Responsible Care

UBE Group

Responsible Care Report 2004

Working for the Environment, Safety and Health

UBE INDUSTRIES,LTD.

Contents

Highlights

New Medium-Term Management Plan "New 21•UBE Plan II" Launched

UBE launched the new Medium-Term Management Plan for Fiscal 2004–2006 in April 2004.

Comprehensive Partnership in Research and Development with Yamaguchi University

Working to produce research and development to contribute to communities and society, UBE signed a cooperative agreement with Yamaguchi University.

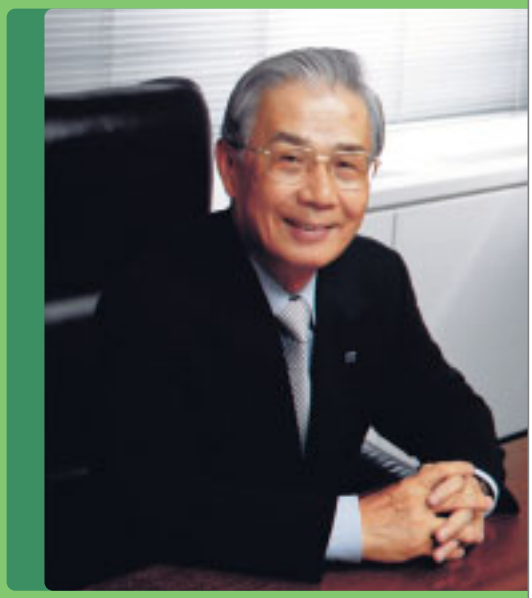
Start-up of Coal/Wood Mixture Burning Power Generation Plant

UBE started a power generation facility at the Isa Cement Factory using waste wood chips to reduce CO_2 emissions.

Implementation of Environment & Safety Audits at Overseas Group Companies

UBE develops Responsible Care activities for overseas group companies.

Foreword



This report focuses on the UBE Group's commitment to the environment, safety and health in fiscal 2003.

It has already been many years since discussions began on the problem of global warming, and PRTR (Pollutant Release and Transfer Register) has been launched to help control the release of chemical substances, waste materials into the environment and prevent soil pollution. European countries continue to lead in this field, strengthening safe control of chemicals in recent years. However, last year several accidents and equipment mishaps occurred at major plants and facilities, heightening public awareness of the need for greater environmental safety.

The UBE Group likewise adheres to and actively works for the policy of responsible care activities, holding as a basic tenet of its business philosophy that its products will support the environment, safety and health at all stages of their lifecycle, from product development and manufacture through distribution, use, consumption and disposal. In 2004, UBE initiated a new Medium-Term Management Plan, "New 21•UBE Plan II," which has as its keywords "Speed and Reliability," and which is directed toward continuing the implementation of the policies of the previous Medium-Term Management Plan. In keeping with the theme of the previous plan, i.e., "Environmentally Oriented Business Practices," continuing safety and environmental programs will build on the progress achieved in waste management and efficient use of resources such as biomass systems to work towards a "recycling-based society." Energy conservation, which addresses the global warming problem, curtailing the release of substances that negatively impact the environment and safe management of chemicals are other policy areas where UBE's efforts will continue as it works to contribute to the creation of a sustainable society.

Recently, as awareness of corporate social responsibility increases, demand is growing stronger for corporate disclosure of information relating to the core areas of economy, society and the environment. In this year's report UBE discusses environmental programs, health and safety policy, and accident prevention, which fall into the core topic areas of environment and safety, but also offers a thorough discussion of activities and policies ranging from business operations and corporate governance to corporate ethics, compliance, social contributions and communications with local communities.

The UBE Group hopes that its stakeholders will gain from this report a clear understanding of the efforts being made toward the improvement of the environment, safety and health, and continue to offer their growing support in the future.

UBE Industries, Ltd.
President and Group C.E.O.

常見和正
Kazumasa Tsunemi

Company Profile (as of March 31, 2004)

The history of the UBE[*1] Group[*2] starts from the Okinoyama Coal Mine, established to develop the coal fields at Ube, Yamaguchi Prefecture. With its commitment to "co-existence and co-prosperity" with the local community, the Company used the limited coal industry as a starting point to create industries that would give rise to unlimited value, developing a succession of new businesses needed by the times to bring long-lasting prosperity. Unremitting self reform, a desire to progress through original technologies, and the ideal of sharing with various shareholders[*3]—these are the UBE Group's core identity that have permeated its long history.

Today, a century after its founding, UBE is a manufacturer of Synthetic Chemicals and Resins, including nylon resin and synthetic rubber, Fine Chemicals and Specialty Products, including electronics, battery materials and pharmaceuticals, Energy and Environment products, including coal and electric power, Construction Materials, including cement and building materials, Machinery and Metal Products, which include heavy machines, industrial machines and aluminum wheels, as well as a variety of other products. Through the five core business fields, UBE contributes to society with diversified products.

In 2001, in order to clarify its direction in the future, UBE defined a new corporate vision: "Wings of Technology, Spirit of Innovation. That's our DNA driving our global success." Based on this vision, the UBE Group, which is imbued with a frontier spirit and which uses the most advanced technology, will continue to create next-generation value. Using management resources and concentrating them on successful businesses, we are committed to further, ongoing progress.

- **Founded:** June 1897
- **Consolidated:** March 1842
- **Capital:** ¥43.5 billion
- **Employees:** 3,208 (Non-consolidated)
  11,397 (Consolidated)

- **Business Areas:**

Synthetic Products and Resins:
Caprolactam, nylon resins, industrial products, synthetic rubber, polyethylene

Fine Chemicals and Specialty Products:
Functional materials, fine chemicals, pharmaceuticals

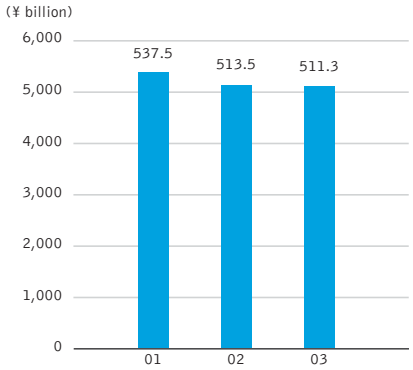
Energy and Environment:
Coal and electric power

Construction Materials:
Cement, building materials

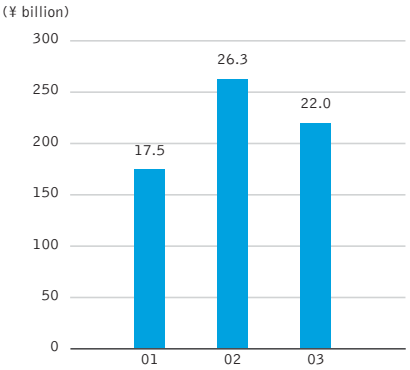
Machinery and Metal Products:
Metal molding machines, resin molding machines, crushers, transportation equipment, bridges and steel structures, aluminum wheels

- **Business Results:**

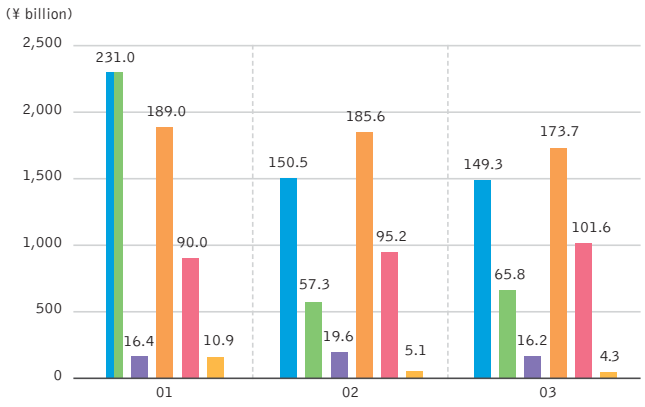
Consolidated Net Sales



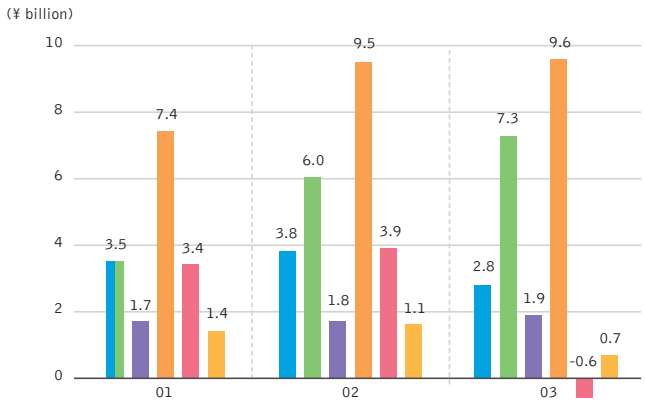
Consolidated Operating Income



Net Sales by Segment[*4] (Consolidated)



Operating Income by Segment (Consolidated)



Synthetic Products and Resins | Fine Chemicals and Specialty Products | Energy and Environment | Construction Materials | Machinery and Metal Products | Others

*For fiscal year 2001, Synthetic Products and Resins and Fine Chemicals and Specialty Products are combined.

GLOSSARY

*1. UBE: UBE Industries Ltd. (non-consolidated)
*2. UBE Group: UBE Industries and its 169 Group Companies. However, on pages other than this "Group" refers to 12 principal companies. (See "Editorial Policy" on p. 39 for reference.)
*3. Stakeholders: Not only associates of the Company directly affected by performance, such as employees, stockholders and customers, but also regional communities, governments, mass communications, and all entities and individuals influenced by the actions of the Group in society.
*4. Segment: Category of Operations. UBE Group presently recognizes six categories of operations for which profit and loss are accounted for individually: Synthetic Products and Resins, Fine Chemicals and Specialty Products, Energy and Environment, Construction Materials, Machinery and Metal Products, and Others. However, on all pages except this one, the listed data for Synthetic Products and Resins and Fine Chemicals and Specialty Products are combined.

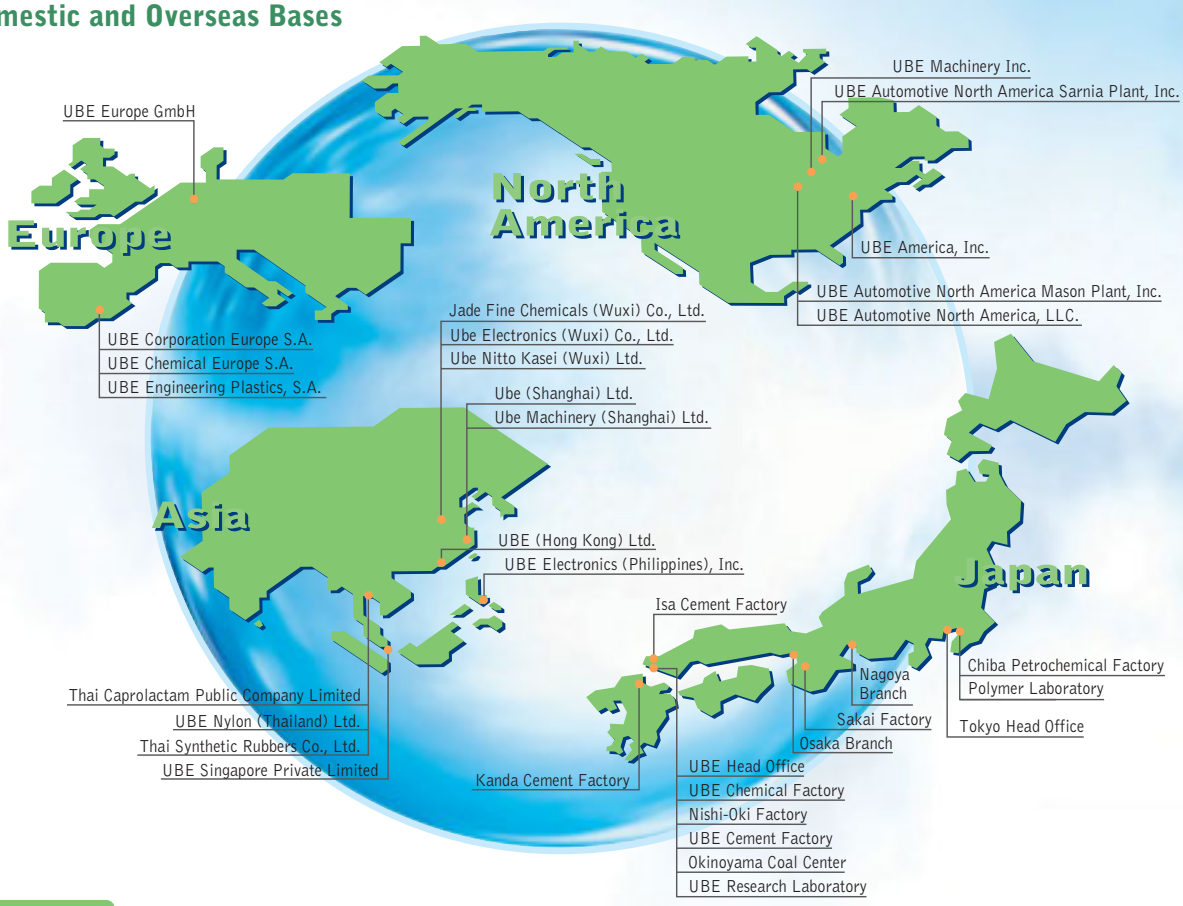
Overview of Medium-Term Management Plan of the "New 21•UBE Plan II"

From fiscal 2001 to fiscal 2003, UBE Group implemented the "New 21•UBE Plan" Medium-Term Management Plan. Starting in fiscal 2004, a new Medium-Term Management Plan was launched—the "New 21•UBE Plan II."

- **Term of plan:** Fiscal 2004 to 2006 (three years)
- **Concept:** Continuation of the developments of the previous Medium-Term Management Plan, elimination of debt, expansion of business and establishment of growth trajectory for success.
- **Key words:** "Speed and Reliability" By increasing the speed of PDCA cycles, business and management targets will be achieved sooner and stakeholder trust will increase.
- **Key issues:** Strengthening and expanding the Group's business profitability
  a) Core businesses: expand operations by concentrating management resources while ensuring that we reap the returns of past investments.
  b) Fundamental businesses: generate stable cash flow through ongoing restructuring and cost-reduction efforts, thereby strengthening our earnings base.
  c) Financial structure: continue work to improve the financial structure.
  The plan calls for maximizing operating income while holding down capital investment, thereby creating free cash flow to pay down ¥31 billion in debt. For this reason, capital investments for the coming three years will be limited to within 80% of amortization and depreciation.
- **Numeric goals:**

	Fiscal 2006	Fiscal 2003
Operating Income to Net Sales Ratio	Above 6%	4.3%
Ratio of Business Profit to Assets (ROA)	Above 5%	3.3%
Net Debt/Equity Ratio	Less than 3.0 times	4.4 times

Domestic and Overseas Bases



GLOSSARY

*1 Free cash flow: Refers to cash flows from operating activities minus cash consumed by operations (cash flows from investing activities).
*2 Net debt/Equity ratio: (Interest-bearing debt – cash and cash equivalents) ÷ stockholders' equity.

Internal Control

Corporate Governance*1

In 2001, in order to separate corporate governance and management functions, UBE introduced an executive corporate officers' system and restructured governing procedures for the Board of Directors.

The new executive corporate officers' system gives total responsibility for business activities to executive corporate officers to enhance speedy decision-making. At the same time, the Board of Directors' role from the medium- and long-term standpoint is to advocate profit on behalf of stockholders. By monitoring the appropriateness and efficiency of operations, greater transparency will be achieved throughout operations, maximizing stockholders' value and minimizing risk for investors.

Accordingly, the number of Board members has also been reduced to nine. UBE has not adopted the company-with-committees system and does not have any outside corporate directors, but it does have an Evaluation and Compensation Committee and a Nomination Committee appointed as an inner committee of the Board of Directors, and it is considering introducing outside directors to the board in the future. Two of the four auditors are from outside the Company.

While paying continuing attention to what optimum corporate governance should be, UBE has taken the above steps to ensure that policy is implemented promptly and effectively, and it will continue to strengthen business functions in corporate management to further enhance its strategic decision-making and corporate governance functions in the future.

Overview of Corporate Governance

Operations Method for Group Management and Consolidated Management of Division Companies

Group Management

The Group CEO*2 (Company president) is appointed by the Board of Directors and is responsible for the direction of the Group and the clarification of policy directives. The CEO also sets goals for each division/company and makes decisions on personnel, materials and management resources necessary for the realization of those goals. Decisions relating to matters beyond the authority of a single division/company are also the responsibility of the CEO.

Division/company Management and Business Operations

Each division manager or company president will act autonomously and in accordance with policy jointly determined with Group management policy to direct the division/company in the effective use of allocated management resources toward the achievement of the division/company's goals.

Group Staff Department

The Group Staff's role is to support the strategic planning and business results management directives of the Group and division/company managements by effectively providing the staffing, materials and procurement of management resources, as well as the common, specific and highly specialized systems and resources necessary for each operation.

Decision-making System

The UBE Group separates the functions of Governance and Management. It promotes transparency and efficiency in its corporate management by the following decision-making methods and procedures.

Board of Directors

The Board of Directors issues decisions on topics affected by commercial laws and relating to corporate policy and major company directives, acting in the best interests of stockholders and with an eye to the medium and long-term health of the Group. The Board of Directors is the highest-ranking decision-making body in the Group and is comprised of all UBE directors. Discussions are led by the Chairman and meetings are held on an as-needed basis, but not less than once every three months.

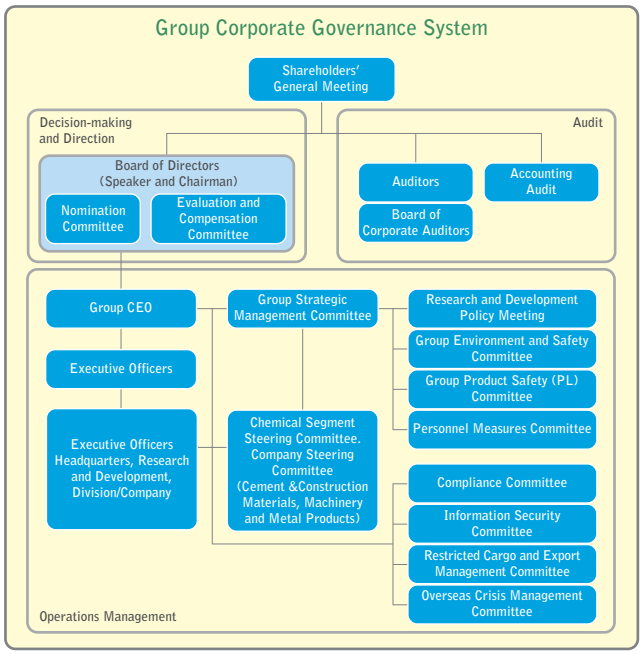
The Board of Directors also appoints subcommittees for effective steering, appointing several of its members to the Nomination Committee and the Evaluation and Compensation Committee.

Group Strategic Management Committee

Based on the policy and regulations of the Group Management Committee, this committee discusses and decides issues relating to group-wide allocation of resources and other necessary items, including budgets, projections, medium-term business plans, capital investment and investment and loan plans, as well as other important items which impact the Group as a whole.

Chemicals Steering Committee, Company Steering Committee (Cement & Construction Materials, Machinery and Metal Products)

These division/company-level committees discuss and/or make decisions on Group strategy and other important issues based on Group policy and regulations.



GLOSSARY

*1 Corporate Governance: Management policies and actions designed to uphold laws and rules of conduct throughout the Group and companies, in order to promote legality, sound management and efficiency throughout the organization.

