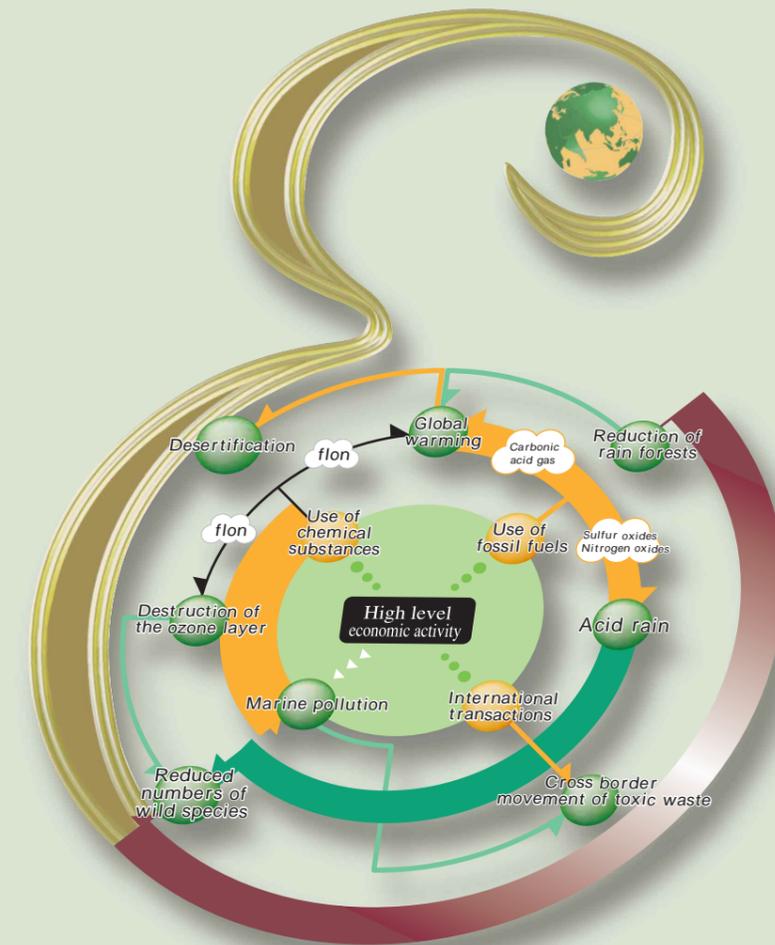


TOPPAN

ENVIRONMENTAL REPORT 2001

Toppan Group's Environmental Conservation Activities



Contents

Message from the President 1
Corporate Profile and Scope of the Environmental Report 2
Toppan Group's Commitment to the Environment 4
Principal Environmental Activities for Fiscal 2000 6
Environmental Accounting 8

1 TOPPAN'S BUSINESSES AND ENVIRONMENTAL IMPACT 10
Principal Businesses and Environmental Impact 11
Information & Networks 12
Living Environment 14
Electronics 15

2 ENVIRONMENTAL MANAGEMENT ACTIVITIES 16
Environmental Management Structure 17
Environmental Management System 18
Education and Emergency Response 21

3 ECO-PROTECTION ACTIVITIES 22
Outline of Eco-protection Activities 23
Prevention of Pollution 24
Energy and Resource Savings 26
Waste Management 28
Management of Chemical Substances 31
Office Eco-protection 32
Efforts in Product Distribution 34
Overseas Operations 35

4 ECO-CREATIVITY ACTIVITIES 36
Overview of Eco-creativity Activities 37
Development and Supply of Environmentally-friendly Products 38
Toppan's Environmentally-friendly Products 40
Development of Environmental Support Business 44

5 COMMUNICATION ACTIVITIES 46
Internal and External Communication Activities 47
Information Disclosure and Activities to Harmonize with Local Communities 48
Social Contributions and Awards 49

Toppan's Environmental Chronology 50
Environmental Targets for Fiscal 2001 51
Summary of Independent Review and Questionnaire Results 52
Compositional Considerations for the *Environmental Report 2001* 53
Independent Review of the *Environmental Report* 55

About the cover:

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

Editorial policy

The *Environmental Report 2001* has been put together with the *Environmental Reporting Guidelines* (Fiscal Year 2000 version) of the Ministry of Environment as a guide. As far as possible, we tried to arrange the reported matters according to guideline items, with a view to facilitating comparison by type of business or by company. Also, the data indexes were taken, wherever possible, from the Ministry of Environment's Environmental Performance Indicators for Businesses (Fiscal Year 2000 version).

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

- (1) Specialized environmental terms were marked "*" and explanations were inserted.
- (2) For graphs, an explanation and description of data-calculation methods were provided, to make values easy to read.
- (3) Effort was made to avoid using industrial terms and internal jargon, as far as possible, and when such a term had to

be employed, it was appended with an explanation.

- (4) To invite as many people as possible to read this report, we employed numerous illustrations, tables, and photographs, and chose characters of easy-to-read size. Consideration was also given to making discrimination of data easy, with color, tabs, and appropriate page composition.

In addition to the above, some unique innovations were employed to make this a more "reader-friendly" report.

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

Furthermore, to enhance the reliability of our *Environmental Report*, it is subjected to examination by a third party, effective as of the current fiscal year.

Environmental Report 2001

■ Period covered

April 1, 2000 to March 31, 2001.

*Some key items include data acquired through July 2001, or future projections.

*Due to revision of the methods of calculation or for other reasons, this report contains some of the data covered in the *Environmental Report 2000*, corrected or modified accordingly.

■ Publication details

Published November, 2001.

(Published annually since fiscal 1998)

■ Next scheduled publication

September, 2002.

■ Scope of coverage

Please refer to Scope of Toppan Group Companies in the Environmental Report (See page 2.)

■ 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

Message from the President



Last year, Toppan Printing Co., Ltd. established *Toppan Vision 21*, which outlines new corporate vision and activities. It describes the role of our company in its commitment to achieving a harmonious coexistence with society, through culture-enhancing business activities and the communication of information on a global level, a commitment that is based on Toppan's marketing capabilities and skills in technological development. *Toppan Vision 21* places a high priority on harmonization with the global environment, a re-acknowledgment and a re-establishment of the corporate ethic, and the accurate disclosure of corporate information.

I believe our consolidated environmental accounting reflects the efforts of each and every employee. In addition, the Company presents the President's Ecology Award twice a year, as part of the in-house employee evaluation system. In this way, the Company recognizes and rewards the achievements of individual employees.

Toppan held the Environmental Communication Exhibition 2000 from October 30 to December 20, 2000, with the cooperation of Nikkei Business Publications, Inc. Held in the Plaza 21 showroom of the Toppan Koishikawa Building, this event, in addition to presenting Toppan's environmental reports and related publicity, offered various seminars and lectures. More than 1,000 people attended the exhibition. Under the theme of "Environmental Communication," we stressed the importance of mutual environmental understanding among companies, citizens, and governments, for the creation of a recycling-oriented social structure.

In promoting corporate environmental management, Toppan strives to reduce the environmental load generated through production processes. At the same time, the Company actively and continuously develops and introduces environmentally-friendly products in the household-product field. Environmental corporate management demands steady environmental preservation efforts and activities, establishment of a stable revenue structures, and other proactive corporate actions. At Toppan, we intend to strengthen communication with society and apply the information we obtain in nurturing corporate growth in the future. To this end, we will continue to develop new businesses based on existing corporate operations and strengthen communication with society through management of the Toppan Hall and the Printing Museum, Tokyo, which have been established as part of our contributions to society.

Our *Environmental Report* was reviewed by an auditing firm from this year. It is our hope that this report will deepen the understanding of our customers and others regarding the Toppan Group's policies and activities for environmental preservation. We look forward to receiving your frank opinions and comments as well as your kind guidance and support.

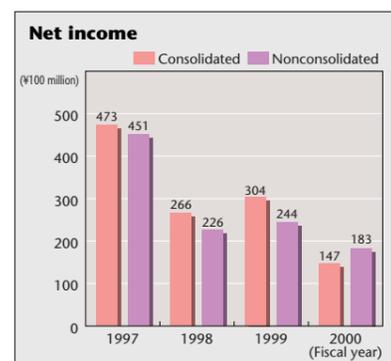
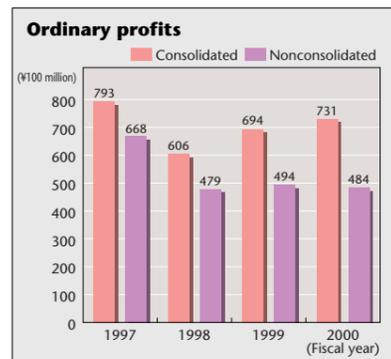
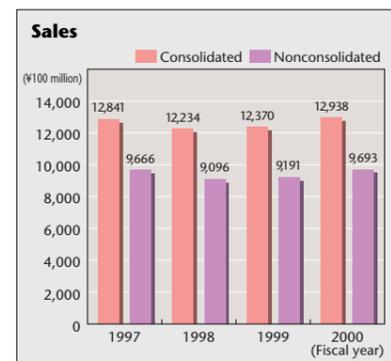
August, 2001

Naoki Adachi
President and CEO

Corporate Profile and Scope of the Environmental Report

Toppan's business activities can be classified into three fields: the Information & Networks, the Living Environment, and Electronics. The primary objective of our environmental activities is acquiring an accurate picture of the environmental impact of our business activities.

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 (since June 29, 2000)
Number of employees	13,026 (as of the end of March, 2001)
Capital	¥104.9 billion (as of the end of June, 2001)



*Amounts shown were rounded off, discarding figures below the ¥100 million mark.
*Consolidated accounting reflects the results of all subsidiaries and affiliates, with consolidated subsidiaries numbering 119 and companies subject to the Equity Law numbering 21.

By making the most of the knowledge acquired in the printing field, Toppan is unfolding a broad variety of business operations in seven fields: securities and cards, commercial printing, publications printing, packaging, industrial materials, electronics, and the multimedia field. In June, 2000,

Toppan established *Toppan Vision 21* clarifying the Toppan Group's vision for the 21st century. Toppan has divided and reformed its conventional business fields into "Information & Networks," "Living Environment," and "Electronics," and also added two new fields, Next-Generation Products, and Per-

sonal Services thus further developing the information communications industry.

In realizing every possibility, the entire Toppan Group is engaged in operations supporting these five fields. Toppan's environmental activities, in addition to facilitating a fundamental awareness of the impact

of our operations on the environment, aim to develop the environmental initiatives taken by the Group. This *Environmental Report 2001* now includes environmentally important affiliates within its reporting coverage, thereby extending its reach to the entire Toppan Group of Companies.

Scope of Toppan Group companies in the Environmental Report (As of April 1, 2001)

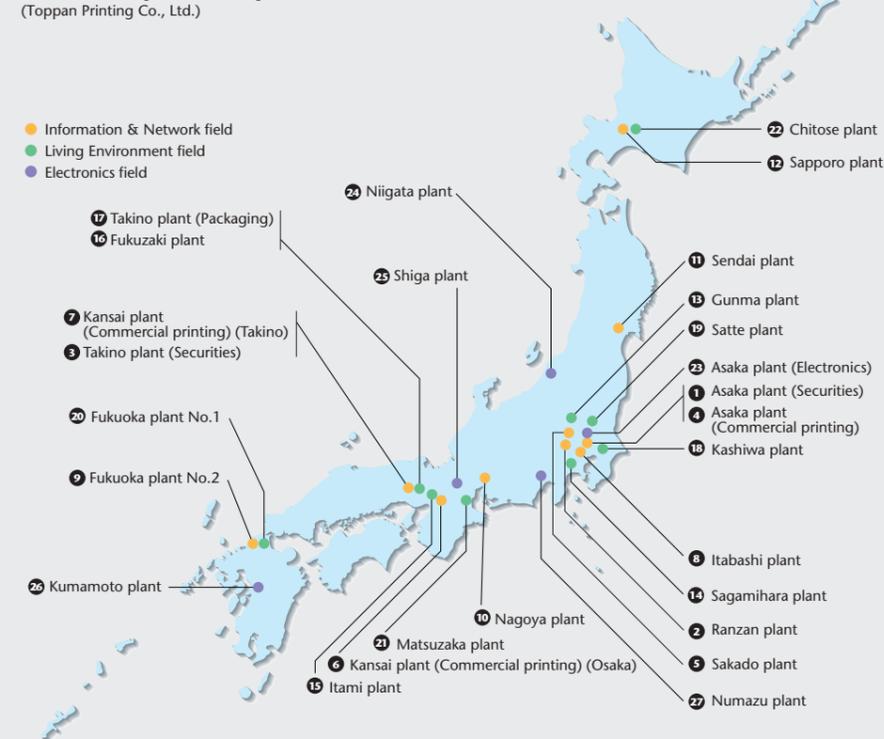
1 Production plants (Toppan Printing Co., Ltd.)	Specific plant*5		Plant designated for energy management*6		Plant with heavy discharge of industrial waste*7
	Air	Water	Type I	Type II	
Asaka plant (Securities)*1 ①			Electricity, heat		
Ranzan plant ②				Electricity, heat	
Takino plant (Securities)*2 ③			Electricity, heat		
Asaka plant (Commercial Printing)*1 ④			Electricity, heat		
Sakado plant ⑤			Electricity, heat		
Kansai plant (Commercial Printing) (Osaka) ⑥				Electricity	
Kansai plant (Commercial Printing) (Takino)*2 ⑦			Electricity, heat		
Itabashi plant ⑧			Electricity, heat		
Fukuoka plant No. 2 ⑨				Electricity	
Nagoya plant ⑩				Electricity	
Sendai plant *3 ⑪			Electricity	Heat	
Sapporo plant ⑫					
Gunma plant ⑬			Electricity, heat		
Sagamihara plant ⑭			Electricity		
Itami plant ⑮				Electricity	
Fukuzaki plant ⑯			Electricity		
Takino plant (Packaging)*2 ⑰			Electricity, heat		
Kashiwa plant ⑱			Electricity, heat		
Satte plant*4 ⑲			Electricity, heat		
Fukuoka plant No. 1 ⑳			Electricity		
Matsuzaka plant ㉑				Electricity	
Chitose plant ㉒				Electricity	
Asaka plant (Electronics)*1 ㉓			Electricity, heat		
Niigata plant ㉔			Electricity, heat		
Shiga plant ㉕			Electricity, heat		
Kumamoto plant ㉖			Electricity, heat		
Numazu plant ㉗			Electricity	Heat	

Production plants in Information & Networks (Securities & Cards, Commercial Printing, Publications Printing).
Production plants in Living Environment (Packaging, Industrial Materials).
Production plants in Electronics (Electronics).

- *1 Submitted for the Asaka plant group.
- *2 Submitted for the Takino plant group.
- *3 Includes production plants in the Living Environment field.
- *4 Includes the New Product Business Promotion headquarters.
- *5 Specific plant:
Plants above a certain scale, with facilities impacting the air and water and subject to the Law on the Provision of Pollution-Preventive Systems in Specific Plants.
- *6 Plants designated for energy management:
Type I (Electricity): Plant that consumes 12 million kWh/year or more of electric energy.
Type I (Heat): Plant that consumes thermal energy equivalent to 3,000 kℓ/year or more of crude oil.
Type II (Electricity): Plant that consumes 6 million kWh/year or more of electric energy.
Type II (Heat): Plant that consumes thermal energy equivalent to 1,500 kℓ/year or more of crude oil.
- *7 Plants with heavy discharge of industrial waste:
Plants that generated 1,000 tons or more of industrial waste or 50 tons or more of specially controlled industrial waste in the previous fiscal year.
- ◆ Scope of the *Environmental Report*: ① ② ③ ④ ⑤ ⑦ ⑧
- ◆ Scope of environmental performance data: ① ② ③ ④ ⑤
- ◆ Scope of in-house environmental audit: ① ② ③ ④ ⑤ ⑦
- ◆ Scope of environmental accounting (consolidated basis): ① ② ③ ④ ⑤ ⑥ ⑧ and other sales offices, etc.

- *Changes including corporate mergers, and dissolutions, which affect the contents of the report (April 2000 to April 2001):
- ⑤ Affiliated companies that are included as production plants:
Toppan Seihin Co., Ltd. merged with Toppan Seihon Co., Ltd. in April, 2001.
Toppan Proof, Inc. merged with Toppan Graphic Arts, Inc. in April, 2001.
- ⑥ Affiliated companies, production cooperation subsidiaries and other subsidiaries that are not included as production plants:
Denshi Media Service Co., Ltd.; dissolved in March, 2001.
Title Producing Co., Ltd.; dissolved in March, 2001.
Toppan Co., Ltd. (printing business) dissolved in March, 2000.

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



2 Affiliates with independent production plants*1

Osaka Toppan Display Co., Ltd.
Toppan Joh-hoku Printing Co., Ltd.
Toppan Graphic Co., Ltd.
Toppan Seihon Co., Ltd.
Toppan Containers Co., Ltd.
Toppan Plastic Co., Ltd.
Toppan Packs Co., Ltd.*
Toppan Engineering Co., Ltd.
Toppan Beverage Co., Ltd.*
Kumamoto Toppan, Co., Ltd.
Toppan Saga Yoki, Co., Ltd.
Kannabe Toppan Co., Ltd.
Mikkabi Toppan Printing Co., Ltd.
San-ei Shiki Co., Ltd.*

*Affiliates included in the in-house environmental audit, effective fiscal 2001.

3 Research centers

Toppan Technical Research Institute
Tsukuba Research Laboratory

4 Offices (Buildings owned by Toppan)

Head Office and Sales Buildings (Akihabara)
Toppan Koishikawa Building
Toppan Shibaura Building
Honjo GC Building
Hiroshima Sales Office Building
Toppan Building (Nishinohon Division)

5 Affiliates included in production plants*1

Toppan Display Co., Ltd.
Toppan Graphic Communications Co., Ltd.
Osaka Toppan Display Co., Ltd.
Toppan Graphics Communications Kansai Co., Ltd.
Niigata Toppan Printing Co., Ltd.
Toppan Electronics Fuji, Co., Ltd.
Toppan Precision Board Co., Ltd.
Toppan Shiga Seimitsu Co., Ltd.
Toppan Graphic Arts, Inc.
Koyo Sangyo Ltd.
Toppan Packs Co., Ltd.
Toppan Carton Co., Ltd.
Toppan Gravure Prepress Co., Ltd.
Toppan Kansai Packs Co., Ltd.
Toppan Paperware Co., Ltd.
Toppan Unyu Soko Ltd.
Toppan Kenzai Tech Co., Ltd.
Toppan Idea Center Nishinohon Co., Ltd.
Toppan Fukuoka Shiko Co., Ltd.
Kyushu Product Ltd.
Toppan Aichi Kako Co., Ltd.
Toppan Miyagi Kako Co., Ltd.
Toppan Multi Create Co., Ltd.
Toppan Hokkaido Insatsukako Co., Ltd.
Toppan Techno Co., Ltd.
Toppan Security Service Co., Ltd.

*Affiliates' subsidiaries included.

6 Affiliates and subsidiaries not included among the production plants*1

Toppan Creative Communications Co., Ltd.
Sobi Calendars Co., Ltd.
Toppan Technical Design Center Co., Ltd.
Tokyo Computer Type Co., Ltd.
T.M.G. Prepress Toppan Co., Ltd.
Digital House Co., Ltd.
Kita-Osaka Shigyo Co., Ltd.
Toppan Captech Co., Ltd.
Kansai Bottling Co., Ltd.
Top Planning Ltd.
Cyber Map Japan Corp.
Toppan Editorial Communications Co., Ltd.
Toppan and Moak Co., Ltd.
Toppan, Co., Ltd.
Toppan Hall Co., Ltd.
Toppan Financial Services Co., Ltd.
Toppan Human Information Services Co., Ltd.
Toppan Direct Mail Center Co., Ltd.

7 Overseas production plants (Plants of companies incorporated overseas)*2

Toppan Printing Co., (Shanghai) Ltd.
Toppan Electronics, Inc.
Toppan Chunghwa Electronics Co., Ltd.
Toppan Printing Co. (H.K.) Ltd.
Toppan Printing Co. (America), Inc.
Toppan Printing Co., (Shenzhen) Ltd.
PT Toppan Sampoerna Indonesia
Siam Toppan Packaging Co., Ltd.
Toppan Interamerica Inc.

8 Independent business subsidiaries (Printing-related businesses only)*3

Printing related:
Toppan Forms Co., Ltd.
Tamapoly Co., Ltd.
Toppan Label Co., Ltd.
Sales related:
Toppan Cosmo, Inc.
Publishing business:
froebel-kan, co., Ltd.
Distribution related:
Toppan Logistics Co., Ltd.
Others:
Total Media Development Institute Co., Ltd.
Toppan Multisoft Ltd.

- *1 Affiliates
Company in which Toppan owns 50% or more of equity and whose management is directed by Toppan (affiliates' subsidiaries included).
- *2 Company incorporated overseas
Company incorporated overseas in which Toppan owns 50% or more of equity and whose management is directed by Toppan.
- *3 Independent subsidiary
Company in which Toppan owns 50% or more of equity and which conducts business operations independently.

Toppan Group's Commitment to the Environment

The Toppan Group, as a global citizen, is carrying out environmental activities with an emphasis on two major initiatives: "eco-protection" and "eco-creativity."

Things We Can Do

After dealing with a great variety of data and information on a daily basis since I began my commitment to environmental issues, I cannot help but realize that our planet is in a truly critical state. While this sort of problem can only be improved through larger frameworks or mechanisms, it also has some facets that can be resolved by awareness and actions on the part of companies and individuals. Seriously assuming my assigned responsibility as the person in charge of environmental issues, I am resolved to take on these issues sincerely, regarding them my own issues, as well as the company's.

What I can do in my given position is to consider how we at the Toppan Group should behave as a company living on Earth, as a global citizen, and how we should fulfill our responsibilities. To this end, I believe two viewpoints are important. One is that we should recognize that we are imposing a burden on the environment and, therefore, that we should conduct activities that do everything within our reach to ease the burden. We at the Toppan Group refer to these as our eco-protection activities.

The other important viewpoint lies in activities designed to alleviate the environmental burden and to further promote environmental communications, by supplying society with environmentally-friendly products and by supporting diverse environment-related businesses. These activities are referred to as eco-creativity activities.

In addition to the above two initiatives, we can also cite other important commitments, such as open disclosure of information, sincere operating practices, and so forth. I believe that the development of these sorts of commitments is what will eventually lead a company to gain public trust.

Reducing Environmental Burden through Eco-protection Activities

The Toppan Group is developing business activities in diversified product fields, including packaging, industrial materials, color filters for LCDs (liquid crystal displays), and more, in addition to general printed materials.

The common link across these fields is our role as a manufacturer. Inasmuch as Toppan is engaged in a manufacturing industry, it uses raw materials, consumes energy, and emits CO₂ (carbon dioxide) as a result, thus adding to the environmental burden. Besides, our activities directly pose

an environmental burden on the residents neighboring our plants—effecting air, water, and soil and creating noise, vibrations, and odors.

The Toppan Group views reduction of the environmental burden as an important issue in environmental management and establishes environment targets based on *Toppan's Declaration on the Global Environment*, and is currently developing activities to reduce the environmental burden at its plants throughout the country. Although achievements were, to some extent, reached with respect to the established targets in fiscal 2000, the results fell short in terms of energy-saving. Therefore, I think improvement in this fields represents another issue to be addressed in fiscal 2001.

Meanwhile, in promotion activities, the commitment of each of the employees comprising the group is also important. No matter how superior the environmental management system, no results will be achieved if the people driving the system lack commitment. For this reason, we have continuously been conducting training and awareness-raising activities, thus aiming at enabling all the employees to share the same level of awareness relating to environmental issues. I think this is highly important

in the context of the commitment to environmental activities of the entire Group.

Eco-creativity Activities, for the Sake of Society

In Toppan Vision 21 the Toppan defined its corporate image and its business fields for the 21st century. Toppan classified the Group's traditional business fields into Information & Networks, Living Environment, and Electronics, and developed these fields by adding software and service elements to each one. With the further addition of a Personal Service and Next-Generation Products to the above three, Toppan is now aspiring to develop the whole information communications industry. In the process of this evolution, Toppan has also been applying measures aimed at selectively investing management resources into the "3E's"; namely, E-business, Eco-business and Electronics.

Of the 3E's, eco-business rests on two principal pillars: the planning and development of environmentally-friendly products, and environmental communications.

For environmentally-friendly products, product assessment has been undertaken, with the Ecology Center playing a leading role, and 43 types of environmentally-

friendly products have been planned and developed so far. In the field of environmental communications, we are planning on developing activities designed to create mutual understanding among companies, citizens, and governmental municipalities, to follow up on the Environmental Communication Exhibition 2000 we held last year.

Information Communications in the 21st Century

The ability to create and transfer information constitutes one of the key elements in the evolution of the human being. Printing as a means to extensively transfer that information has evolved through the ages of woodblock plates, type, and lithographs.

And now, at the advent of the 21st century, the means of information transfer are undergoing diversification—from printed materials on paper media to the provision of information services over the Internet (prompted by the wide spread of the Internet among households in general), in step with advancement of the IT (information technology) revolution.

Furthermore, the notion of a paperless world, with electronic newspapers and electronic magazines will become reality in the near future.

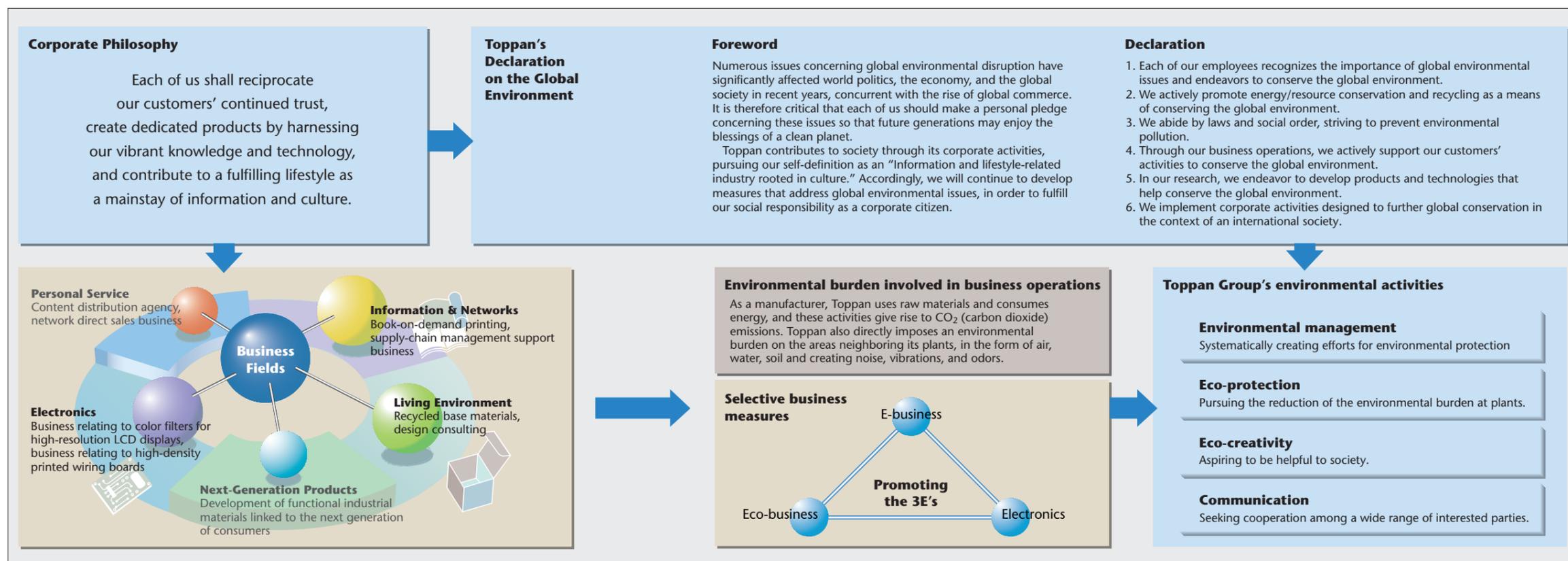
Since I have engaged in the development of technology for computerized composition that dispenses with the use of type, I have been paying keen attention to the development of mediums that do not rely on paper, such as the Internet and other paperless technologies. I am doing so in light of the possibility that these may become the most suitable technologies for a recycling-oriented society of the future, notwithstanding the fact that these technological innovations—at a glance—may seem to contradict the traditional concept of printing.

