and adoption of a unified aggregation method throughout the entire group has continuously improved the level of precision.

Regarding environmental targets that were not reached this year, Asahi & Co recommended that Toppan describe the causes and solutions in detail in the *Environmental Report*, in order to improve the report as an effective tool for environmental communication.

Asahi & Co

Independent Review Report on the "Environmental Report 2003"

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

1. Purpose and Scope of our Review

We have reviewed the "Environmental Report 2003" (the "Environmental Report") of Toppan Printing CO., LTD. (the "Company") for the year ended March 31, 2003. 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 third 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
September 4, 2003

Questionnaire results

Toppan attaches a questionnaire to each copy of the *Environmental Report* as a tool to promote dialog with readers (also posted on the Toppan website). The questionnaire is also used as part of the environmental education session held for new Toppan employees.

According to results for fiscal 2002, 76.6% of the readers and new Toppan recruits who responded to the questionnaire assessed the *Report* as "Easy to understand," while 21.9% rated it as "Average." In evaluating the content of the *Report*, 79.7%

replied "Sufficient," while 19.6% selected "Average." When asked to rate the "most impressive" sections in the report, readers cited the following, in descending order: "Eco-protection Activities," "Eco-creativity Activities," and "Toppan's Businesses and Environmental Impact."

Respondents also provided a number of helpful suggestions on ways to improve the *Report*. A few examples follow.

- The report should list specific figures on Toppan's long-term targets.
- Similar data on other companies should

be provided as a reference for comparison.

- The report should have a section for children.
- The report should describe Toppan's activities based on the Kyoto Protocol.
- The authors should provide more detail in their explanations to help consumers more fully understand the importance of developing environmentally-friendly products.

Toppan will consider these suggestions from respondents in its ongoing effort to improve the *Environmental Report* and the company's environmental communications.



TOPPAN PRINTING CO.,LTD.

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



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