*2 CEO: Chief Executive Officer

Risk Management

Compliance Committee

In response to the growing demand for thorough compliance*1 in corporate activities and operational performance, UBE codified "Our Personal Action Guideline" in 1998, to promote compliance awareness among all its directors and staff. The Company followed this with the April 2002 publication, "Our Personal Action Guideline: Case Studies," which provided concrete guidelines for action. In March 2003, we implemented additional measures in order to further improve upon our past efforts in the form of the following policies:

(1) "Our Personal Action Guideline" is revised in part to reflect more strongly the statements of the Group's corporate ethics. At the same time, "The Guideline" has obliged a all directors and employees of the UBE Group to act suitably.

(2) In order to ensure and promote compliance, the Compliance Committee is organized with Chief Compliance Officer*2, a lawyer and a secretariat. The same organization is established under the respective internal companies and Group companies.

(3) In order to swiftly identify and rectify problems, a direct contact line, the "UBE C-line," has been available to all employees to directly notify of potential breaches of compliance without recourse to the normal chain of command.

UBE will improve and strengthen compliance throughout the Group by using this organization and system.

Our Personal Action Guidelines

Chapter 1: Corporate Mission and Creation of Value
Chapter 2: The Law and the Corporation
Chapter 3: Social Trust and Rating
Chapter 4: Impartiality and Sincerity
Chapter 5: Safety and the Environment
Chapter 6: Human Rights and the Workplace
Chapter 7: Information Disclosure and the Regional Community
Chapter 8: International Society and the Corporation
Chapter 9: Conclusion: Establishing Corporate Ethics

Information Security Committee

The officers and employees of the UBE Group are aware that information is a business resource every bit as important as personnel, materials, money and time. Because of the diverse and important influence that information has on so many aspects of its business the Group launched an "Information Security Committee" in 2002.

The Information Security Committee sets and disseminates security policy, assesses compliance with measures and generally oversees all matters relating to information security. Since 2004, the Committee meets once every quarter to discuss ways to further protection of information.

Restricted Cargo and Export Management Committee

In July 1997, the Group's "Restrictions on Strategic Cargoes and Export Management" was completely revised and put into the form of the "Restricted Cargoes and Export Management" (Compliance Program), and at this time the Restricted Cargoes and Export Management Committee was established.

The Committee is responsible for managing company exports and policy where it concerns foreign exchange rates, international trade laws, and export laws designed to ensure international peace and safety. The Committee acts to educate the Group regarding these laws, forthwith referred to as "Foreign Trade Restrictions," and ensure that activities or proposals which might be in breach of these restrictions, in particular the export of controlled materials or technology, do not take place.

Overseas Crisis Management Committee

UBE Group has an increasing number of employees working overseas, including employees with families, and it recognizes that security and safety issues are growing. In an effort to ensure the safety of its expatriate staff and local employees alike, UBE set up a group-wide "Overseas Crisis Management Committee" (OCM*3) in 1997.

This Committee forms the core of company efforts to ameliorate the risk of an overseas crisis. It has created a manual broken down into crisis levels and based on scenarios, created models for normal and crisis operations for overseas locations, and made plans for a swift response to a variety of situations that might affect its overseas staff, staff families and local employees.

UBE also prepares employees and their families for overseas assignments with lectures and materials on local security, points of caution and proper response in a crisis situation, so that they are confident in their new work environment and prepared to respond to emergencies.

E-manual

In 1996, UBE prepared its first domestic emergency manual ("E manual") to train in early response to and external action in case of emergencies, and in 2003 substantially revised the contents to include not only early response measures and external actions but additionally an emergency communications network and a crisis management HQ system.

GLOSSARY

*1 Compliance: This means, while observing laws, company regulations, international rules and other social rules, to respond to the trust of both domestic and overseas society to the UBE Group and to act in sincerity in our business activities and performance.

*2 Compliance Officer: Executive officer responsible for all aspects of compliance in the UBE Group.

*3 OCM: Overseas Crisis Management

Responsible Care (RC)*1

Since 1990, when the Responsible Care (hereinafter referred to as RC) activity started in Japan, UBE has been carrying out these activities not just in the Chemical segment, but also in Construction Materials, Machinery and Metal Products, Energy and Environment segments, as well. RC activities are also developing throughout the Group as a whole. As a member of the Japan Responsible Care Council (established in 1995), UBE promoted RC activities under the following six codes to protect staff, local residents and regional environment, safety and health.

Environmental and Safety Principles

As members of society, corporations must be fully conscious of their own responsibilities regarding their contributions to society, environmental preservation and the maintenance of health and safety in performing their corporate activities.

As the core company in managing the consolidated UBE Group, UBE shall pursue the following vision in order to perform its leadership role, and shall work to improve the quality of the environment and safety among all of its Group companies.

Safety Management	Ensuring safety shall be the priority in all areas and activities under UBE's commitment to respect human life.
Environmental Preservation	As a responsible corporate citizen, UBE shall act positively to protect and improve both community and regional conditions and to work for the preservation of the global environment.
Product Safety	The UBE Group shall pursue its corporate responsibility in providing its customers and the public with safe and reliable products.
Health Management	UBE recognizes that maintaining and promoting the health of its employees is the basis of corporate and social vitality.

Kazumasa Tsunemi,
President and Group CEO
Ube Industries, Ltd.

常見和正

Instituted April 1, 1992. Revised April 1996, July 1999 and April 2003.

What is RC activity?

Responsible Care (RC) is a set of voluntary initiatives based on the principles of autonomous decision-making and self-responsibility. Under RC, corporations that manufacture and/or handle chemical substances are working voluntarily to preserve health, safety and the environment in every process, from the development of chemicals through their manufacture, distribution, use and final consumption and disposal. This includes maintaining ongoing dialogues and discussions with the public by openly disclosing the results of these efforts.

レスポンシブル・ケア®

● UBE takes actions in six themes for environment, safety and health

1. **Environmental Preservation**
   Environment-friendly business activities that promote energy conservation, reduction of environment-polluting emissions and other pro-environment operations
2. **Process Safety and Disaster Prevention**
   Carrying out safe operations and preventing accidents
3. **Occupational Safety and Health**
   Protecting the safety and health of workers
4. **Product Stewardship**
   Manufacturing safe products and providing proper information on correct usage
5. **Logistics Safety**
   Implementing safe transport
6. **Publication of performance reports and dialogue with society**
   Publishing performance reports and promoting further mutual understanding through public dialogue

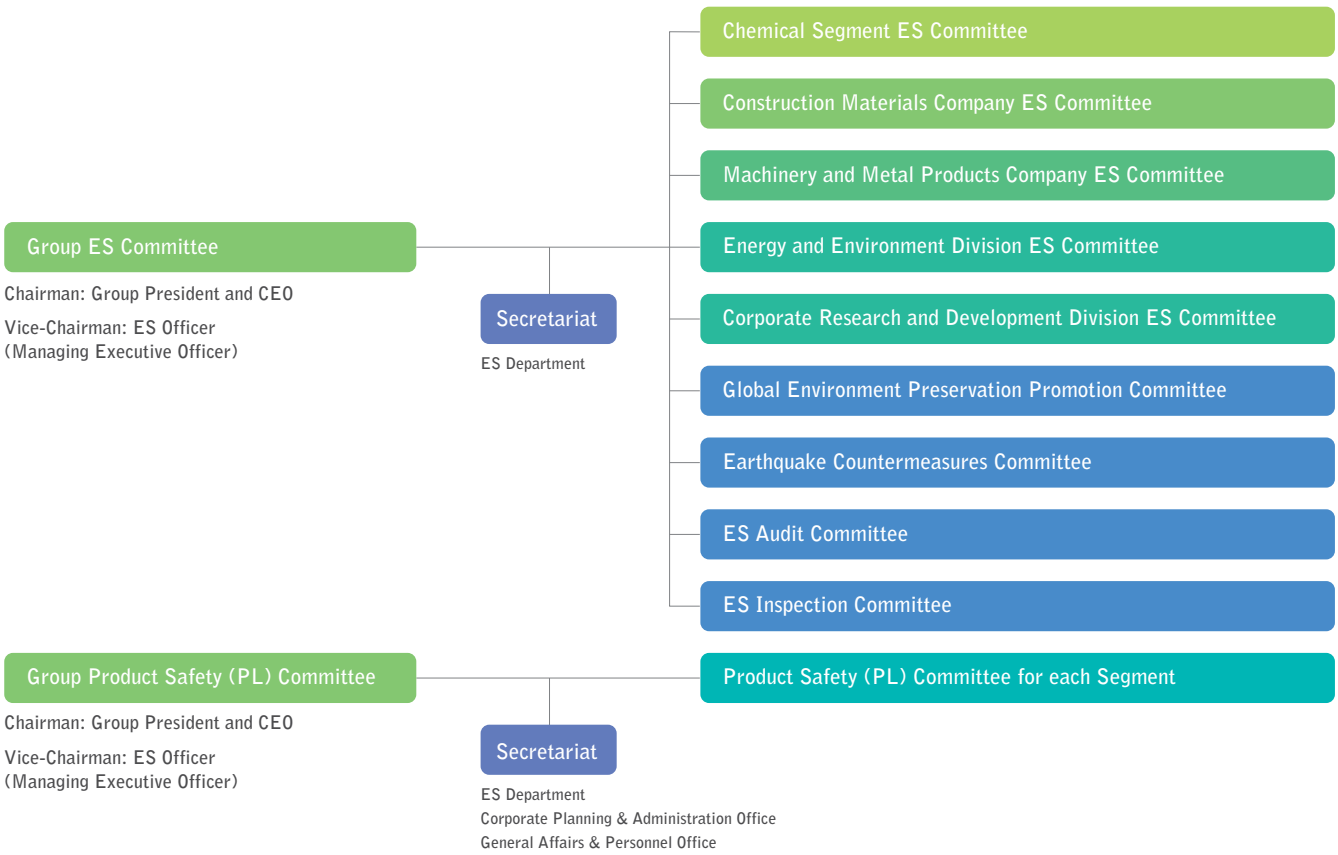
GLOSSARY

*1 Responsible Care (RC): Initiated in Canada in 1985, the RC is introduced by the 47-member countries of International Council of Chemical Associations established in 1990. In Japan, the Japan Responsible Care Council was established within Japan Chemical Industry Association in 1995, whose member companies are 111.

Environment and Safety Management System

The UBE Group established the Group Environment and Safety Committee, consisting of Group Management Committee members and chaired by the president (also the Group CEO), as the highest decision-making entity in the area of safety management, environmental preservation and health management as set out in our Environmental and Safety Principles. This Committee decides Group policy as well as implementation plans relating to the environment, safety and health.

From fiscal 2002, the Group Safety (Product Liability) Committee has been determining and reviewing the policy relating to product safety. Under the Group Environment and Safety Committee, individual Environment and Safety Committees were set up for each of five business areas as shown below, and each committee deals with environment and safety measures that relate to the business operations of each area in accordance with the policies and plans determined by the Group Environment and Safety Committee. In addition, four further separate committees were set up to examine, report on, and review specific activity plans.

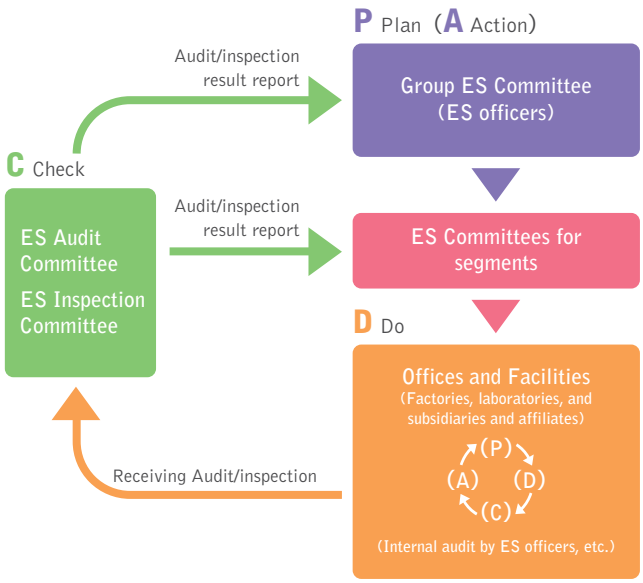


Responsible Care Management System

In an effort to continually improve its performance in regard to the environment, safety and health, the UBE Group promotes the management system based on a PDCA (Plan, Do, Check, Action) cycle.

Specifically, the Environment and Safety Committee for each segment formulates concrete plans that reflect the plans determined by the Group Environment and Safety Committee, and each office or facility implements measures based on these plans.

Moreover, all offices, facilities and group companies are subject to annual environment and safety audits by audit team and inspections by the management. On the basis of these, corrective measures may be required to be implemented where applicable, and results are reported to the Group Environment and Safety Committee and to the ES Committee for each segment.



Outline of Responsible Care Activities

The UBE Group is promoting its Responsible Care activities

Responsible Care Code	Fiscal 2003 Targets	Fiscal 2003 Planning and Policy
Common Points	RC medium-term targets: Carrying out enhancement of sustainable environment, safety and health quality plans	1. Health and safety "Risk Assessment implementation and OSHMS introduction" and "Improvement of Health Management System" 2. Process safety and disaster prevention "Confirmation of facility safety and double-checking of self-imposed management level" 3. Environmental preservation "Implementation of environmentally oriented business practices" 4. Product Safety "Upgrade of administrative management"
Management system		1. Promotion of compliance activities 2. Preparations and revisions of restrictions and standards relating to environment, safety and health 3. Implementation of "Environment and Safety audits" 4. Implementation of "Environment and Safety Inspection" and "Special Inspections" 5. Holding of "Environment and Safety Committee" and "Product Liability (PL) Committee"
Environmental preservation	Reducing output of substances that negatively impact the environment	1. Reduction of greenhouse gases, precise response to internal and external trends 2. Response to 5th Water Pollution Regulations 3. Response to PRTR Law 4. Reduction of noxious air pollutants 5. Reduction of industrial waste
Process safety and disaster prevention	Elimination of facility accidents	1. Improved safety assessment (Plant Safety Assessment) 2. Support and follow-up to facility inspections and implementation of improved planning 3. Thorough analysis and verification of facility accidents and failures 4. High-pressure gas: Promoting voluntary handling and disaster prevention
Occupational safety and health	＜Health Management＞ Strengthening of health management systems	1. Company-wide health management and management integration 2. Structuring of Ube regional management system and strengthening of health education and guidance
	＜Occupational Safety＞ Reduction of occupational accidents	1. Promotion of conformity to OSHMS, total implementation of risk management 2. Implementation of safety awareness improvement policy 3. Complete analysis of past accidents 4. Improvement of environment and safety audits and inspections 5. Receiving JRCC third-party verification (Chiba Petrochemical Factory)
Distribution safety	Full implementation of Container Emergency Card notification	1. Holding regional distribution conferences 2. Revising maintenance and management plan for tanks 3. Emergency Card management and promoting adoption of Container Emergency Cards
Chemicals and product safety	Strengthening of measures and upgrading practical management	1. Improvement of chemical product safety management and operational efficiency 2. Chemical products hazard and risk notification and improvement 3. Improvement of safety management functions 4. Strengthening service functions to Group companies 5. Continuation of HPV safety program 6. JRCC third-party inspection verification visits (Head Office and UBE Chemical Factory)
Dialogue with communities		1. Promotion of community and social dialogue 2. Improvement of disclosure and transparency of information

(Table based on policy extracts from the Japan Responsible Care Council "Responsible Care Implementation Report and Plan")

✿: Achieved ✿: Largely achieved ✿: Not yet achieved

Fiscal 2003 Activity Report	Evaluation	Pages included
● Issued RC Report (this report) and announced aggressive RC promotion		6
● Published RC report on UBE website; discussed RC through RC regional dialogue meetings (February 2004, Ube/Onoda area)		25・26
● Based on multi-level education, implemented environment and safety education curriculum for new employees through directors		24
● Implemented emergency training at all factories; revised of E-manuals; simulation exercises		5・27
● Used third-party (JRCC) verification (chemical and products safety [Head Office and Ube Chemical Factory], occupational health and safety [Chiba Petrochemical factory])		38
1. Holding of Compliance Committee meetings with additional legal advisors (April, September, December)	✿	5
2. Revision and improvement of Product Safety-related Regulations, Process Safety and Disaster Prevention-related Regulations, Distribution Safety-related Regulations, Health Management Regulations and other regulations	✿	
3. Implementation of audits at 10 business offices and 3 Group companies	✿	7・34
4. Environment and safety inspections at 16 business offices and factories by top management and special inspections by the president of 3 "locations with a poor safety record."	✿	7・34
5. Meeting of both committees held twice a year, and PDCA (Plan, Do, Check, Action) cycle promoted	✿	7
1-1. Holding of Global Environmental Preservation Promotion Committee (December) followed by PDCA management cycle appropriate response to internal and external trends. 1-2 Due to production increases in some areas, energy consumption and CO_2 emissions rose slightly over the previous year, compared with 1990 levels; CO_2 emissions were down 7% 1-3. Ministry of Economy, Trade and Industry: initiation of credit transactions and participation in test operations (Chiba Petrochemical Factory Energy Conservation Plan); receipt of certificate from Certification Agency in March 2004	✿ ✿ ✿	13 26
2. Measures implemented to reduce total nitrogen and total phosphorous emissions in some factories	✿	15
3-1. Publication of report on Japan Chemical Industry Association PRTR materials (total 480 chemical substances) survey and PRTR Law materials (354 chemical substances) survey results 3-2. Reduction of substances indicated by the JCIA and PRTR Law by 1,857t (-13%) and 459.6t (-16%) respectively, a reduction over the fiscal 2002 total	✿ ✿	16
4-1. Completion of 2nd voluntary management plan—total reduction of 83% (based on 1999 levels); combined with 1st plan achievement totals a 93% reduction (based on 1995 levels) 4-2. Specific targeting of benzene for reduction achieves 95% reduction, with 82% reduction of 1,3-butadiene and 91% reduction of acrylonitrile (all against 1995 levels)	✿ ✿	17
5. Reduction ratio of final landfill: more than 73% (against UBE's 1990 level.) Increased progress in Chemical Division, with continued zero emissions target in Construction Materials	✿	18・19
1. Plant safety assessment performance: new and additional testing at 7 facilities, for a total of 27 facilities applying HAZOP*1	✿	27
2. Sharing of issues and verification of special inspections and others. (horizontal development)	✿	27
3. Revision of equipment and facility accident reporting standards	✿	27
4. Sakai Factory: Certification (March, 2004) for high-pressure gas safety inspection/completion of renewal inspection	✿	27
1. Company-wide unification of basic evaluation standards and items relating to "Health Management Regulations" and "Checklist for Regular Health Physical Examination."	✿	23
2. Strengthening of response to mental healthcare system, non-smoking campaign and lifestyle illnesses	✿	23
1. Risk assessment implementation based on Occupational Health and Safety Management System (OHSMS) and training personnel for internal risk assessment	✿	22
2. Implementation of disaster prevention measures, informal safety meetings at all work places, safety poster production, surveys and mini inspections (at 10 company offices)	✿	22
3. Development and application of database of past accidents; regular reporting of findings	✿	22
4. Special "theme development" practice implemented at all company offices	✿	22
5. March 2004 Verification—results are high evaluations for no accidents, internal audits, revision and prevention efforts, but further effort required in planning and goal setting	✿	38
1. Ten meetings on distribution issues in regions of operation (held with trucking section, shipping section and premises section)—discussing policy on logistics claims and providing tank lorry accident response training, etc.	✿	29
2. Presently considering restructuring	✿	29
3. Checking of Container Emergency Card program introduction ratio (30%)	✿	29
1. MSDS/JIS labeling preparation and revision for 100 products and EU/ANSI labeling preparation for 50 products, implementation of Container Emergency Card program and discussion of methods to verify improvements	✿	28・29
2. Hazard and risk information to be collected and disseminated throughout the Company (on top-ten environmental emissions by volume)	✿	28・29
3. Chemical management, establishment and application of standards, and PL quality control revisions	✿	28・29
4. Consultations with Group companies on implementation of MSDS, labeling, REACH, GHS and other information disclosure	✿	28・29
5. Named leader of international zinc nitrate soda producers	✿	28・29
6. March 2004 Inspections—results are high evaluations for education, transportation operational management, revision and prevention efforts, but further effort required in planning and targeting	✿	38
1-1. RC Community Dialogue Meeting held in February 2004 in Ube and Onoda District and attended by local government agencies, community groups (local associations, NGOs, others) and JRCC member companies 1-2. Participation in the 4th RC Regional Dialogue Meeting in Sakai-Senboku District	✿ ✿	26 25
2-1. RC Report published and simultaneously posted on both the Japanese and English websites of UBE. 2-2. Holding of Company Announcement Meeting for RC Report.	✿ ✿	

GLOSSARY

*1 HAZOP: Abbreviation of Hazard and Operability Analysis or Studies, which evaluates process safety and determines safety responses for hypothetical breakdowns, etc.