As a Leader in the Printing Industry

The environmental activities of the Toppan Group are not solely designed to fulfill our responsibilities as a company. We believe that it is also important for us to raise these activities to an industry level, by accumulating expertise as we take an active lead in this area and by then supplying that knowledge to the entire printing industry. To be able to counter the critical situation we currently face, it is essential that we keep moving forward with more people and more companies. To this end, we are resolved to continue our best efforts, while being aware of our position as the industrial leader.



Tohru Shimabukuro
Chief Environmental Manager and Senior Managing Director



Principal Environmental Activities for Fiscal 2000

In fiscal 2000, Toppan undertook the challenge of introducing consolidated environmental accounting for the Group. Our major, relevant activities and achievements of fiscal 2000 are outlined below.

Environmental Communication Exhibition 2000

Mutual understanding among all parties, including employees, customers, and regional communities, is important in the environmental activities of the company. For this reason, Toppan held the Environmental Communication Exhibition 2000 in October, 2000 through a joint effort with the Nikkei Business Publications Environmental Management Forum. Besides the exhibition of various types of environmental communication tools (displayed at the venue in the Toppan Koishikawa Building), a semi-



President's Award for the planning and organization of Environmental Communication Exhibition 2000

nar was conducted by Mr. Lester Brown of the World Watch Research Institute. A total of 1,456 people visited the event. (See page 44.)

Development of Ecogloss Glossy Paper Containers

After the Law for Promotion of Sorted Collection and Recycling of Containers and Packaging was put into effect, obliging people to recycle containers and packaging (such as bottles, cans, and paper packs), the need to recycle paper containers became more pressing. In light of this need, Toppan



President's Award for the development of Ecogloss

has developed several new technologies, including a high-gloss water varnish, a soy-ink drying system, and more. It also has successfully developed an Ecogloss that offers a combination of aesthetics, environmental-friendliness, and economy. This product was awarded the Chairman's Prize of the Japan Federation of Printing Industries and the Chemicals Section Prize at the 2001 Japan Packaging Competition, in addition to winning the President's Award within Toppan itself, for fiscal 2000. (See page 42.)



Products using Ecogloss

Toppan Group's Consolidated Environmental Accounting

Toppan introduced environmental accounting in fiscal 1999 and has since been making efficient use thereof in disclosing information publicly, as well as for internal use at

the company. Starting with the present report, therefore, values were computed according to the principles of consolidated environmental accounting of the Toppan Group, which included its major affiliated companies. (See page 8.)

Energy Management

Toppan is targeting to reduce energy consumption by 20% in fiscal 2005, relative to fiscal 1990, in terms of the energy consumption per unit of plant output. In fiscal 2000, the unit energy consumption stood at 118.0, up 2.8 from 115.2 of the previous year, calling for renewed efforts to achieve the target of 80.0. (See page 26.)

Introduction of a Cogeneration System (CGS)

A thermoelectric variable cogeneration system was introduced at Toppan Graphics Co., Ltd., utilizing a subsidy available from NEDO (New Energy and Industrial Technology Development Organization). This has enabled the company to make more efficient use of energy by converting steam



Cogeneration system at Toppan Graphics Co., Ltd.

energy into electric energy. Moreover, a steam-pressure stepped control system using compressed air was also adopted at the same time. In the near future, we will attempt to establish an optimum operation method, consistent with the energy load at the plant. (See page 26.)

Waste Management

Toppan continued its efforts to reduce the disposal waste per unit of production volume by 50% in fiscal 2000, compared to the figures for fiscal 1990. In fiscal 2000, the said unit disposal volume remained at 43.4,

leaving a substantial margin of 6.6 points from the target of 50.0. (See page 28.)

Packaging Division Obtains ISO 14001 Certification

Toppan's Packaging Division (Akihabara and Ebie offices) obtained ISO 14001 certification in March, 2001. Following certification in November, 2000 of the Ranzan plant (Securities Printing Division), this marks the 7th system—or 10th plant—to achieve certification, and the 9th system—or 12th plant—within the Group to do so. The scope of registration covered the planning, development, design, sales, and prepressing of packages, and the examination and registration body was the Japan Quality Assurance Organization (JQA). (See pages 18, 43.)

Environmental targets, achievements, and progress for fiscal 2000

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

Environmental targets	Environmental targets for fiscal 2000	Achievements and progress for fiscal 2000	Evaluation	Page in report
• Enhanced employee awareness regarding environmental issues and the promotion of corporate-wide activities to preserve the environment	• Dissemination of Toppan's environmental logo	• Obligation to indicate on business cards those persons charged with environmental duties • Presence of Toppan's environmental logo in in-house magazines and business reports		P.47
• Voluntary participation in social activities and active contributions to the cause of environmental conservation	• Participation in tree planting activities.	• ¥2,271,667 donation to the Global Citizens' Forest fund for tree planting activities		P.49
• 20% reduction (compared to FY 1990) of unit energy consumption by fiscal 2005, proportioned to plant output	• A 10% reduction compared to the previous fiscal year	• A 2.4% increase compared to the previous fiscal year (Control index modified due to lack of validity of the index specified in the previous year)	×	P.26
• 50% reduction (compared to FY 1990) of unit disposal volume by fiscal 2000, proportioned to plant output	• A 50% reduction compared to the fiscal 1990 level	• A 56.6% reduction compared to the fiscal 1990 level		P.28
• Realization of our zero-emissions target in ten domestic plants by fiscal 2001, through the effective use of industrial waste generated in production	• Realization of zero-emission plants: one plant	• No plant could achieve a 100% recycling rate → The recycling rate of the whole company improved 4.7% over the previous fiscal year, to 87.5%		P.30
• Compliance with in-house control standards, exceeding the legal regulations	• Compliance with in-house control standards	• Check on the status of compliance of in-house control standards at 48 plants, through internal environmental audit		P.19
• Appropriate management of chemical substances and the reduction of toxic chemical substances	• Emissions of dichloromethane into the air: 15% reduction compared to the previous fiscal year	• Emissions of dichloromethane into the air: 12.4% reduction over the previous fiscal year		P.24
• 5% reduction (compared to FY 1997) of CO ₂ emissions by fiscal 2010	• Maintenance of the fiscal 1999 level	• A 3.7% increase over the fiscal 1999 level → Introduction of cogeneration system at Toppan Graphics Co., Ltd.: CO ₂ reduction ratio of 15%		P.26
• Reduction in inventories of specific CFCs and consumption of CFC substitutes	• Replacement of freezers using specific CFCs: eight units	• Replacement of freezers using specific CFCs: 4 units		P.25
• Active proposal for proprietary technologies, products, and services to our customers	• New developments and proposals for environmentally-friendly products: five cases	• New development and proposals for environmentally-friendly products: 2 cases → Structuring of a system designed to develop environmentally-friendly products in the Living Environment field		P.40
• Active cooperation to serve the needs of our customers and society	• Supply of environment-related information, including product evaluations	• Supply of environment-related information, including product evaluations, to customers: 14 cases • Supply of information through participation in Eco-Products 2000		P.47
• Involvement in businesses that can contribute to environmental conservation through Toppan's own environmental activities	• Research into new methods of recycling	• Execution of FS (feasibility study) for an RPF (refuse paper & plastic fuel) business in the Chubu region		—
• Planning and proposals for social recycling system	• Continued operation of a recycling system for printed materials	• Continuous implementation of the current paper recycling system for catalogs and printed materials		P.45
• Promotion of corporate activities that take into account of in-house product planning, production processes, and the final disposal of products	• Establishment of action plans, principles, and standards for the development of environmentally-friendly products	• Establishment of guidelines and standards by field or product group • Standardization of in-house rules through establishment of environmentally-friendly product control standards		P.38
• Compliance with local regulatory standards, international treaties, etc.	• Implementation of in-house environmental audits at overseas plants: six in Asia	• Implementation of internal environmental audits at overseas plants: three in Asia		P.35
• Active promotion of local environmental conservation activities	• Active promotion of local environmental conservation activities	• Operational startup of environmental management organizations suited to the actual conditions of local companies		P.35

Environmental Accounting

We at Toppan regard environmental accounting—indispensable for environmental activities—as an important means to provide determinative criteria, and plan to further promote environmental management by incorporating such accounting into the corporate management structure.

Commitment to Environmental Accounting

We introduced environmental accounting*1 in fiscal 1999, because we considered that evaluating the costs incurred by environmental conservation, as well as its effects, are indispensable elements of environmental activities.

For a company to be able to carry out its environmental activities efficiently and continuously, it is essential to promote a type of environmental management that generates economic value through environmental activities. If environmental accounting is introduced and can be used to provide determinative criteria for environmental management, then environmental activities will be more effective. On the occasion of the introduction of environmen-

tal accounting, Toppan began promoting environmental management and disclosing information widely, in the hope that this would provide society with the necessary material on which to base comments and evaluations concerning our activities.

*1 Environmental accounting: A mechanism designed to accurately assess the investment and expenses related to environmental conservation, including their effects, and items which were formerly difficult to reflect in financial analyses of companies.

Action for Consolidation

We address environmental activities on a consolidated basis, including all the member companies of the Group. Because the member companies of the Group conduct business operations in different fields and forms, their manufacture and environmental burden varies. Furthermore, to carry out envi-

ronmental management, effective investments and cost management are essential. Moreover, environmental management has to be conducted on the basis of each member company in each independent business area, as well as on an overall consolidated basis. To this end, our environmental accounting covers Toppan Printing Co., Ltd. and its consolidated subsidiaries.

Results for Fiscal 2000

The unification and standardization of the consolidation contributed to improving accuracy in environmental accounting for fiscal 2000. When the totalization result for Toppan Printing Co., Ltd. (with the inclusion of subsidiaries conducting related production activities) is compared to that of the previous fiscal year, the investment in

environmental conservation costs increased by 145 million yen, while expense demonstrated a slight increase. Moreover, in terms of economic effect, environmental sales grew by 2.204 billion yen, reflecting increases in the sales of environmentally-friendly products, representing an economic impact over 30% larger than that of the previous year.

Calculation Standards of Environmental Accounting

Toppan's environmental accounting computes values with reference to the Environment Agency of Japan's May, 2000 report entitled *Developing an Environmental Accounting System (Year 2000 Report)*. However, Toppan adopted internal calculation methods for the following.

For energy saving under item (1) of Economic effect for fiscal 2000, the scope was restricted to definitively quantifiable amounts of money; that is, the amount of energy-saving effects resulting from investment in energy-saving equipment and modifications (converted into annual amounts) were also recorded.

As for environmental business, under item (3) of Economic effect for fiscal 2000, the amounts were obtained by multiplying the sales of environmentally-friendly products by the gross profit ratio.

Future Challenges

We at Toppan consider it a pressing need to search for an environmental accounting system that is oriented toward society and to establish original standards of our own. In

the near future, we will strive to calculate more concrete and more accurate data by clearly defining cost totalization items and cost effects, so that this accounting system can be put to more effective use, as a way to provide valuable determinative criteria in the context of environmental management.

Environmental conservation cost for fiscal 2000

Item	Description of major efforts	Entire group		Toppan Printing Co., Ltd.*1			
		Current term (Apr. 2000 to Mar. 2001)		Current term (Apr. 2000 to Mar. 2001)		Change (Current term—Previous term)	
		Investment amount	Expenses	Investment amount	Expenses	Investment amount	Expenses
(1) Environmental conservation cost required to reduce environmental burden generated in the business area through production and service activities (business field cost)		1,719	10,175	1,523	9,665	210	69
Breakdown:							
(1) Pollution prevention cost	Investment and facility maintenance costs for preventing pollution	1,093	3,027	1,012	2,980	76	160
(2) Global environmental protection cost	Investment and running costs for global environmental conservation	228	1,723	224	1,675	210	326
(3) Resource circulation cost*2	Investment and running costs for waste processing and recycling	397	5,426	287	5,010	75	97
(2) Cost required to reduce environmental burden generated upstream or downstream by production and service activities (upstream/downstream cost)	Expense relating to 'Green Purchasing,' recycling and recommercialization of containers and packages, allotments to trade organs, etc.	—	261	—	260	—	18
(3) Environmental conservation cost of management activities (management activity cost)	Expense relating to environmental education, awareness-raising, acquisition and maintenance of certifications for environmental management, monitoring and measurement of environmental burden, etc.	19	528	19	473	17	72
(4) Environmental conservation cost of R&D activities (R&D activity cost*3)	Expense relating to R&D for environmentally-friendly products	281	1,001	281	979	202	38
(5) Environmental conservation cost of social activities (social activity cost)	Expense relating to the promotion of afforestation at business sites, disclosure of environmental information, environmental advertisements, etc.	203	225	190	215	136	40
(6) Cost for restoring environmental damages (environmental damage cost)		—	—	—	—	—	—
Total		2,221	12,190	2,012	11,593	145	23

*1 Includes subsidiaries engaged in related production activities.

*2 Resource recycling cost: In the results for fiscal 1999, released in the 2000 edition of the *Environmental Report*, the sales amount of valuables was subtracted from the resource recycling cost. This accounting method has been revised with respect to the results for fiscal 2000 so that the sales proceeds of valuables are now included only in the amount of economic effect.

The results of fiscal 1999 were also recomputed in the same manner; the resultant change in cost is as shown.

*3 R&D cost: In the totalization for fiscal 2000, the R&D cost was examined according to the revised definition of environmentally-friendly products. Also for fiscal 1999, the R&D cost was recomputed based on the same principle; the resultant change in cost is as shown.

Economic effect for fiscal 2000

Item	Amount of economic effect	Amount of economic effect	Change
(1) Energy conservation	257	256	93
(2) Sales proceeds of valuables	1,648	1,574	172
(3) Environmental business	7,761	6,801	2,204

Equipment investment amount for fiscal 2000

Item	Investment amount	Investment amount	Change
Total amount of investment for the period covered	93,440	85,236	19,180

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

Effect of environmental conservation for fiscal 2000

Environmental burden item		Reduction**4	Environmental burden for fiscal 2000	Page number
Energy	Total energy consumption	501,000 GJ	13,487,000 GJ	P.26
Water	Water consumption	3,000 m ³	12,393,000 m ³	P.26
Air	CO ₂ emission	1,000 t-CO ₂	619,000 t-CO ₂	P.24
	Emission of substances destructive to the ozone layer	—	3 ODPt	P.26
	NO _x emission	4 t	137 t	
	SO _x emission	0 t	691 t	
	Emission of dioxins	—	0.97 g-TEQ	
Water system and Soil	Total water discharge	—	11,238,000 m ³	P.24
	Underground penetration	—	226,000 m ³	
	On-site evaporation	—	1,051,000 m ³	
	Discharge of water-polluting substances	—	635 t	
Waste	Total generation	9,000 t	339,000 t	P.28

*4 Reduction: Value that results from subtracting the fiscal 2000 environmental burden from the value which was obtained by multiplying the fiscal 1999 environmental burden by an assumption coefficient (fiscal 2000 plant output/fiscal 1999 plant output) for the fiscal 2000 environmental burden. When marked (negative), it denotes an increase from the previous year.

*The environmental burdens discussed here were all obtained by processing actual measurement values (which met the legal control values), using the prescribed calculation method.

*Reductions are not indicated here for items whose totalization began with the results of fiscal 2000. It is planned that changes in such items will be shown as of the next fiscal year.

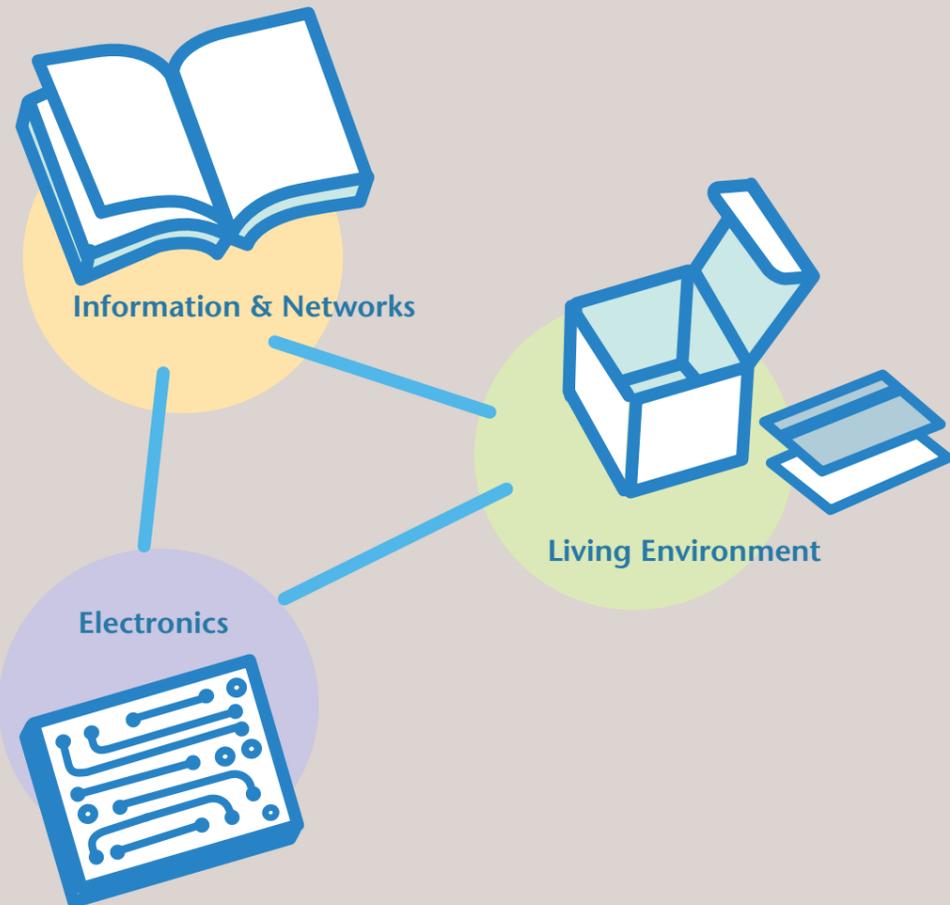
1 TOPPAN'S BUSINESSES AND ENVIRONMENTAL IMPACT

Toppan encompasses a wide range of business fields.

For this reason, Toppan's business activities and corresponding environmental burdens need to be understood based on individual factors.

In this chapter, we will address the features of three of Toppan's business fields:

Information & Networks, Living Environment, and Electronics, and the environmental burden they impose.



Principal Businesses and Environmental Impact

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

Countering our Impact on the Environment

Toppan's business fields are diversified, and the associated impact on the environment also varies a great deal. The environmental burden of the printing industry stems from the use of raw materials—such as paper, ink, resins, and the like—and is manifested in the form of depletion of resources through consumption of fuel at production facilities, indirect forest logging, acid rain and so on. Meanwhile, the effects lead to depletion of the ozone layer and global warming due to CO₂ (carbon dioxide) emissions generated by chemical substances and the energy consumed in production processes. Moreover, there is an environmental burden on the air, water, and soil, as well as a waste problem; imposed by business activities, while an indirect environmental impact caused by the use of products and by used products also adds to the environmental burden.

To reduce the environmental burden associated with its business activities, Toppan has structured and is promoting an environmental management system, thereby

developing initiatives referred to as "eco-protection" and "eco-creativity."

Three business fields

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

Environmental Conservation in Production and Environmental Efficiency

In reducing our environmental burden, it is first necessary to acquire an accurate idea of the impact imposed by the total process of our business activities. Each production plant at Toppan records the input and output of various substances and utilizes this as an environmental indicator.

Toppan has introduced a system of disposal waste per unit of production (generated amount of waste, including inserviceables that can be recycled as resources/

production volume) as a focus of resource productivity. In this context, we have been working since 1999 on the standardization of indicators that will enable us to assess the maximum production and added values using minimal resources, by business field and product type. This way of thinking will interact well with the traditional notion of yield control and improvement, and the data derived from the concept will be utilized as reference for comparison among production plants of similar product types and for determining targets for improvement of resource-saving efficiency.

Amid the current call for increases in environmental efficiency in manufacturing industries, evaluation will be made of disposal waste per unit of production volume in the near future in order to see the percentage reduction from the previous fiscal year, on an individual plant basis, which will serve as a resource-saving index. In this way, Toppan will seek to improve environmental efficiency across the entire organization.

Input/output data

INPUT

Energy	
Total energy consumption* ¹	13,487,000 GJ
Electric energy	9,290,000 GJ
Thermal energy	4,197,000 GJ
Water	
Water consumption* ²	12,393,000 m ³
Industrial-use water	1,309,000 m ³
Service water	1,404,000 m ³
Ground water	9,680,000 m ³
(Utilization of rainwater)	10,000 m ³
(Utilization of water circulated on premises)	922,000 m ³

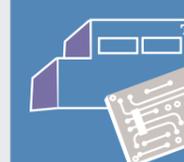
TOPPAN



Information & Networks



Living Environment



Electronics

OUTPUT

Air	
CO ₂ emission* ³	618,508 t-CO ₂
Emission of substances destructive to the ozone layer	3 ODPt
NO _x emission* ³	137 t
SO _x emission* ³	691 t
Emission of dioxins* ⁴	0.967 g-TEQ
Water system and soil	
Total water discharge	11,238,000 m ³
Public water system	8,414,000 m ³
Sewage system	2,824,000 m ³
Underground penetration	226,000 m ³
On-site evaporation	1,051,000 m ³
BOD discharge	300 t
COD discharge	239 t
Nitrogen discharge	91 t
Phosphorous discharge	5 t
Waste	
Total generation	339,007 t
Reuse and reversion to resources	297,007 t
Amount of final disposal	41,999 t

*¹ The Toppan Koishikawa Bldg., the Hiroshima sales office bldg., and the Toppan Bldg. (Nishinohon Division) are included within the scope of energy-consumption calculations, effective fiscal 2000.

*² Office buildings (owned by Toppan) are included within the scope of water-consumption calculations, effective fiscal 2000, but the figure for these buildings does not include utilization of rainwater or water circulated on premises.

*³ The Hiroshima sales office bldg. and the Toppan Bldg. (Nishinohon Division) are included within the scope of calculations of CO₂ emissions, NO_x emissions, and SO_x emissions, effective fiscal 2000.

*⁴ As of July, 2001 within the period covered for totalization (April 1, 2000 to March 31, 2001), one incinerator was taken out of service, while five more are slated to be removed. Toppan is pursuing the reduction of total emissions by removing or modifying more incinerators.

Information & Networks

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

Products within the Three Production Divisions

Securities and cards

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

Commercial printing

Toppan produces diverse commercial printed materials, such as catalogs, pamphlets, flyers, posters, calendars, and so on.

Publications printing

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

Information & Networks' Environmental Impact

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

Environmental impact of plate-making process

Plate-making creates positive films for printing and produces press plates (running plates). The output of this process (consisting of waste washing water, developing, and fixing solutions used in film development, waste films, and so forth) poses an

environmental burden. However, the spread of digitalization technology (referred to as CTP) has shortened the production process and eliminated films ('filmless' plate-making), which has resulted in a lower environmental burden imposed by the film development process.

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

Environmental impact of printing process

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

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

The input in the printing process is the thermal energy of the web press dryer, and the output consists of exhaust gases from the deodorization equipment of the web press, which gases pose an environmental burden. Paper spoilage also takes place in the printing process, nearly all of which paper is recycled today. (See page 28.)

On the other hand, a waterless printing method is also in use today. The method employs press plates prepared for waterless printing, and forgoes the use of "dampening water" containing IPA (isopropyl alcohol). This eliminates output waste solutions and contributes to the reduction of waste. (See page 54.)

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

Environmental impact of converting process

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

Input/Output Data for the Information & Networks Field

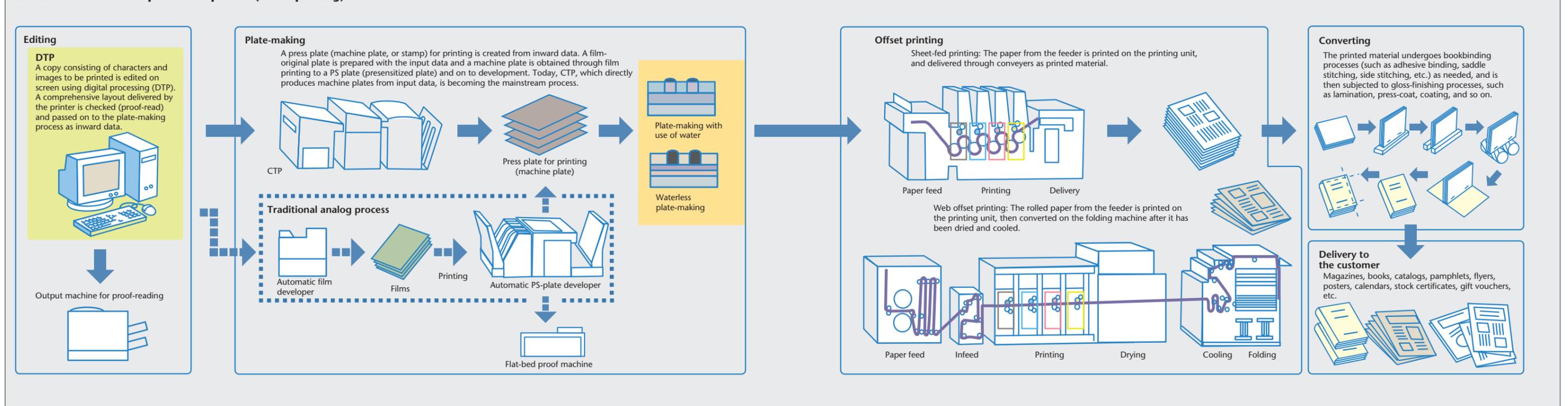
According to the input/output data of this field for fiscal 2000, the total generated quantities of waste stood at 178,000 tons, accounting for 52.7% of the total at Toppan. The major stumbling block to be cleared by the production plants under Information & Networks is reducing the amount of generated waste. However, the majority of this waste corresponds to refuse paper, which is a recyclable resource. Therefore, the priority target set for those plants is now to reach 'zero-emissions.' Currently, all of the ozone-depleting materials are emitted from production plants under Information & Networks, as they use an alternative CFC (HCFC-141b) as a cleaning agent to clean press plates.

HCFC (Hydrochlorofluorocarbon) is a kind of alternative freon, and is slated to be

totally abolished by the year 2020, because of the depleting effect it has on the ozone layer and because of its contribution to the greenhouse effect. Toppan's environmental target of fiscal 2001 calls for a 5% reduction (relative to the previous year) in consumption of HCFC. Toppan is now striving to achieve this target by switching to other alternative products.

Input/output data for Information & Networks		
INPUT		
Energy		
Total energy consumption	5,115,000 GJ	
Water		
Water consumption	1,806,000 m ³	
OUTPUT		
Air	CO ₂ emission	220,538 t-CO ₂
	Emission of substances destructive to the ozone layer	3 ODPt
	NO _x emission	63 t
	SO _x emission	110 t
Water system and soil	Emission of dioxins	0.347 g-TEQ
	Total water discharge	1,246,000 m ³
	Underground penetration	111,000 m ³
	On-site evaporation	601,000 m ³
	BOD discharge	126 t
Waste	COD discharge	73 t
	Nitrogen discharge	15 t
	Phosphorous discharge	1 t
Waste	Total generation	178,529 t

Information & Networks production process (Offset printing)



Living Environment

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

Products within the Two Production Divisions

Packaging

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

Industrial materials

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

Living Environment's Environmental Impact

The production plants under Living Environment operations mainly perform gravure printing. The production process of gravure printing is broadly divided into plate-making, printing and converting.

Environmental impact of plate-making process

The plate-making process produces printing cylinders and applies an electroplating treatment, using heavy metals in the process. Although wastewater from the electroplating process is neutralized in the treatment equipment, the output (consisting of waste solutions derived from the replacement of

electroplating solutions and sludges from wastewater treatment) imposes an environmental burden.

Environmental impact of printing process

The printing process conducts gravure printing on a rotary gravure press, and employs large quantities of solvents because of the numerous colors involved. It also uses a hot blast dryer to promote ink adhesion to the film, by means of evaporation drying. The dryer generates thermal energy in the input stage, and exhaust gas in the output, these items imposing the heaviest environmental burdens of the process.

Environmental impact of converting process

The converting process is further divided into laminating of melted resin, die cutting and several other similar processes. Its input consists of thermal energy for melting resins, and its output—waste plastics discharged as die-cutting scraps—jointly posing the heaviest environmental burdens of this process.

Input/Output Data for Living Environment

According to the input/output data for fiscal 2000, the emissions of SOx (sulfur oxides) stood at 476 tons, accounting for 68.9% of the total at Toppan. The size of this figure is due to the fact that many of Toppan's

Input/output data for Living Environment	
INPUT	
Energy	
Total energy consumption	3,964,000 GJ
Water	
Water consumption	2,160,000 m ³
OUTPUT	
Air	
CO ₂ emission	206,062 t-CO ₂
Emission of substances destructive to the ozone layer	—
NOx emission	47 t
SOx emission	476 t
Emission of dioxins	0.568 g-TEQ
Water system and soil	
Total water discharge	1,852,000 m ³
Underground penetration	—
On-site evaporation	302,000 m ³
BOD discharge	65 t
COD discharge	57 t
Nitrogen discharge	28 t
Phosphorous discharge	3 t
Waste	
Total generation	92,477 t

production plants use waste plastics as a thermal energy source. Toppan is striving to reduce these emissions through the modification of incinerators, as well as by optimizing operations.

Electronics

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

Products within Electronics

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

Electronics' Environmental Impacts

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

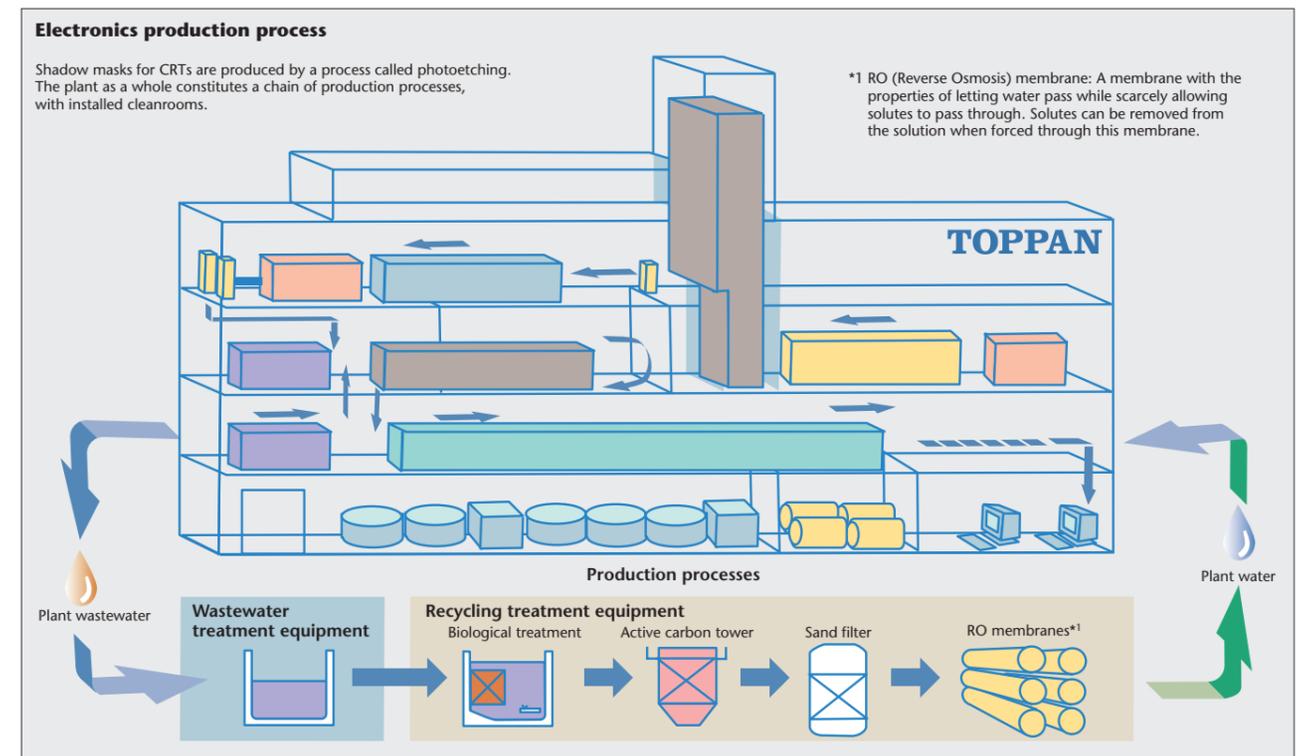
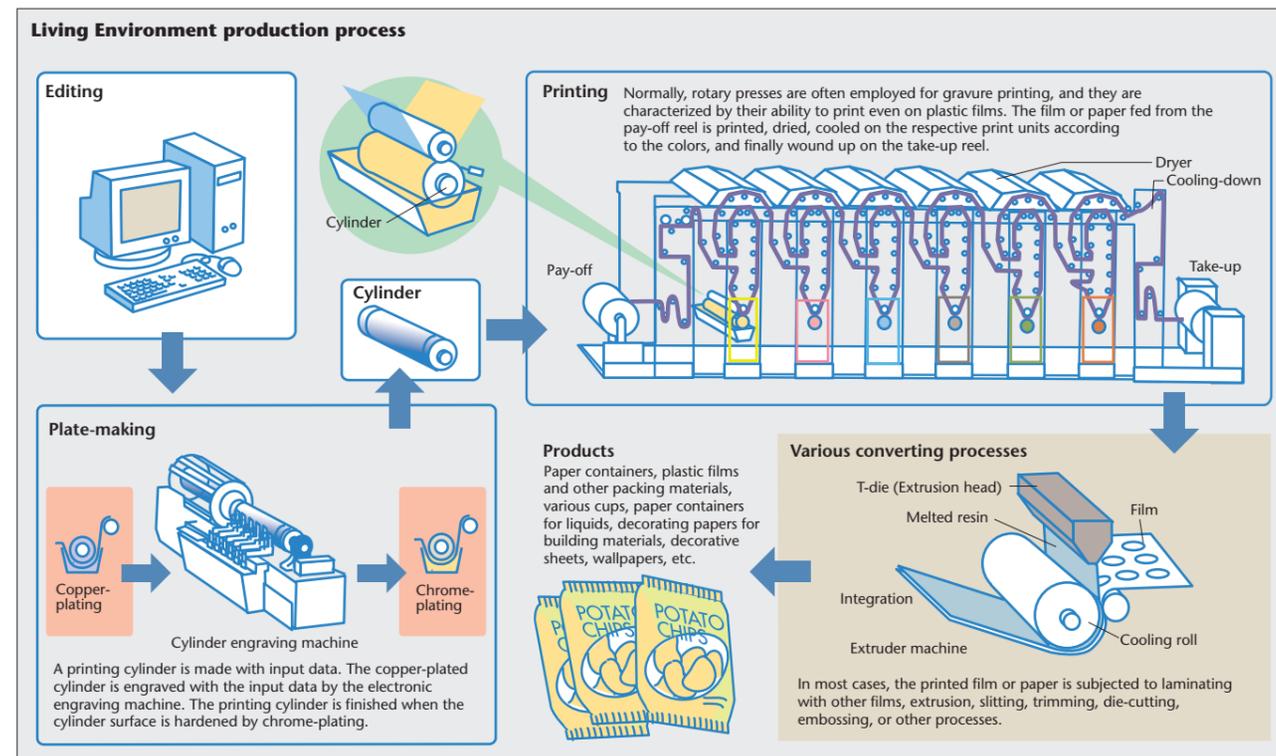
Of the diverse subprocesses composing the production process, the etching subprocess that effects metal etching using chemicals should be the object of special consideration. The etching subprocess prints patterns onto a metal material coated with photopolymer, develops it, clears it of all ele-

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

Input/Output Data for Electronics

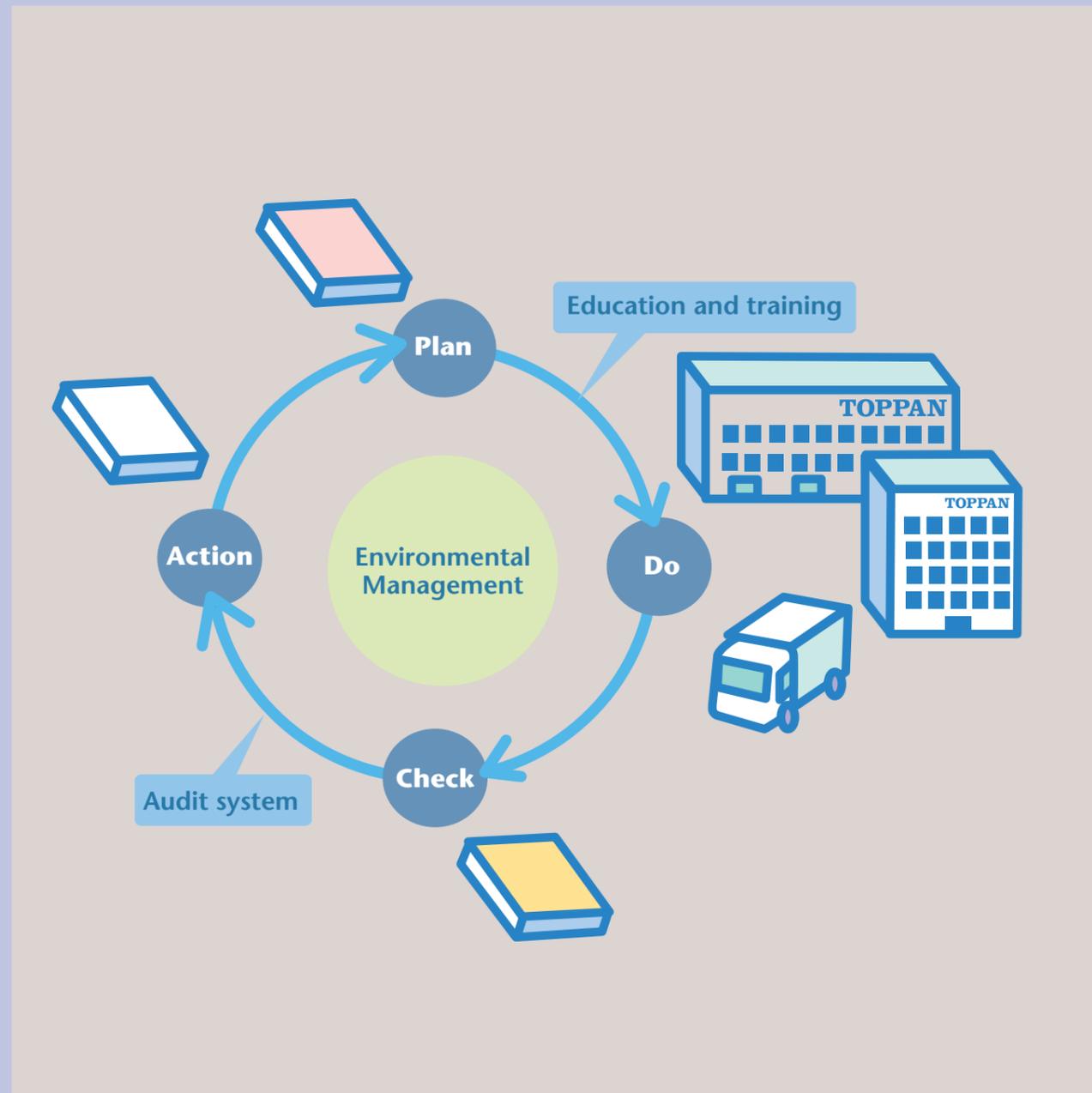
According to the input/output data for fiscal 2000, water consumption in this field stood at 8,135,000 m³ and discharged water volume stood at 7,880,000 m³, accounting for 65.6% and 70.1% of the total, respectively, at Toppan. This large volume of water consumption is due to the fact that the production processes of the plants involve many cleaning phases for components. The production plants under Electronics are promoting the reduction of water intake and discharge, as well as more efficient use of this resource, through the introduction of various measures, including wastewater recycling systems. (See page 27.)

Input/output data for Electronics	
INPUT	
Energy	
Total energy consumption	3,869,000 GJ
Water	
Water consumption	8,135,000 m ³
OUTPUT	
Air	
CO ₂ emission	169,643 t-CO ₂
Emission of substances destructive to the ozone layer	—
NOx emission	24 t
SOx emission	104 t
Emission of dioxins	0.052 g-TEQ
Water system and soil	
Total water discharge	7,880,000 m ³
Underground penetration	110,000 m ³
On-site evaporation	114,000 m ³
BOD discharge	109 t
COD discharge	108 t
Nitrogen discharge	48 t
Phosphorous discharge	1 t
Waste	
Total generation	66,317 t



2 ENVIRONMENTAL MANAGEMENT ACTIVITIES

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



Environmental Management Structure

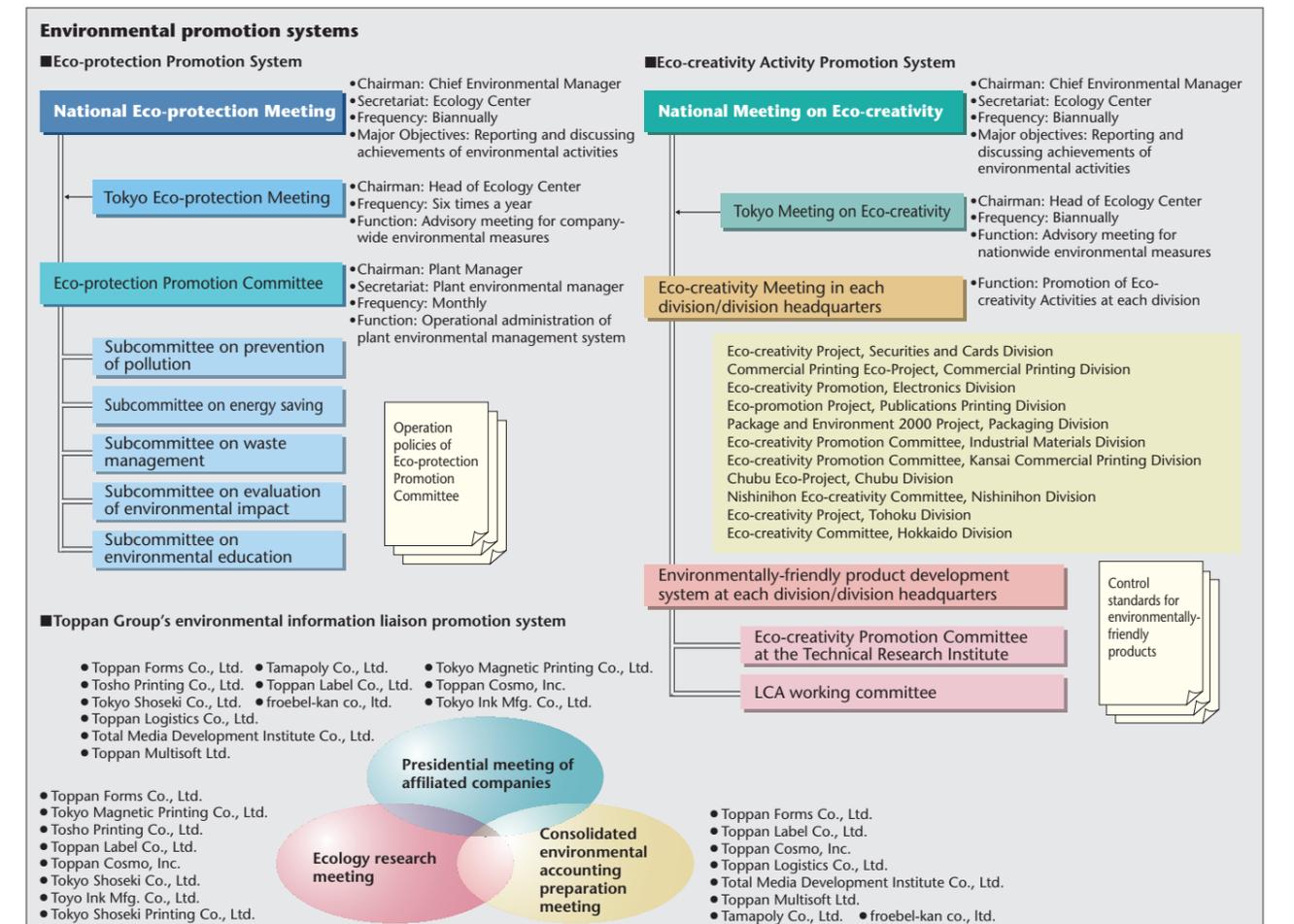
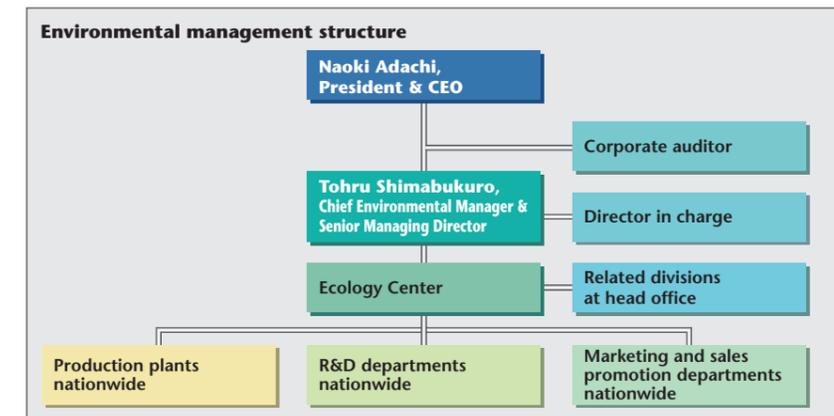
Environmental activities should be carried out through the concerted efforts of all the employees. To this end, an across-the-board system has been established for promotion of these initiatives, with the president as the top person responsible.

Toppan's environmental initiatives are managed through two environmental management structures; the "Eco-protection Promotion System" and the "Eco-creativity Promotion System," under the supervision of the president and the chief environmental manager.

The central functions of these two struc-

tures is fulfilled by the Ecology Center, which performs the duties of making the different divisions and production plants fully aware of the environmental policies and measures determined by management. At the same time, the Center performs the function of conveying information from the divisions and plants to management.

The divisions and plants have each set up an Eco-protection Promotion Committee and an Eco-creativity Promotion System, through which they carry out environmental activities under the guidance and support of the Ecology Center.



Environmental Management System

Toppan has established an original environmental management system and is also actively pursuing activities conducive to obtaining ISO 14001 certification. To ascertain the necessary scope of the activities, Toppan is fully implementing in-house environmental audits.

Environmental Management System at Toppan

History of system structure

Along with the promotion of environmental activities, Toppan has structured a unique environmental management system and is presently executing this system at 48 plants and in 2 research centers in Japan.

In 1992, we presented Toppan's *Declaration on the Global Environment* and established our *Environmental Action Plan*. Since then, environmental management activities have been carried out in line with the *Environmental Policy* and the *Environmental Objectives and Targets* and *Environmental Activity Plan* laid out for each individual plant.

Introduction of ISO 14001

When ISO 14001, an international standard of certification for environmental management systems, was issued in September 1996, Toppan also initiated activities directed toward obtaining ISO 14001 certification for its domestic plants, research centers, and offices.

The Shiga plant (Electronics) became certified in July 1998, soon followed by the Kumamoto plant (Electronics) and the Satte plant (Living Environment). In fiscal 2000, the Niigata plant (Electronics), the Kashiwa plant (Living Environment), the Sakado plant (Information & Networks), and the Ranzan plant (Information & Networks) were successively certified. Meanwhile, the Akihabara office and Ebie office (including their sales offices) of the Packaging Division (Living Environment) won certification for the first time in the office sector.

ISO 14001 certifications within the Toppan Group

(9 systems and 12 plants as of July 31, 2001)

Division	Plant	Main product	Registrar	Registration date
Electronics	Shiga	Electronics products	JQA	1998.7
Electronics	Kumamoto	Electronics products	JQA	1998.11
Industrial Materials	Satte	Wallpapers, decorative sheets	JQA	2000.3
Electronics	Niigata	Electronics products	JQA	2000.4
Industrial Materials	Kashiwa	Decorative papers, decorative sheets	JQA	2000.5
Publications/Commercial Printing	Sakado	Books, magazines, catalogs	JQA	2000.10
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

Member company of group	Plant	Main product	Registrar	Registration date
Total Media Development Institute Co., Ltd.	Head office	Consulting for museums and related facilities	JSA	2001.3
Toppan Forms Co., Ltd.	Hino	Business forms	JQA	2001.6

*Plans for obtaining certification: 9 domestic plants (including 3 member companies of the Group) are slated to be certified by the end of December, 2002

Of the member companies of the Toppan Group, Toppan Forms Co., Ltd. and Total Media Development Institute Co., Ltd. have already been certified under ISO 14001.

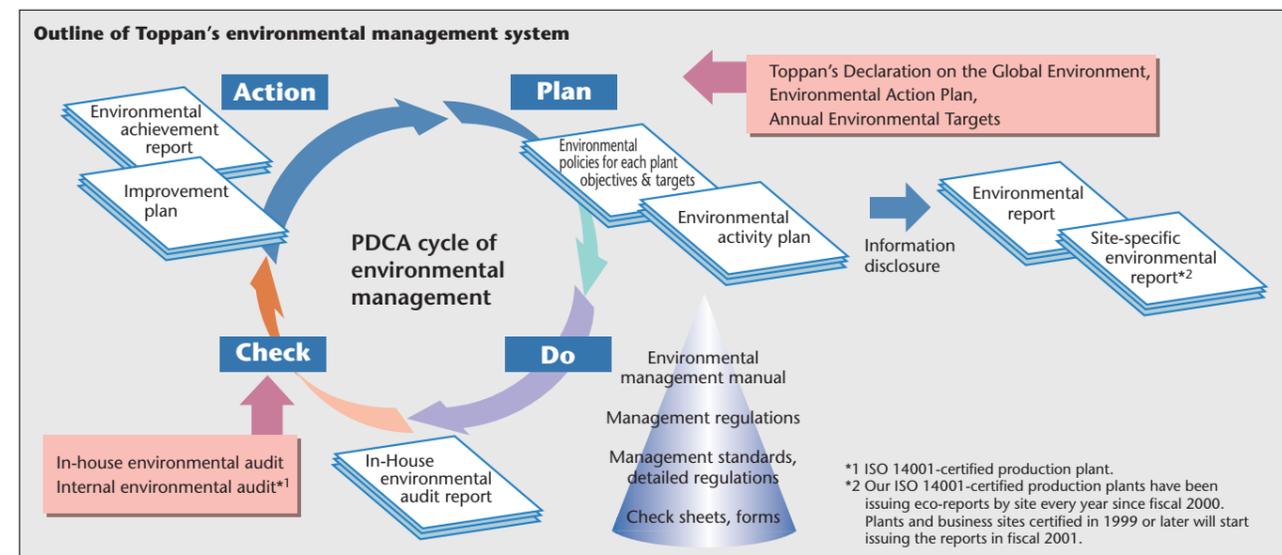
Execution of document control

Irrespective of whether or not a plant or office is planning to obtain ISO 14001 certification, each one of the plants is executing systematic document control, classifying documents as Environmental Management Manuals, Management Regulations, Management Standards, Detailed Regulations, Documents and Forms, and so on.

Toward continual improvement

We at Toppan confirm and review environmental activities regularly once a year,

acquiring the basic data for laying out our *Environmental Policy* and the *Environmental Objectives and Targets* and *Environmental Activity Plan* for the following year. We also totalize and analyze the *Eco-protection Achievement Reports* and data on energy, waste, and other environmental issues, submitted by the plants at the end of each fiscal year. Feedback regarding this information is provided at the National Eco-protection Meeting, which is held in May of each year. If there are measures found to be particularly effective, they are reported in the eco-protection case study meeting, so that other plants can share the benefits of those successful initiatives.



In-house Environmental Audit

Audit based on Toppan's original in-house environmental audit system

Toppan exercises an in-house environmental audit using document records, under the guidance of local superintendents. The in-house environmental auditors, consisting of head office audit members (corporate auditor and provisional auditor of the Environmental Management System), undertake an annual audit of all the plants subject to the in-house environmental audit. They check and evaluate not only the structural status of systems and compliance with rules and regulations, but also the status of compliance with in-house standards. The auditors then put together a *Report on In-house Environmental Audit Results* reflecting, if any, necessary improvements pointed out during the audit, and submit this to the director in charge. These auditors perform an In-house

Environmental Audit Review within the same fiscal year with a view to raising the level of compliance for the following fiscal year.

Environmental audit at ISO 14001-certified production plants

In addition to the in-house environmental audit system, the ISO 14001-certified plants are subject to the following environmental audits: annual internal environment audits, annual surveillance inspections by an outside examination organ, and triennial renewal inspections.

Environmental audit at overseas production plants

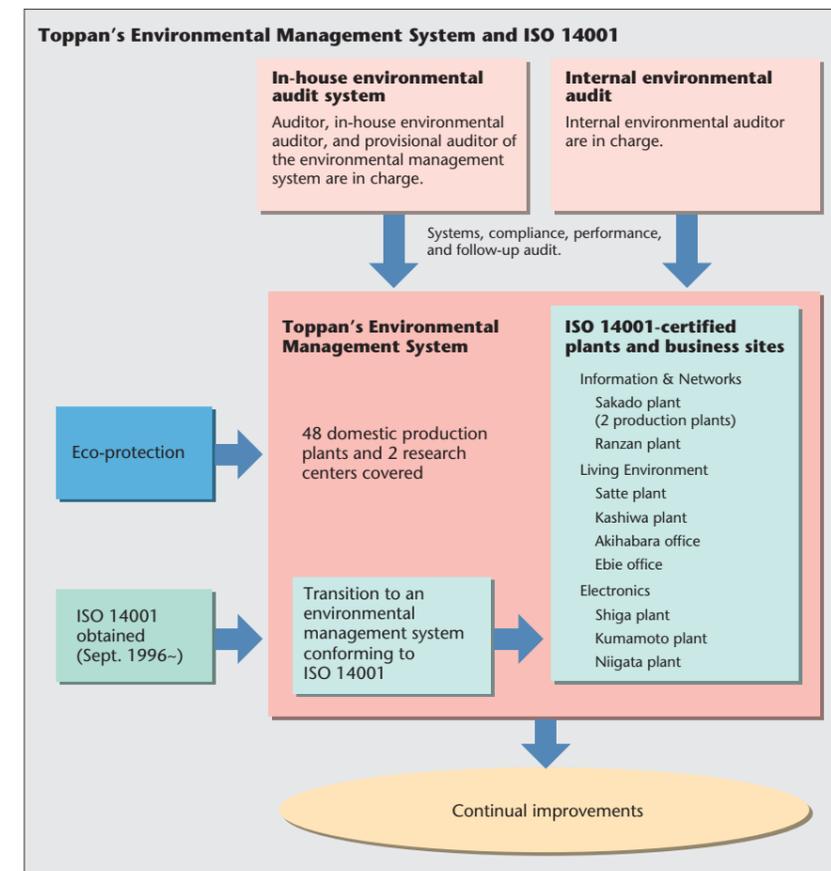
At overseas production plants in the U.S. and Asia, local hearings and inspections are carried out every other year. In years in which no local inspection is made, improvement activities are promoted through document review.