Environmental Accounting

Since FY1999, the UBE Group has introduced environmental accounting as a tool for quantitatively understanding and evaluating the costs and effects of environmental preservation in the Group business activities and promoting more efficient sustained environmental preservation.

For environment accounting to be effective, it must be incorporated into a company environmental management, be allowed to function as a decision-making tool, and be used to disclose accurate information on the results of the Company environmental preservation activities. The UBE Group will continue to carry out various measures aimed at establishing more effective environmental accounting. The following tables show the results of activities in fiscal 2003.

[UBE Group Environmental Accounting Method]

- Reporting Period: Fiscal 2003 (April 2003–March 2004)
- Reporting Company: 12 companies of UBE Group (See page 39, Scope of Reporting)
- Calculated in accordance with the Ministry of the Environment's Environmental Accounting Guidelines (FY2002 version).
- The economic effect is the effect obtained in fiscal 2003 as a result of environmental protection activities. This is limited to what can be calculated rationally, and excludes hypothetical calculations such as the avoidance of the costs of cleaning up environmental damage.
- Internal transactions within the UBE Group are not included.

Environmental Preservation Cost

Cost Category		Main Activity	Capital Investment (Unit: ¥100 million) FY2002	FY2003	Percent of increase/decrease	Cost (Unit: ¥100 million) FY2002	FY2003	Percent of increase/decrease
Cost by business area	Pollution prevention	Costs of investing in and maintaining air and water pollution prevention facility	6.0	8.9	48	6.0	8.9	48
	Global environment preservation	Costs of investing in and maintaining energy saving facility	1.6	2.5	56	1.6	2.5	56
	Resource recycling	Costs of recycling and reducing industrial wastes	7.0	3.7	–47	7.0	3.7	–47
Upstream/ downstream costs		Costs of packaging recycling, green purchasing	0.0	0.1	—	0.0	0.1	—
Costs of management activities		Costs of acquiring, running and maintaining environmental management systems	0.4	0.1	–75	0.4	0.1	–75
Research and development costs		R&D costs of environment-friendly products and green technologies	1.5	0.9	–40	1.5	0.9	–40
Costs of social activities		Costs of greening and beautifying offices/facilities and their surroundings	0.1	0.2	100	0.1	0.2	100
Costs of cleaning up environmental damage		Environment-related assessment charges	0.0	0.0	—	0.0	0.0	—
Total			16.6	16.4	–1	16.6	16.4	–1

[Calculating results]

Compared to fiscal 2002, capital investment decreased by ¥20 million, to ¥1,640 million. The main factor in this decrease was a decline in resource recycling costs (completion of capital investment for waste recycling facility).

Expenses fell ¥1,210 million compared to fiscal 2002, to ¥7,410 million. The main factor in this change was a rise in pollution prevention costs (in particular, prevention of water pollution).

Effect

1) Environmental Preservation Effect

Principal effects		Unit	FY2002	FY2003	Change on previous year (%)	Page
Pollution prevention activities	SOx emissions	Tons	2,916	**2,975**	2	14
	NOx emissions	Tons	20,013	**20,295**	1	
	Dust emissions	Tons	521	**503**	–3	
	Water usage	1,000 m³	90,695	**94,033**	4	15
	Water effluent discharge	1,000 m³	194,077	**188,344**	–3	
	COD emissions	Tons	1,021	**997**	–2	
	Total nitrogen emissions	Tons	1,634	**1,192**	–27	
	Total phosphorus emissions	Tons	32	**37**	16	
Global environment preservation activities	Energy usage	1,000 kl-oil	1,939	**1,973**	2	13
	CO_2 emissions (from energy)	1,000 t-C	1,696	**1,742**	3	
	Benzene	Tons	64	**38**	–41	17
	1,3-Butadiene	Tons	49	**36**	–27	
	1,2-Dichloroethane	Tons	1.3	**0.2**	–85	
	Chloroform	Tons	0.4	**0.6**	50	
	Dichloromethane	Tons	—	**0.8**	—	
	Acrylonitrile	Tons	0.1	**0.0**	—	
Resource recycling activities	Final waste disposal volume	Tons	13,275	**13,037**	–2	19
	Recycled waste volume	Tons	249,367	**282,485**	13	

2) Economic Effect

(Unit: ¥100 million)

	FY2002	FY2003	Change on previous year
Income effect	38.7	**52.5**	36
Savings effect	32.9	**34.5**	5

[About the accounting results]

1) Environmental preservation effect

Through investments in facilities, a significant reduction in benzene and other pollutants was realized.

2) Economic effect

The income effect was ¥5,250 million, reflecting an increase in income for wastes accepted as fuel and raw materials for cement.

The savings effect was ¥3,450 million, reflecting the results of promoting energy saving.

Message from an Employee

Toru Yamada, Corporate Planning & Administration Office, Planning & Accounting Dept.

Trends in UBE Group's Environmental Accounting

One of the noteworthy trends in the UBE Group's environmental accounting activities is the comparatively high-income effect, mainly due to the existence of income for waste accepted as materials for cement and as fuel. Accepted materials are used effectively and contribute to local communities, which benefit from reduced emissions and a cleaner environment. This is a good example of the UBE Group's response to the demands of society.

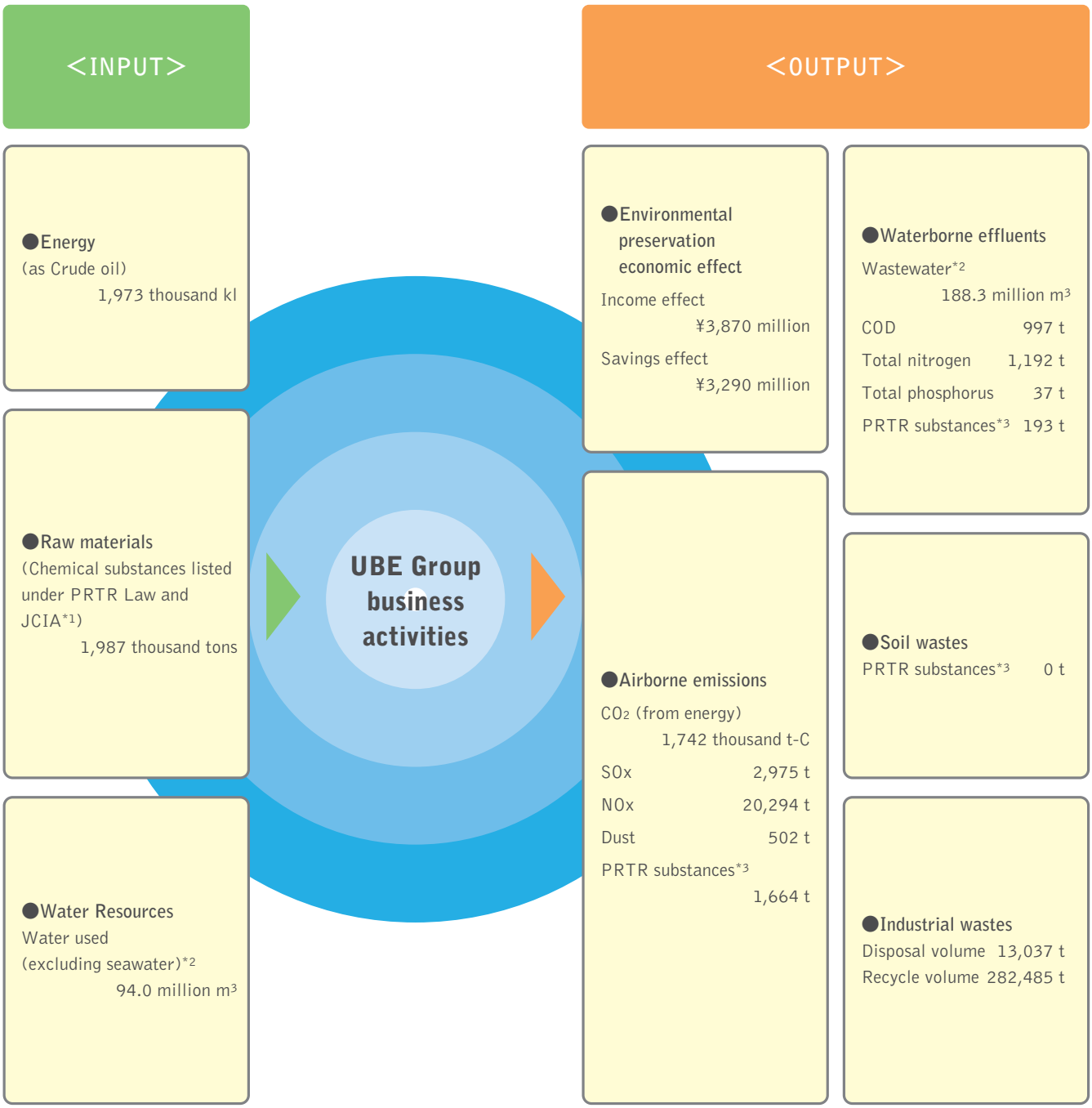
A future issue is improvement of environmental accounting so that the information can be used to evaluate environmental management performance. For that reason, we are presently working to include data on major overseas manufacturing sites.

Environmental Preservation

Environmental Performance

With more than a century since its establishment, the UBE Group has developed a broad range of business operations, including Synthetic Products and Resins, Fine Chemicals and Specialty Products, Energy and Environment, Construction Materials, and Machinery and Metal Products.

The Group recognizes that environment-friendly management is a vital issue for continuing to survive and grow in the 21st century. "Environmentally oriented business practices" is one of the basic policies advocated by the New 21•UBE Plan II, the Group's 3-year, mid-term business plan, for which 2004 is the first year and which focuses on "Speed and Reliability" as a key term. In the future, the Group will promote business activities that contribute to the formation of a recycling-conscious society by promoting measures to prevent global warming, reducing noxious air pollutants, cutting industrial wastes, and using wastes and resources effectively. At the same time, we will contribute to the formation of a sustainable society through our products and services.



*1 Japan Chemical Industry Association (JCIA)

*2 The difference between the amounts of water usage and wastewater is due to inclusion of seawater in the wastewater volume.

*3 PRTR figures are based on amounts of 480 substances regulated by the JCIA (see page 16 for reference).

Global Warming Prevention Measures

Based on 1990 levels, Japan's emissions of greenhouse gases in fiscal 2002 increased by 7.6%, it was announced.

Fiscal 2004 marks the last year of the first step (fiscal 2002–fiscal 2004) of the Outline for Promotional Effects to Prevent Global Warming, and sharp assessments and revisions to policies are now under way following the Petroleum and Coal Tax, which has been imposed on the industry since the second half of fiscal 2003. Moreover, the "Greenhouse Gas Tax," which may have a significant impact on the industry, has been discussed nationwide.

If the Kyoto Protocol is ratified, it will call for Japan to reduce Greenhouse gas emissions by 6%, relative to 1990 levels, between 2008 and 2012, which would mean that Japan would need to reduce current emissions by 13%. Against this backdrop, in 2000, the UBE Group formulated its medium and long-term Global Warming Prevention Strategy in pursuit of a greater than 6% reduction in CO_2 emissions by fiscal 2010 (as compared with the 1990 level). Then in fiscal 2001, it initiated a CO_2 emissions reduction and follow-up plan drawn up by the Global Environmental Preservation Promotion Committee, and it is currently maintaining this commitment.

In fiscal 2003, through the use of biomass and the diversification of fuels, etc., UBE reduced output of CO_2 gas by 27,000 t-C. In the future, we will work to meet the targets (shown below) set for each industry under the Japan Business Federation's voluntary action plan as we strive to improve energy efficiency by more than 1% a year.

UBE has also gained valuable experience by participating in the Ministry of Economy, Trade and Industry's CO_2 credit trade and transfer trial operations.

UBE Group Comprehensive Targets

Targeting a comprehensive reduction of CO_2 emissions to less than 94% of fiscal 1990 levels by fiscal 2010

Targets of voluntary action plan by segment and industry

- Chemical segment/Japan Chemical Industry Association: 10% reduction in Unit Energy Consumption by fiscal 2010 (fiscal 1990 basis)
- Construction Materials segment/Cement Association: 3% reduction in Unit Energy Consumption by fiscal 2010 (fiscal 1990 basis)
- Machinery and Metal Products Segment/Japan Industrial Machine Association Target: 1% per year reduction in Unit Energy Consumption by fiscal 2010 (fiscal 1997 basis)

Energy Consumption and Energy Efficiency

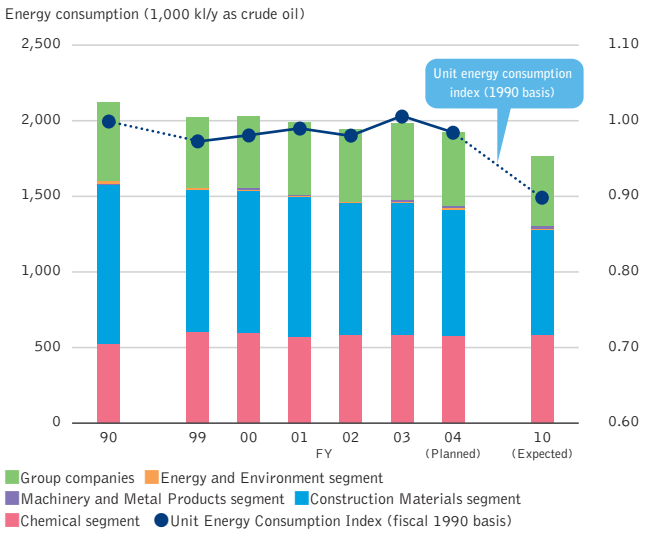
Because of the effect of adopting the NSP*2 system in cement kilns in the past, recent diversification of energy sources and waste, along with some production decreases, energy consumption and unit energy consumption decreased slightly. In fiscal 2003, we continued to implement energy-saving measures. However, there were increases in emissions due to the disposal of hard-to-burn wastes and the start-up of new power generation facilities. Thus there were temporary increases in both energy consumption and unit energy consumption.

In fiscal 2004, unit energy consumption will be improved as a result of energy saving activities, and energy use will be expected to decline due to some fall in production.

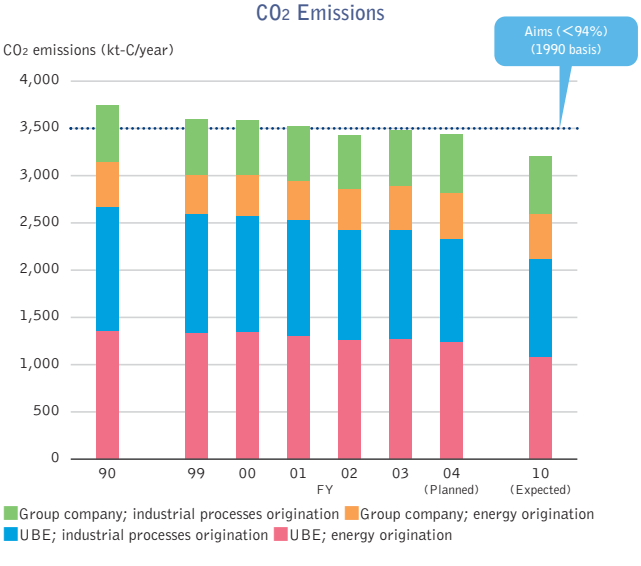
CO_2 Emissions

With the reduction in energy consumption as described above, CO_2 emissions also fell. In fiscal 2003, we already succeeded in reducing energy consumption by more than 7% (fiscal 1990 basis). In expectation of future business expansion, we will continue to reduce CO_2 emissions, by focussing on our energy saving activities.

Energy Consumption and Unit Energy Consumption Index



CO_2 Emissions



(Energy origination: Classified in accordance with the Law Concerning the Rational Use of Energy)

GLOSSARY

*1 First Step: This refers to the first step (2002–2004) of the "Step by Step Process," one of four policies advocated by the Japanese government for implementation of the Kyoto Protocol. The second step (2005–2007) and third step (2008–2012) cover the period of the first accord.

*2 NSP: Abbreviation for New Suspension Pre-heater, a cement kiln with an attached pre-heater. The process utilizes a rotary kiln with a pre-heater, which heats the feedstock, as well as a calciner.

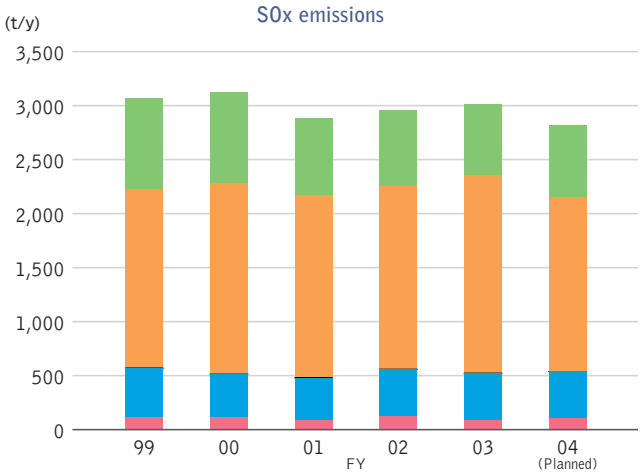
Controlling Air Pollution

UBE has been working in cooperation with the public, academics and administrators to prevent air pollution since 1949, which was long before air pollution first began to attract attention as an environmental issue. Today, desulfurization, denitrification, and dust removal processes developed by UBE are used to eliminate or reduce such health-threatening substances as sulfur oxides (SOx*1), nitrogen oxides (NOx*2), and dust.

Efforts to reduce emissions include monitoring emissions at their sources and taking emergency measures at the first sign of any change in the natural environment such as photochemical smog warning. In addition, the Ube Environment Preservation Council continually monitors environmental measurements taken at various sites around Ube City. This measurement data is reflected in factory operations according to air pollution preventing management standards, which are already established.

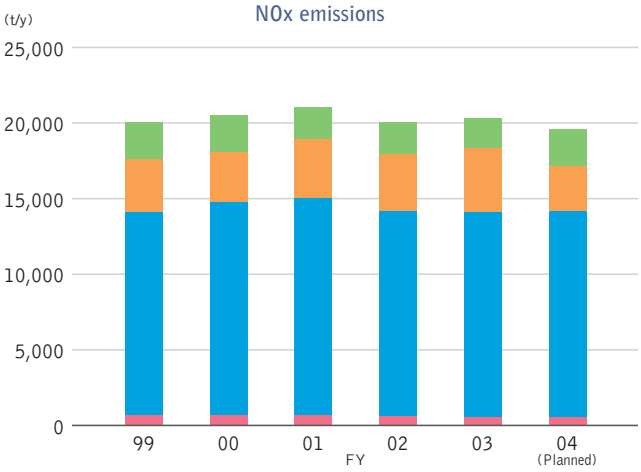
●SOx emissions

Although we planned to reduce SOx emissions by 5% from fiscal 2002 to fiscal 2003, because of a change in the kind of fuel coal for our own power plants, the emissions increased by 2%. In fiscal 2004, we plan to reduce SOx emissions by 6% from the fiscal 2003 level.