Information Sharing and Disclosure

Toppan discloses the results of these audits both within and outside of the company.

Environmental performance data are acquired reflecting the results of environmental activities, and are used to verify the degree of achievement for targets and actions, based on the in-house environmental audit reports and on data calculations. These data are compiled into an *In-house Environmental Audit Report* and submitted to the Head Office. The cost incurred in the environmental activities and the corresponding effect of these activities are also covered and reported in the same *In-house Environmental Audit Report*.

As a point of note, the ISO 14001-certified plants have, since fiscal 2000, each been obliged to put together a site report designed to disclose information to the local municipal government and neighboring residents.



Ranzan plant (Information & Networks)



Sakado plant (Information & Networks)



Toppan Forms Co., Ltd. Hino plant

Registered internal environmental auditors

(as of May 31, 2001)

Position	Personnel
Managers	58
Supervisors	21
Employees	14
Total	93

*Toppan has built up the Toppan Environmental Management System through the promotion of its eco-protection activities. The activities are being carried out at 48 domestic production plants and 2 research centers. An in-house environmental audit is conducted on these plants and centers, based on the in-house environmental audit system, in order to ensure continual improvements. Moreover, a shift to an ISO 14001-compliant management system was initiated upon obtaining ISO 14001 certification, which first took place in September, 1996. As at the end of March, 2001, Toppan had 8 production plants and 2 offices that were certified for ISO 14001 compliance.

Environmental Management System

State of Audit in Fiscal 2000

In-house environmental audit results from fiscal 2000

As a result of the in-house environmental audits for fiscal 2000, there were a total of 340 cases requiring preparation and submission of an *Improvement Plan* in which improvement measures and execution schedules are to be proposed. Some of the more major problem areas were as follows:

- Insufficient understanding of requirements under environmental laws and ordinances, and similar regulations
- Unavailability of procedural manuals relating to environmental equipment.
- Incorrect control of environmental documents.
- Lack of arrangement and storage tidiness for waste materials.

However, the internal environment audit did not uncover any administrative problems that could directly lead to a grave environmental accident outside of our environmental control. For the indicated issues, reviews of in-house environmental audits were conducted (within the same fiscal year) for 139 cases in 10 plants, in order to verify the progress status of remedial actions. Moreover, for 201 indicated cases, follow-up is planned with respect to the execution status of these remedial actions during the in-house environmental audits of fiscal 2001.

Audits at ISO 14001-certified plants

Toppan began seeking ISO 14001 certification in 1998; thus, there were no plants subject to renewal examination in fiscal 2000. Meanwhile, annual surveillance uncovered one minor noncompliance item and

27 items for observation. At Toppan, these examination results were reported to the chief environmental manager and are being followed up via internal environmental audits conducted by the in-house internal environmental auditors. The lessons learned will be disseminated company-wide, to further improve the overall environmental management system.

Results of environmental audits at overseas production plants

In fiscal 2000 we carried out on-site audits at 3 plants in Southeast Asia and confirmed the status of environmental management and operations. As a result, we discovered a total of 25 cases that required improvement. (See page 35.)



In-house environmental audit hearing

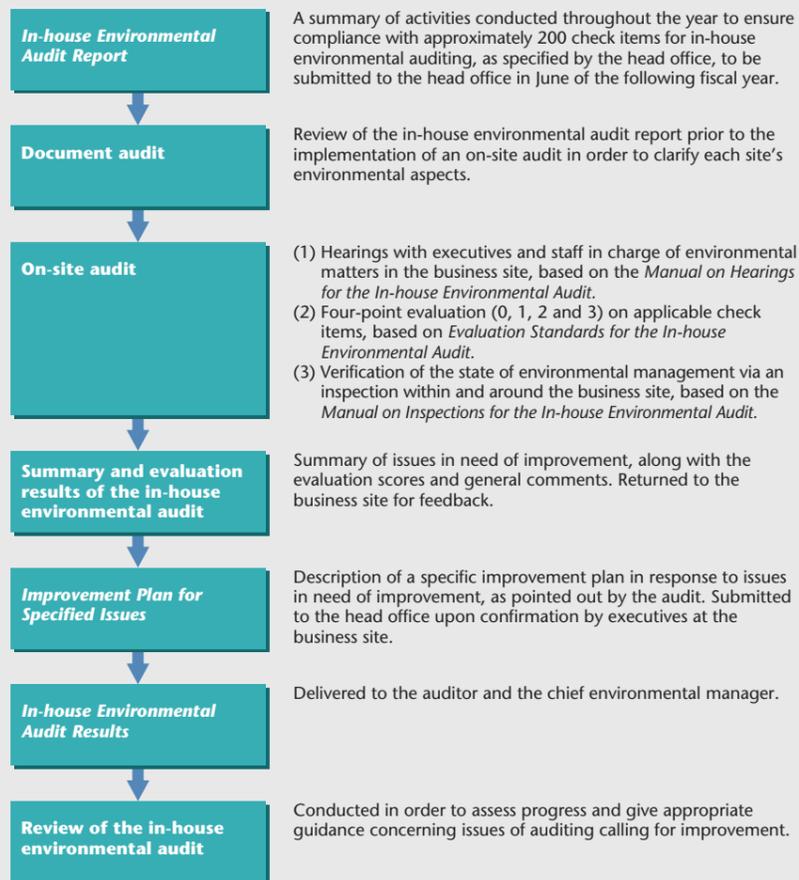


In-house environmental audit—inspection



In-house environmental audit—summary

Structure of in-house environmental audit



Education and Emergency Response

We are carrying out thorough environmental education, designed to maintain and improve the level of our environmental activities. In preparation for accidents that may have an impact on the environment, we are also conducting emergency training and drills.

Philosophy and Structure

In maintaining and improving the level of educational activities, we believe that a new level of awareness is required of all of us working at Toppan. Therefore, a variety of educational opportunities (ranging from basic education to specialized education), are provided for the entire workforce, from new recruits to managerial staff.

Environmental education system

Toppan's environmental education program, which begins as part of the annual training for new recruits, encompasses diverse aspects pertaining to environmental activities, such as training for new management staff, specialized training, and the like. Meanwhile, the educational activities conducted at each individual plant are directed to concrete issues closely related to the local area, including activities relating to the local environmental burden caused by the production activities of the plant in question.

Training of internal environmental auditors

To make the internal environmental audit at each plant more effective, Toppan organizes a training course for internal environmental auditors, sponsored by the head office. Thirty trainees participated in, and successfully finished, the course held in fiscal 2000.

Efforts in fiscal 2000

In fiscal 2000, five plants (3 systems) initiated efforts to seek ISO 14001 certification. To this end, environmental education was provided to all of the workers and executives of each plant. Of particular note, the Packaging Division was the first, among all Toppan's divisions, to structure an environmental management system that included marketing activities. Some special educational innovations, such as the creation of an environmental education tool for marketing personnel, came out of these efforts.



Training for internal environmental auditors

System of education



Efforts for Emergency Response

Preventive actions against emergencies

Chemical solvents are used in numerous plant operations. When these solvents are used, they are poured from tank trucks into storage tanks, a step that involves risks of soil and water pollution, should an accident occur. At plants where the possibility of such an environmental impact is present, we are installing pollution-preventive devices and preparing oil fences, sandbags, and other appropriate measures, in order to prevent the outflow of solvents outside of the plants in the event of a leak-related accident.

Preventive emergency-response actions

Toppan's plants are provided with documented procedures of response against hypothetical emergency cases. Periodical drills are also carried out to render environmental education more effective and, at the same time, the procedural manuals are evaluated with respect to their validity in actual emergencies.



Mock emergency drills



Installation of watergates to adjoining public water systems

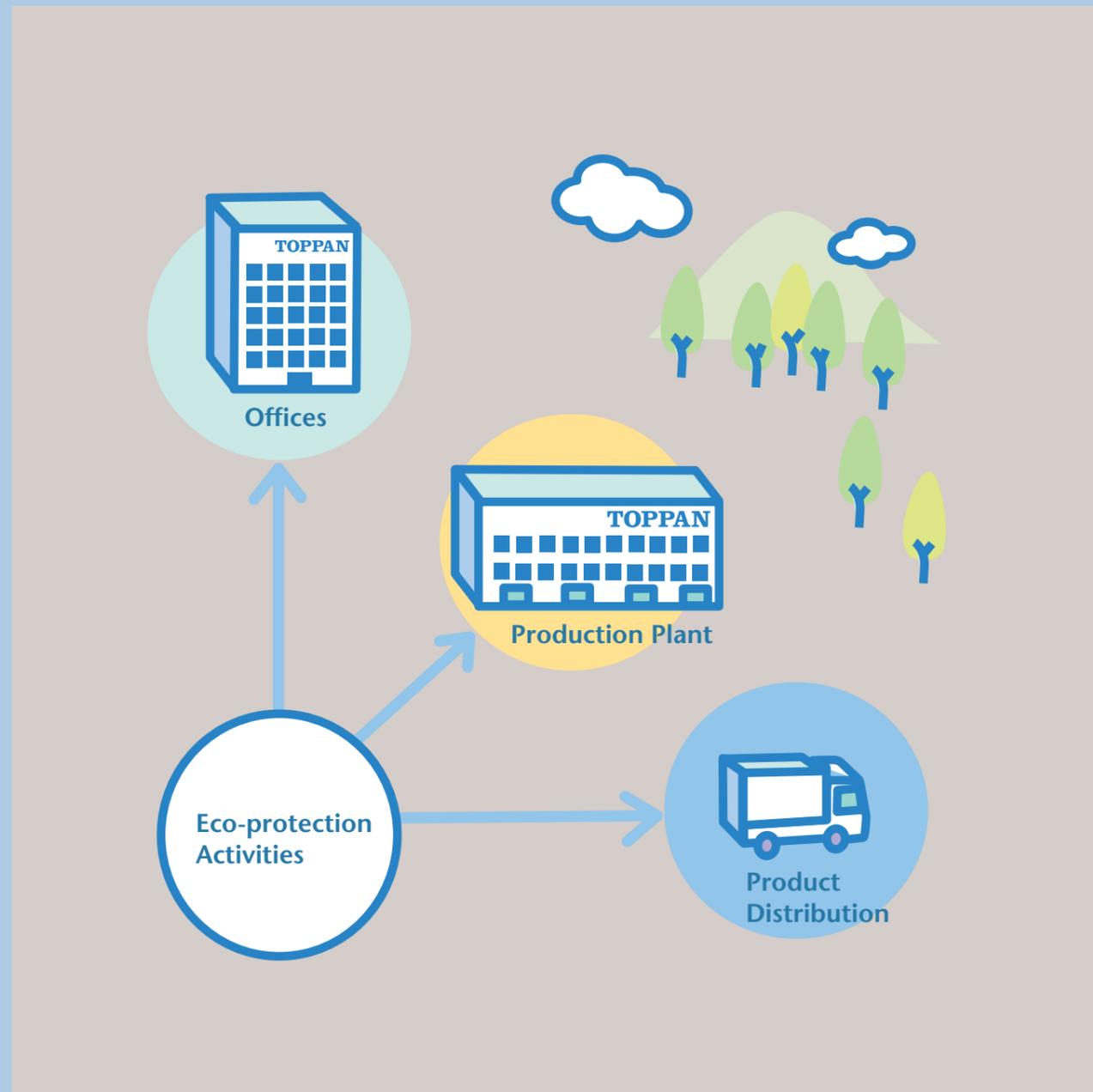


Indication of emergency response procedures

3 ECO-PROTECTION ACTIVITIES

At Toppan, efforts at reducing the environmental burden involved in business activities are called "Eco-protection Activities."

At all of our business sites, not simply those dealing with production, but also offices and product distribution sites, we aspire to contribute to conserving the global environment and to foster a recycling-oriented society.



Outline of Eco-protection Activities

Eco-protection activities are centered on efforts to reduce the environmental burden of production plants. These activities are carried out with the Eco-protection Promotion Committee playing the leading role.

Environmental Conservation Activities in Production Fields

Activities led by the Eco-protection Promotion Committee

Our production plants use raw materials and consume energy, water, and other materials to produce products. This production process inevitably generates an environmental burden, consisting of CO₂ (carbon dioxide) emissions, wastes, and so forth. In addition, it is likely that these production activities also impose a direct environmental burden on the residents in the neighborhood of the plants, in the form of air, water, or soil, creating noises, vibrations, and odors.

In view of the above, each production plant has organized an Eco-protection Promotion Committee with plant managers serving as chairmen. Through this committee, each plant carries out activities designed to cut back on the environmental burden at the plant level. Moreover, we are endeavoring, through the National Eco-protection Meeting (held semiannually) and through

the Intranet, to ensure that everybody shares in the knowledge of eco-protection.

Concrete efforts of eco-protection activities

With the aim of reducing the environmental burden, the following efforts are made at each production plant:

- (1) Prevention of pollution: Actions against pollution of air, water, soil, and for the protection of the ozone layer.
- (2) Energy saving: Reduction in energy consumption and efficient use of energy.
- (3) Resource saving: Protection of natural resources.
- (4) Waste management: Activities oriented toward 'zero-emissions.'
- (5) Management of chemical substances: Reduction in the use of hazardous chemical substances and facilitation of the proper management thereof.

The status of these activities is first summarized at each production plant and then subject to centralized management at the Ecology Center.

Eco-protection Activities at Other Business Sites

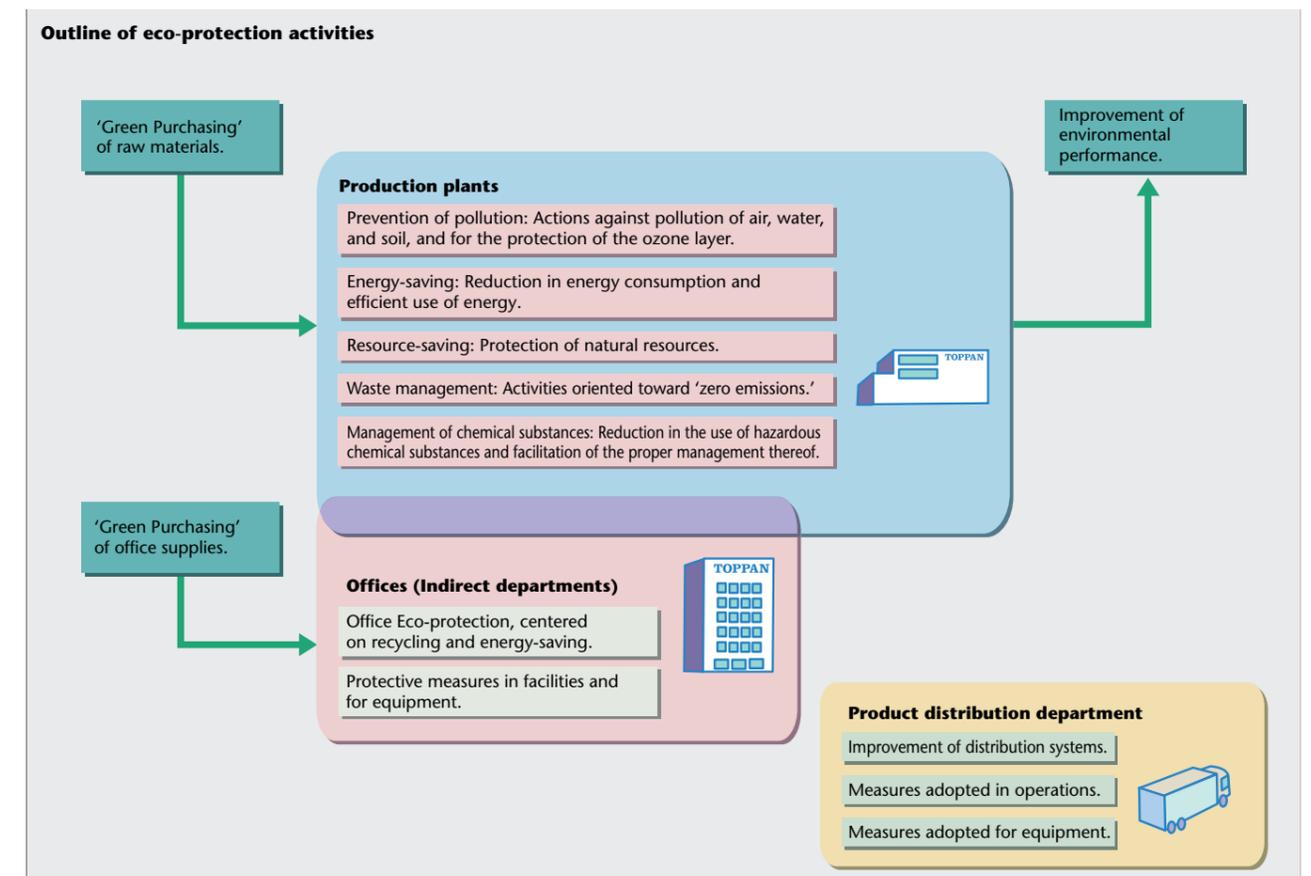
Offices (indirect departments)

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

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

Product distribution department

In addition to efforts to secure higher efficiency in the distribution system, Toppan Logistics Co., Ltd., which undertakes product distribution in our Group, is implementing eco-protection activities by encouraging a "Stop Idling" campaign, and by using low-noise tires in its transportation equipment.



Prevention of Pollution

Toppan is striving to reduce environmental burden and prevent pollution not only through compliance with legal regulations, but also through the establishment of, and compliance with, original in-house control standards.

The Fundamentals in Pollution Prevention

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

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

Prevention of air pollution

Conversion to alternative fuels for facilities equipped with boilers and incinerators that

*1 Electrostatic precipitator: Pollution-prevention equipment installed with the primary aim of removing hazardous substances contained in gas emissions. An electrode is placed in exhaust gases, and the hazardous substances contained in the gases are absorbed by the negative ions generated by corona discharge as high pressure is applied.

*2 Scrubber: Like the electrostatic precipitator, this is also a pollution-prevention device designed to eliminate hazardous substances contained in exhaust gases. The hazardous substances are removed by adsorption as those substances are passed through a cleaning solution. Dust also can be removed along with the exhaust gases. The scrubber requires the use of large quantities of water and a device capable of treating water that contains hazardous substances.

*SOx: Generic denomination of the three kinds of SO₂, SO₃ and sulfuric acid mist among the sulfuric acid oxides generated by the combustion of fossil fuels containing sulfuric acid, such as heavy oil and gasoline.

*NOx: Refers to NO and NO₂ among the nitrogen oxides created by combustion of fuels. These are substances that cause air pollution.

generate smoke and soot, and control of machine operations based on appropriate combustion requirements are among the preventive measures adopted at Toppan to prevent air pollution. In addition, air pollution is strictly controlled through the introduction of electrostatic precipitators*¹, bag filters, and other control machinery.

We also collect and reuse organic solvents from the printing process in order to prevent these from being released into the air. In this way we are able to use our own resources more efficiently. In addition, the volatile chemical substances that would otherwise be released into the air during production are dissolved in water, through use of a scrubber*². Proper treatment of this water allows us to avoid their discharge to the air and into public water systems.

Based on the *Guidelines for the self-imposed control of the Hazardous Air Pollution Substance* (Ministry of Economy, Trade and Industry), we at Toppan are striving to reduce the use and emissions of dichloromethane, a substance controlled under said guidelines. In fiscal 2000 we succeeded in cutting back

on the air emissions of dichloromethane by 12.4%, relative to the previous fiscal year, by both partially switching to an alternative substance and reducing the consumption of the dichloromethane still in use.

Prevention of water pollution

Toppan endeavors to prevent water pollution at its plants by installing wastewater treatment facilities in accordance with the environmental burden imposed by the production processes. To monitor compliance with the in-house control standards on water pollution, we are now in the process of introducing a 24-hour monitoring system for treatment facilities to cope with seasonal changes in BOD (biological oxygen demand) and COD (chemical oxygen demand) values. Moreover, we are internally treating wastewater by building a closed process water system, thus avoiding the discharge of wastewater off-site and allowing us to employ water resources more effectively.

On the other hand, it is necessary to use oil-water separators for treating compressor-generated emulsive wastewater (drainage) in which water and oil are intermixed. To

this end, we have installed oil-water separator equipment, developed with proprietary technology, at our plants. Since this system functions by a combination of specific gravity separation and metal substitution, without the use of chemical agents or energy, it implements efficient and low-cost oil-water separation.

Prevention of soil pollution

Toppan's preventive measures against soil pollution mainly consist of preventing leakages and outflows from storage tanks containing fuels, chemicals, and waste liquids.

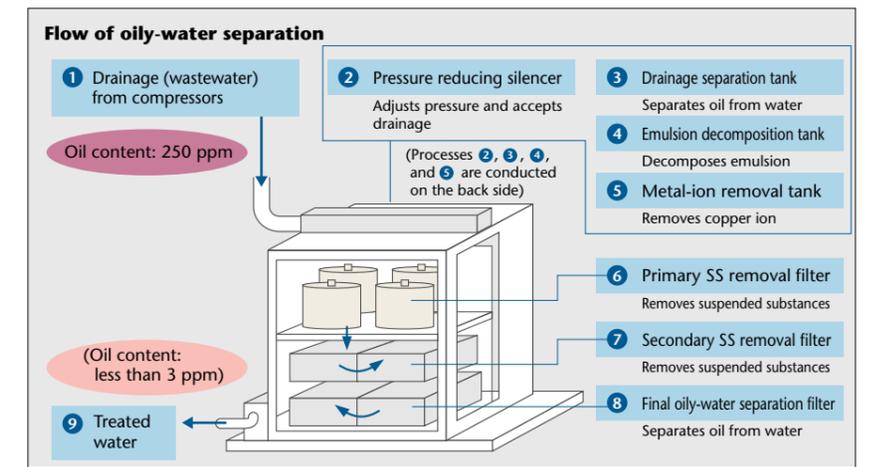
As concrete measures, we have constructed concrete walls around the storage tanks and, moreover, we check the tanks and pipings regularly in order to detect cracks and aging early, before soil pollution can occur. Further, when expanding, modifying, or removing buildings, we conduct investigations into soil pollution. Recently (in March, 2000), when the former Kamata plant was removed, we examined the soil for pollution, to find that the measurements remained below the standard values of Ohta Ward at all points investigated and for all the items checked.

Measures to protect the ozone layer

In March 1994, Toppan abolished the use of specific CFCs and 1,1,1-trichloroethane, both ozone-layer depleting substances, which were mainly used in cleaning processes. Also, for the 26 refrigerating machines using specific CFCs that still remain at our facilities, we are proceeding under a schedule to replace them or to install substitute systems.



Oily-water separator



(Patent pending as NT oil-separation method and metal-conversion method)



Collecting and recycling equipment for organic solvents



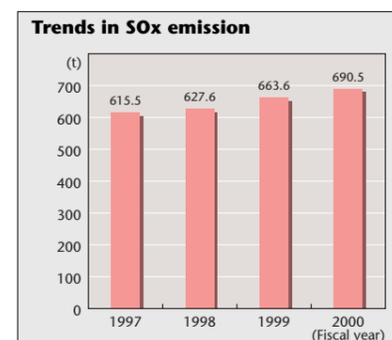
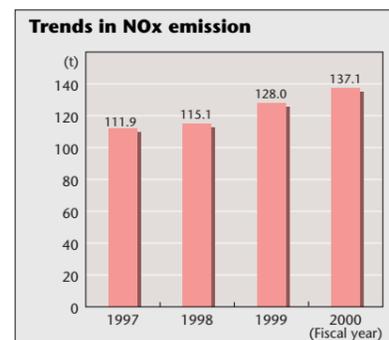
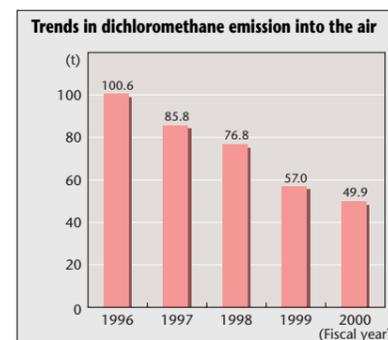
Wastewater treatment facility/coagulative precipitation tank



Scrubber



Wastewater treatment facility/underground leakage inspection pit



*Method of calculation: The NOx emission volume was calculated using the NOx emission index set forth in the Environment Agency's Environmental Activity Evaluation Program as issued in September, 1999.

*Method of calculation: The SOx emission volume was calculated by converting the sulfur (S) in each used fuel to SO₂.

Environmental activities at the Shiga plant



Shin Saeki
Chairman
Eco-protection Promotion
Committee

The Shiga plant (Shiga Prefecture) belongs to the Electronics Division, manufacturing various groups of electronics-related device products, including shadow masks, color filters for LCDs (liquid crystal displays), lead frames, and so on. Through its eco-protection activities, our plant started structuring an environmental management system under ISO 14001, ahead of the rest of the plants in our Group, and acquired ISO 14001 certification in July, 1998.

Since our plant comprises numerous manufacturing departments that consume and discharge a great variety and large volumes of chemicals and large quantities of water and energy, we promoted activities in fiscal 2000 with the primary aim of reducing the use of resources and energy and maintaining stable water quality in wastewater

and discharged water. In particular, this plant requires measures for the absolute prevention of pollution, as it discharges plant wastewater into Lake Biwa. For this reason, we have established tougher in-house control standards, above and beyond the regulatory standards, and are exercising full control and maintenance of the required water quality for wastewater and discharged water, with the intention of meeting the standards perfectly.

For fiscal 2001, the sustained pursuit of the targets of the previous year will be set as the basic objective, and all of our employees will jointly strive to secure further improvements, the principal target being the reduction of industrial waste and energy. Fiscal year 2001 happens to be the 3rd year since the acquisition of ISO 14001 certification,

and a renewal examination is scheduled. We also plan to develop a more efficient environmental management system, by taking the opportunity of the renewal examination to review and improve this system.

Shiga plant input/output data

INPUT	
Energy	
Total energy consumption	1,214,000 GJ
Water	
Water consumption	2,558,000 m ³
OUTPUT	
Air	
CO ₂ emission	54,833 t-CO ₂
Emission of substances destructive to the ozone layer	—
NO _x emission	6 t
SO _x emission	42 t
Emission of dioxins	—
Water system and soil	
Total water discharge	2,558,000 m ³
Underground penetration	—
On-site evaporation	—
BOD discharge	23 t
COD discharge	40 t
Nitrogen discharge	12 t
Phosphorous discharge	—
Waste	
Total generation	32,648 t



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

Energy and Resource Savings

We are aspiring to achieve thorough energy and resource savings by introducing highly efficient systems and equipment, and by raising efficiency in production processes.

Basics in the Efforts to Save Energy and Resources

To do our part in the prevention of global warming and the reduction of excessive resource consumption, we are tackling the tasks of reducing CO₂ (carbon dioxide) emissions—classified as a greenhouse gas—and of achieving more effective energy use.

We have established and have been striving to accomplish the following environmental targets:

- To reduce CO₂ emissions by 5% in fiscal 2010, relative to fiscal 1997 figures.
- To reduce energy consumption by 20% in energy consumption per unit of plant output in fiscal 2005, relative to the fiscal 1990 figures.

However, the energy consumption employed in setting up the targets was subject to some questions of validity, because it was expressed in terms of the energy consumption per unit of plant output, which is affected by decreases in unit product prices. Then, effective fiscal 1999, Toppan elected to define energy consumption based on production volume or on a substitute production value (energy consumption per unit of production volume)—which remains immune to market variation factors and which reflects the actual status of plant production and energy efficiency—and has since been adopting this definition as an

Energy consumption per unit of production volume for fiscal 2000

(Relative to figures for previous fiscal year)

Field of business/production plant	Results
Information & Networks	
Itabashi plant	4.3% decrease
Asaka plant (Commercial printing)	4.0% increase
Sakado plant (Commercial printing)	22.2% decrease
Living Environment	
Gunma plant	1.0% decrease
Fukuzaki plant	3.6% decrease
Kashiwa plant	1.2% increase
Electronics	
Niigata plant	2.0% decrease
Kumamoto plant	8.6% decrease
Numazu plant	5.7% increase

*Principal plants: The three most-energy-consuming plants in each field of business in fiscal 2000, of all plants controlled for energy consumption per unit of production volume

*Changes in value refer to comparisons of energy consumptions per unit of production volume from fiscal 1999 to fiscal 2000.

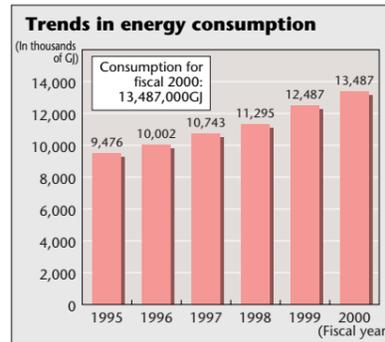
*For the Fukuzaki plant and the Kumamoto plant, only the major production departments were covered.

Factors contributing to increase in energy consumption:

*Asaka plant (Commercial printing): The ratio of the fixed energy consumption for air-conditioning and the like rose, measured against a decrease in production volume due to the relocation of production facilities.

*Kashiwa plant: Energy consumption increased due to the introduction of new environmental conservation facilities.

*Numazu plant: Energy was consumed during the startup period of new facilities, and greater consumption was due to the expansion of air-conditioning equipment, attributable to an increase in clean rooms.



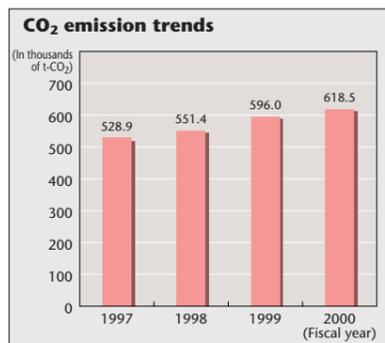
*Calculation base for reference: Calorific values specified in the 1999 Survey on Economic Statistics Concerning Energy. (Compiled by the Energy Data and Modelling Center, the Institute of Energy Economics, Japan)

energy-control indicator for evaluation purposes. Since the validity of this index was confirmed by the calculation results of the achievements of fiscal 2000, we adopted it in reviewing the energy-management environmental target for fiscal 2001, which was set at a 3% reduction in energy consumption per unit of production volume from the fiscal 1999 level for fiscal 2001. Moreover, we are presently promoting the following items as the three pillars of our energy-rationalization activity:

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

Achievements for fiscal 2000

The energy-saving activities executed in fiscal 2000 resulted in an energy consumption of 13,487,000 GJ (giga-joules), up 8.0% from the previous fiscal year's figures, which represents an increase of 2.4% in energy consumption per unit of plant output. However, in terms of the energy consumption per unit of production volume by plant, 29 out of 47



*Calculation base: The following values were taken from the Manual for Establishing Action Plan (Ministry of Environment) pertaining to the Law Concerning the Promotion of the Measures to cope with Global Warming. (See Article 8, Section 1.)

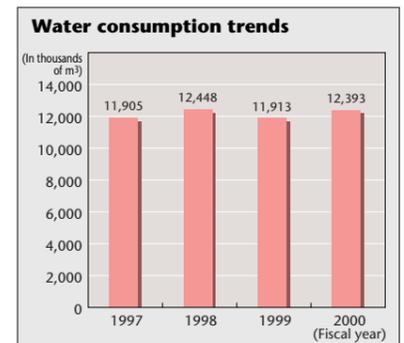
*Coefficients of CO₂ emissions:
 Electric power: 0.3840 kg-CO₂/kWh City gas: 1.9914 kg-CO₂/m³
 A-grade heavy oil: 2.6977 kg-CO₂/ℓ Light oil: 2.6444 kg-CO₂/ℓ
 Kerosene: 2.5284 kg-CO₂/ℓ LPG: 3.0065 kg-CO₂/kg
 Waste oil: 2,933 kg-CO₂/t Waste plastics: 2,567 kg-CO₂/t
 General waste: 2,442 kg-CO₂/t

plants and departments successfully slashed energy consumption. Meanwhile, CO₂ emissions stood at 618,500 t-CO₂, an increase of 3.8% from the previous fiscal year, meaning that our environmental target was missed. With regard to energy consumption by principal type of energy, the consumption of city gas registered a high growth of 11.7%, because a cogeneration system (CGS)^{*1} was introduced; the fuel source was switched to the cleaner city gas in order to reduce SO_x (sulfur oxides) and CO₂ emissions. As a result, the increase in purchased electric energy could be held at 4.7%, lower than the growth rate of 7.2% in fiscal 1999.

*1 Cogeneration system: System that supplies multiple types of energy, such as heat and electricity, obtained from a single energy source. Improves energy efficiency by 75 to 80%. It is also termed "steam supply and power generation" or "thermoelectric generation."

Employment of cogeneration system

A thermoelectric variable type cogeneration system was employed at Toppan Graphic Co., Ltd., utilizing a subsidy from NEDO (New Energy and Industrial Technology Development Organization). This has enabled the company to make more efficient use of energy by converting steam energy into electric energy. Calculations^{*2} indicate that energy savings of 14% and CO₂ reductions of 15% can be expected. Moreover, a steam-pressure stepped control system^{*3}, using compressed air, was adopted at the same time and has been operating in full swing since December, 2000. In the near future, we will try to establish an optimum operation method, consistent with the energy load at the plant.



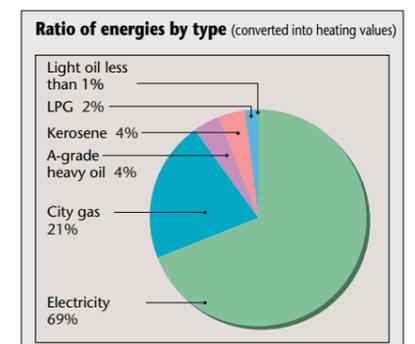
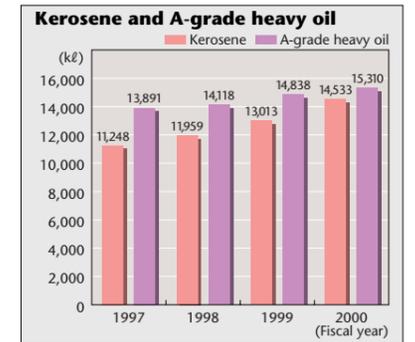
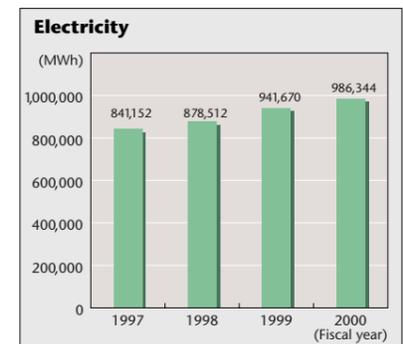
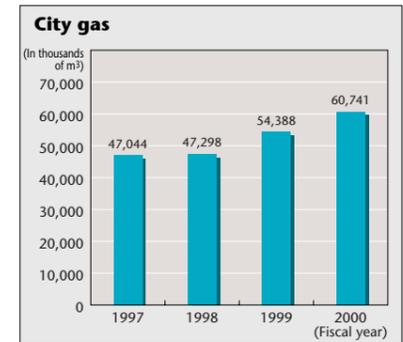
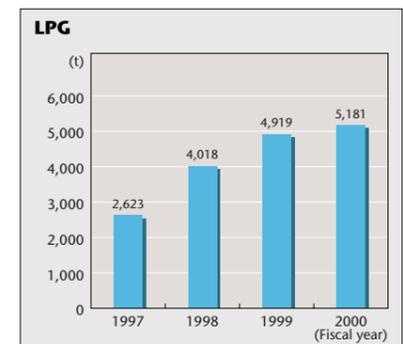
Absorption refrigeration machines

*2 Comparison with purchased electric power (thermal power generation)

*3 Steam-pressure stepped control system: System that regulates a fuel-control valve in steps by means of a steam-pressure control device, efficiently varying generated electric power and generated steam volume.

Protection and recycling of water resource

At the production plants in the Electronics Area, where water is consumed in large quantities, wastewater is recovered and re-generated through a wastewater recycling system, in order to reduce the intake and discharge of water. In this way, we are promoting more efficient use of water.



Environmental activities at the Ranzan plant

Securities and Cards Division, Ranzan plant (Information & Networks)



Satoshi Yoshioka
 Chairman
 Eco-protection Promotion
 Committee

In response to the needs for security in the computerized age, we at the Ranzan plant (Saitama Prefecture) manufacture electromagnetic cards, prepaid cards, and IC cards, among other products.

At this relatively new plant (barely four years old) situated in the midst of an abundant natural environment, we have been directing our efforts at resource-saving through reuse of rainwater, and focusing on energy-saving by limiting the number of refrigerating machines and boilers. In November, 2000, we obtained ISO 14001 certification, part of efforts to raise the level of our environmental conservation activities, in which reduction of waste, energy saving, and a lower environmental burden (imposed by organic solvents and other chemicals) are the major issues addressed. In the course of the last year, we improved the settings for

air-conditioning through a close review of air-conditioning needs at our plant, and we also introduced water humidifiers, which helped us save more energy. In terms of waste reduction, we have been implementing recycling of the metal chips that are produced in the production processes, and decreased use of waste plastics or converted these into valuables, but achievements so far still leave something to be desired.

Since both waste treatment cost and energy cost are very likely to steadily rise in the future, we will employ more efforts to cut back on use of the applicable resources. Moreover, concurrently with the placement in force of the PRTR Law (Pollutant Release and Transfer Register), we will promote appropriate controls of regulated chemical substances and focus on reducing their use as well.

The Ranzan plant makes cards from a non-polyvinyl chloride material, such as the Eco-Through Card, as well as other biodegradable cards. We will also be focusing further efforts on producing environmentally-friendly products such as these.



Ranzan plant input/output data

INPUT		
Energy		
Total energy consumption	156,000 GJ	
Water		
Water consumption	35,000 m ³	
OUTPUT		
Air	CO ₂ emission	7,558 t-CO ₂
	Emission of substances destructive to the ozone layer	—
	NO _x emission	2 t
	SO _x emission	0 t
Water system and soil	Emission of dioxins	—
	Total water discharge	19,000 m ³
	Underground penetration	—
	On-site evaporation	19,000 m ³
	BOD discharge	3 t
Waste	COD discharge	2 t
	Nitrogen discharge	1 t
	Phosphorous discharge	0 t
Total generation	799 t	

Waste Management

Thorough waste management and converting waste into recycled resources, Toppan is aspiring to realize a target of 'zero-emissions.'

Philosophy of Waste Management

Refuse paper, primarily derived from the Information & Networks and Living Environment fields, comprises 67% of Toppan's waste, followed by waste acids (such as waste etchant from the Electronics field) and waste plastics (from the Living Environment field). Toppan has been tackling waste man-

agement with a target of reducing the final disposal volume by 50% (as a proportion of plant output) in fiscal 2000, relative to the figures for fiscal 1990. Our activities over the past 10 years have culminated in the accomplishment of the target, as the disposal volume was reduced by 56.6% in fiscal 2000, the target year for the goal. Subsequently, in fiscal 2001, we established the new envi-

ronmental target of reducing the landfill disposal volume*1 by 20% by fiscal 2003, relative to the fiscal 2000 figure. To realize this goal, we have established the following items to address successively:

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

Appropriate disposal will be made of waste that continues to be generated despite the above efforts, and will be recorded on manifest slips.

From now on, we will further promote waste management with a view to making the "zero-emissions" campaign more substantial and complete by recycling more waste as a resource.

*1 Landfill disposal volume: Total of the direct landfill disposal volume and the landfill disposal volume of residues from intermediate treatment.

Achievements for fiscal 2000

For fiscal 2000, the target fiscal year for accomplishment, Toppan was able to reach the target when the unit disposal volume decreased by 56.6% from the fiscal 1999 level.

A key factor in the achievement was perhaps the 27.3% decrease in waste, as compared to the previous fiscal year, which came as a result of our efforts to implement more thorough sorting and recycling, along with a 4.4% increase in plant output over the previous fiscal year.

While the total volume of waste discharge in fiscal 2000 was 339,000 tons, which represents an increase of 1.3% from fiscal 1999, the volume of waste was 42,000 tons, down 27.3%.

From here on forward, we will proceed with waste management in accordance with the following major issues: sludge treatment in the Electronics field (which is continually working on recycling and reuse), and promotion of recycling and efficient use of paper/plastic-layered materials in the Living Environment field.

Reuse of waste as recycled resources

The majority of waste at Toppan is represented by refuse paper. For this reason, Toppan is regenerating approximately 97.3% of refuse paper as recycled paper or as another form of resource. Efforts are also still being made to utilize the remaining 2.7% of refuse paper as a recycled resource.

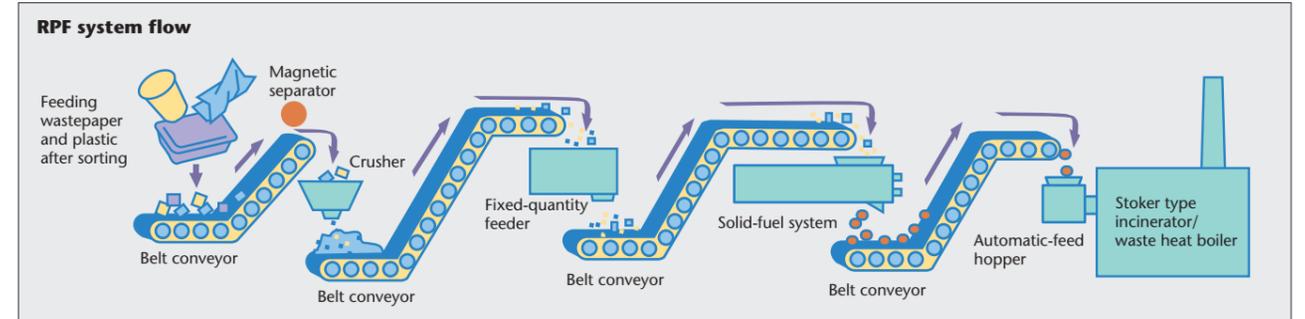
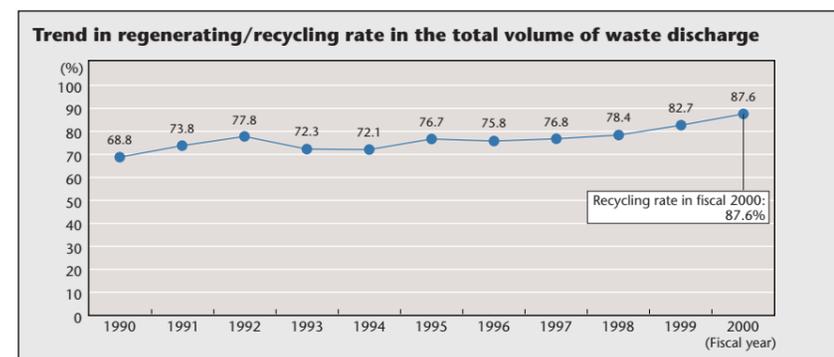
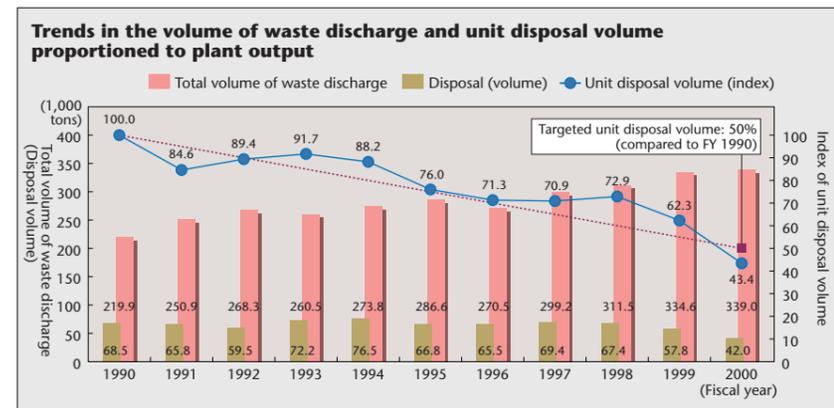
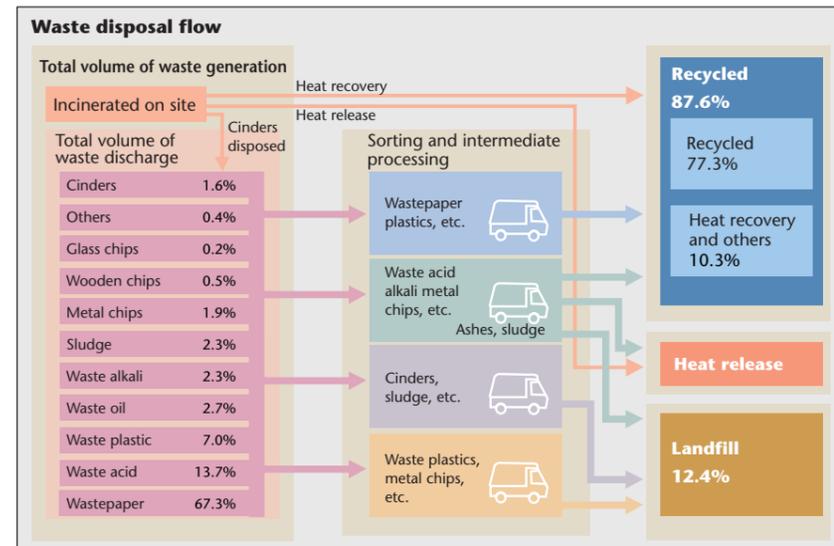
The RPF (Refuse Paper and Plastic Fuel) system, which was introduced in the Sagami-hara plant of the Living Environment field in March, 1999, is designed to regenerate the composite materials of paper and plastics as solid fuel. The waste converted

into solid fuel in this system can be reused for thermal energy in incinerators. The employment of RPF allowed the Sagami-hara plant to improve the combustion efficiency of its incinerators to a point where fuel consumption by stabilizing burners was slashed to approximately one-tenth of the previous

figure, and the weight of the cinders was cut to about one-third. Furthermore, a portion of the cinders and dehydrated sludge resulting from in-house treatment is recycled as materials for cement and steel.



RPF system



Environmental activities at the Fukuzaki plant



Shuji Morishita
Chairman
Eco-protection Promotion
Committee

Situated amid a verdant natural environment in Fukuzaki Town, our Fukuzaki plant (Hyogo Prefecture) manufactures soft packaging materials, such as plastic film, paper cups, plastic molded products, and so on. The business environment surrounding our packaging industry, which tends to impose a high environmental burden, is becoming increasingly intense today, due to a series of constraints, such as the Law of Promotion of Sorted Collection and Recycling of Containers and Packaging for products, the PRTR Law and the Law Concerning Special Measures against Dioxins for production, in addition to a growing shortage of industrial waste disposal sites.

At the Fukuzaki plant, we established "prevention of loss in production processes" as the key issue to be addressed in our eco-protection activities for fiscal 2000. While

promoting the reduction of waste generated at our plant (reduction), we also directed efforts at the conversion of flame-retardant materials into cement material (reuse), and the regeneration and recycling of waste plastic films as resources (recycling).

As a result, we were able to achieve a reduction in the unit landfill disposal volume of 12% in fiscal 2000, relative to the fiscal 1999 figure. In fiscal 2001, we will proceed with the recycling of cinders derived from incinerators for reuse as cement material, thus striving to accomplish the "zero-emissions" target. At our plant, where ISO 14001 certification is anticipated in the latter half of the current fiscal year, we will continue our endeavors to improve the environment, to help realize a recycling-oriented society.



Packaging Division, Fukuzaki plant (Living Environment)

Fukuzaki plant input/output data

INPUT	
Energy	
Total energy consumption	549,000 GJ
Water	
Water consumption	281,000 m ³
OUTPUT	
Air	
CO ₂ emission	33,898 t-CO ₂
Emission of substances destructive to the ozone layer	—
NO _x emission	5 t
SO _x emission	14 t
Emission of dioxins	0.001 g-TEQ
Water system and soil	
Total water discharge	156,000 m ³
Underground penetration	—
On-site evaporation	125,000 m ³
BOD discharge	3 t
COD discharge	2 t
Nitrogen discharge	4 t
Phosphorous discharge	0 t
Waste	
Total generation	5,975 t

Waste Management

Development of Zero-emissions Target

Toppan is now working on waste management, aiming for the achievement of its ultimate target of zero-emissions, with the intention of reusing waste as recycled resources.

In 1999, model plants for zero-emissions were chosen, and the corresponding activities have since been carried out in a manner consistent with the characteristics of their respective business fields, with the aim of achieving the zero-emissions target at 10 plants by March, 2002. Nonetheless, achievement of this target faced a problem: the recycling rate was largely dictated by external factors, and achievement of the target inevitably required the cooperation of outside recycling partners. We then proceeded

to reviewing the selection criteria of the "zero-emissions plant," effective fiscal 2001, redefining this as a "plant with 95% or greater recycling rate, which is certified as such by the head office Ecology Center." For the 17 plants which achieved a 95% or greater recycling rate (according to results for fiscal 2000), specific issues blocking achievement of the "zero-emissions" target will be examined by the Ecology Center in technical, economic, and regional terms during the in-house environmental audit for fiscal 2001, and certification will be determined at the National Eco-protection Meeting to be held in November.

Going forward, more efficient efforts to achieve zero-emissions will be developed, by making the most of Toppan Group's network.



Waste storage

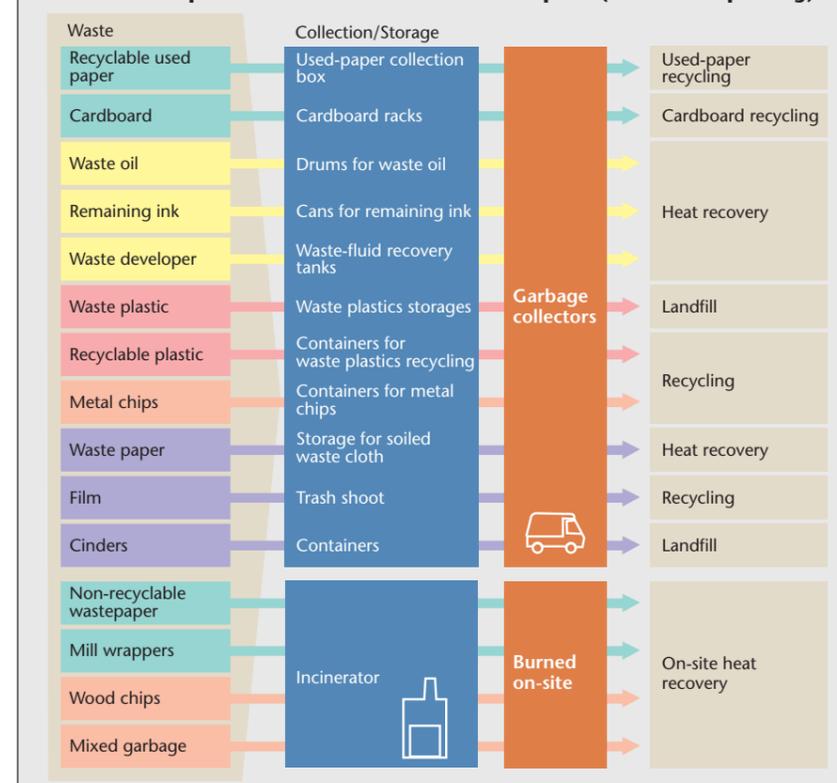


Signboard for waste storage

Status and specific issues at 6 model plants for zero-emissions (%)

Plant	1998	1999	2000	Issues to be resolved
Asaka plant (Commercial printing)	97.0	97.7	97.4	Cinders, waste plastics
Itami plant (Packaging)	94.8	92.5	96.4	Mixed wastepaper, waste oil
Toppan Seihon Co., Ltd. (Binding subsidiary)	99.2	98.9	99.3	Waste plastics, mixed wastepaper
Toppan Containers Co., Ltd. (Sano plant)	99.3	99.2	99.1	Mixed wastepaper
Mikkabi Toppan Printing Co., Ltd.	95.7	95.4	94.1	Waste plastics, waste oil
Toppan Joh-hoku Printing Co., Ltd.	91.7	92.3	96.7	Waste plastics, waste oil

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



Management of Chemical Substances

Now that the impact on the global environment of chemical substances has become obvious, the management of chemical substances in corporate operations has come to form one of the major pillars of environmental risk management at Toppan.

Management of Chemical Substances and Philosophy

The vast variety of chemical substances created to date by mankind has made our life more convenient and pleasant, but on the other hand, these substances are exerting adverse effects on the human body and the global environment, including ecological systems. Therefore, we at Toppan believe that it is our duty, as those engaged in business activities, to place thorough control on the chemical substances under our own responsibility.

Concrete actions

In July 2000, the PRTR*1 Law (*Law Concerning Reporting, etc. of Releases to the Environment of Specific Chemical Substances and Promoting Improvements in Their Management*) went in force. The Federation of Economic Organizations initiated the PRTR investigation in fiscal 1998, and had been acquiring data for the purpose of building

up knowledge in preparation for the enforcement of the Law. Meanwhile, Toppan also conducted its own PRTR investigation, based on the achievements of fiscal 1997 at all plants, and collaborated with the Federation of Economic Organizations by reporting its accumulated data. At the same time, Toppan has diligently been working to structure a PRTR system designed to measure and control released and transferred amounts of regulated chemical substances.

From here on, Toppan will establish a comprehensive in-house control system for chemical substances by completing and expanding the PRTR system, so that appropriate risk assessment and risk management can be made in respect of the chemical substances. For fiscal 2001, we will try to gain an accurate grip on the present status and the processes of release of chemical substances into the environment, in accordance with the data acquired in fiscal 2000. For

plants which have released regulated chemical substances in the past, we will identify the process in which each one of those substances was used, and explore the possibility of using substitutes for them. Where an immediate substitution is difficult to make, action designed to reduce the release of that chemical substance will be taken, or reduction of the consumption itself of the substance will be sought.

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

PRTR investigation at Toppan Group and results for fiscal 2000

Decree No.	Type-I designated chemical substances	Released amount			Transferred amount in sewerage system	Transferred amount for disposal	Transferred amount for recycling
		Air	Water	Soil			
1	Water soluble zinc compounds	2	0	2	0	0	3,098
16	2-aminoethanol	44,088	58	44,030	0	0	33,187
24	n-alkylbenzenesulfonic acid and its salts	1,000	0	1,000	0	0	7,000
44	Ethylene glycol monoethyl ether	17,774	17,774	0	0	0	17
63	Xylene	149,827	149,827	0	0	0	903
64	Silver and its water-soluble compounds	0	0	0	0	0	1,649
68	Chromium and chromium (III) compounds	173	0	173	0	0	23,251
69	Chromium (VI) compounds	0	0	0	0	0	4,759
132	1,1-dichloro-1-fluoroethane (HCFC-141b)	11,143	11,143	0	0	0	0
145	Dichloromethane	38,514	38,514	0	0	0	2,325
207	Water-soluble copper salt	851	0	851	0	0	15,614
224	1,3,5 trimethyl benzene	1,105	1,105	0	0	0	0
227	Toluene	5,763,267	5,763,267	0	0	300	1,284,229
231	Nickel	2,024	0	2,024	0	0	119,220
232	Nickel compounds	0	0	0	0	0	1,535
253	Hydrazine	1,711	1,711	0	0	0	0
254	Hydroquinone	0	0	0	0	4,421	4,107
270	Di-n-butyl phthalate	0	0	0	0	660	0
272	Bis (2-ethylhexyl) phthalate	0	0	0	0	0	14
304	Boric acid and its compounds	392	0	392	0	0	700
310	Formaldehyde	2,780	1,728	1,052	0	0	11,000
311	Manganese and its compounds	499	0	499	0	0	11,690

*Period of computation: April 1, 2000 to March 31, 2001

*Plants and business sites covered: Plants and business sites with 1.0 t/year or more of annual handling amounts.