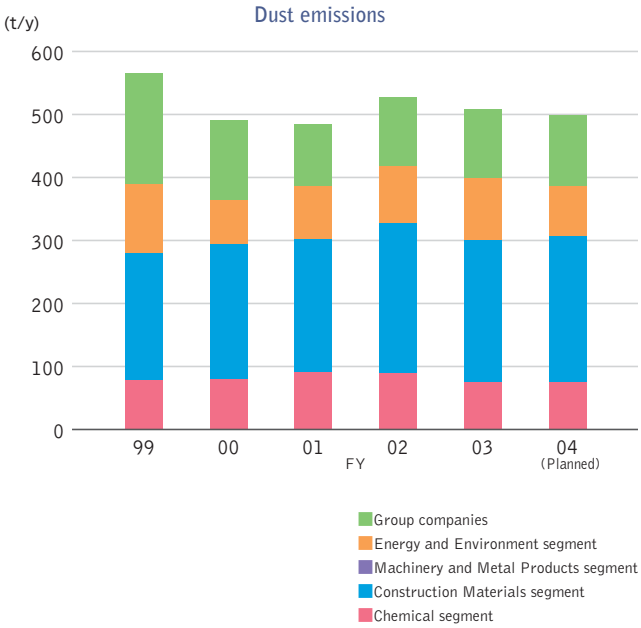
● NOx emissions

While we planned in fiscal 2003 to reduce NOx emissions by 3% from fiscal 2002 levels, for the same reasons as reducing SOx emissions, that is, mainly due to a change in the kind of coal fuel used for our own power plants, the emissions increased by 1%. In fiscal 2004, we plan to reduce NOx emissions by 4% from the 2003 level.



● Dust emissions

Although consistent efforts to reduce dust emissions have been successful, in fiscal 2003 by offsetting an increase due to changes in the kind of fuel coal used in power plants and a decrease by stopping plant operations, a total 4% reduction was achieved. In fiscal 2004, we plan to reduce dust emissions by 2% from the fiscal 2003 level.



Message from an Employee

Environment and Safety Division

Masahiro Abe

Continuous efforts to reduce emissions of chemical substances

It is the fate of UBE to be a large-scale user and producer of energy and chemical materials. Recently, every factory has exerted efforts to reduce harmful air pollutants emission, and these efforts have borne significant results. Efforts have not been undertaken only to meet the PRTR regulations, but in order to meet the voluntary goals on emissions. Efforts to reduce the chemical substances other than harmful air pollutants emissions will be issues for the Company.

GLOSSARY

*1 SOx: Sulfur oxides originate in the sulfur (S) component of fuels. Boilers are the main producers of SOx.

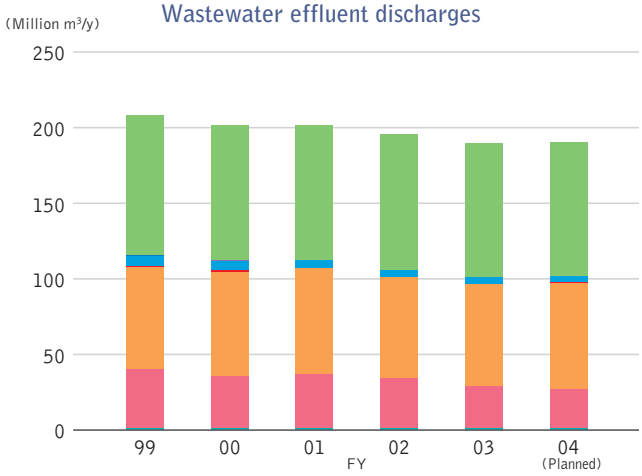
*2 NOx: Nitrogen oxides originate in the nitrogen (N) components of fuel and air when a fuel is combusted in air. Boilers and cement kilns are the main sources of NOx.

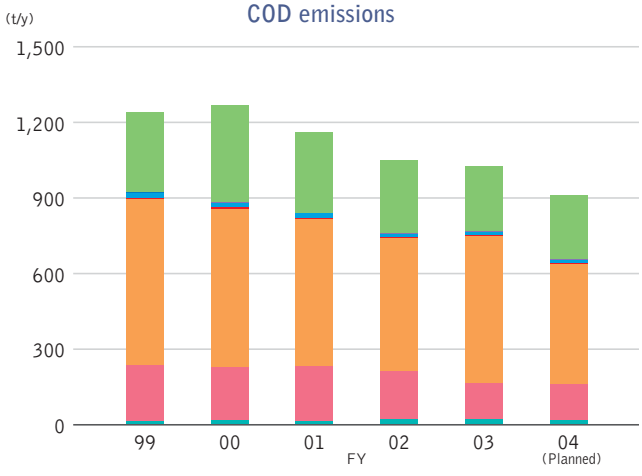
Controlling Water Pollution

Such laws as the 5th Area-wide Water Pollutant Regulations*1 for enclosed sea areas like the Seto Inland Sea have been toughened. The UBE Group, and in particular our chemical plants, which can have a major impact on water quality, discharge water only after it has been purified by such means as activated-sludge or wet oxide processes, and the discharge is always strictly monitored.

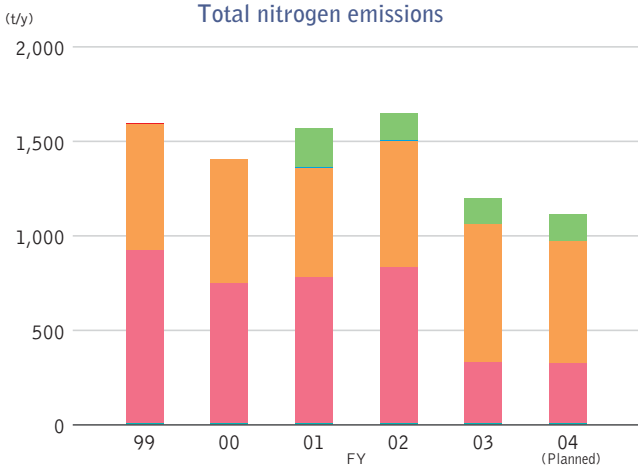
The Group also constantly works to reduce COD*2, nitrogen and phosphorus, typical indicators of water pollution.

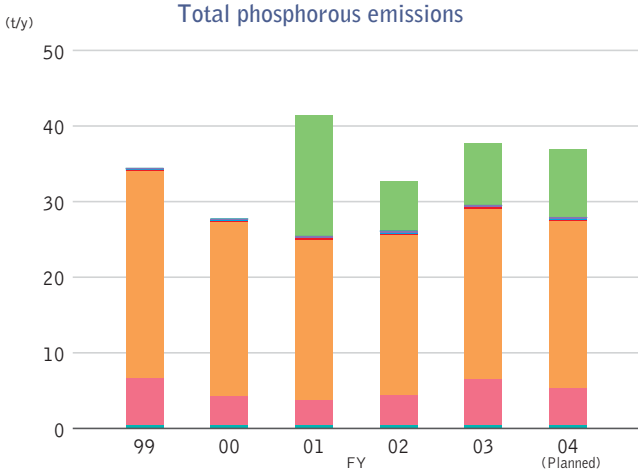
Wastewater effluent discharges, COD and total nitrogen*3 fell due to a shutdown of part of the facility at the Sakai factory, but power outages due to wind and water damage and other equipment trouble at the Ube area resulted in a 2% increase in phosphorous emissions*3.





Group Companies
Research & Development Department
Machinery and Metal Products Segment
Construction Materials Segment
Chemical Segment/Nishioka Factory
Chemical Segment/Ube Chemical Factory
Chemical Segment/Sakai Factory
Chemical Segment/Chiba Petrochemical Factory





Message from an Employee

Ube Chemical Factory
Environment and Safety Group, Environment Team
Ikuzo Nishiyama

Response to the 5th Area-wide Water Pollutant Regulations

The Ube Chemical Factory discharges wastewater through its industrial canal and Ube Port into the Seto Inland Sea, where there is a beautiful natural environment. In order to leave it for the next generations, as one of the staff working at this factory facing the sea, I would like to control the discharge of wastewater, and to improve the water quality.

In order to achieve this, we have rearranged drainage routes including our water quality monitoring system. We are maintaining a responsible operation.

GLOSSARY

*1 The Fifth Provision of the Effluent Discharge Regulation: Based on the Water Pollution Control Law to further lower pollutant load levels in large enclosed sea areas such as Tokyo Bay, Ise Bay and the Seto Inland Sea, beginning in fiscal 2000 the regulation identified COD, nitrogen and phosphorous as designated items and set reduction targets for each sea area, with fiscal 2004 as the target date for achievement.

*2. COD (Chemical Oxygen Demand): This is an indicator of water pollution by organic substances and is the amount of oxygen consumed in the chemical oxidation of organic matter.

*3. Total nitrogen, total phosphorous: These are water pollution indicators related to the maintenance of the biologic conditions in rivers, lakes and seas.

■ PRTR*1 (Pollutant Release and Transfer Register) System

The UBE Group manages to reduce discharges of chemical substances from its facilities into the environment in recognizing the importance of chemical management.

In addition to 354 substances designated under the PRTR law, the chemical industry controls a total of 480 substances which have voluntarily been added by the Japan Chemical Industries Association under Responsible Care activities. Of these, 75 substances are handled by the UBE Group, and 57 by UBE. For the substances in the PRTR list, UBE Group handles 43 substances, and UBE, 30.

Total emissions decreased by 16% from fiscal 2002. For emission of each substance, we endeavored to reduce it by installing and operating the exhaust gas treatment systems and improving production processes, such as a closed system adoption and alternative solvent usage.

<UBE Group Data on PRTR Substances> (Unit: t)

	Total Handling Volume (Volume consumed/produced)	Emission into atmosphere	Emission into public waterway	Emission into soil	Total emission	Emission ratio compared with fiscal 2002	Transfer volume*
PRTR Law Basis	436,644	383.6	75.8	0.2	459.6	–16%	1,024.0
JCIA Basis	1,986,947	1,663.8	193.3	0.3	1,857.4	–13%	1,346.0

*Transfer volume: volume treated externally as waste

Individual Emission Volume

No. shown by law	Substance	CAS No.	Handling volume (t)	Emission volume			Total (t)	Total emission percentage increase/decrease from fiscal 2002	Transfer volume
				Atmosphere	Public waterways	Soil			
227	Toluene	108-88-3	781	195.4	8.5	0.0	203.8	–15%	157
61	ε-Caprolactam	105-60-2	227,337	0.0	54.8	0.0	54.8	–18%	0
63	Xylene	*	167	50.0	0.2	0.0	50.3	–17%	27
299	Benzene	71-43-2	96,531	37.7	0.6	0.0	38.3	–41%	0
268	1,3-Butadiene	106-99-0	95,908	36.2	0.0	0.0	36.2	–25%	0
102	Vinyl acetate	108-05-4	2,138	21.1	0.0	0.0	21.1	17%	0
40	Ethylbenzene	100-41-4	20	19.9	0.0	0.0	19.9	–15%	0
85	Chlorodifluoromethane (HCFC-22)	75-45-6	13	13.0	0.0	0.0	13.0	242%	0
304	Boron and its compounds	*	56	0.2	7.0	0.0	7.2	–15%	1
224	1,3,5,-Trimethylbenzene	108-67-8	6	5.8	0.0	0.0	5.8	23%	0
1	Water-soluble compounds of zinc	*	3	0.0	2.5	0.2	2.7	New	0
145	Dichloromethane	75-09-2	40	2.4	0.0	0.0	2.4	—	9
179	Dioxins	*	—	238	7	0	244	–52%	15

CAS No: Chemical substance registry No. issued by the Chemical Abstract Service
*isomer mixture
Unit of dioxins: mg-TEQ/year

PCB (Polychlorinated biphenyl)

The UBE Group uses and stores transformer, condensers and fluorescent lighting stabilizers contained PCB in its factories properly, according to the Law Concerning Special Measures against PCB waste. We plan, up to July 2018, to appropriately store and treat PCBs.

Message from an Employee

Chiba Petrochemical Factory, Environment and Safety and Quality Assurance Group Leader

Shigeru Goto

About Controlling Air Pollution

At the Chiba Petrochemical Factory, since a large volume of benzene and 1,3-butadiene are emitted, we have managed to reduce the emission since fiscal 1996.

In the beginning, we carried out countermeasures to strengthen our waste recovery capability at facilities, but we were not satisfied with the results. We decided to employ an alternative substance from benzene, and to burn the exhaust gas containing butadiene, and we completed this countermeasure in 2003.

We will continue to take measures to reduce other chemical substance emissions and manage to acquire the trust of the regional communities.

GLOSSARY

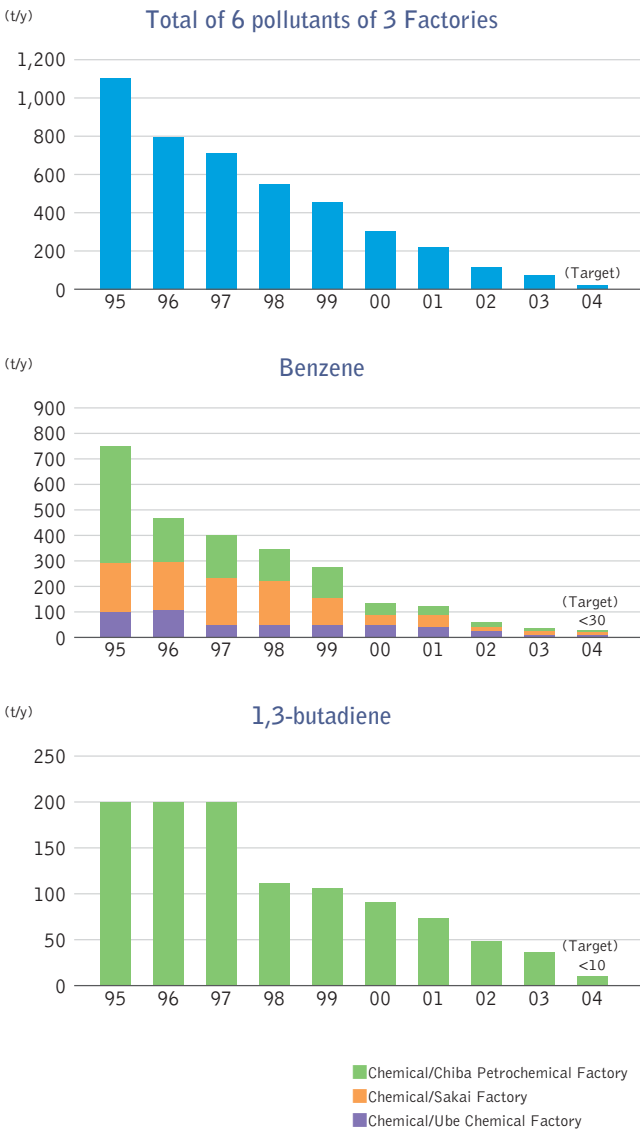
*1 PRTR: The PRTR system aims to track and identify the quantity of chemical substances that are discharged into the environment or transferred to an external location in the form of waste by plants and other facilities in the course of their business activities, and seeks to control and reduce the impact on the environment through the appropriate use and control of chemical substances. The contents of the register are reported to the Government and other official bodies. Based on the 1999 Law Concerning Reporting, etc., of Releases to the Environment of Specific Chemical Substances and Promoting Improvements in their Management (also known as the Chemical Substance Management Promotion Law, or "PRTR Law"), businesses with 21 employees or more handling any of the 354 class 1 special chemical substances (one ton or more a year, or half a ton or more a year if carcinogenic) must report the amount of wastes discharged or transferred from their business premises.

■ Controlling Noxious Air Pollutants

In consideration of their usage volumes and potential harm, the chemical industry designated 12 harmful air pollutants as subject to voluntary controls among a number of harmful air pollutants, and has promoted reduction of their emissions. From 1997, the industry worked on the 1st Voluntary Control Plan, which used fiscal 1995 as the base year, following this up in 2001 with the 2nd Voluntary Control Plan, which used fiscal 1999 as the base year, in an effort to reduce emissions still further. Fiscal 2003 was the final fiscal year of the 2nd Voluntary Control Plan.

Under the 1st Voluntary Control Plan, UBE succeeded in reducing emissions by 59% (compared to 1995), and under the 2nd Voluntary Control Plan cut emissions by 83% (compared to 1999). The combined reduction ratio of emissions for the 1st and 2nd Voluntary Control Plans was 93%. UBE uses 6 of the 12 substances subject to voluntary controls, and is working to further reduce emissions of these. The 6 substances are: benzene, 1,3-butadiene and acrylonitrile, which are raw materials for synthesis, and 1,2-dichloroethane, chloroform and dichloromethane, which are solvents. Benzene is also used as a solvent. Benzene and 1,3-butadiene are particularly harmful, and UBE is doing all it can to make deep cuts in emissions of these. By 2003, emission volumes of benzene and 1,3-butadiene were reduced by 95% and 82% respectively from fiscal 1995. (The other 6 substances subject to voluntary controls are: acetaldehyde, ethylene oxide, vinyl chloride monomer, tetrachloroethylene, trichloroethylene and formaldehyde.)

＜Emissions of Airborne Chemical Pollutants＞



Industrial Waste Measures

Cement factories are the ultimate resource recycling facilities

Wastes can be used as a part of raw materials of cement (as an alternative to raw materials; material recycling) and as a fuel (as a thermal recycling) in cement making. A wide variety of wastes can be used in this way.

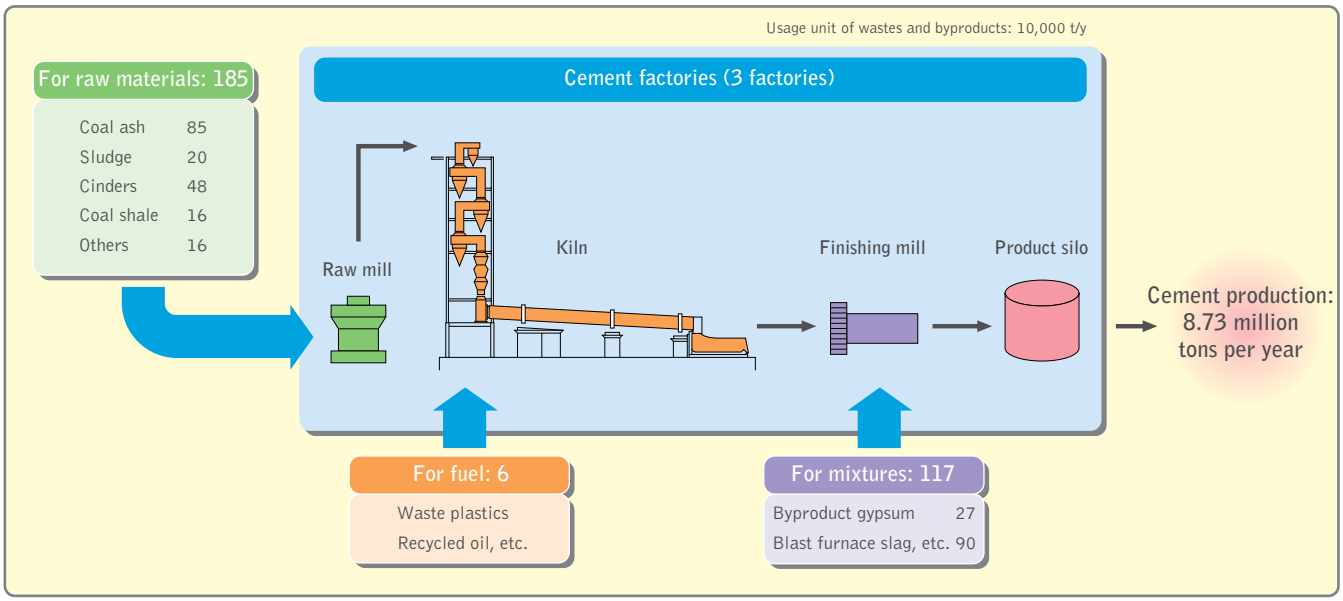
Ash produced by incineration can also be used as an alternative to clay, a component of cement, eliminating the need for final disposal sites for incineration ash. Another advantage is that the high calcining temperature of the cement kilns (1,450°C) burns and destroys substances that cannot be eliminated by ordinary incinerators. The kilns also offer a large waste processing capacity.