*The amount transferred out of the plant or business site as waste was entered under Transferred amount for disposal and the amount delivered to a recycling contractor was entered under the Transferred amount for recycling column.

*Dioxins are described on page 11.

Office Eco-protection

Environmental activities in the offices are referred to as Office Eco-protection, and are centered on recycling, energy-saving, and resource-saving activities, with a change in awareness of all participants constituting the focal point.

Efforts in the Offices

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

Recycling activities in the offices

As a result of the recycling activities promoted in fiscal 2000, the recycling rate at Toppan's buildings was 63.4%.

Employees at the Toppan Koishikawa Building, which produces the largest quantities

of office waste among Toppan's buildings, are encouraged to separate and dispose of waste in the 11 categorized recycling bins situated on each floor. The sorted waste is then brought to an underground collective recycling area, where it is compacted and delivered to garbage collectors for disposal. These recycling activities, initiated in June, 2000, have resulted in a recycling rate of 88.5%.

Furthermore, in the Akihabara office building (Packaging), which obtained ISO 14001 certification in March 2001, the established environmental policy calls for "thorough sorting for reduction and recycling of waste," and has defined as many as 25 waste-sorting categories. After ensuring the employees' thorough awareness of the

sorting methods, full-scale activities began in January, 2001.

Energy-saving

We are now working on the installation of energy-saving fluorescent lamps and motion sensors in lighting apparatuses, among other measures, as part of our energy-saving endeavors in the offices. Ice-thermal-storage system*1 heat pumps were introduced in the sales office building in the Akihabara area of the head office and the Shibaura building, as part of our efforts to cut back on electric consumption. The Office Eco-protection activities are thoroughly effectuated by each one of our employees, since everyone has acquired a variety of daily energy-saving habits, which include temperature management via air-conditioning adjustments, powering-down of lighting appliances and office-automation equipment during lunch breaks, alternating "lights out" periods in hallways, encouraging employees to use the stairways in lieu of the elevators, and so forth.

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



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

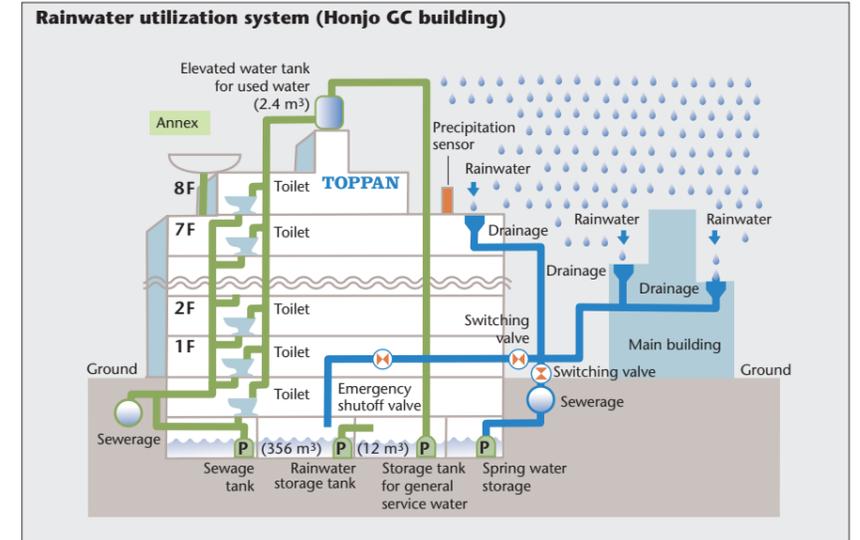


Recycling bin on each floor (Toppan Koishikawa Building)

Conservation of water through use of rainwater

At Honjo GC building, we were able to cut the consumption of service water by 3,258 m³, thanks to the system for the use of rainwater, which was introduced in April, 1994. The Toppan Koishikawa Building also introduced a used-water treatment system that collects water from washbasins and cafeterias and then applies BOD treatment to reuse the water for flushing toilets. This system, which was placed in operation in May, 2000, contributed to saving 4,651 m³/year of water.

Location of the system	1999	2000
Honjo GC building	3,175	3,258
Toppan Koishikawa Building	—	4,651



Used-water recycling facility (Toppan Koishikawa Building)



Rainwater pipings (Toppan Koishikawa Building)

Standards for office refuse sorting at Toppan Koishikawa Building			
Office refuse sorting	Location of categorized recycling bins on each floor		
Empty cans	Refreshment lounge	Underground collective recycling storage	Crushed
Paper cups	Categorized recycling bins		Sorted
Used paper recycling storage*	Freight elevator area		Sorted
General inflammable garbage	Bins with lids		Crushed
Newspaper	Bins with pulleys		
Magazines	Recycling storage on each floor		
Cardboard	Categorized bins		
PET bottles			
Glass bottles			Sorted
Disposal lunch boxes & vinyl objects			
Metals and batteries			

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



Sorting station in offices (Akihabara office building)



Shared floor station (Akihabara office building)

"Green Purchasing"

Basic policy and in-house standards

Toppan believes that realization of a recycling-oriented society necessarily requires that we give priority to the purchasing of environmentally-friendly products. Therefore, we established our Basic Policy on Green Purchasing in January, 1999, and initiated corporate-wide Green Purchasing. Under this policy, we select and purchase products that meet our in-house Green Purchasing standards, especially for the designated product categories: office paper, copiers and printers, personal computers, stationery and office supplies, and toilet paper.

In-house "Green Purchasing" standards

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

Achievements for fiscal 2000

Toppan achieved 100% Green Purchasing for copiers and toilet paper for fiscal 2000. The achievements for printers and stationery/office supplies fell short of expectations, at 75.9% and 67.2%, respectively. These two items remained unsatisfactory because of certain technical factors involved with the products and insufficient awareness of Green Purchasing, which are problems yet to be resolved.

While we will make further efforts to raise the current level of Green Purchasing, we are planning to initiate a Toppan "Green Procurement" system as part of our activities

for purchasing environmentally-friendly materials used in plants, in fiscal 2001.

Green Purchasing for internal printed matter

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

Efforts in Product Distribution

Environmental activities are actively being promoted in the product distribution departments, with the aim of introducing low-pollution vehicles and reducing packaging materials, not to mention reducing exhaust gases from trucks and forklifts.

Issues and Efforts in Distribution Departments

The distribution departments of the Toppan Group are developing activities primarily aimed at reducing air pollutants, such as CO₂ (carbon dioxide) and NO_x (nitrogen oxides) emitted by trucks, which are indispensable for product distribution.

Building up a distribution system for higher efficiency

Toppan Logistics Co., Ltd., in charge of Toppan's product distribution, has traditionally been handling product distribution from the depot of each individual plant. This was creating an inefficient situation; for example, several plants had to independently arrange for transportation vehicles going to the same destination.

To improve such situations and to reduce costs and the environmental burden through efficient operation of vehicles, Toppan Logistics Co., Ltd. established a new system; namely, WARTS (Wide Area Relay Trucking System), which was made possible by the consolidation of delivery information. The system receives consolidated delivery-instruction information and then coordinates cargoes from the various plants and operation bases in a given area, thus allowing for the transportation of multiple cargoes from each specific area. Introduction of this system enabled the company to cut the operating number of trucks by an average of 135 units (on a 4-ton truck basis) per month and, at the same time, helped reduce packing materials by a great amount.

This system is now utilized to transport products from the packaging departments in Tokyo to the Kansai district. We hope to make use of the same system also for transportation to other areas of the country in the future, in order to achieve increased efficiency in product distribution and a reduction of the environmental burden.

"Stop Idling" campaign

The company instructs its truck drivers to observe legal speed limits, to drive at a constant speed on highways, and to refrain from idling their engines while they are stopped. In May 1995, the company initiated its "Stop Idling" campaign with specific defined rules. Drivers' awareness of these requirements is enhanced with notices printed on posters and direct instructions.

The specific items of instruction include: (1) engine-warming should be kept to within three minutes regardless of the season; and (2) engines should be stopped during waiting periods. We have also opened a lounge where the drivers can spend time during their waiting periods, to further promote the campaign. Consequently, the 50 trucks owned by Toppan Logistics Co., Ltd. have lowered their monthly fuel consumption by an average of 290 liters.



"Stop Idling" sticker, posted on a truck

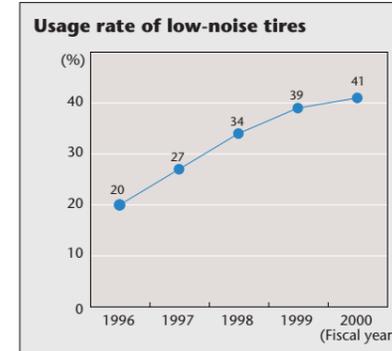
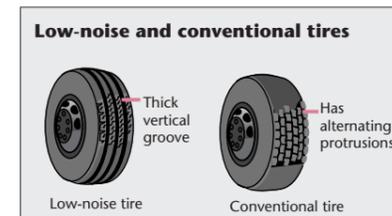


Facilities in drivers' lounge

Introduction of low-noise tires

In conjunction with the "Stop Idling" campaign, we also began introducing low-noise tires. Those low-noise tires, called vertical-groove tires, not only make less noise on the roads, but also generate less frictional heat and, therefore, help prevent global warming. Toppan Logistics Co., Ltd. achieved a 41% usage rate of low-noise tires in fiscal 2000.

The company is also working to reduce waste and to promote the effective use of resources by recycling its used tires.



Battery-powered forklifts

Toppan is promoting the conversion from fuel-operated forklifts to battery-powered units. While the former type will consume approximately 400 liters of gasoline per month, a battery-powered forklift can not only eliminate gasoline consumption, but can also eliminate exhaust gases and reduce waste consisting of engine oil and maintenance parts. In fiscal 2000, Toppan Logistics Co., Ltd. achieved a 79.4% usage rate for battery-operated forklifts.

Introduction of low-emission vehicles

The conversion of company cars to low-emission vehicles is steadily under way. In fiscal 2000, two more of this type of vehicle were introduced, with a total of 12 environmentally-friendly cars now in our fleet.

Overseas Operations

The status of environmental efforts at our overseas production plants is assessed through biannually conducted in-house environmental auditing. Overseas activities are directed toward reducing the environmental burden.

Fundamental Activities

Along with globalization of the economy and progression of internationalization, Toppan has also been expanding its business activities overseas.

Currently, Toppan has 3 production plants operating in the United States, and 6 production plants in Asia.

At each one of those plants, the Toppan Group is working on environmental conservation activities based on Toppan's Declaration on the Global Environment, in addition to strict compliance with environmental rules and regulations in force in each country.

Also for environmental management, we are promoting the introduction of a system conforming to ISO 14001.

Japan's environmental conservation technologies are rated highly on a global level. Our Japanese technical staff provide technical information and guidance in the construction of plants and in the introduction of environmental conservation facilities.

Environmental Audits Overseas

An in-house environmental audit is implemented every other year at Toppan's overseas production plants. In fiscal 2000, hearings and inspection visits were made at the following 3 production plants abroad:



Siam Toppan Packaging Co., Ltd., Bangkok

- PT Toppan Sampoerna Indonesia in Jakarta
- Siam Toppan Packaging Co., Ltd. in Bangkok
- Toppan Chunghwa Electronics Co., Ltd. in Taiwan

Major audit items

The audit items are intended to confirm precise understanding, operation, and compliance in respect of environmental rules, regulations, and ordinances in each country, with an emphasis on the environmental impact on water and air and on the daily management of waste.

As a result of the audit, some aspects that required improvement were discovered, such as (among others) the clarification of assignments of the corporate organ related to the environmental management system and improvement of the operation thereof; the establishment of in-house standards for wastewater management; and the establishment of a method for obtaining the latest editions of local environmental rules and regulations.

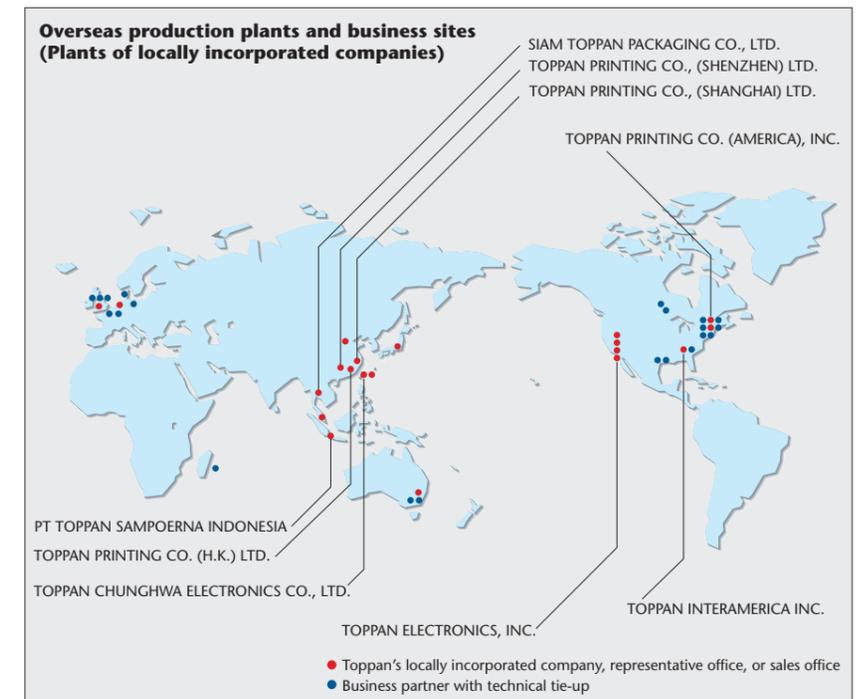
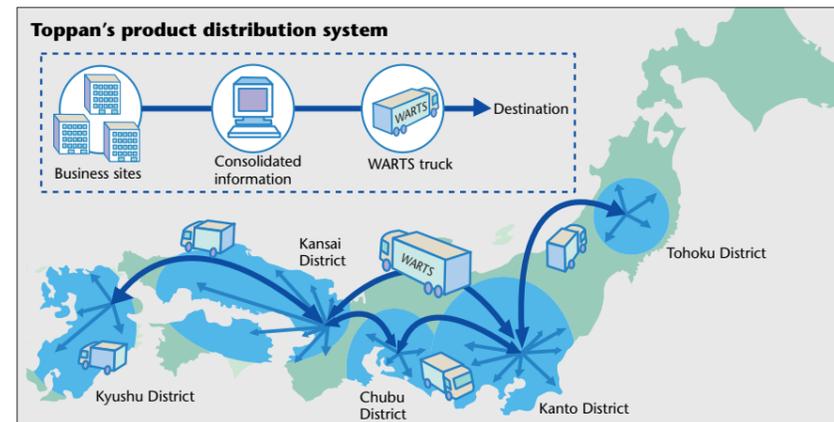
There were a total of 25 items requiring improvement; 11 in Jakarta, 7 in Bangkok, and 7 in Taiwan. The local parties are presently proceeding with remedial actions in accordance with established improvement plans.



PT Toppan Sampoerna Indonesia, Jakarta



Toppan Chunghwa Electronics Co., Ltd., Taiwan



Development and Supply of Environmentally-friendly Products

Toppan has established its own original evaluation standards for the development and supply of environmentally-friendly products. The points of environmental consideration are noted on (Type-II) environmental labels.

Basic Philosophy for Environmentally-friendly Products

Toppan intends to raise the accuracy of its accountability to customers and to actively support the environmental claims made on behalf of its products. To this end, Toppan performs prior evaluations at each plant during the design and development of products, and registers these developed products at the Ecology Center. These products are marked with Toppan's Labels for Environmentally-friendly Products for easy understanding of the applicable environmental consideration.

Evaluation and registration of environmentally-friendly products

Toppan conducts evaluations and registrations of products, based on its *Guidelines*

and *Standards for Environmentally-friendly Products*. Each division can develop more efficient, environmentally-friendly products by working in line with these standards right from the initial stages of planning and development of the products. Moreover, the standards are drawn up on the basis of the Type-II Environmental Labeling of ISO 14021 and comprise 13 items each, with the addition of Toppan's 3 own original items: safe materials, reduced release of chemical substances, and fitness for disposal.

Toppan's Labels for Environmentally-friendly Products

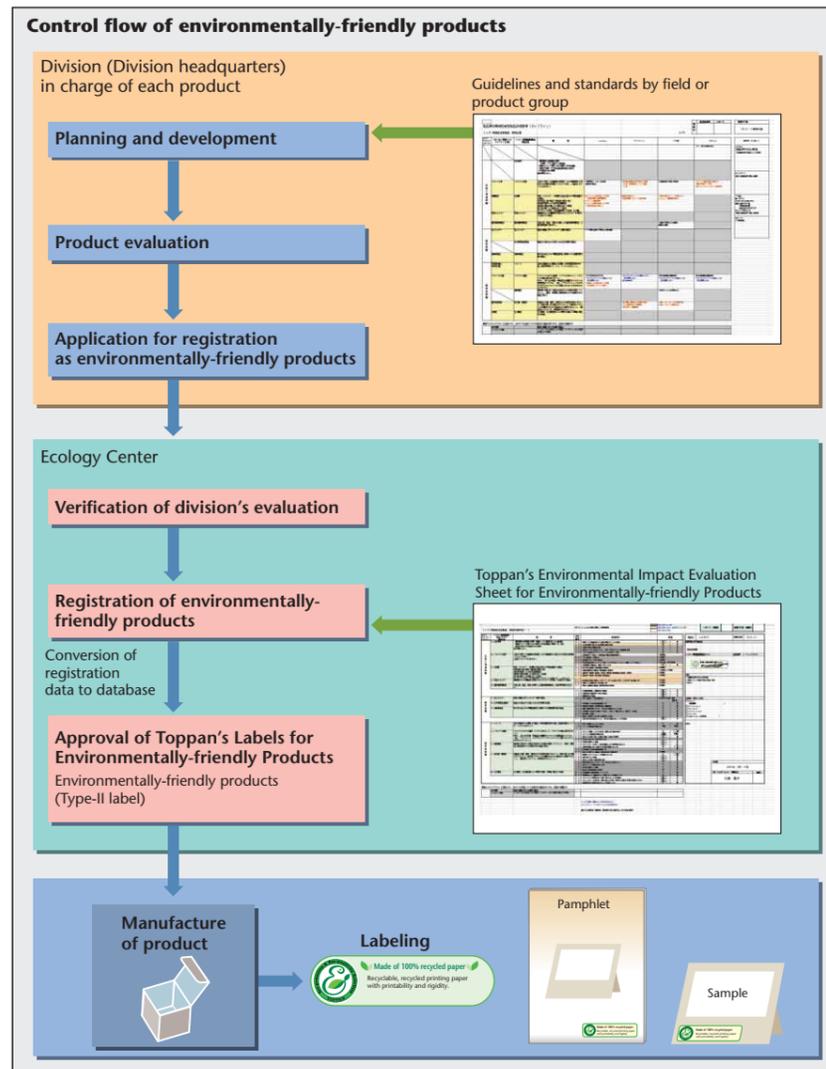
Products developed in the respective product divisions are evaluated in line with the said standards, and an application is filed with our Ecology Center for registration of products determined to meet the standards.

The Ecology Center verifies the evaluation and registers these as environmentally-friendly products. It also evaluates the possible environmental impact of the products over their entire life cycle, in accordance with *Toppan's Environmental Impact Evaluation Sheet for Environmentally-friendly Products*, and approves them for *Toppan's Labels for Environmentally-friendly Products*. These approved environmentally-friendly products are indicated as such in the sales promotion tools, product brochures, product samples, and so on. As of the end of June, 2001, there were 43 types of environmentally-friendly products approved through the above process.

The registration data of those products are entered into databases for subsequent use.

Guidelines and standards by field or product group

Life cycle stage	Environmental merit
Production and distribution stages	Safe materials Recycled materials Resource-saving Recovered energy Reduced solid waste
Usage stage	Energy-saving Reduced release of chemical substances Product with long life
Stage after use	Reuse Recyclability Fitness for disposal Easy separation and easy detachment Biodegradability



Product Assessment Method

In commercial printing, Toppan developed a system of qualitative environmental impact evaluation via a method of product assessment used to evaluate the impact of our POP sales promotion products. This system is intended to evaluate the environmental burden and to determine the methods of reduction of this burden in the design and development stages of a product, and finally

to convey the results of this evaluation to customers in an easy-to-understand manner.

This system first performs a simple evaluation by a primary summary screening. Product assessment is made of products that pass the screening, and the evaluation results are plotted on a graph.

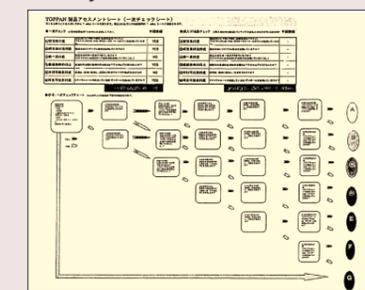


Eco-PAK packaging-integrated life-size POP

Example of product assessment for life-size displays

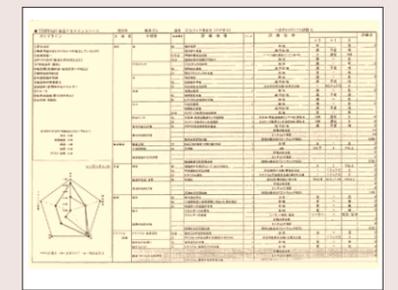
In this example, the Eco-PAK life-size POP display was assessed at the planning and development stages. Eco-PAK has an integrated cardboard packing box which serves as a support for the display. By employing such a construction, it became possible to manufacture the POP display by using only paper-based materials.

Primary check sheet



With the primary check sheet, a simple YES/NO evaluation is made concerning 6 items, including "Degree of Safety of Material," "Degree of Use of Recycled Material," and "Degree of Recyclability of Material." Only products evaluated with YES for 4 items or more are then subjected to more detailed evaluation for product assessment.

Product assessment sheet



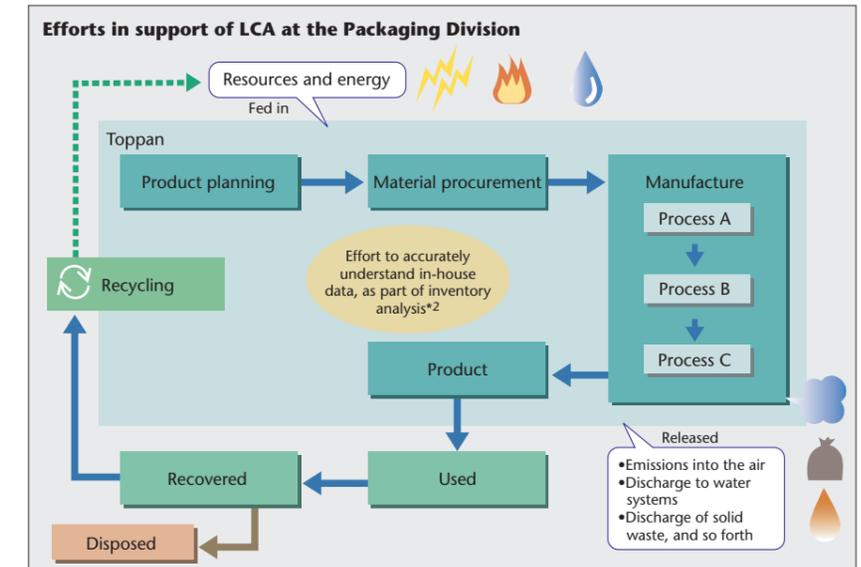
The sheet indicates that the product reflects improvement and has higher evaluation points regarding recyclability, disposability, and distributability, relative to traditional products made from multiple materials, such as plywood.

Introduction of LCA (Life Cycle Assessment)

Toppan believes that the concept of LCA*1 is important to permit us to quantitatively grasp the environmental burden at each stage: from acquisition of raw materials to production, distribution, use, recycling, and disposal. To this end, we have set up an in-house committee concerning LCA and have initiated studies designed to spread a common, in-house concept of the way internal data are to be understood, data accuracy in general, and so on.

The Packaging Division, which was the first division to undertake this sort of activity, is already working on a quantitative data-acquisition project as a part of the environmental management system. In this project, we have already consolidated accurate quantitative data-control methods and data-calculation methods pertaining to the material balance (for example, between input and output) within the scope of the manufacturing process.

We are currently working to be able to then feed the information obtained in the project back to the design and development departments, leading to further process



improvement and to a reduction of the environmental burden posed by the products. Furthermore, we release this information at the request of customers and of outside parties, for use as data for the evaluation of environmental impact.

*1 LCA (Life Cycle Assessment): Technique to quantify the burden placed on the environment by a product throughout its life cycle, through all stages—from raw materials through manufacture, distribution, use, and disposal, thereby permitting evaluation of the environmental impact of the product.

*2 Inventory analysis: Measurement of quantitative data regarding input of resources (such as raw materials), energies, and output (consisting of carbon dioxide and waste).

Toppan's Environmentally-friendly Products

Toppan is planning and developing environmentally-friendly products across all its business fields for the purpose of contributing to creating a recycling-oriented society.

Toppan's Environmentally-friendly Products

In contributing to the formation of a recycling-oriented society, Toppan is planning, developing, and supplying—across all its business fields—environmentally-friendly products that give due consideration to the environment throughout the stages of a product's life cycle—from the raw material stage through manufacture, distribution, use, and post-use.

Product development is carried out with consideration given to "use of recycled materials" and to "resource-saving" for the production and distribution stages, to

"reduced release of chemical substances" for the usage stage, and to "reuse," "recyclability", and "easy separation and easy detachment" for the post-use stage. Further, developed products are controlled in accordance with Toppan's guidelines and standards by field or product group. (See page 38.) At present, 43 products are registered as environmentally-friendly products and authorized for Toppan's environmentally-friendly product labeling.

Breakdown of authorized products—Information & Networks:
There are 5 product types in Securities and Cards, 7 in Commercial Printing, and 3 in Publications Printing.

Electronics:

One product type.

Living Environment:
Twenty-four product types in Packaging, 3 in Industrial Materials.

Some of these products are introduced below.

Information & Networks

Eco through card



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

BE card



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

Toppan Green Paper 100



100% recycled paper
Recyclable, recycled printing paper with printability and rigidity.

Eco-PAK packaging-integrated life-size POP



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

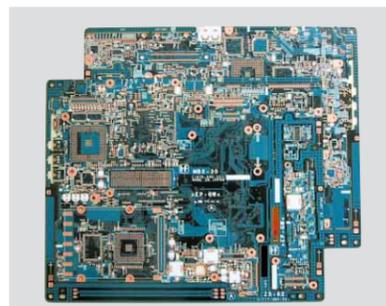
Recycled vegetable-oil inks



Recycled vegetable oil
Aromatic-free inks, with 20% or more of recycled vegetable oil mixed in offset sheet-fed printing ink, or 7% or more in rotary printing ink.

Electronics

Low-halogen printed-wiring board



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

Living Environment

GL-Family



Non chlorine-base material used
These packing films emit few noxious gases when incinerated for disposal after use.

Standing Pouch



Resource-saving (reduced use of materials)
The resin was reduced by more than 50% in volume, relative to traditional plastic bottles. These containers for liquids are also easy to compact after use.