UBE's 3 cement factories actively accept and use various waste substances such as slag, coal ash, refuse incineration ash, sludge, waste fluids, and waste plastics from UBE and companies both inside and outside the Group.

In fiscal 2003, our cement factories made effective use of around 3.1 million tons of wastes and byproducts. Of this, about 2.9 million tons was sourced from outside UBE Group. This is one way UBE contributes to the formation of a recycling-conscious society.

In the future, treatment capabilities will be further upgraded to enable the use of more difficult high chlorine waste materials. The Kanda Cement Facility has plans to introduce chlorine bypass equipment in fiscal 2004 with several times the chlorine extracting capabilities as past equipment.

<Waste and Byproduct Utilization in Cement Factories>



<Types of Waste Products Utilized>

Our 3 cement factories recycle large volumes of the following highly diverse wastes and byproducts:

Industry	Type of industrial waste
Local government	Sewage, public refuse incineration ash, water supply sludge, RDF*1
Steel, non-ferrous metal	Slag, electric furnace slag, gypsum
Electric power	Coal ash, gypsum
Chemicals, paper pulp	Waste plastics, hydraulic cake, gypsum, activated sludge, paper sludge
Petroleum, petrochemicals	Waste sludge, waste fluids, waste oil
Construction, building materials	Sludge residues, waste board, controlled soil, waste tatami ats, waste timber
Food and beverages	Sochu lees, organic sludge
Food and beverages	Waste silica sand, paint residue, waste grinding sand, discarded tires, waste plastics
Others	Waste pachinko panels, bone meal

Message from an Employee

Construction Materials Company
General Manager of
Resources Recycling Dept.

Masanori Hirai

Utilization of waste materials in cement

The cement manufacturing process is very well suited to the utilization of waste products. With the growing shortage of landfill space and the environmental restrictions on handling of such products as dioxins, demand for repurposing of waste products into cement materials continues to grow.

In the future, we plan to increase the use of waste products in cement manufacturing, lowering production costs without affecting the quality of cement or the environment, and in this way contribute to the preservation of the global environment.

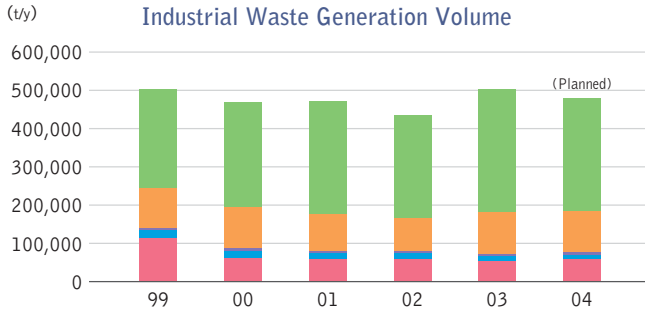
GLOSSARY

*1 RDF: Refuse Derived Fuel

● Industrial Waste Reduction

◆ Industrial Waste Generation Volume

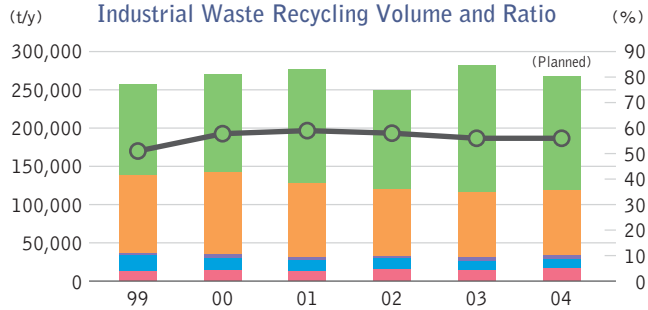
Industrial waste is generated by many sources. Chemical-related factories and facilities produce sludge, waste oil and waste plastic; on-site power generating and ammonia plants produce coal ash; machinery factories produce inorganic waste, etc. Although efforts are under way to control such waste and increase recycling, due to the demolition of facilities and the increase in machine production, inorganic waste related to these activities increased this year.



◆ Recycled Industrial Waste Volume

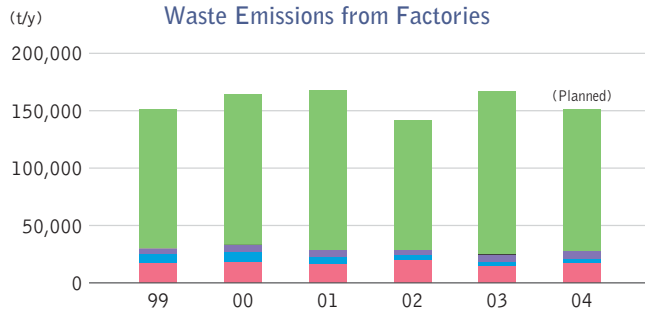
Most of the waste produced by the UBE Group is recycled within the Group, while some waste is recycled on a cooperative basis with companies outside the Group. In fiscal 2003, recycling volume increased over the previous fiscal year, although the overall recycling ratio decreased by 2%.

The line graph below shows the recycling ratio of the UBE Group. In fiscal 2003, the recycling ratio was 56% (UBE, 65%).



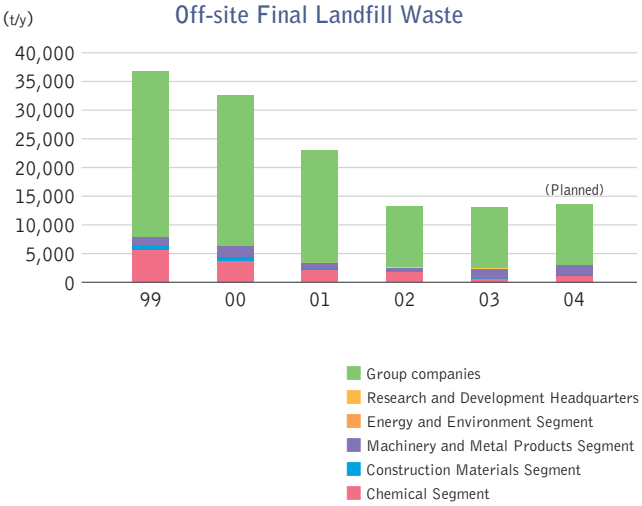
◆ Industrial Waste Emissions from Factories

Waste emissions from UBE decreased due to internal recycling, although for the Group, waste increased due to increased amounts of inorganic waste.



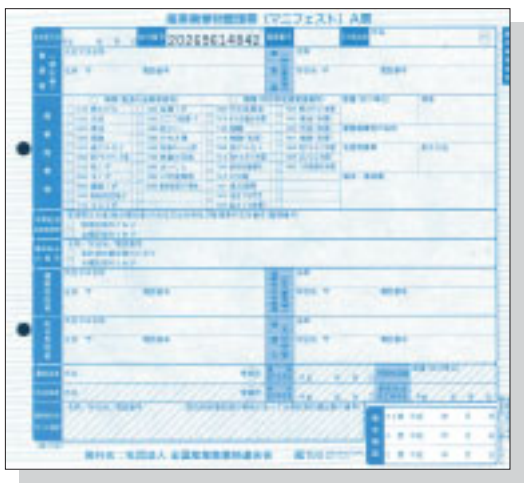
◆ Off-site Final Landfill Volume

UBE cement factories accept large quantities of wastes from both inside and outside the Group, utilizing these as raw materials and fuel and contributing to recycling. In this way, our cement factories continue to achieve zero emissions. As a result of improving our recycling ratio and increasing volume reductions, overall UBE Group reduced final off-site disposal volumes by more than 2% compared to fiscal 2002. As for UBE, we marked a decrease of 73% compared with fiscal 1990.



◆ Industrial Waste Management

In compliance with the waste treatment and clean-up laws, our industrial wastes are stringently controlled to ensure they are treated and disposed of appropriately. When contracting waste treatment or disposal to outside companies, we use a waste manifest system to control transfer volumes and destinations, and the wastes are monitored until final disposal.



Measures for Environmental Preservation

History

	Organization & Environmental Activities (UBE)	Environment-Related Products and Technology	Domestic and World Trends
1949	○Ube System*1 started		
1951	○Dust Countermeasures Section established in Ube City		
1971	●Environment Management Section established in each factory		●Environment Agency established
1973	●Environment Management Department established in head office (currently "ES Department") ●Energy Savings Committee established		●Special Environment Preservation Law for Seto Inland Sea enacted
1992	●UBE ES Principles instituted		●UN Conference on the Environment and Development (Earth Summit) held
1993			●Basic Environment Law enacted
1994	●Environment-related business started ●ES audits started		●UN Framework Convention on Climate Change took effect
1995	●Joined Japan Responsible Care Council (JRCC), UBE's Voluntary ES Plan formulated	●Demonstration plant for in-situ vitrification completed ●Demonstration plant for manufacture of RDF from waste plastics completed	●JRCC established ●Container and Packaging Recycling Law enacted
1996	●UBE's ES Principles revised ●Environment and Engineering Division formed	●Sludge puffing demonstration plant completed	
1997	○Ube City awarded UNEP Global 500 Prize ●1st RC report issued ●Participated in 1st RC regional meetings in Chiba, Yamaguchi, and Sakai-Senboku	●SWM demonstration plant completed	●Third Convention on Climate Change (COP3) held
1998	●Resource Energy Measures Study Committee established ●Personal Action Guidelines instituted		●Law for Promotion Measures to Tackle Global Warming enacted
1999	●Isa Cement Factory received ISO 14001 certification. Subsequently, all plants awarded ISO 14001 certifications ●Participated in 2nd RC regional meeting in Chiba	●Handover of RDF manufacturing plant to Mine City ●EUP demonstration plant completed ●Test operation of press and roll packaging plant completed	●Chemical Substance Management Promotion Law (PRTR Law) enacted ●Law Concerning Special Measures Against Dioxins enacted ●Guidelines on Environmental Accounting announced
2000	●Environmental accounting introduced ●2010 Environment Preservation Project initiated ●Participated in 2nd RC regional meetings in Sakai-Senboku and Yamaguchi	●Commercial EUP operations begun	●Basic Law to Promote the Formation of a Recycling-Conscious Society enacted
2001	●Global Warming Prevention Promotion Committee formed ●Participated in 3rd RC community dialogue in Chiba	●Completion of facilities to produce raw materials from refuse incineration ash at Yamaguchi EcoTech	
2002	●Participated in 3rd RC community dialogue in Sakai-Senboku and Yamaguchi	●2nd EUP line expanded	●Kyoto Protocol ratified ●Soil Pollution Prevention Law enacted
2003	●Participated in 4th RC community dialogue in Chiba ●Personal Action Guidelines revised	●Test operation of waste wood pulverizing boiler	●UN GHS published
2004	●Participated in the 1st RC community dialogue in Ube/Onoda area ●Participated in 4th RC community dialogue in Sakai-Senboku		●POPs Treaty ratified

GLOSSARY

*1 Ube System: This is the common name for a system that was independently established by Ube City as a measure to prevent environmental pollution, whereby the public, academic specialists, administrative agencies and companies have cooperated in carrying out voluntary activities on the basis of information disclosure. While the Ube System already has a history of more than 50 years, new viewpoints are still being incorporated in addressing environmental and safety issues.

ISO Certification and Other Approvals

The UBE Group energetically acquires ISO 14001 and ISO 9000-series certifications, which represent international standards of environmental management and quality assurance respectively. In the high-pressure gas, boiler and other fields, UBE has obtained certification for its inspectors and promotes voluntary safety standards.

ISO 14001 (Environment Management System) Certification

Certification Year	Ube Industries	Group Companies
1998		●Fukushima Ltd.
1999	●Cement Production Department Isa Cement Factory Ube Cement Factory Kanda Cement Factory ●Chiba Petrochemical Factory ●Machinery and Engineering Works (Currently known as Ube Machinery Co., Ltd.) ●Corporate Research and Development Division Polymer Laboratories (Chiba, Ube) Ube Research Laboratory	●Ube-Mitsubishi Cement Research Institute Corporation, Ube Center ●UBE Scientific Analysis Center
2000	●Sakai Factory ●Ube Chemical Factory ●Coal Center ●Power Division	●Ube Cycon Ltd. (currently known as UMG ABS Ltd.) ●Supermix Concrete Pte Ltd. (Singapore) ●U-Mold Co., Ltd. ●Thai Synthetic Rubbers Co., Ltd. (Thailand) ●Ryukyu Cement Co., Ltd. (Yabe Plant)
2001	●Environment Business Division ●Nishioki Factory	●Ube Ammonia Industry Ltd. ●Thai Caprolactam Public Co., td. ●Ube-Nitto Kasei Co., Ltd. (Fukushima Factory)
2002		●Meiwa Kasei Industries Ltd.
2003		●Ube-Nitto Kasei Co., Ltd. (Gifu Factory)
2004		●Hagimori Industries, Ltd. ●UBE Film Ltd. (Head Office and Factory)

ISO 9000-series (Quality Management System) Certification

Certification Year	Ube Industries	Group Companies
1992		●Ube Cycon Ltd. (Currently known as UMG ABS Ltd.)
1994	●Ube Chemical Factory ●Chiba Petrochemical Factory	●Supermix Concrete Pte Ltd. (Singapore)
1995	●Isa Cement Plant	
1996	●Machinery and Engineering Works ●Kanda Cement Factory ●Sakai Factory	
1997	●Ube Cement Factory	●Ube-Nitto Kasei Co., Ltd. (Gifu Factory) ●Fukushima Ltd.
1998		●U-Mold Co., Ltd.
1999		●Ube Information Systems Inc. ●Ube-Nitto Kasei Co., Ltd. (Fukushima Factory) ●Meiwa Kasei Industries, Ltd. ●Ryukyu Cement Co., Ltd. (Yabe Plant) ●Ube Steel Co., Ltd.
2000	●Nishioki Factory	●Ube Electronics, Ltd. (Currently known as UEL)
2001		●Yamaishi Metal Co., Ltd. ●Ube Industries Consulting, Ltd. ●Ube Material Industries, Ltd. (Chiba Plant) ●Ube Scientific Analysis Center Co., Ltd.
2002		●Hagimori Industries, Ltd. ●Shin Kasado Dockyard Co., Ltd. ●Ube Shipping and Logistics Ltd. ●Ube Techno Eng. Co., Ltd. ●Ube Material Industries, Ltd. (Ube plant) ●Thai Caprolactam Public Co., Ltd. (Thailand) ●Ube Nylon (Thailand) Ltd. ●Thai Synthetic Rubbers Co., Ltd. (Thailand) ●Ube Chemical Europe S.A. (Spain)

Where a factory has obtained multiple certifications, only the year of the first certification is specified.

Acquisition of Certification for Workers Engaged in High-pressure Gas Safety and Completion Inspections

Certification Year	Plant Certified	Content of certification
1999	●Sakai Factory	Certification of workers engaged in high-pressure gas safety and completion inspections (High-Pressure Gas Safety Law)
2001	●Nishioki Factory	
2003	●Chiba Petrochemical Factory	
1997	●Nishioki Factory	Certification for inspections when operating boilers and class 1 pressure vessels are operated (Industrial Safety and Health Law)
1997	●Chiba Petrochemical Factory	
1998	●Sakai Factory	

High Pressure Gas Safety & Total Inspection Certified Inspector (high pressure gas safety law)
Total Inspection Certified Inspector: Inspection of modifications to high pressure gas equipment by the Prefectural Governor (completed inspection), with certification of full self-inspection qualifications conferred by the Minister of Economy, Trade and Industry upon an individual of the Company.
Operating Inspection: Involves the inspection of boiler operation and valve status by the Director of Labor Standards of the local Labor Jurisdiction Office. This system was designed to allow for inspections during operations.

Occupational Safety and Health

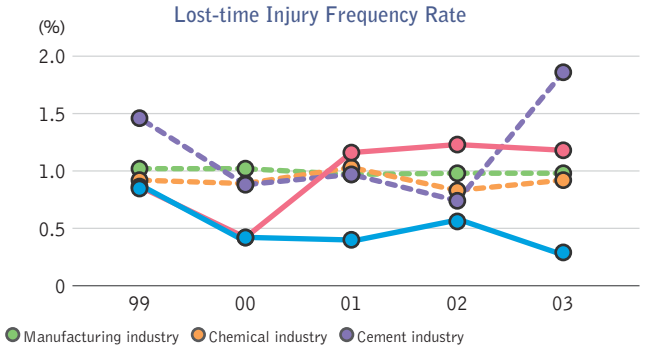
Under the Environmental and Safety Principle: "Respecting people means putting safety first in all areas," the UBE Group promotes safety, health and plant safety measures at all offices and facilities.

Occupational Accident Prevention Activities

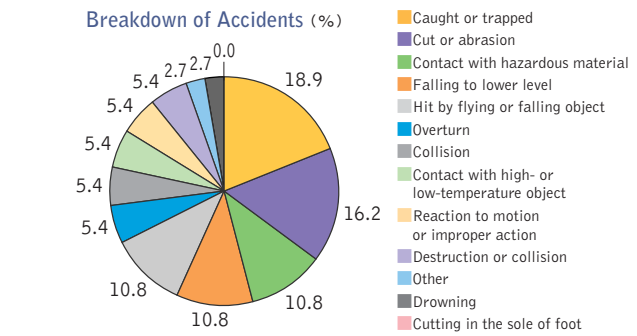
- We implement various safety and disaster prevention activities, including danger prediction training (so called KYT), total productive maintenance (TPM)*1, "hiyari-hat" activities, "identifying and naming," accident case study, and risk assessment in an effort to prevent disasters and accidents.
- Through a Group-wide safety drive which gathered ideas and opinions from all employees the Company developed a poster "Insuring Safety, Reducing Accidents: Five 'do's' and five 'don'ts'."
- The OSHMS*2 is being used as part of the accident reduction campaign.
- The UBE Group holds an annual Group Safety and Health Conference where awards are presented and employees and affiliated companies have an opportunity to increase their awareness of safety issues.

UBE Group safety and health conference

UBE Group safety poster



Notes: (1) Data on lost-time injury frequency rates for the manufacturing, chemical, and cement industries are based on Ministry of Health, Labour, and Welfare data.
(2) Frequency rate = number of lost-time injuries/million working hours



Prior Chemical Substance Safety Assessments

- Based on procedures designated in safety assessment standards, we also perform prior chemical substance safety assessments on chemical substances that we have developed or plan to start handling. In fiscal 2003, the UBE Group performed 23 prior chemical substance safety assessments.

Message from an Employee

Health Care & Support Office, Health Care & Support Center, Registered Dietitian

Rieko Yamagami

In-Company Health Information Dissemination and Health Education

There is a flood of information on health in magazines and on TV, with opinions all around. We organize health and nutrition-related information so that it is easy to understand, and place it on the homepage of the Health Care & Support Center, and provide it on a regular basis to the Safety and Health Committee.

However, health information is not always easy to use, even if you understand it. For this reason we offer health improvement classes and other health education, and try to be sensitive to the needs of the individual while providing specific advice and support on matters of concern. Although there is often resistance to guidance in the beginning, we have been surprised many times to see good results in the end.

GLOSSARY

*1 TPM Activities: the abbreviation of Total Productive Maintenance, a company-wide effort to maximize productivity through innovative productivity strategies.
*2 OSHMS: Occupational Safety & Health Management System

Health Care & Support

The Health Care & Support Center supports employee health through activities based on occupational safety and Health Law regulations and UBE Industries' own principles of promoting environment and safety.

Major initiatives in Fiscal 2003 are outlined below.

Enactment and Implementation of various regulations

- Enactment and implementation in July, 2003, of comprehensive "Health Care & Support Regulation," followed in October, 2003, by implementation of the subordinate "Health Care & Support Promotion Committee Regulation," "Health Information Handling Rule" and others.
- Company-wide unification of health check-up points
- Establishment of several committees including the "Health Care & Support Promotion Committee."

Restructuring the Health Care & Support System in the Ube District

Improvement of infrastructure of the mental health response system

With the continuing stagnation of the economy, and the changes in the workplace brought about by advances in globalization and the impact of IT systems, more workers are suffering from stress and mental fatigue. Mental health is becoming a major social issue, and companies are likewise moving to strengthen mental health policy.

Against this backdrop UBE launched a new mental health response system in the Ube District in October 2003. Specifically, the program (1) established a program for education and training; (2) started a consultation service open to the public; and (3) increased Health Care & Support staff and use of company intranet information and in-house magazines as part of a campaign to heighten awareness.

At present emphasis is on education and training at the management level, and a two-year campaign to train all staff begins in 2003. Since the training program began the number of individuals seeking mental health care advice for themselves or others in their sections has been increasing.

Comments upon completion of management mental health training

- "I had the sense that I had to solve all the problems in the section myself, and I realized that my own insistence and anger were in fact counterproductive."
- I recognized the importance of protecting the privacy of everyone involved, and also the need to listen from the standpoint of the person you are speaking with.
- I learned the importance of paying attention to signs—greetings, choice of words, ways of speaking out and communicating, the complexion of a staff member's face, or changes in their daily habits.

Strengthening of Lifestyle Disease Countermeasures

- Approximately 100 UBE employees with multiple physical-examination findings, including obesity, high blood pressure, hyperlipemia and hyperglycemia, that are said to contribute to the risk of brain disease or heart disease attended six-month "Health Up" classes held in the Ube district.

  The educational approach combined group learning and individual guidance, in addition to family participation. Improvements to their conditions were observed at the end of the classes.
- A lifestyle disease seminar addressing hyperlipemia was held during the autumn Occupational Health Week, with some 300 participants in attendance.
- Information on self-supervised management of health and nutrition is being posted on the Group homepage and provided to the Safety and Health Committee on a monthly basis.

Comments from participants in "Health-up" classes

＜Opinions of Participants＞

- It was commented that being selected for this program was a death knell, and I was afraid at first. However, being in the class gave me the opportunity to reconsider my health situation. I believe that a sense of responsibility for my own health has helped me achieve my goals. I now set goals that are not impossible, and I am achieving them.
- This was a good opportunity for me to rethink my own health situation. I am happy with not achieving 100% success immediately; instead, I am setting goals that improve me up step by step.
- I have a new awareness of self-management. If I do not remain consistent in my goals, I don't seek to place responsibility elsewhere. I see the importance of viewing it my own problem.

＜Opinions of Family Members＞

- Today my husband tells me about his situation at work, and I'm thankful for that.
- Being in this program I started thinking about health management for the first time.
- It's hard to listen to what your family/relatives are telling you; it helps to have guidance from someone with special training.
- This was a good opportunity to think about health and everyday living.

Promotion of smoking/non-smoking areas

Yamaguchi prefecture is signing up participants in the certification system for smoking/non-smoking areas. In fiscal 2003, five locations joined the program.

Mental health studies

Education and Employment

Fostering of Staff Education

The UBE Group has a guideline for fostering all employees as professionals. Based on a program for their chosen career path, employees are educated through OJT*1 program, selected for competitive intensive seminars at different levels, and given the opportunity to take extension courses.

Professionally trained employees can of course work efficiently with specialized skills for the Company, but that alone is not enough. They must also do their part to win the trust of society.

For instance, at UBE in-house entrepreneurs (professionals of business operations) are selected for a program that takes such prospects early in their careers and trains them to be business leaders. These individuals are chosen for: (1) Ownership (leadership ability); (2) Influence (presence); (3) Creativity; and (4) Fairness (ethical vision and respect for the law in their actions.) After selection for the program, the candidates are tested not only in their accountability, but also in their development as leaders with an awareness corporate responsibility to society.

Environment and Safety Education

Environment and safety are two topics covered in general staff education. Naturally, employees are required to gain public certification in the operation of equipment, etc., used in their area of specialization. At UBE education involves both general knowledge and practical learning as below:

- New employees: Responsible Care, Basics of Safety, Health Care & Support, etc.
- Environment and Safety Management level staff in plant: correspondence course on Safety and Health
- Maintenance persons for High Pressure Gas: held technical exchange meeting to give mutual presentations
- All UBE employees: RC education and detailed explanation of reports for RC report meetings
- Elective: OSHMS internal auditor training
- UBE Group persons in charge of Environment and Safety: training in explanation of revisions to laws; training in policy discussion
- Directors: Environment and safety topics affecting the Company significantly

Measures for Employment of the Physically Challenged

UBE is working proactively to increase hiring opportunities for physically challenged individuals. In 1991, in Yamaguchi prefecture, it established a special subsidiary, Libertas Ube, Ltd., to expand the number of jobs in the printing industry for disabled persons.

To further this endeavor, the Company entered the cleaning industry as a way to create jobs for the intellectually challenged, and by 2003 it had increased its overall hiring in this area over 1.8% (the level required by law) to 1.94%. Libertas Ube, Ltd. will continue to build operations and create job opportunities for the disadvantaged.


障害者の雇用支援

「重度」でも職場で活躍

February 27, 2004 Yomiuri Newspaper, evening edition

A special subsidiary, where two-thirds of the employees are physically disadvantaged

Libertas Ube, Ltd., President and CEO
Shinjiro Arita

"Being disadvantaged is not something special; it is just the way you are. And being disadvantaged is not a hindrance to developing your talents." With these basic precepts in mind Libertas is pursuing a corporate philosophy of "bringing assets of endearing value to society through business." Being disadvantaged means simply that; it is not something that sets one apart from the rest. Discrimination against handicaps and a society that is difficult for disadvantaged individuals to live in are what make disadvantaged people unhappy. At this company we put two people on a team and ask them to handle two people's workload, with each individual helping the other to compensate for their disability. Although we have made many modifications to our facilities to accommodate the needs of disadvantaged employees, our most important realization is our "barrier-free open heart" environment, where any one can seek help when they need it. It is our hope that this philosophy will someday spread beyond our company and throughout society as a whole.

GLOSSARY

*1 OJT: Abbreviation for "On the job training," in which candidates gain career knowledge, skills and technical abilities while continuing with their regular work responsibilities.

Regional Cooperation and Communications

UBE Group undertakes various programs and participates in local activities to promote better understanding of its operations in local communities. It also publishes and distributes an annual Responsible Care Report, creating further opportunities for dialog with local citizens.

Facility Tours

UBE Group hosts tours of its facilities for students at nearby schools and groups from all types of organizations in order to promote understanding of its operations. Families of employees are also welcome to visit and learn about the places where their parents work.

Responsible Care Community Dialogue Meetings

The Japan Responsible Care Council sponsors RC Regional Meetings in industrial complexes. UBE participates in these events, including attending the 4th Sakai-Senboku Community Dialogue Meeting.

UBE also participated in the Ube/Onoda District Dialogue Meeting of council member companies. Details of topics discussed there are given in the following pages.

Chemistry Experimentation Lab

Every year, as part of the "Junior Science Class" curriculum, local elementary and middle school students are invited to the Ube Research Laboratory to experience the fun of chemistry.

Corporate Philanthropy

UBE Science Foundation: The Ube Industries Scientific Research Foundation was established in 1959 from an endowment by the first chairman of Ube Industries. Since then it has been providing financial support and funding to researchers and scientific research facilities.

The Watanabe Memorial Culture Association: This organization supports cultural activities and events held at the Watanabe Memorial Center, which was dedicated after the passing of UBE's founder.

Support for the Exhibition of Modern Japanese Sculpture: UBE supports the bi-annual Exhibition of Modern Japanese Sculpture, and has been supporting sculpting with funding for prizes and the purchase of winning works for years prior to the initiation of the regular exhibition. Education of artists and beautification of the local landscape are further accomplishments of these activities.

Participation in other regional social activities

UBE contributes in many other ways to the local community, through donations of time and effort to such things as local fireworks displays, flower-planting as a volunteer activity, street-cleaning collections, international environmental studies exchange student hosting and experiences in forestry operations.

Topics

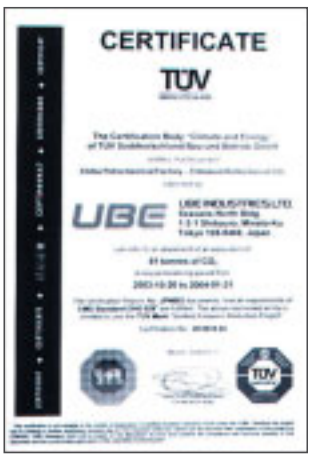
Holding of Responsible Care (RC) Dialogue Meeting

On February 14, 2004, UBE and four members of the Ube/Onoda District RC Council (KYOWA HAKKO KOGYO, Co., Ltd., Central Glass CO., Ltd., Nissan Chemical Co., Ltd., UMG ABS Co., Ltd.) held a RC dialogue meeting with Ube and Onoda Environmental NGOs, consumer groups and residents of neighborhoods near the factories as one component of their RC activities. The meeting, entitled "Meeting to Discuss Pressing Environmental Issues with Chemical Enterprises," was held in the Ube Environment Club at the Ube Head Office in cooperation with the Ube City Office.

About 20 individuals from both the companies and NGOs participated and frank opinions were traded in a round-table discussion format. The meeting opened with a greeting, followed by an explanation of RC by JRCC and an outline of Council member facilities in the District, and then entered into open discussions.

Some of the questions asked by a local resident included "Aren't pollutants and bad odors being emitted by the facilities at night?" and "Though we eat locally caught fish, are the discharged water safety standards safe enough?" Participants said that discussions were worthwhile, and asked that further meetings continue in the future. It was also promised that opportunities to visit the member facilities would be provided.

Carbon Gas Credit from the METI (Emission Rights) for participation in credit transaction and experimental operations project



In April 2003, the Ministry of Economy, Trade and Industry selected the energy conservation project at the synthetic rubber plant at UBE's Chiba Petrochemical Factory as a candidate for the Carbon Gas Credit Certification for an experimental transfer facility. The program is one link in the Ministry's global warming countermeasures. In March 2004, "Carbon Gas Emissions Credit" certification was conferred on the factory.

Although this was a small-scale project for which a "small-scale" CDM*1 was awarded, the project has merit as a run through and study for full-scale procedures.

Although the credit earned (on carbon gas reduction volume) was for a very small 300 tons/year, the experience simulated the procedures necessary to obtain a certificate following implementation of international trade rules based on the Kyoto Protocol and will be a valuable reference in the future.

Atmospheric carbon gas reduction efforts with Yamaguchi University cooperative agreements on various research projects

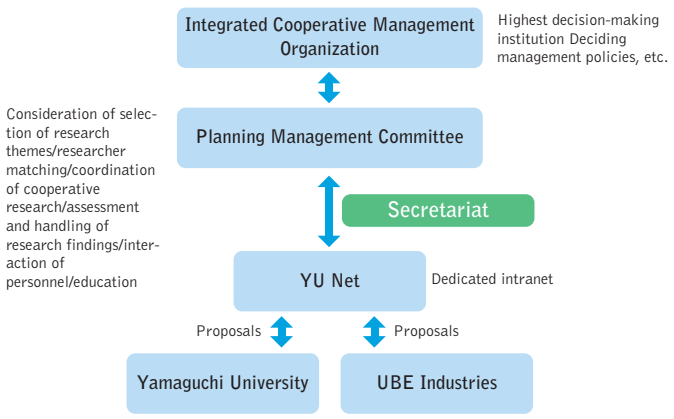
In April 2004, UBE and Yamaguchi University signed an agreement on a comprehensive cooperative research program to expand the research capabilities of both parties and benefit not only science and industry but also society throughout the region.

The agreement on cooperative research is for medium and long-term projects dealing with environmental issues, in particular carbon gas reduction, and will bring together the University's Environment and Symbiosis Department, on the one hand, with UBE's C1 Chemistry and Waste Recycling technology on the other. A short-term theme will be the continuation of cooperative efforts to develop and improve fine chemicals and specialty chemicals.

Operations will be led by representatives of both the University and the Division in the form of a cooperative management team which will make all high-level decisions, and under which an operations proposal committee, comprised of researchers from both parties, will select research topics, provide technical advice, coordinate researchers and evaluate and manage results.

An intranet, referred to as the "YU (Yamaguchi-Ube) Net," will be created as a tool to allow the exchange of information between the groups. Utilizing YU Net widely, we carry out further promotion of research and development.

Integrated Cooperative Management Organization



GLOSSARY

*1 CDM: Clean Development Mechanism. One example of a "Kyoto Mechanism," whereby credit gained for a carbon gas reduction achieved through a project in an advanced country is credited to a developing country.

Process Safety and Disaster Prevention

Safe operation of factories and facilities is a major concern not only of UBE employees but of local citizens, as well. The UBE Group is concerned from its highest ranks down to its most basic policies with operational and employee safety, and this concern is manifest not only in written procedures and directives but also in actual on-site emergency drills and safety patrols. UBE's employees receive different kinds of safety training that serves to build a culture of safety throughout the Group.

Safety Education

Through an overall education policy, immediately after joining the Company, new employees are taught the importance of and correct attitude toward the environment, safety and health, and practical training programs are implemented in each workplace. In addition, managers and executives are also taught about the regulations and laws applied.

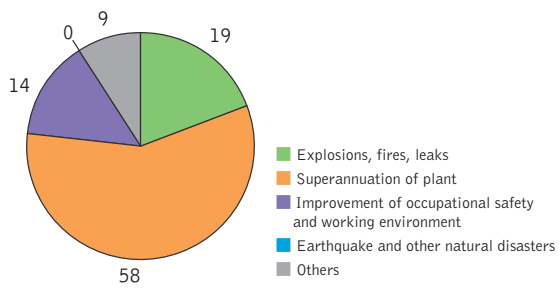
Prior Plant Safety Assessments

The methods stipulated in the in-house plant safety assessment standards are used when carrying out prior and post plant safety assessment on newly installed, additional or modified facility, and when establishing or amending related regulations. In fiscal 2003, the UBE Group carried out 16 assessments.

Disaster Prevention Spending

In fiscal 2003, the UBE Group spent ¥2.95 billion on safety and security measures. (¥3.15 billion in fiscal 2002.)

Breakdown of plant safety and disaster prevention measures (%)



Emergency Training

Every month, each office or facility carries out emergency training programs, mutual workplace diagnoses by safety supervisors, and mutual safety patrols with cooperating companies. These programs are reported on our website. We also send useful information to those who were unable to participate in training or patrols.

Moreover, in fiscal 2003, an emergency drill based on a hypothetical major earthquake was held, involving not only each factory but all offices including Tokyo, Ube Headquarters, Ube Chemical Factory and local government agencies. The mock emergency was announced throughout the Company and involved all employees below the level of the president.

All-companies emergency drill

Personnel with Environmental and Safety-related Qualifications

We encourage our employees to obtain legal qualifications for the safe operation and management of our workplaces.

Qualification Number of Qualified personnel	UBE Group Number of Qualified personnel (Persons) *
Pollution control manager and chief	507 (363)
Environment measurement expert	4 (3)
Working environment measurement expert	60 (56)
Health supervisor	204 (107)
Energy supervisor	198 (127)
Hazardous materials supervisor	3,955 (3,247)
Operations chief for work handling specified chemical substances	925 (605)
High-pressure gas production safety chief	1,082 (774)

* Parentheses refers to UBE

(As of April 2004)

Product Stewardship

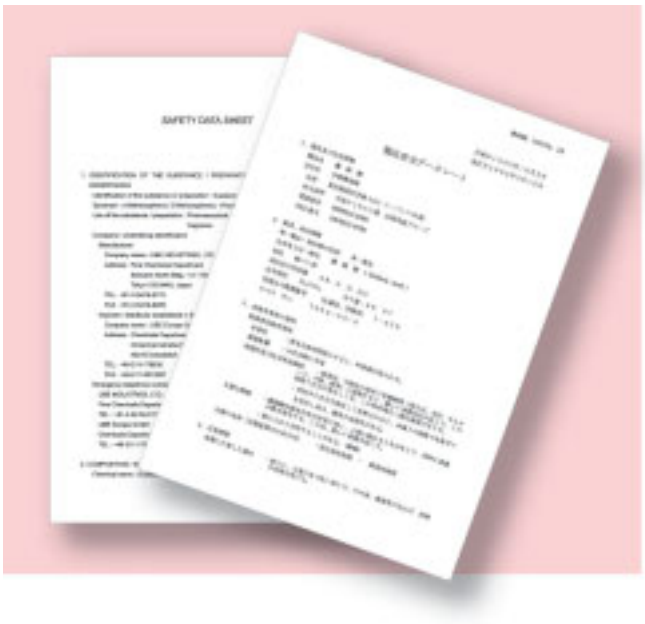
The UBE Group has established the Group Product Safety (PL[*1]) Committee to promote the safety and ensure the quality of all group products.

Company-wide safety system for product safety and activities supporting product safety

The Group Product Safety (PL) Committee, which is chaired by the president, discusses action plans, reports and product revisions as they relate to ongoing efforts to address product liability and improve product safety. In regards to specific products, the Committee discusses specific laws and standards relating to the safety of given products as stipulated by the Environment & Safety Department.

Material Safety Data Sheet (MSDS)[*2]

To ensure our chemical products are used safely, we prepare MSDS's, which we distribute to customers. In addition, we share the MSDS's throughout the Company through a database on our in-house Intranet. MSDS preparation standards and updating rules have been added to the UBE Group's internal regulations. We gather all kinds of information on chemical substances (including information on hazardous data and changes to the legal system) and update the MSDS's so that they always reflect current information. The information format of the MSDS conforms to the JIS system.



Labeling

Product containers are affixed with warning labels[*3] that indicate precautions necessary for safe handling. UBE is also actively implementing the "Container Emergency Card (label format)[*4]" labeling system in its product line-up. This system is promoted by the Japan Chemical Industries Association.

Message from an Employee

Environment and Safety Department
Masazumi Harada

Providing Accurate and Up-to-Date Product Safety information

Providing customers with technically superior products is of course very important, but the customer's ability to use the product safely and with confidence also affects the product quality for better or worse.

For this reason we do our utmost to provide our customers with the most accurate and up-to-date product information possible. In order to do this, it is vital that employees themselves have a high awareness of product safety.