Ecoslim



Resource-saving (reduced use of materials)
The resin was reduced by more than 30% in volume, relative to traditional plastic bottles. These containers for liquids are also easy to compact after use.

Ecogloss



Resource-saving (reduced use of depletable resources) and made from recyclable materials
Glossy paperware that uses soy ink and applicable water varnish for higher recyclability.

Ecotainer



Resource-saving (Reduced use of depletable resources)
The resin was reduced by 80% in volume, relative to traditional plastic bottles. The outer box (paper) and the inner box (plastic) are easy to separate from each other.

EP-PAK·GL



Resource-saving (reduced use of distribution energy)
These are paper containers for beverages. Reduced by 90% in weight, relative to traditional bottles of the same capacity.

TP-Tray



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

Toppan Ecowall



Reduced release of chemical substances
Wallpaper with reduced substances causing 'Sick-House' syndrome, and with low noxious gas emissions when incinerated for disposal after use.

Toppan Ecosheet



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

Development of Ecogloss Glossy Paperware

The Law for Promotion of Sorted Collection and Recycling of Containers and Packaging has recently gone into effect, making the recycling of bottles, cans, paper packs, other containers, and packing materials obligatory, as well as indications of materials used, among other requirements. This has heightened the need to reuse paper. In view of this development, Toppan started developing packages that will provide high recyclability while maintaining their excellent decorative features, with its manufacturing cost held low.

Challenging the intrinsic problem that recycled paper is inferior in appearance, Toppan developed the high-gloss water-based varnish, and further succeeded in obtaining higher gloss by combining this varnish with a specially coated cardboard.

From the standpoint of environmental considerations, Toppan first investigated the use of soy ink with the aim of reducing the use of petroleum-based solvents, which are derived from a finite resource. However, this forced us to address the problem that it takes too much time for soy ink to dry, while



Tetsuya Yamada
Production Engineering Dept.,
Packaging Division
Tokyo Sub-division
Sagamihara plant

traditional ultraviolet-curing inks take only a few seconds to dry. To counter the problem, we developed a new curing system applicable to soy ink, and also improved on the curability of the soy ink in itself. The combination of these new developments enabled us to manufacture products within a time period comparable to that of conventional-ink processes. In addition, by using a high-gloss water varnish that could be combined with soy ink, we were able to give the glossy packages an excellent de-inking property at the time of recycling, almost equivalent to that of newsprint.

Furthermore, when we performed an environmental burden evaluation at our plant with respect to Ecogloss, we confirmed that the new material emits less CO₂,



Ecogloss glossy paper packages

NO_x, and SO_x gases than conventional glossy packages.

In this way, we were able to develop the new Ecogloss glossy paper containers, providing high functionality while paying due consideration to the environment. Our development efforts culminated in our winning the President's Award for fiscal 2000.

Also in the future, we will continue our technical development efforts in pursuit of higher glossiness and applicability of Ecogloss paper containers to gravure printing. Thus, we hope to create an Ecogloss family of products with excellent functionality and environmental friendliness.

Development of Toppan Green Paper Bagasse

In 1998, an across-the-board Commercial Printing Eco-Project was kicked off at the Commercial Printing Division. The major objective of the project was to develop environmentally-friendly materials and products—primarily in the field of commercial printing material production—and to lay out plans for communication between consumers and the company, among other purposes.

In this project, we first developed Toppan Green Paper 100, Toppan's original recycled paper for commercial printing, which provides printability quite comparable to that of plain paper. The newly developed paper has met with favorable acceptance by many customers.

As a next step, the project started searching for raw materials other than used paper, from the viewpoint of the protection of forest resources. After exhaustive discussions within the project, we finally came to consider treefree paper, to further promote



Makoto Okawa
Collaboration Business Dept.,
Commercial Printing Division

environmental preference. We determined that utilization of crushed sugarcanes (or "bagasse," usually disposed of as waste) to make printing paper would lead to a reduction in agricultural waste and in the environmental burden at the same time.

In development, we encountered a series of questions, such as whether the paper surface might turn rough due to the use of bagasse, whether the reproducibility required of commercially printed materials could be maintained, how costs could be kept low, and so on. We proceeded with development by solving these questions



Toppan Green Paper Bagasse
This Toppan Green Paper Bagasse was registered at the Japan Ecology Foundation as a "Certified Treefree Paper," and some of the profits from sales are being donated to the "Treefree Fund" of the same foundation.

one by one, in cooperation with the paper manufacturer. Toppan Green Paper Bagasse is the culmination of our efforts at overcoming these difficulties.

We are fully satisfied with the newly developed product, which is very smooth, and well capable of standing in comparison with conventional paper stocks.

TOPICS: Packaging Division

Making the Most of ISO 14001 Certification for Product Planning and Sales Promotion

Environmental Activities at the Packaging Division

We at the Packaging Division wish to contribute to realizing a recycling-oriented society through planning and sales of environmentally-friendly packages (packing materials).

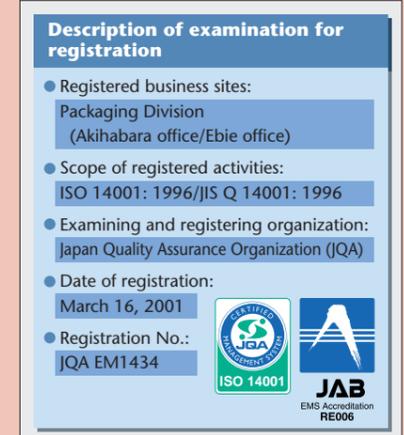
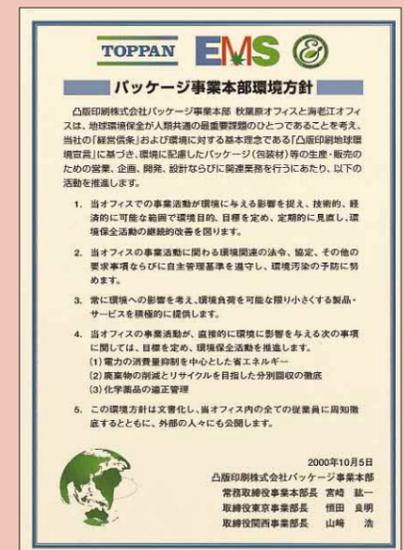
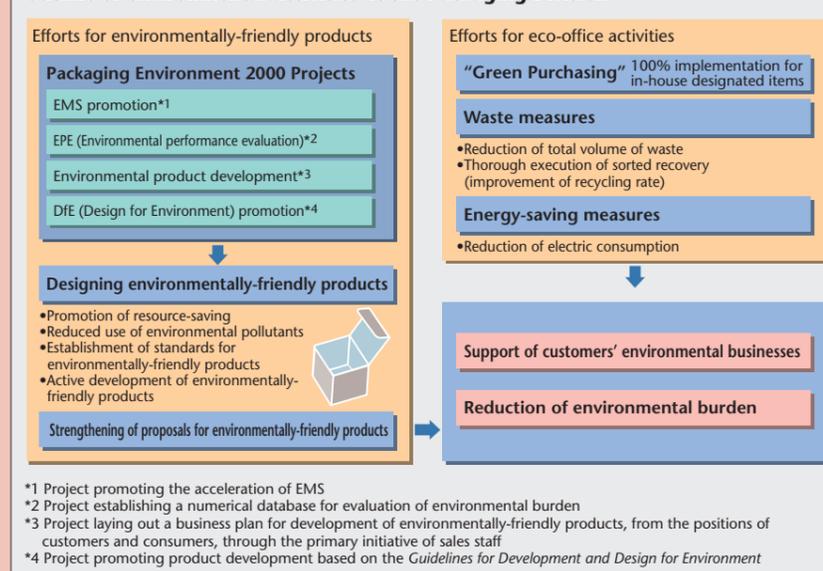
Accordingly, we have laid out environmental policies for the Packaging Division, based on Toppan's overall environmental policies. We are strengthening proposals for environmentally-friendly products and conducting eco-office activities. We also aspire to support customers' environmental businesses and to reduce the environmental burden.

Acquisition of ISO 14001 certification

At the Packaging Division, we created an EMS (Environmental Management System) for activities ranging from product planning to development and design to marketing, which system was awarded ISO 14001 certification on March 16, 2001.

From here on forward, we are planning to make the most of this system, for product planning and sales.

Outline of environmental activities at the Packaging Division



Aspiring to be the best partner in a recycling-oriented society



Yasuyuki Watanabe
Director
General Planning Dept.,
Packaging Division

Long before we established an EMS (Environmental Management System) that would eventually achieve ISO 14001 certification, we at the Packaging Division were working to manufacture products in response to the individual environmental needs of our customers. However, amid the ongoing transition to a recycling type of economy, we fully

realized the importance of shifting not only products, but also the business administration stance in itself, toward more environmentally-friendly types. This prompted us to initiate efforts to structure the EMS.

Our EMS is characterized by activities conducted in the fields of product planning, development, design, and sales, and not just in the production field. This is based on our recognition that, to work on the environment, it is highly effective to take environmental fitness into account as early as the product concept phase, and based on our recognition of the importance of alleviating the environmental burden generated in the production field. We also made sure to struc-

ture an EMS free of regional differences, so that ISO certification would be granted under the same system—for both offices, in the east and west of Japan (namely, Akihabara and Ebie).

For the further evolution of EMS activities, we will now attempt to build up an integrated structure throughout the production plant, based on the EMS introduced, and to intensify the development and launching on the market of environmentally-friendly products that meet objective standards of environmental claims. Through those activities we will also promote activities befitting a partner of the customers in a recycling-oriented society.

Development of Environmental Support Business

We believe that supporting customers' environmental activities with the knowledge we have accumulated through our diverse environment-related activities is also, in itself, an environmental activity.

Basic Philosophy

Environmental conservation activities in the manufacturing field, and the development and supply of environmentally-friendly products, can be cited as initial corporate activities that take the environment into consideration. And we at Toppan believe that supporting customers' environmental activities, based on the knowledge we have acquired through our own pursuits, in itself represents one of our eco-creativity activities.

At the same time, Toppan considers that partnership with companies (our customers included), consumers, administrations, municipalities, and non-governmental organizations, is indispensable for the promotion of our eco-creativity activities. Therefore, we are conducting a variety of activities based on cooperation and collaboration, in addition to activities conducted in support of the environmental activities of others.

Environmental Communication Exhibition 2000

Through joint sponsorship with the Nikkei BP Eco Management Forum Toppan held the Environmental Communication Exhibition 2000 from October 30 to December 20, 2000, at Plaza 21 of the Toppan Koishikawa Building. We had a total of 1,456 visitors, including Minister of the Environment, Yoriko Kawaguchi.

The purpose of this event was to enhance mutual understanding and cooperation among all those holding some sort of stake in the environment. We thus tried to create the places and opportunities for that purpose.

On display at the venue were environmental reports, environmental advertisements, promotion tools, and other diverse Environment-related materials from business companies. Moreover, varied cases of environment-related education and awareness-raising activities, including seminars, campaigns, in-house training programs, and the like, were gathered on the site for introduction to the visitors. In addition, a discussion was held by Mr. Lester Brown, president of World Watch Institute and other speakers, making the exhibition even more substantial.

By making the most of the results obtained from this exhibition, we will try to advance the techniques of environmental communications and expand the consulting business for environmental communications in environmental reports, advertisements, P.R., and so forth.

Also, through collaboration with NPOs, NGOs, environmental specialists, and environmentally-advanced business companies, we will carry out environmental activities within a wider range.

Initiation of "Ecollable Net" Environmental Monitoring System

Environmental activities conducted solely from the viewpoints of business companies and administrations have their limits. Environmental activities can achieve balanced growth only when they are evaluated and supported by "Green Consumers" (consumers who take an interest in environmental activities). For this reason, Toppan created the Ecollable Net,*1 a mechanism that should serve as a bridge between business companies/administrations and Green Consumers. This was made possible with the collaboration of the environmental NPO Chubu Recycle. We believe that well-balanced environmental activities can be carried out through a tie-up between Toppan, which has specialized market-research functions and an inter-company network, and the environmental NPOs that convey citizens' voice to society.

Ecollable Net is an environmental monitoring system using the Internet, designed to solicit Green Consumers to respond to polls on the web.

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

Ecollable Net Web site
<http://ecollable.eal.or.jp/>

This represents an unprecedented experimental undertaking, a joint operation between a company and an NPO. It is our intent to implement two-way communications linking companies to consumers.

Although we are currently operating the Ecollable Net program in the Chubu region, we intend to expand it gradually throughout the country.

Support Business for Preparation of Environmental Reports

There has been an increase in companies that regard environmental issues as one of the pillars of their administrative activities, with a growing number of environmental reports published each year. As the environmental issues become administrative issues, the environmental reports have become more substantial in content, and are now required to have a higher degree of accuracy and precision. The reports will continue to become more substantial in content in the future. Moreover, in the period from 2001 to 2002, these environmental reports are likely to evolve in two ways: first, they will be more influenced by the elements of *Sustainability Reporting Guidelines* published by GRI*1, with an emphasis on the relationships among three fields: Environmental Aspects, Social Aspects, and Economic Aspects. The second evolution will reside in

the adoption of advertisement-style presentation techniques, to enhance public relations. This shows the ways in which environmental reports have come to occupy a central position among the communication tools of companies.

Toppan has been supporting many companies in the preparation of environmental reports. In the future we will support environmental communication activities by making the most of that knowledge, and through joint work with audit firms and other entities.

*1 GRI: Stands for Global Reporting Initiative. An organization created by CERES, an environmental NGO, upon proposal to the United Nations Environmental Programme (UNEP), with the purpose of laying out guidelines that can be followed worldwide. A wide variety of company representatives participate, as well as environmental protection activists, trade organizations, and so forth.

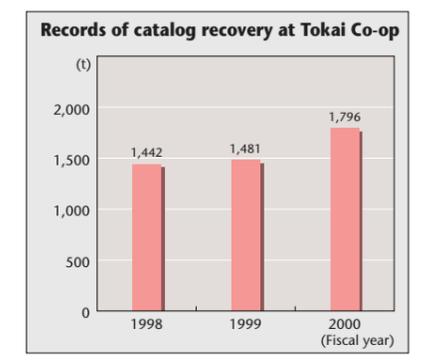
Establishment of Printed Material Recycling System

Promotion of recycling is an indispensable element for creating a recycling-oriented society. Accordingly, Toppan established a self-completing recycling system for printed materials in order to initiate activities conducive to resource conservation. This system can only begin to move forward when the awareness of the objective (to create a recycling-oriented society) is shared by the paper manufacturer. Unnecessary printed

materials recovered from consumers are recycled as Toppan paper via the paper manufacturer, and finally delivered again to the consumers in the form of printed materials.

This recycling system is continually operated through the initiative of the Tokai Co-op Consumers' Co-operative Federation, along with its member co-ops: Meikin Co-op, Co-op Gifu, Mikawa Citizens' Co-op, Mie Prefectural Citizens' Co-op, and Mie-Kita Citizens' Co-op, as well as the Chubu Division of Toppan. In the course of the current fiscal year, the system has recovered 1,796 tons of used paper, significant growth over the previous fiscal year.

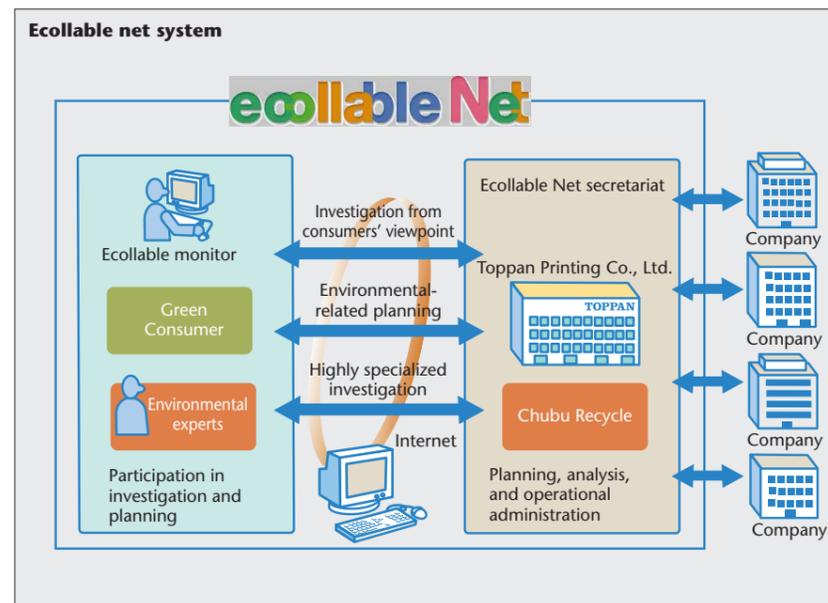
From here on forward, we plan to explore the possibilities of expanding the system to other business areas.



Environmental Communication Exhibition 2000



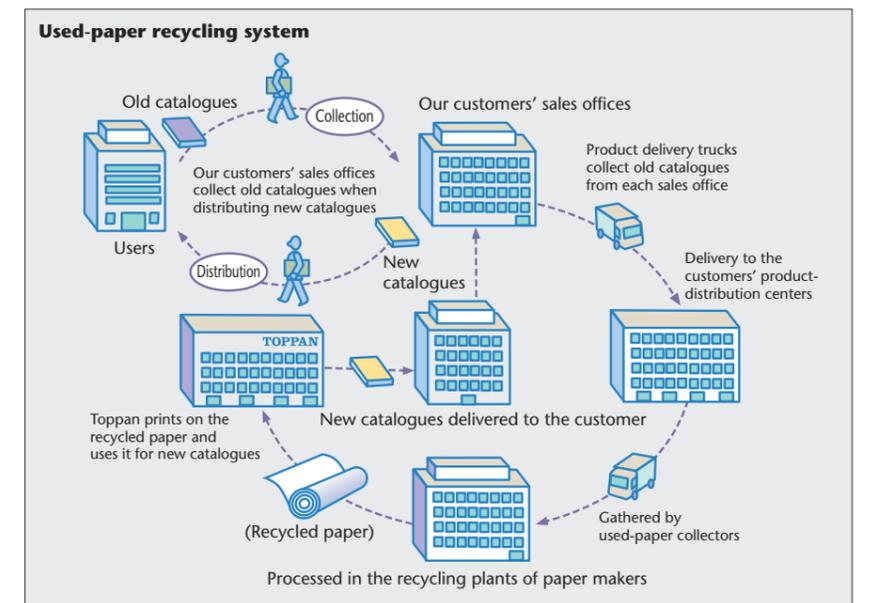
Discussion at the Environmental Communication Exhibition 2000



Ecollable Net Web site



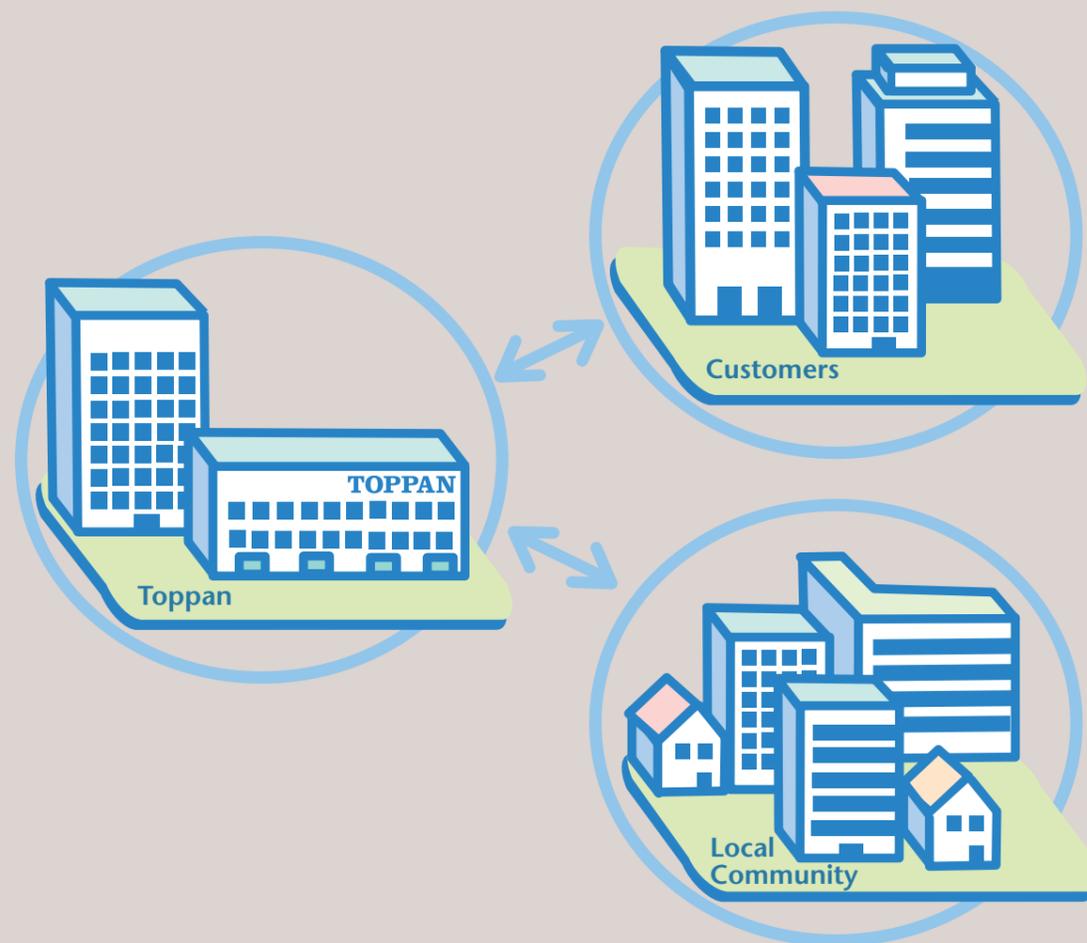
Environmental reports prepared with the cooperation of Toppan



5 COMMUNICATION ACTIVITIES

To make environmental activities more substantial, it is important to share the awareness of working on the environment not only among our employees, but among the many people with whom we have dealings, throughout a wide range of fields.

To accomplish this, the Toppan Group is conducting communication activities on a variety of levels, which include awareness-raising efforts in and out of the company, collaborative activities with local communities, and so forth.



Internal and External Communication Activities

Toppan's environmental logo was adopted to enhance in-house environmental awareness.

Outside of the company, Toppan is also promoting activities involving participation in seminars and exhibitions of an environmental nature.

Basic Philosophy in Communication Activities

We at Toppan believe that the establishment of partnerships with various parties is important for realization of a sustainable environmental society. For this reason, we are actively proceeding with communication efforts designed to share information and to deepen mutual understanding with all concerned parties.

Communication Activities Inside the Company

Adoption of Toppan's environmental logo

To make ourselves fully aware of the burden imposed by our company on the environment, and to promote environmental activities throughout the company, it is essential to establish a new environmental awareness among us all. For this purpose, we adopted what we refer to as Toppan's environmental logo in 1999. This logo is now printed on in-house publications, business cards, and the like, to promote full environmental awareness for all of us.



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

Environmental month and energy-saving month

Each year June is set as Environmental Month, while February and August are designated energy-saving months, so as to promote participation among the entire company. Prior to the applicable activities, we sponsor a contest to select the Toppan Group's overall environmental slogan. For the energy-saving months, each business site posts awareness-raising posters and slogans. The details of such activities are presented to other offices through activity reports prepared at the end of the months in question, in order to expand awareness of excellent sample cases nationwide.

Moreover, we try to enhance the environmental awareness of employees by inviting outside experts to give lectures. We also offer talks by our own personnel, who give business lectures at our offices and plants.

Toppan Environmental Link

For the purpose of raising environmental awareness among our employees, we have



Reported eco-protection activity cases (May, 2001)

built up an information-sharing system, using the in-house intranet. This "Toppan Environmental Link," which was established in May, 2001, shows various types of environmental information, from both inside and outside of the company, and also displays information on Toppan's environmentally-friendly products and other content, in order to promote the general sharing of information.



Toppan Environmental Link

Ecology Awards

We added Ecology Awards to our biannual President's Awards and Divisional Awards as a means to activate employee efforts. In fiscal 2000, the Environmental Communication Exhibition 2000, which was planned and organized as part of eco-creativity activities, and the development of Ecogloss, were selected for the President's Award and the Ecology Award, respectively.

Communication Activities Outside the Company

To promote a wide understanding outside our organization of our environmental efforts, we give lectures to various trade and industrial organizations, and also participate in and host exhibitions. We believe that it is important that the environmental activities at Toppan reflect the opinions that are shared on those occasions.

Participation in symposiums

In October, 2000, we had the opportunity to give a lecture at the Zero-Emissions Symposium 2000—"Reuse of Recyclable Resources and Creation of Social Systems"



Lecture at the Zero-Emissions Symposium 2000—"Reuse of Recyclable Resources and Creation of Social Systems"

sponsored by the United Nations University. In this lecture we introduced the background and philosophy behind the development of recycled vegetable-oil ink, an environmentally-friendly product developed at Toppan.

Participation in and hosting of exhibitions

We held the Eco-Products 2000 exhibition in December, 2000. At this exhibition, held at the Tokyo Big Site, we exhibited Toppan's environmentally-friendly POP, original recycled printing paper, environmentally-friendly packages, and other items, taking the opportunity to provide an introduction to Toppan's environmental efforts.

Moreover, we held the Environmental Communication Exhibition 2000 (See page 44), jointly with the Nikkei BP Eco Management Forum from October 30 to December 20, 2000. We also organized the Toppan Fair in celebration of the company's 100th anniversary. The Toppan Fair was held in a total of six locations throughout the country, starting with the Toppan Koishikawa Building, as a means of conveying our corporate stance on environmental issues.



Exhibition site of Eco-Products 2000

Information Disclosure and Activities to Harmonize with Local Communities

We at Toppan actively disclose environmental information via environmental reports, environmental labels, and other means. We also conduct activities directed toward fostering harmonious relationships between our businesses and local communities.

Disclosure of Environmental Information

Adoption of Toppan's labels on environmentally-friendly products

Since fiscal 2000, we began applying Toppan's Labels for Environmentally-friendly Products to environmentally-friendly products that meet Toppan's in-house standards; these labels explain the elements of our efforts for the environment in plain language.

By the end of March, 2001, a total of 43 products were internally qualified for use of the Labels for Environmentally-friendly Products.



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

Continual publication of environmental reports

Toppan has been busy working on environment-related information disclosure through the annual publication of its *Environmental Report*, which began in 1998. Besides being published in booklets as the *Environmental Report*, the same information is also posted on our Web site, so that it can be shared by as many people as possible.

Toppan Web site Environmental Report URL
http://www.toppan.co.jp/abouts/tech_info/environment01/index.html

Issuance of Site Reports

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

E-mail address for requesting Toppan's Site Report
eco@toppan.co.jp



Site Reports

Due to limitations of space, the *Site Report* deals only with environmental performance data on a company level. Site-specific*1 environmental performance data can be obtained from Toppan's Web site, shown above.

*1 Toppan production plants

Activities for Collaboration with Local Communities

Basics of the efforts

To facilitate collaboration with local communities, we are working to enhance mutual communication by promoting 'greening' on the premises of our plants and by organizing plant tours and other events for local residents and people from neighboring facilities. In fiscal 2000, all the Toppan plants invited their neighbors to a Beer Fest over a period from July to August, which is held every year as a continuing event. The event was well regarded as an informal opportunity for mutual communication.

In fiscal 2000, there were 79 cases of complaints by the residents of neighboring areas of our production plants. The majority of the complaints related to noise and offensive smells, which are urban types of pollution. While most of the complaints were



Noise reduction duct installation (Kashiwa plant)



Plant tour (Sagami-hara plant)

resolved with immediate remedial actions, complaints involved with some of our production activities still remain to be ironed out. We will continue our efforts to facilitate extensive communication with local residents and to execute remedial measures, including active investments in equipment.