Our products are used not only in Japan, but also around the world, so it is also important that we have precise knowledge of foreign rules and regulations. Likewise, we need to actively exchange pertinent information with overseas production facilities and sales liaisons.

GLOSSARY

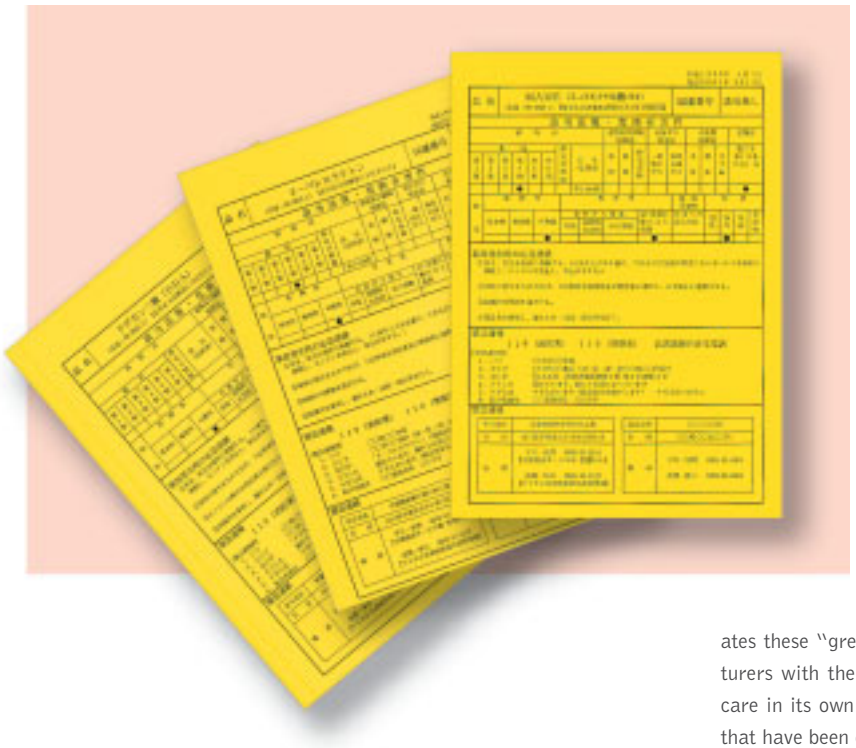
*1 PL: Product liability
*2 MSDS: The Material Safety Data Sheet, containing the product name, chemical and materials characteristics, applications, warnings and other information.
*3 Warning Label: Showing the product name, address of contact and other legally required information, as well as precautionary information on dangers and safe handling.
*4 Container Emergency Card (label format): A warning label with emergency contact information and UN chemical code number. Used when mixing shipments of different products or when shipping small orders where other information formats would be impractical.

Distribution Safety

The Distribution Subcommittee works under the direction of Product Safety Committee to implement plans throughout the year, cooperating with local distribution groups to prevent accidents and ensure improved product quality.

The Committee works as a unit with the Group companies and associated companies to ensure distribution safety. It does so through periodic checks of Yellow Cards*1 (emergency contact info cards), conveying and exchanging distribution information, conferring on accidents and initiating truck accident training drills, among other activities.

Participation in International Chemical Safety Management Initiative



UBE is actively involved in the International Safety Management Initiative on Chemicals (ICCA*2 HPV Initiative).

Safety information is being provided on UBE's high production volume (HPV) chemical products for evaluation of potential dangers.

As the leader of a consortium considering construction of a potassium soda facility, UBE will submit a project safety report to the OECD*3 International Evaluations Council before the end of the year. UBE is also participating voluntarily (as a member the Japan Chemical Industry Association) in a long-range research initiative sponsored by the ICCA on the affects of chemicals on people and the environment.

Responses to recent trends relating to chemical product safety

The Chemical Inspection Law was revised in April 2004, to address the influences of chemicals on life forms. In the EU, the RoHS Directive*4 will be enforced from July 2006, and the New Chemical Products (REACH*5) proposal is currently under discussion. The GHS*6 system, which aims to harmonize chemical product classifications and labeling, received approval from the UN in July 2003. The target year for implementation is set for 2008.

In this way major revisions to the laws and regulations affecting chemical products are taking place worldwide. UBE is doing its utmost to assist in the progress of these advanced initiatives, providing support through its position in the Japan Chemical Association, gathering and providing useful information, and participating in various regulatory activities.

Green Purchase*7

UBE Group supports the provisions of the Green Purchase Law by selecting ecologically friendly "eco-products" when purchasing such office supplies as writing implements, stationery and uniforms. This report is printed on 100% recycled paper, and the ink is soybean based.

Response to Customer "Green" Procurement

Today efforts are being made to reduce the use of harmful materials in all types of products, and this is particularly true in the electronics and electrical equipment manufacturing industry. UBE appreciates these "green" efforts and is doing its utmost to provide manufacturers with the correct materials for these products. UBE itself takes care in its own management of materials, applying company standards that have been established to improve its product sourcing and management of raw materials.

GLOSSARY

*1 Yellow Card: Emergency card which is a warning label used when transporting products, with emergency contact information, product characteristics and handling instructions.
*2 ICCA: International Council of Chemical Associations
*3 OECD: Organization for Economic Co-operation and Development
*4 RoHS Directive: Restrictions on electrical and electronic products
*5 REACH Proposal: Registration, Evaluation and Authorization of Chemicals
*6 GHS: Globally Harmonized System of Classification and Labeling of Chemicals, which is expected to impact the format of MSDS.
*7 Green Purchasing: the practice of basing purchase decisions not only on price and quality but also upon environmental impact, with preference given to items requiring minimum service and causing the least environmental burden.

Effective Use of Woody Biomass*1

Shifting from fossil fuels to earth-

Using woody biomass derived from forest products for fuel has the dual benefits of utilizing a renewable resource and reducing emissions of carbon dioxide, which is a major contributor to global warming. Unlike fossil fuels, which produce carbon dioxide, woody biomass takes up carbon dioxide from the air, so that burning it does not result in a net gain in the total atmospheric carbon dioxide. Hence, this fuel is regarded as being "gentle" on the environment.

Coal/woody biomass-mix power generating facilities

Commercial Operations at Isa Cement Factory Boiler

Woody biomass, including construction wood scrap materials and lumber by-products from suppliers in Yamaguchi prefecture and adjacent districts is now being collected and pulverized in the chipping machine at the Ube Cement factory. The chipped woody biomass is then being transported by special truck to Isa Cement Factory, where it is being used for fuel in the factory's generator boiler.

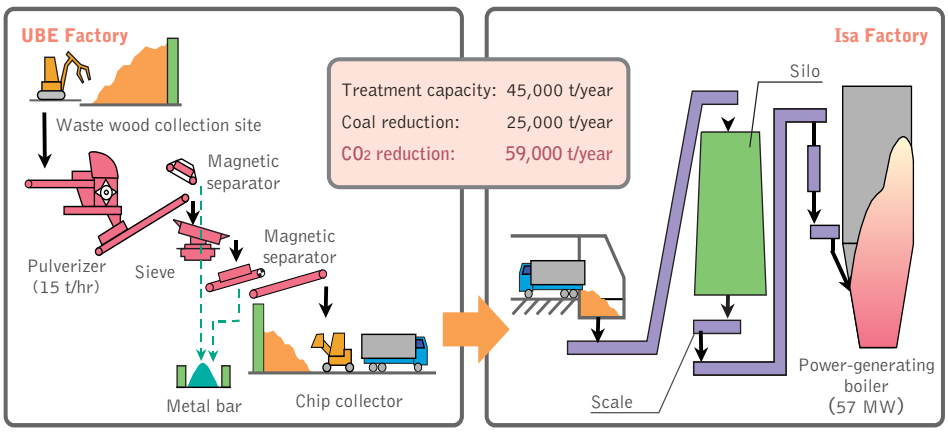
The system has the capacity to handle 45,000 tons of chipped woody biomass a year, which will provide a substitute for 20–25% of total fuel needs.

The Isa power-generating boiler is recycling-type fluidized bed boiler with 57MW of power generating capacity and is suitable for use with woody biomass as chip fuel. The use of woodchip biomass not only alleviates the waste of hitherto unused lumber by-products, but also helps to reduce emissions of carbon-dioxide gases by cutting usage of coal (a fossil fuel), thus contributing to the prevention of global warming.

The ash by-product from the biomass fuel incineration can also be used as a raw material in cement, further benefiting the recycling drive.

Equipment used in this system, including the wood pulverizer, the special transport truck and the boiler feeder, have been designated by the Ministry of Forestry for funding as components of special operations utilizing equipment designed for use with woody biomass in fiscal 2002.

<Flow of woody biomass fuel power generation operations>



Message from an Employee

Isa Cement Factory, Production Manager **Yoshiaki Ito**

Utilization of Waste Wood Chips for Boilers

Compared to coal fuel, waste wood fuel produces a lower ratio of ash, sulfur and nitrogen per unit of heat, and is therefore easier on the environment.

Use of wood chip biomass fuel in a generator boiler is a relatively new challenge. During the planning stages of the project we gave considerable thought to safety and fire prevention measures. We will need to educate our employees and drill in accident prevention as we continue to improve management of these operations and work for a better environment.

GLOSSARY

*1 Woody biomass: Sawdust and wood chips from lumber, cuttings from trees and scrap construction materials make up this organically derived energy source. As a renewable energy resource this fuel is one of the "New Energies."

friendly woody biomass for fuel

Historically, UBE has heavily dependent on fossil fuels, but today it is working on two projects with environment-friendly woody biomass.

Specifically, UBE is using wood chips in the commercial operations of its fluidized bed boiler at Isa Cement Factory, and developing woody biomass usage technology for application in pulverized coal-fired boilers for generating electricity and steam.

Pulverized wood chips

Development of applications for pulverized coal-fired boilers

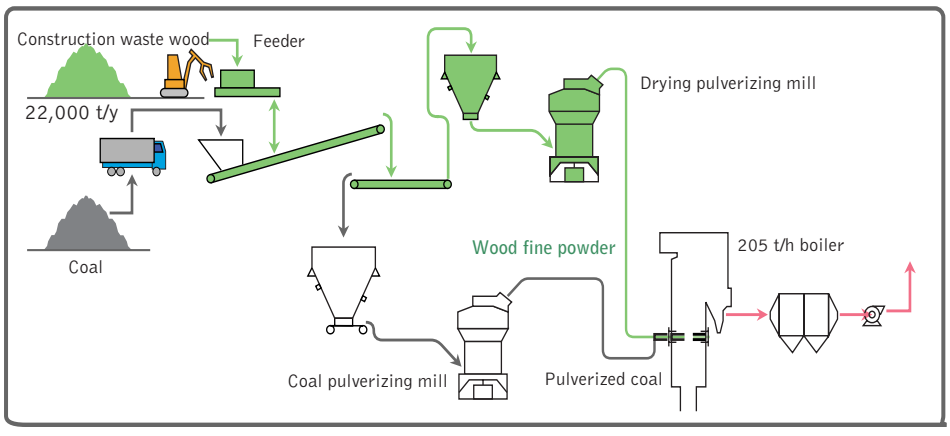
In 2002–2003, woody biomass from construction project waste (including demolition scrap and sawmill chips, etc.) was transported to the No. 2 power plant in Ube district, where it was pulverized and used in mixtures with coal for power plant fuel. In experiments, up to approximately 12% of the total fuel mix was woody biomass.

The total volume of woody biomass used was 730 t, and the accumulated time of mixed-fuel burning was 490 hours. The experiments provided useful answers to technical issues.

The No. 2 power plant consumes 205 t/h of coal. For the experiment, one of the coal mills had to be switched to a wood pulverizer, and a new wood burner was installed and tested. During the two years of experimentation the energy derived from the pulverized mix and the combustibility of the material were both greatly improved. At the Isa Cement Factory biomass in the form of wood chips was used as fuel in a fluid bed boiler, but in this experiment the wood matter was pulverized to a finer degree, making it acceptable for use in the burners of UBE's existing power generating boilers and cement kilns—offering much greater potential for use. From the end of 2004 the No. 2 power plant will begin using woody biomass in a fuel mixture for regular operations, further contributing to reduced emissions of CO_2, which is one of the "greenhouse gasses."

No. 2 power plant with waste wood mixed fuel-burning demonstration facility

The equipment developed for the fuel preparation process described above met the NEDO (New Energy Development Organization) requirements for a "development of wood waste fuel as an alternative to fossil fuels," making it eligible for grant funding in fiscal 2002 and 2003.



Message from an Employee

Energy & Environment Division, E&E Technology Center **Kiyoshi Shimoide**

Application Producing Pulverized Woody Biomass for a Boiler

The source of the wood for the project (demolition waste) was established for easier collection, so our main issues were the following three technical points:

1. The biomass needed to burn in the pulverized coal-fired boiler, had to be available in large enough quantities, and needed to be safe and inexpensive.
2. The pulverized wood needed to burn completely in the boiler.
3. Any impurities in the wood had to be dealt with.

Our use of woody biomass in a boiler was something new, so there was no text for the experiment. We made new discoveries every day, and enjoyed the feeling of actually developing technology.

UBE Group Products

UBE Group is contributing to the creation of a resource recycling society by developing products and technology with low environmental impact in every division of its operations. Here we introduce some of the leading products from these divisions.

Chemicals

Heliofresh, widely used as a fragrance

Heliofresh

A refreshing marine scent created from UBE's own product catechol, requires no use of tropical forest products (which are frequently sacrificed in the production of perfumes.)

1,6-Hexanediol

1,6-Hexanediol

Made from a liquid waste generated in the process of caprolactam production. Used as material for polyurethane resin and for solvent-free UV hardening resins, powder paints and hot melt adhesive.

Synthetic leather made with PCD

Polycarbonatediol (PCD)

Basic materials used in the highest quality polyurethane products. When used in synthetic leather simulates the feel of the highest quality genuine leather.

DMC manufacturing plant

Dimethylcarbonate (DMC)

DMC with minimal toxicity is a logical substitute for dimethyl sulfate and methylene chloride, both known to have residual toxicity. In addition, it is also used as a solvent for gravure ink, for example, replacing organic solvents such as toluene.

Separation membrane module

Separation Membranes

UBE's gas separation membranes use hollow polyimide fibers. In addition to being used to separate and recover CO_2 in the atmosphere, these separation membranes are superb for the recovery of chemical substances that harm the environment.

DPF (Photo provided by APEX DPF System.)

TYRANNO Fiber

This is a highly heat-resistance fiber used in diesel particulate filters for diesel engines, where they are effective in reducing NOx and free-floating particles.

"Aqua Solution"

Photo-catalytic Fiber Module "Aqua Solution"

This water purifier is photo-catalytic and completely breaks down toxic impurities in water. Effective against bacteria and dioxins alike, it is expected to command a very large market.

A tanker loaded with hydrogen peroxide

Hydrogen Peroxide (Kemira-UBE, Ltd.)

Used as a substitute for chlorine to bleach and sanitize paper, pulp and fiber, as well as for etching electronic circuit boards and purifying wastewater.

Slow-release fertilizer is popular with gardens and farms.

Slow-Release Fertilizer

This fertilizer's active ingredients dissolve slowly, providing long-lasting nourishment to the soil. With its neutral pH it also causes no build-up of harmful substances in the soil.

Safe-to-use wrapping products

Heat-resistant "Polywrap" (Ube Film, Ltd.)

This film gives off no poisons when burned because it contains no chlorine. It is designed specifically to function as a strong, non-toxic, heat-resistant food wrap.

The widely recognized EUP Plant

"EUP" Two-stage Pressurized Gasification Process

The two-stage gasification processor takes waste plastic and shredder dust and converts them into synthesis gas which is a raw material for chemicals. This process made the separation of vinyl chloride products from regular rubbish unnecessary, and earned the Nikkei Global Environment Technology Prize for its usefulness.

Z-Sand artificial sand

Z-Sand

Created from coal ash, this artificial sand is easy on the environment and useful in place of natural sand and dirt.

Waste compression and packaging plant

Waste Compression and Packaging Plant

This is a facility to compress general wastes and waste plastics into packages that cannot damage the environment. The facility reduces the volume of waste and has earned a high reputation for facilitating waste disposal.


Plant to turn incinerator ash into raw material for cement

● Recycling Incineration Ash
(Yamaguchi EcoTech)

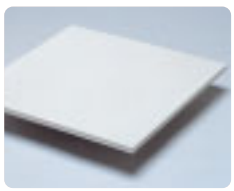
UBE has established technology to recycle the ash from waste incineration facilities as a raw material for cement. Dioxins can be removed from ash and the ash dechlorinated by rinsing. This safe and stable system enables treated ash to be used in high-temperature cement kilns.


Wood chips and compost made out of green waste

● Organic Recycling
(West Japan Green Recycling)

This recycling system takes green resources, including logging waste and garden trimmings and turns them into chips, which can be used as pulp or compost.

Construction Materials


"Friendly Wall" panel

● "Friendly Wall" (Ube Board Co., Ltd.)

This new human- and environment friendly construction material for interior panels, is produced by a drying process from diatomaceous earth, a natural construction material, and can suppresses the generation of volatile organic compounds (VOCs) that may cause "sick house" syndrome.


Incinerator using Calbreed SII and Solbalit


Highly reactive Calbreed SII

● Calbreed SII
(Ube Material Industries, Ltd.)

It is an ultra-highly reactive and efficient absorber of harmful acidic gases generated by incineration of industrial wastes. Calbreed SII is used at various local government waste incineration facilities and is winning a solid reputation across Japan.


Solbalit in the form of a fine chemical powder

● Solbalit (Ube Material Industries, Ltd.):

Solbalit is a product that absorbs and removes harmful substances such as dioxins found in the waste gases of incinerators.


Application of U-Stabilizer

● U-Stabilizer
(Ube-Mitsubishi Cement Corporation)

● Green Lime
(Ube Material Industries, Ltd.)

These are soil stabilizers developed to treat and stabilize soft soil, sludge, and sewage mud. U-Stabilizer is a cement-based soil stabilizer, while Green Lime is a limestone-based stabilizer. Both are extremely effective in solidifying road beds and filling foundations in the stabilization of slopes, sludge, and construction residue.


Clear Water Calsan Marine

● Clear Water, Calsan Marine
(Ube Material Industries, Ltd.)

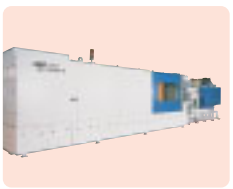
Based on magnesium hydroxide and quick lime, these products were developed to improve water quality. They are effective in improving the quality of water and sediment at the bottom of the sea and lakes.

Machinery and Metal Products


Rollerless conveyor in action

● Rollerless Conveyor
(UBE Machinery Co., Ltd.)

This revolutionary conveyor system utilizes an air cushion belt. The central section of the conveyor has no rollers, and works quietly and without vibration. It operates on a low-power motor that saves energy and moves at high-speed; allowing downsizing for improved space economy. It is also completely sealed, and therefore releases no dust or unpleasant odors into the environment.


All-electric Large-scale injection molding machine

● All-Electric, Large-scale Injection Molding Machine
(UBE Machinery Co., Ltd.)

This is a large, all-electric injection-molding machine that avoids using hydraulic fluids and coolants. It is also extremely energy efficient, using only one third of the power and two thirds of the cycle time of conventional hydraulic machines. This all-electric machine has received the Director-General's Award. And because this machine is capable of extremely precise molding, it has opened the way to a world of new molding technologies including die-pressed molding (integrated plastic and surface material molding) and the in-mold coating process, which performs the molding and coating at the same time inside the mold.


Aluminum wheels for luxury vehicles

● Aluminum Wheels
(Ube Automotive, Ltd.)

Based on its own unique "Squeeze Process,", UBE manufactures aluminum wheels featuring fine metal structure, a high tenacity and design flexibility. Though cast, they have the same strength of forged wheels. This allows them to be lightened, which contributes to improving fuel economy and reducing exhaust emissions. These wheels enjoy a very high reputation on the world market.

Measures Applied toward Group Companies

Working with Group Companies

Environment Safety Audits and Inspections

All the companies of the UBE Group are working as a team with UBE to promote RC activities. Of course, major companies of the Group participate in the Group Environment Safety Committee, Segment Environment Safety Committees, the Global Environment Preservation Promotion Committee and the Product Safety (PL) Committee. At the same time, the environment and safety audits and environment safety inspections are implemented by Group member companies. The Environment and Safety Department, serving as secretariat, oversees all of the environment safety audits, checking on activities and recording results of PDCA cycles relating to environmental preservation, safety and hygiene and process safety and disaster prevention. Environment safety inspections are headed up by Group executives (the president and directors) who inspect the overall environment safety activities of all facilities, mainly through on-site observation. The following list shows the sites of audits and inspections of offices and Group companies in fiscal 2003.

Observation at TCL factory

UCE audit

Environment Safety Audits and Inspections at a Glance (fiscal 2003)

	Environment Safety Audits	Environment Safety Inspections
UBE Office	Ube Cement Factory Isa Cement Factory Kanda Cement Factory Facility and Technology Department, Production and Technology Ube Chemical Factory Chiba Petrochemical Factory Sakai Factory Nishioki Factory Technical Department, Chemical Production Division Power BU (Power Generating Station)	Ube Cement Factory Isa Cement Factory Kanda Cement Factory Ube Chemical Factory Chiba Petrochemical Factory Sakai Factory Nishioki Factory Call Center Power BU (Power Generating Station) UBE Research Laboratory
Group Companies	Ube Machinery Inc. Ube Materials Industries, Ltd. Meiwa Kasei Industries, Ltd.	Ube Machinery Inc. Ube Steel Co., Ltd. Ube Materials Industries, Ltd. Ube Shin Kasado Dockyard Co., Ltd. Ube Agri-Materials, Ltd.

In fiscal 2004, Ube Group will continue the same pattern of audits and inspections in Japan, and as a further step in its global RC activities will audit environment safety activities at its overseas companies.

UCHE

<Spain>

In May 2004, a two-day environment safety audit was held at Ube Corporation Europe, S.A. (UCE), which is located in the eastern Spanish state of Valencia. Along with the Company's subsidiaries, UBE Chemical Europe, S.A. (UCHE), which produces caprolactam, 1,6-hexanedinol and other products, Ube Engineering Plastics, S.A., which manufactures nylon resins, and cooperating companies, the group employees approximately 350 people. We mainly reviewed the fields of occupational safety and health, process safety and disaster prevention and environmental preservation activities, received an explanation from environment safety staff on their activities, inspected facilities, pointed out issues to be resolved and engaged in lively discussions with staff. Later, the managers joined in the audit review and confirmed the main points of the inspection.

<Thailand>

TCL

In June 2004, two-day environment safety audits occurred at three nearby companies on the outskirts of Thailand's capital, Bangkok. The companies are caprolactam manufacturer, Thai Caprolactam Public Co., Ltd., nylon resin manufacturer, Ube Nylon (Thailand), Ltd., and butadiene rubber manufacturer, Thai Synthetic Rubbers, Ltd., which employs a total of 520 people (including staff in affiliated operations.) The format of the inspection was like the one that was implemented in Spain, but with differences. The companies are relatively new, meaning that many new employees benefited from the observations on occupational safety and health and process safety and disaster prevention. Because the companies are close to residential areas, there was also considerable interest in environmental issues and specific questions about health management.

Environmental Performance

Activities to improve environmental performance in the global warming countermeasures, controlling air pollution, controlling water pollution, PRTR and industrial waste measures are coordinated on a Group-wide basis, and environmental performance data of all the major group companies is collected and published in aggregate in the this RC report.

Environmental performance data of major overseas companies is scheduled for inclusion in the RC report beginning after fiscal 2005.

Site Report

Ube Chemical Factory

Overview of Factory

- **Location:** 1978-10 Ohaza Kogushi, Ube City, Yamaguchi
- **Start of operations:** 1933
- **Area:** 623,000 m²
- **Employees:** 541
- **Main products:** Caprolactam, nylon resin, active pharmaceutical ingredients and intermediates, fine chemicals, high purity chemicals, industrial pharmaceuticals and fertilizers, polyimide resins, separation membranes, new materials

RC Measures

Based on the UBE Group's basic Environmental and Safety Principles, the Ube Chemical Factory sets goals and manages its performance on an annual basis. In fiscal 2000, Ube Chemical Factory's RC activities earned it the world's second (and Japan's first) World Class Award for TPM and ISO 9001/ISO 14001-based activities, including its bottom-up and top-down management structure.

The Factory sets medium-term reduction targets for air, water quality and wastes and takes actions toward these targets. With regard to water quality, the target fiscal year, fiscal 2005, of the Fifth Total Volume Regulations is set by the Seto Inland Sea Environment Preservation Special Law. In conformity with this, we implemented various countermeasures and constructed a system that always monitors the situation. A real-time communications and abnormal levels alert system, as well as a carefully planned, organization-wide response plan, have been put into effect.

When new or increased capacity facilities are installed, or when new chemical substances are to be manufactured, an "environment and safety evaluation system" is used to protect the environment and ensure safety. When necessary, deliberations and environmental council meetings are held beforehand with Ube City and local citizens to earn trust and provide a sense of Ube's reliability in matters of security. As part of its safety preparedness, Ube has implemented aggressive "process danger prediction activities" and "risk assessment activities." It is particularly proactive in process safety and disaster prevention activities, where it focuses on monthly emergency drills targeting specific facilities and holds regular "workplace mutual diagnosis" sessions carried out by safety and hygiene personnel, which verifies the disaster prevention system and promotes safety awareness.

In fiscal 2004, the Occupational Safety and Health Management System will be added to the current product quality and environment management systems, covering the four factory safety goals of protecting labor, environment, equipment and facilities and product quality. In order to achieve "spiraling" gains in each of these areas the Product Quality, Environment and Safety and Hygiene Committees will hold monthly meetings and apply the PDCA cycle to ongoing actions and plans.

Ube Chemical Factory Environmental Data (Unit: t/year)

	1999	2000	2001	2002	2003
CO_2 emissions (thousand t)	267	273	257	255	259
SOx emissions	1,754	1,850	1,766	1,788	1,912
NOx emissions	3,728	3,538	4,103	3,972	4,372
Dust emissions	120	86	102	101	108
COD emissions	657	627	582	526	585
Total nitrogen emissions	670	655	575	666	726
Total phosphorous emissions	27	23	21	21	23
Waste final disposal volume	4,380	2,468	1,097	1,008	213

Message from the Factory General Manager

Ube Chemical Factory General Manager Executive Corporate Officer

Katsunori Suzuki

Since it started operations in 1933 at the onset of Japan's chemical age, Ube Chemical Factory has always had Ube City's future development in mind, growing new industries and improving local infrastructure to support growth. This is especially true of electrical power supply, where it has worked to ensure adequate supplies of power, while actively working to reduce the environmental load burden. The factory is located in close proximity to residential areas, and the Company has always held itself to be a leading company in the region. Ube's RC activities are a way to increase the peace of mind of the local community for the Company.

Chiba Petrochemical Factory

Overview of Factory

- **Address:** 8-1 Goi Minami Kaigan, Ichihara City, Chiba
- **Start of operations:** 1964
- **Area:** 563,000 m²
- **Employees:** 200
- **Main products:** Polyethylene, synthetic rubber

Measures for Responsible Care

Environmental Preservation

To create a factory that is friendly to the region and the earth, UBE is carrying out a variety of environmental preservation activities, including reducing chemical substances and waste emissions and global warming prevention. To reduce chemical substances emissions, especially the key substances benzene and butadiene, UBE is shifting to low-environment-effect substances and installing gas incinerating facilities. Waste reduction efforts are centered on lowering waste production and promoting recycling. With the exception of certain types of non-burnable materials, these efforts have proven successful. In global warming prevention efforts, UBE has promoted energy savings at factories and worked on the product development side, including synthetic tire rubber that improves fuel use efficiency.

Safety and Health

In keeping with the Company's basic principle of insuring safety above all else, UBE is working to enhance employee safety awareness and improve the security of its equipment, facilities and operations. Specifically, UBE trains employees in "danger prediction training," "process danger prediction," "pointing and naming," "hiyari hatto kigakari chushutsu" (identifying and naming), and other methods to focus attention on potential dangers, and involves all staff in the publication and use of a safety booklet. The factory also has its own programs to reduce risks, including facilities and working operations, and to increase employee satisfaction levels. The result is 14 years of operations without a major accident.

Process Safety and Disaster Prevention

As a voluntary-maintenance, safety-certified factory that voluntarily imposes High Pressure Gas Maintenance Safety and Occupational Safety and Health Laws, UBE works in a variety of ways to improve safety. Among these are studies to predict the life expectancy of equipment parts through scientific reliability studies in order to practice safe operation of specialized equipment, and implementation of emergency response training drills at each plant to improve the performance of operators in times of emergency. Emergency drills are held twice yearly, to ensure that damage is held to a minimum in the event that a disaster occurs. In response to the Disaster Prevention Law for petroleum refineries, the Factory held a disaster response drill for Ichihara City at this Factory in fiscal 2003.

Chiba Petrochemical Factory Environmental Data (Unit: t/year)

	1999	2000	2001	2002	2003
CO_2 emissions (thousand t)	52	51	47	49	52
SOx emissions	6.7	18.9	5.0	15.7	0.5
NOx emissions	5.1	9.2	3.9	9.0	3.4
Dust emissions	0.9	1.6	1.0	2.0	1.6
COD emissions	15.3	17.2	15.8	21.5	20.2
Total nitrogen emissions	6.2	6.9	6.6	7.9	8.6
Total phosphorous emissions	0.4	0.4	0.4	0.4	0.4
Waste final disposal volume	327	238	334	372	27

Message from the Factory General Manager

Chiba Petrochemical Factory, General Manager

Mamoru Miyamoto

Chiba Petrochemical Factory earned ISO 14000 certification early on and has always operated with environmental preservation as its most important issue. Recently we have focused on a shift from the solvent benzene to other chemical substances in our synthetic rubber manufacturing process, and have installed a new facility to prevent emissions of the main raw material butadiene into the atmosphere. For Safety and Health, we are aiming for a record 12,000,000 hours of operation without an accident in the 3rd Class Environment and Safety category, and we are continuing to build on our perfect safety record by instilling a high level of safety awareness in the work place. From now on, we will deliver products that have customer satisfaction from the "abundantly green" Chiba Petrochemical Factory.

Sakai Factory

Overview of Factory

- **Location:** 3-1 Chikko Shinmachi, Sakai City, Osaka
- **Start of operations:** 1967
- **Area:** 463,000 m²
- **Employees:** 245
- **Main products:** Caprolactam, ammonia, liquefied carbonic dioxide, electrolytic liquid

Responsible Care Activities

Sakai Factory is located in Sakai City in the Senboku Industrial Belt on Osaka Bay. Its main operation is the production of Caprolactam. The Factory has been attentive to environmental safety, safety and health, disaster prevention and product safety management through a voluntary Responsible Care program it initiated in 1995.

One useful tool in this regard has been the application, since 1996, of ISO 9001international standards certification on all of its products. Moreover, in 2000 the Factory began utilizing ISO 14001 international standards in its efforts to reduce its impact and burden on the environment.

Major accomplishments in 2003 were in the areas of energy conservation, where efficient operations of equipment and process improvements led to reductions in energy and CO_2 emissions, and in waste management, where thorough separation of waste material and more efficient production resulted in a reduction in total waste volume. Plans are in place to further reduce the chemical burden on the air and water by installing new recovery equipment.

In regards to safety, the use of certified high pressure gas equipment inspectors, and certification of boilers and all pressurized operations, will improve the level of safety and accident preparedness of the facility. These measures are now planned for introduction.

In March, 2004, Sakai Factory initiated a Responsible Care regional dialogue in Senboku District, introducing its operations to the public and inviting questions and opinions in an effort to deepen understanding among concerned groups and individuals.

Utilizing the ISO system, and following the P (plan) D (do) C (check) and A (act), the factory is improving its performance and bettering the level of social understanding.

Sakai Factory Environmental Data (Unit: t/year)

	1999	2000	2001	2002	2003
CO_2 emissions (thousand t)	188	170	160	170	170
SOx emissions	2.0	3.8	5.7	2.6	2.9
NOx emissions	443	436	432	409	322
Dust emissions	63	57	64	69	57
COD emissions	221	211	216	192	143
Total nitrogen emissions	916	742	775	826	323
Total phosphorous emissions	6.3	3.9	3.3	4.0	6.1
Waste final disposal volume	872	898	583	320	295

Message from the Factory General Manager

Sakai Factory Chief

Jyunichi Misumi

At Sakai Factory, safety and environmental protection are our highest priorities, so we have adopted Responsible Care as a voluntary activity.

Our activities target conservation of energy and resources and global environmental protection, mainly through reduced CO_2 emissions and waste material. To achieve a better result in this regard we are utilizing the ISO system. Responsible Care activities are a way of creating a chemical industry that is gentle on the region, the people, the earth and nature.

In order to respond to a challenging economic environment and the changing times, Sakai's posture will emphasize innovation and morality and a "slim, tough, busy factory" that produces "high-quality, highly-functional" products.

Third-party Comments

Third-party Verification and Comments

On March 19, 2004, UBE received its first third-party verification by the Responsible Care Verification Center.

The verification areas were under two categories, "Occupational Safety and Health" and "Chemical & Product Safety." Following the verification comments and reports received, we will apply future Responsible Care activities to further improve the quality of efforts.

レスポンシブル・ケア検証　意見書

レスポンシブル・ケア

宇部興産株式会社
取締役会長兼社長　常見　和正　殿

2004年3月22日

検証評議会　議長
山本明夫

レスポンシブル・ケア検証センター長
田中康夫

■検証の目的
レスポンシブル・ケア検証は、レスポンシブル・ケア活動を推進している企業の活動状況のレベルをレスポンシブル・ケアコードに照らし合わせて、評価することを目的としています。

■検証範囲
レスポンシブル・ケア（以下「RC」という）検証は、東京本社に於いて、下記日程にて実施しました。

<評価モジュール>	<対象事業場>	<実施日>
労働安全衛生	千葉石油化学工場	3月19日
化学品・製品安全	本社及び宇部ケミカル工場	3月19日

■検証の手順
検証業務手順に従い、検証員による以下の検証を実施しました。
・検証範囲に対応するコードを基準に作成された質問表への回答並びに添付資料に対する事前書類審査。
・本社のRC担当者及び工場のRC担当者へのヒアリング、関係書類の審査。

■レスポンシブル・ケア活動に関する意見
[労働安全衛生]
・14年間の無災害の継続は評価します。
・リスクアセスメントの内部監査はレベルが高く、適切に行われています。
・小冊子「365日集」は無災害の継続に役立っていると評価します。
・労働安全衛生に関する方針を目標及び実施計画へ展開する流れに改善の余地があります。
・実施計画の記載方法に改善の余地があります。

[化学品・製品安全]
・化学品・製品安全に関する情報収集の方法には、工夫があり評価します。
・製品トラブルに対する措置には予防的観点からの措置も確実に行われており評価します。
・化学品・製品安全に関する方針と目標の関係を明らかにし、実施計画に展開する流れに改善の余地があります。
・目標の定量化及び実施計画の記載方法に改善の余地があります。
・化学品・製品安全には、PL及び品質を含め、一体的に管理システムを運用することが望まれます。

以上

Comments of Knowledgeable Individual

Yamaguchi University Honorary Professor
Former Chairman of the Yamaguchi Prefecture Environment Committee

Dr. Hiroshi Nakanishi

It has been a half century since corporations began environmental protection activities, and today it seems like a completely different world. From the sourcing and transport of materials to their consumption and disposal, at all stages in the product life-cycle, we can say that impact on the environment, safety (accident prevention and product safety) and health are all receiving fair consideration. Nevertheless, reports are not easily understood on first glance, and it is desirable that responsibility be taken to fully explain the points of importance and the points not fully explicated to those whose benefits or risks are in question. Moreover, it would be good to see a clear differentiation between those points where improvement is needed and those points where effort needs to be sustained, and then in the areas requiring improvement a statement of what the specific goals are, and what measures are to be taken towards them; and for the points where effort is to be sustained, a clear explication of the standards by which management is undertaken, with the results for 2003 shown in comparison with the goals for 2004. Moreover, it appears that remarkable progress has been achieved in the reduction of air pollutants and total waste materials, but it remains to be seen how well cement factories can be used to advance the success of recycling.

In this year's report there is discussion of economic viability and social benefit from the standpoint of corporate social responsibility and sustainability, yet to create a truly sustainable society the three elements of energy, resources and the environment must be guaranteed as sustainable globally. For that, we must question our own lifestyles. In this case what is the position, and what is the correct way of existing, for the corporation? It is to be hoped that the current framework of Responsible Care can be transcended to include actions in this broader realm of responsibility.

Editorial Policy

As one facet of its Responsible Care activities, and in conformance with guidelines set by the Ministry of the Environment, UBE produces a yearly RC Report disclosing information on it activities. This report is used as a means of communication with stakeholders as well as a safety education tool for employees. This RC report is unlike past environmental reports in that it incorporates issues relating to corporate social responsibility (CSR). In the past 2 years sustainability report guidelines (Global Reporting Initiative: GRI) for reporting have suggested that the 3 issues of environment, economy and society be included.

This year's report pays comparatively greater attention to economic and social elements, and also offers more in-depth information on specific site activities and overseas business developments. In addition to ISO 14001 environmental areas, which are verified by third parties, this year's report includes third-party verifications of occupational and health safety and chemical and product safety activities, as well as comments from knowledgeable third parties.

Subject of this report

Reporting period:	April 1, 2003 to March 31, 2004 (Including sections on 2004 activities and future planning)
Subject company:	Ube Industries, Ltd. and 11 consolidated subsidiaries Four chemical factories (Chiba, Sakai, Ube, Nishioki) Three cement factories (Ube, Isa, Kanda) Ube Film, Ltd., Meiwa Kasei Industries, Ltd., Ube Ammonia Industry, Ltd., Ube Agri-Materials, Ltd., Ems-Ube, Ltd., Kemira-Ube, Ltd., Ube Material Industries, Ltd., Ube Board, Co., Ltd., Ube Machinery Corporation, Ltd., Ube Steel Co., Ltd., U-Mold Co., Ltd. and the above-named consolidated companies are referred to as "UBE Group" in this report.
Subject area:	Activities in Japan
Reported data:	As a rule, this report includes actual performance for fiscal 1999–2003 and forecast performance for fiscal 2004. Information after fiscal 1999 includes data on Group companies involved in reported operations.
Reference on guidelines:	This report was created according to guidelines set forth in "Environment Report Guideline 2003 Edition" (Ministry of the Environment), with performance data determined according to guidelines set forth in the businessman's "Performance Guidelines, 2002 Edition," and accounting standards conforming to "Environment Accounting Guideline, 2002 Edition."

Wings of technology
Spirit of innovation
UBE

UBE INDUSTRIES,LTD.

Tokyo Head Office (Environment & Safety Dept.)
Seavans North Bldg., 1-2-1, Shibaura, Minato-ku, Tokyo 105-8449, Japan
PHONE: +81-3-5419-6148 FAX: +81-3-5419-6242
URL: http://www.ube.co.jp

This report is printed on 100% recycled paper using soy ink.