Space opened at Toppan Koishikawa Building

On the premises of our Toppan Koishikawa Building (Tokyo), which was completed in May, 2000, we own a green space (an open space) of approximately 3,000 m², where there are approximately 200 mature trees and 30,000 shrubs, offering a space for relaxation to our employees and local residents.



Space open to the public at Toppan Koishikawa Building

Participation in local events

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



Cleaning the beach after a local event was held

Agaves in bloom at Sagami-hara plant, open to citizens

On the premises of our Sagami-hara plant (Sagami-hara City, Kanagawa Pref.), *Agave Americana* originating from Mexico, which were planted on the premises of Sagami-hara plant in 1975, came into bloom for the first time at the end of June, 2001. This species of plant is so rare that it is also dubbed the Century Plant. The Sagami-hara plant also offered the residents of the neighboring area the opportunity to enjoy these rare flowers.



Agave Americana coming into bloom after 26 years (Sagami-hara plant)

Social Contributions and Awards

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

Social Contributions

Afforestation activities

In January, 1997, Toppan set up a joint corporation for afforestation in Australia with Oji Paper Co., Ltd. and Nissho Iwai Corporation. The company mainly plants early-maturing eucalyptus and other broadleaf trees. The joint corporation targets covering an area of 10,000 hectares by the year 2007.

In 2000, Hokkaido Electric Co., Ltd. also began participation in the venture, and 4,000 hectares have now been afforested. This afforestation venture is highly acclaimed by the local residents, since it has proven effective in preventing natural disasters, such as wind damage, floods, and salt damage.



Afforestation activities in Australia

Product sales to fund afforestation

Thanks to the generous support of numerous beverage companies, we were able to reserve a portion of the profits from the sales of our Cartocan paper-based beverage containers and donate it to the Forest Fund for afforestation in Indonesia. The donation was made by the Japan Ecology Foundation via the Global Citizens' Forest. We started this program in February 1999, and contributed ¥2.27 million in fiscal 2000.



Cartocan

Promoting of treefree paper

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

In the Treefree Fund, 1% of the cost of tree-free paper is reserved as a fund for forest protection, which has, since 1995, been awarded to afforestation projects and NGOs. In addition, starting fiscal 2000, in response to requests from the Chinese

government and related organizations, another grant will be provided to assist in afforestation activities throughout China.



Treefree Logo

Main Awards Received for Our Environmental Conservation Activities

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's Participation in Environment-related Organizations

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



Fuji Sankei Group Award, at the Fifth Global Environment Awards (1996)

Printing Museum opened

The Printing Museum, Tokyo was opened in October, 2000 in the Toppan Koishikawa Building for the purpose of presenting the past, present and future of printing in a comprehensible way.

Printing has made history in society and culture, greatly contributing to the evolution of civilization. This museum conveys the broad role and significance to society of printing, and exhibits to the public the results of comprehensive investigations and studies (from multiple perspectives) concerning the way print-



Printing Museum, Tokyo

ing can open possibilities for future society, through fusion with computers and other means of communication.

Toppan's Environmental Chronology

Toppan's efforts related to environmental issues, beginning in the 1960s as pollution-prevention activities, have now evolved into its broad activities as a 'global citizen.'

Beginning with the installation of recovery equipment for organic solvents in the 1960s, Toppan embarked on a series of pollution-prevention measures that extended through the 1980s. Back in 1971, under the leadership of our head office, we began auditing operations to broaden and improve the management of pollution prevention.

The movement toward global environmental conservation became widespread in the 1990s, and accordingly, the range of

issues expanded. In 1991, we established the Ecology Center, with the role of controlling environmental activities. While creating an environmental conservation system on a national level, we also recently introduced the In-house Environmental Audit System, as a means of preparation for future international standardization.

As a result of refinement of environmental management activities, our Shiga plant (Electronics Division) obtained ISO 14001

certification in July, 1998, the very first such case at Toppan. Thereafter, activities aimed at winning the same certification were carried out (mainly at production plants), and in 2001, the Akihabara office and the Ebie office (Packaging Division) were certified under ISO 14001, for the first time among the offices.

Environmental chronology

Activities at Toppan Group	Societal developments
<ul style="list-style-type: none"> Introduction of environmental facilities, including equipment for the prevention of pollution 	<ul style="list-style-type: none"> 1960
<ul style="list-style-type: none"> The Environmental Management Department was established at the head office and a section for Environmental Maintenance was set up at each plant The company began pollution-prevention audits 	<ul style="list-style-type: none"> 1971 Environment Agency was created
<ul style="list-style-type: none"> A system for the analysis of environmental data was set up within the Central Research Institute 	<ul style="list-style-type: none"> 1972 United Nations Environmental Programme (UNEP) was established
	<ul style="list-style-type: none"> 1985 Vienna Convention for the Protection of the Ozone Layer
	<ul style="list-style-type: none"> 1987 Adoption of the Montreal Protocol on Substances that Deplete the Ozone Layer
	<ul style="list-style-type: none"> 1988 Eco-Mark was adopted, and Control Law on CFCs was enacted
	<ul style="list-style-type: none"> 1989 Adoption of the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal
<ul style="list-style-type: none"> Introduction of a cogeneration system 	<ul style="list-style-type: none"> 1990
<ul style="list-style-type: none"> The Ecology Center was set up within head office for the rearrangement of the corporate-wide environmental management system An environmental research group was set up in Technical Research Institute 	<ul style="list-style-type: none"> 1991 Keidanren established Global Environment Charter
<ul style="list-style-type: none"> Toppan's Declaration on the Global Environment was established as a basic philosophy for the environment The Ecology Award was added to Toppan's in-house awards 	<ul style="list-style-type: none"> 1992 Hosting of the U.N. Conference on the Basic Environment (Global Summit)
<ul style="list-style-type: none"> Toppan Voluntary Plan on the Global Environment was established as a basic conduct guideline 	<ul style="list-style-type: none"> 1993 Enactment of the Basic Environment Law
<ul style="list-style-type: none"> Completed total discontinuation of use of specific CFCs and trichloroethane 	<ul style="list-style-type: none"> 1994
	<ul style="list-style-type: none"> 1995 Enactment of the Containers and Packaging Recycling Law
<ul style="list-style-type: none"> Received the Fuji Sankei Group Award of the Fifth Global Environmental Awards Joined the Green Purchasing Network 	<ul style="list-style-type: none"> 1996 Commencement of ISO 14000 Series (Environmental Management System) Green Purchasing Network was established
<ul style="list-style-type: none"> Introduced an environmental management system conforming to ISO 14001 at all plants 	<ul style="list-style-type: none"> 1997 Hosting of the Third Conference of Member Countries to the United Nations Framework Convention on Climate Change (COP3) Adoption of the Kyoto Protocol was adopted
<ul style="list-style-type: none"> The self-developed LCA method was established, as intended for packaging products Shiga and Kumamoto plants (Electronics) obtained ISO 14001 certification Commencement of publication of the <i>Environmental Report</i> 	<ul style="list-style-type: none"> 1998 NPO Law was enacted Home Appliance Recycling Law was enacted
<ul style="list-style-type: none"> Toppan Introduced system for the promotion of "green purchasing," covering entire company Introduction of the RPF system at the Sagami plant (Packaging) Introduction of Toppan's environmental logo Introduced environmental accounting 	<ul style="list-style-type: none"> 1999 Revised Energy Conservation Law was put into force PRTR Law was enacted Law on the Promotion of Countermeasures against Global Warming was enacted Environmental Impact Assessment Law was enacted
<ul style="list-style-type: none"> The Sakado plant achieved its zero-emissions target The Niigata plant (Electronics), Sate, and Kashiwa plants (Industrial Materials) obtained ISO 14001 certification The Sakado plant (Publications/Commercial Printing) and Ranzan plant (Securities and Cards) obtained ISO 14001 certification Toppan organized and held the Environmental Communication Exhibition 2000 Exhibited at Eco-Products 2000 	<ul style="list-style-type: none"> 2000 Green Purchasing Law was enacted Construction Recycling Law was enacted Basic Law for Promotion of a Recycling-Oriented Society was enacted Food Recycling Law was enacted
<ul style="list-style-type: none"> Akihabara and Ebie offices (Packaging) obtained ISO 14001 certification Introduction of Toppan Group Consolidated Environmental Accounting 	<ul style="list-style-type: none"> 2001 Environment Agency was renamed as Ministry of Environment Revised Waste Treatment Law was put into force

Environmental Targets for Fiscal 2001

We reviewed the results of fiscal 2000 across the company to establish medium-term environmental targets for fiscal 2001.

Of the 16 environmental targets set for fiscal 2000, we were able to accomplish 9. (See pages 6-7; *Environmental Targets, Achievements and Progress for Fiscal Year 2000*). In particular, we obtained substantial achievements in the *Supply of Environment-Related Information (Including Product Evaluation)*, the environmental target of eco-creativity activities. This was because we held the Environmental Communication Exhibition 2000 (See page 44), exhibited at the Eco-Products 2000 (See page 47), and Product Assessment Method (See page 39) supplied 14

cases of environmental product information to customers. Furthermore, the disposal volume of waste was slashed by 56.6% in fiscal 2000 (the deadline for accomplishment), relative to the fiscal 1990 figures. This marked the accomplishment of a long-term environmental target. (See page 28.)

For six of the seven unaccomplished environmental targets, active efforts were made to obtain substantial results, although the target values were missed. Regarding unit energy consumption (which resulted in a 2.4% increase relative to the previous fiscal

year, as opposed to the targeted 10% reduction), it was determined that there was a problem with the validity of the manner in which the target had been set. (See page 26.)

Based on the results of the activities of fiscal 2000, we reviewed the environmental targets and established new environmental targets for fiscal 2001. The major changes included revision of the energy and waste targets among the environmental targets, as well as the inclusion of a toluene-reduction target and a sales target for environmental business among the targets for fiscal 2001.

Environmental targets	Environmental targets for fiscal 2001	Measures and details
<ul style="list-style-type: none"> Enhanced employee awareness regarding environmental issues and the promotion of corporate-wide activities to reserve the environment 	<ul style="list-style-type: none"> Sharing of environmental information through effective use of the Intranet 	<ul style="list-style-type: none"> Start of Toppan Environmental Link and promotion of awareness efforts for its active use
<ul style="list-style-type: none"> Voluntary participation in social activities and active contributions to the cause of environmental conservation 	<ul style="list-style-type: none"> Participation in afforestation activities (continued) 	<ul style="list-style-type: none"> Donation for the Global Citizens' Forest for afforestation activities
<ul style="list-style-type: none"> 3% reduction by fiscal 2001 (relative to FY 1999) in the proportion of energy consumption to plant output 	<ul style="list-style-type: none"> A 3% reduction compared to the fiscal 1999 level 	<ul style="list-style-type: none"> Establishment of an appropriate energy-control method through the setup of control indexes that clarify the actual state of energy usage efficiency at each plant Introduction of new high-efficiency production systems Introduction of gas-turbine cogeneration system
<ul style="list-style-type: none"> 20% reduction (compared to FY 2000) of unit landfill disposal volume*1 in fiscal 2003 	<ul style="list-style-type: none"> A 5% reduction compared to the previous fiscal year 	<ul style="list-style-type: none"> Reduction of direct final disposal volume through decrease of generated waste Reduction of volume of waste residues through the selection of efficient intermediate treatment technologies
<ul style="list-style-type: none"> Realization of our zero-emissions target in ten domestic plants by fiscal 2001, through the effective use of industrial waste generated in production 	<ul style="list-style-type: none"> Realization of zero-emission plants*2: 10 plants 	<ul style="list-style-type: none"> Review of sorting criteria and promotion of the recycling of waste through the establishment of rules Expansion of in-house treatment and recycling facilities and search for appropriate recycling partners
<ul style="list-style-type: none"> Compliance with in-house control standards, exceeding the legal regulations 	<ul style="list-style-type: none"> Establishment and revision of control standards 	<ul style="list-style-type: none"> Confirmation of validity of the in-house standard control items and standard values through in-house environmental auditing
<ul style="list-style-type: none"> Appropriate management of chemical substances and the reduction of toxic chemical substances 	<ul style="list-style-type: none"> Volume of released toluene: 10% reduction compared to the previous fiscal year 	<ul style="list-style-type: none"> Reduction of consumption of raw materials containing toluene, and switching to substitute inks with low toluene content Introduction of exhaust gas treatment equipment, such as for recovery of solvents
	<ul style="list-style-type: none"> Emissions of dichloromethane into the air: 20% reduction compared to the previous fiscal year 	<ul style="list-style-type: none"> Reduction of consumption of cleaning agents containing dichloromethane, and switching to substitute inks with low dichloromethane content
<ul style="list-style-type: none"> 5% reduction (compared to FY 1997) of CO2 emissions by fiscal 2010 	<ul style="list-style-type: none"> Maintenance of the fiscal 2000 level 	<ul style="list-style-type: none"> Switching from liquid fuels to gaseous fuels Introduction of gas-turbine cogeneration system
<ul style="list-style-type: none"> Reduction in inventories of specific CFCs and consumption of CFC substitutes 	<ul style="list-style-type: none"> Consumption of HCFC: 5% reduction compared to the previous fiscal year 	<ul style="list-style-type: none"> Replacement of freezers with ones that do not use specific CFCs Search for CFC substitutes
<ul style="list-style-type: none"> Actively proposals for proprietary technologies, products, and services 	<ul style="list-style-type: none"> Sales proceeds from Environmental Business: 20% increase compared to the previous fiscal year 	<ul style="list-style-type: none"> Product development conforming to the guidelines and standards by field or product group Development of packaging products through the application of ISO 14001 and promotion of sales activities
<ul style="list-style-type: none"> Active cooperation to serve the needs of our customers and society 	<ul style="list-style-type: none"> Supply of environmental-related information 	<ul style="list-style-type: none"> Disclosure of environmental product information with Toppan's Labels for Environmentally-friendly Products Supply of information through participation in environmental forums, exhibitions, lectures, etc.
<ul style="list-style-type: none"> Involvement in businesses that can contribute to environmental conservation through Toppan's own environmental activities 	<ul style="list-style-type: none"> Proposals for new recycling methods 	<ul style="list-style-type: none"> Investigation and research into new recycling methods (Continued)
<ul style="list-style-type: none"> Planning and proposals for a social recycling system 	<ul style="list-style-type: none"> Continued operation of a recycling system for printed materials 	<ul style="list-style-type: none"> Investigation of recycling systems in the market (recycling system for paper beverages containers, for example)
<ul style="list-style-type: none"> Promotion of corporate activities that take into account of in-house product planning, production processes, and the final disposal of products 	<ul style="list-style-type: none"> Operation and enforcement of the Control Standards for Environmentally-friendly Products 	<ul style="list-style-type: none"> Activities in accordance with Environmentally-friendly Product Control Standards at each Division (headquarters) Research and application in practice of LCA (Life Cycle Assessment)
<ul style="list-style-type: none"> Compliance with local regulatory standards, international treaties, etc. 	<ul style="list-style-type: none"> Execution of in-house environmental audits at overseas plants: 3 plants in Asia and 3 plants in the U.S.A. 	<ul style="list-style-type: none"> Execution of in-house environmental auditing, including local inspections
<ul style="list-style-type: none"> Active promotion of local environmental conservation activities 	<ul style="list-style-type: none"> Introduction of environmental management system at 9 overseas plants 	<ul style="list-style-type: none"> Guidance in the creation of environmental management systems through in-house environmental auditing Efforts to obtain ISO 14001 certification

*1 Landfill disposal volume: Direct landfill volume and volume of residues deriving from intermediate treatment.

*2 Zero-emissions plant: Business site exhibiting 95% or more recycling and reuse of resources, certified as such by the Ecology Center in the Akihabara head office.

Summary of Independent Review and Questionnaire Results

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

Review Outline Conducted by Asahi & Co.

Toppan Printing Co., Ltd. requested Asahi & Co., to conduct an inaugural independent review of the *Environmental Report 2001*. The objective was to ensure the credibility of environmental performance and accounting indicators, and the descriptive information disclosed within. In addition to the independent review report, Asahi & Co. provided a memorandum that outlined findings and suggestions as a result of their review procedures. This information is included in the following summary.

•Excellent points

- (1) The environmental report includes in its scope not only Toppan Printing Co., Ltd., its factories, research facilities, and office buildings, but also includes group companies, and discloses data concerning their activities and operations.
- (2) The company divides its business activities into Information & Networks, Living Environment, and Electronics, and discloses the business operations, work flows, and environmental performance data (input/output data) of each of these divisions. Site-specific environmental preservation activities and environmental performance data (input/output data) are also disclosed for each of these business divisions.
- (3) The scope of environmental accounting has expanded to the entire company group companies in fiscal 2000.
- (4) Reviews (including examination of documents of overseas plants) are conducted every year based on the internal environmental review system, and the results of the review have been incorporated to make improvements in the next term. For internal review, detailed survey manuals and inspection check sheets are fully utilized.
- (5) The number of published site reports has increased, to actively strengthen the communication with the local communities.

•Items that require consideration

- (1) The range of items varies in the environmental report, environmental performance data, and environmental accounting (consolidated basis). It is recommended that the range be eventually expanded so that all of the information provided will be in terms of this broader range.
- (2) With regards to environmental accounting, it is recommended that an operation manual be produced describing concrete methods for grasping the costs of multi-faceted environmental pres-

ervation activities, in addition to the existing *Guidelines for Calculation of Environmental Accounting Cost and Effect, Guidelines for Environmental Preservation Facilities, and Guidelines for Environmental Accounting (for Non-Production Business Sites)*.

- (3) It is recommended that an effective method be created to connect purposes, objectives, achievements, and targets for the next term.
- (4) From the perspective of environmental management, it is recommended that integrated indicators be devised (correlating financial indicators with environmental performance indicators) for promoting environmental preservation activities while ensuring profitability of corporate activities.

Results of Questionnaire

Starting in fiscal 1999, Toppan began including a questionnaire at the end of each copy of the *Environmental Report* to promote bilateral communication with readers. Unfortunately, we did not receive as many replies as we had hoped for. In the environmental education session held for new employees who entered the company in 2001, we conducted a survey using the questionnaire in the 2000 environmental report. The responses indicate many honest and useful opinions. The following intro-

duces some of the results of this questionnaire survey, together with some comments from people outside the company who have read our environmental report. Regrettably, not all the results of the survey have been reflected in this report. We plan to use the comments and opinions that we could not incorporate in this report to improve future environmental activities and in the preparation of subsequent publications of the environmental report.

- An explanation of the cover design should be added.
- There is no definition or explanation of "production subsidiaries" included as business sites, and it is unclear what these refer to.
- Examples of indicators used in the internal environmental audits should be presented and explained.
- It should describe whether overseas plants are promoting the same zero-emission efforts as domestic plants.
- Information relating to the environmental impact generated by each business field should be included.
- More detailed information concerning each aspect of the environmental accounting should be provided.
- The print is very small and hard to read.
- The content is difficult to understand and the report is too voluminous. A simpler booklet is desirable.

Editor's notes

As you can see in the replies to the questionnaire, there were many valuable criticisms regarding the communication function of the *Environmental Report*, such as "explanations are not thorough," "the text is too difficult to read," and "the report is too voluminous." As for the writing style, we have tried to make the report easier to read by avoiding the use of technical terms. Comments of plant managers and product development staff members are included in this environmental report for the first time. These attempts to make the report easier and more interesting to read has resulted in an increase of about 20 pages over the last report. We have considered this issue and will concentrate our efforts on making the report "simpler."

Starting from 2001, the *Environmental Report* underwent independent review by Asahi & Co. to validate credibility of the information and data contained therein. Among several motives for seeking the review, the main impetus stemmed from our internal consensus for 'active introduction of methods to facilitate credibility of information'.

"Environmental communication," through sharing of environmental information, is gaining greater social importance. Toppan strives to ensure transparency of environmental information and to examine effective methods of bilateral communication, in order to improve the function of the environmental report as a tool for environmental communication.

Independent Review of the *Environmental Report*



Independent Review Report on the "Environmental Report 2001"

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

1. Purpose and Scope of our Review

We have reviewed the "Environmental Report 2001" (the "Environmental Report") of Toppan Printing CO., LTD. (the "Company") for the year ended March 31, 2001. 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 first 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) With respect to the descriptive information in the Environmental Report other than the indicators referred to in the above procedures, interviewed the Company's responsible personnel, made an on-site inspection of a factory and compared such descriptive information with the data collected by the Company or the data found in certain published materials.

3. Results of the Procedures Performed

As a result of the procedures performed;

- 1) We are not aware of any material modifications that should be made to the 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.

- 2) We are not aware of any material modifications that should be made to the descriptive information other than the indicators in the Environmental Report to be consistent with the information the Company collected and other information we obtained.

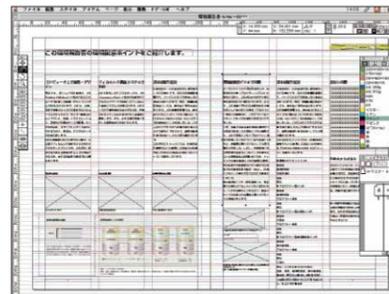
Tokyo, Japan
August 14, 2001

Compositional Considerations for the Environmental Report 2001

Computer editing and designing

Today, most publications are prepared by an editing and design system that uses computers, referred to as DTP (Desktop Publishing). DTP performs composition processes that were traditionally performed with type and photosettings, and arranges photographs, illustrations, charts, and other image data in layout format on the monitor screen. Once the data are created, the system outputs proofs to a color printer for corrections, and then delivers the printing materials in digital format.

The biggest role played by DTP environmentally lies in the creation of digital data designed for subsequent preparation of press plates. In addition, the DTP also helps reduce the amount of color proofing, since it allows verification (similar to color proofing) in the production stage.



Resource-saving



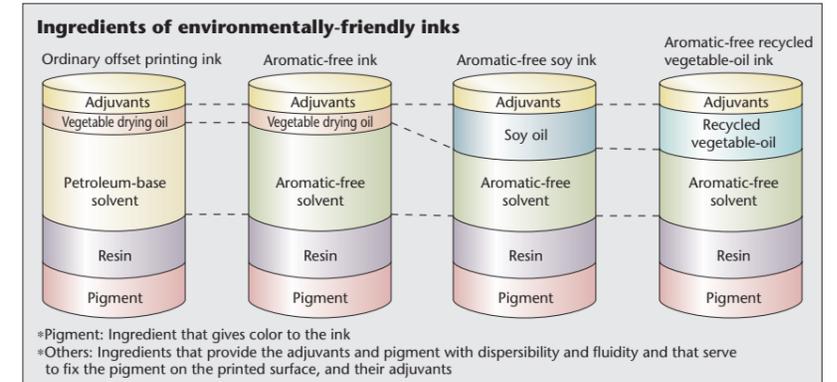
Using environmentally-friendly inks

The petroleum-base solvents of offset printing inks contain aromatics, which are said to exert adverse effects on the air and the human body. A solvent with these presumably hazardous aromatics almost completely removed (aromatic-free solvent) has been developed and used as an aromatic-free ink at many printing plants.

On the other hand, a soy ink made from soybean oil was developed in the U.S.A. with the aim of foregoing the use of petroleum-based solvents. Today, an aromatic-free soy ink made with the said soybean oil ink and an aromatic-free solvent is attracting

attention as an environmentally-friendly ink. However, Toppan itself began developing an ink made from recycled vegetable oils (with the idea that soybean oil should be reserved for food) while at the same time pursuing the reuse of resources. Toppan succeeded in practice in applying a process that refines (mainly used) soybean oil, recov-

ered from school catering services and the restaurant industry, and recycling this as a printing ink. The recycled vegetable-oil ink is well comparable to traditional offset printing inks in performance and, additionally, it is characterized by a deinking property (in the paper recycling process) superior to that of conventional inks.



Reduction of organic solvents

Use of recycled raw materials



Mark authorized for printed materials that use soy ink containing soybean oil in more than a certain proportion. To be certified by American Soybean Association.

Using treefree paper

Printing paper is a material that directly relates to the protection of forest resources. Therefore, from the viewpoint of environmental consideration, paper that does not use virgin pulp is sought. At present, there are two types of environmentally-friendly paper in this sense: recycled paper and treefree paper. For printing paper, this *Environmental Report* has used Toppan Green Paper Bagasse, which comprises 90% used-paper pulp and 10% bagasse. This bagasse, extracted from sugarcane pomace, is now drawing attention as an example of efficient use of agricultural waste.

Besides this type of paper, Toppan supplies the recycled-paper series referred to as Toppan Green Paper 100, made from 100% recycled paper, which was developed based on the printing technologies accumulated by Toppan throughout the years.



Sugarcane

Protection of forest resources

Efficient use of agricultural resources



Treefree Mark
The use of this mark is approved by the Treefree Secretariat of the Japan Ecology Foundation, for non-tree paper that meets certain standards.

Adopting a waterless printing system

Traditional offset printing consists of lithographic printing that makes use of the interaction between water and oil. The system leaves the printing area oily at the time of plate-making and forms ink-adhesion areas by adding moisture to the plate at the time of printing.

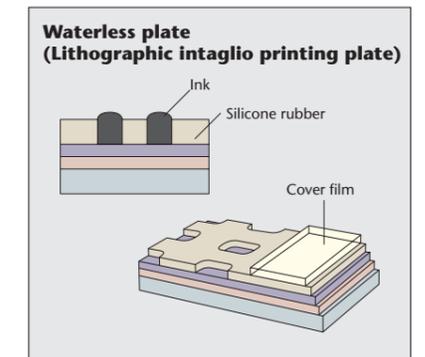
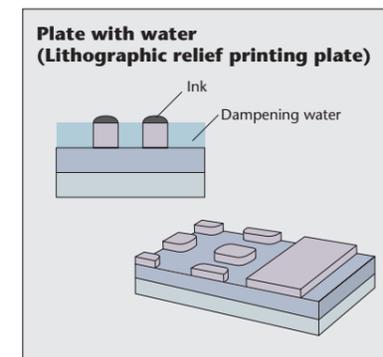
Meanwhile, in lieu of water, the waterless printing system uses a silicone layer that repels water, and therefore does not require

the use of dampening water, with no discharge of waste liquid as a result.

Reduction of waste



Mark authorized for waterless printing that does not require the use of dampening water. The U.S. Waterless Printing Association certifies the mark for companies that actively work on environmental protection and that produce high-quality printed materials, or for the printed materials of such companies.



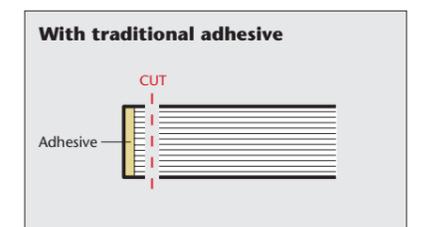
Binding with PUR Hot-Melt

PUR hot-melt is suitable for recycling, since it offers strong cohesion, and can be removed entirely without fragmenting, even during disaggregation in the recycling process. Moreover, it provides higher adhesive strength, higher resistance to hot and

cold temperatures, and better double-page spreadability than traditional adhesives.

Easy recycling

*When perfect-bonded printed materials using a conventional EVA-base adhesive are directly fed into the used-paper regeneration process, the adhesive is fragmented, sometimes resulting in problems. For this reason, the back portions of printed materials are cut off before they are delivered to the paper manufacturer.





For inquiries, please contact our sales representatives, or:
Ecology Center
Corporate Manufacturing Technology & Research Division
Phone: +81-3-3835-5549
Fax.: +81-3-3835-0847
Web site: <http://www.toppan.co.jp/>



This report was printed on Toppan Green Paper Bagasse comprising 90% used pulp and 10% bagasse, and with the waterless printing-enabled aromatic-free soy ink "AqualessEcoo New Soy" (Toyo Ink Mfg. Co., Ltd.).