Responsible Care

Environment and Safety

UBE Group Environmental and Safety Guidelines

UBE Group Environmental and Safety Guidelines

We have made it our shared value to prioritize safety in everything we do. This includes ensuring safety and security in the workplace and in local communities, and conserving the global environment.

1. We will secure healthy, safe and comfortable working conditions, aiming to eliminate occupational accidents.
2. We will ensure the safety and security of facilities and operations, aiming to eliminate facilities accidents.
3. We will reduce our emissions of waste and chemical substances, and contribute to establishing a recycling-based society by recycling and effectively using resources.
4. We will voluntarily and continuously work to address global environmental issues in order to contribute to a sustainable society.
5. We will strive to maintain and improve the health of working persons, who give vitality to society and corporations.

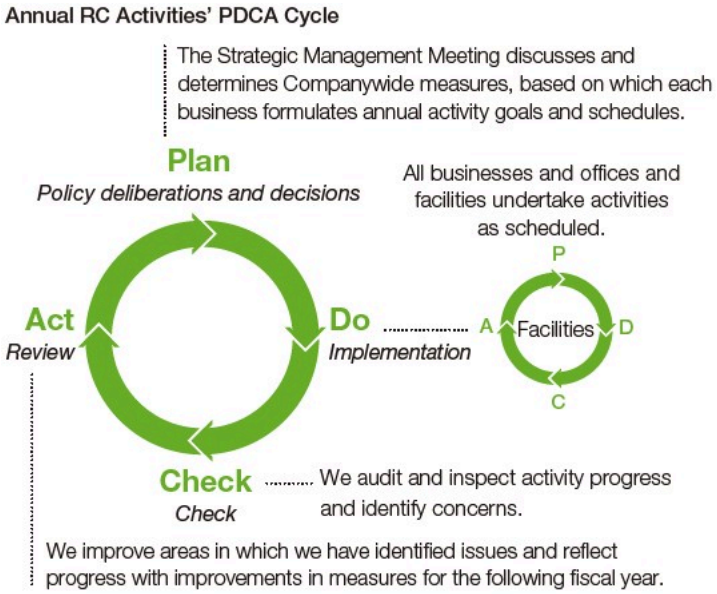
Environmental and Safety Organization

Policies and measures relating to such environmental safety components as occupational safety and health, process safety and disaster prevention, environmental preservation, and environmental issues are key management issues. The President and CEO chairs the Strategic Management Meeting (Environment and Safety), which deliberates and decides on these issues. The meeting also serves as a process safety headquarters prescribed in a ministerial order relating to high-pressure gas safety (HPGS), discussing and determining important matters relating to process safety at certified sites for high-pressure gas.

Environmental Safety Measures

We implement PDCA cycles based on our environmental and safety measures to constantly improve efforts relating to occupational safety and health, process safety and disaster prevention, environmental preservation, and environmental issues. The Outline of Environment and Safety Activities on pages 1–2 of the 2023 Integrated Report Supplementary Information (Environment and Safety/Quality Assurance) presents our environmental safety activity plans and achievements.

Annual RC Activities' PDCA Cycle



Environmental and Safety Activities

Details and data for environment and safety activities are presented in the Integrated Report 2023 and the Integrated Report 2023 Supplementary Information (Environment and Safety).

Occupational Safety and Health

- Basic Approach to Occupational Safety and Health Initiatives
- Initiatives to Prevent Occupational Accidents
- Initiatives on Safety and Health
- Initiatives for Health Management

Basic Approach to Occupational Safety and Health Initiatives

The UBE Group strives to keep occupational accidents to zero by making operations inherently safe. The Group's efforts are designed to foster a safety-driven corporate culture and to reduce risks by enhancing safety initiatives and making continuous improvements. In the area of occupational health, each business site establishes an occupational safety and health management system to maintain and improve corporate activities. The UBE Group also endeavors to ensure the mental and physical health of employees by improving lifestyle habits through health checkups and follow-up care as well as various measures such as mental health consultations.

Initiatives to Prevent Occupational Accidents

Fostering a Safety-Driven Corporate Culture

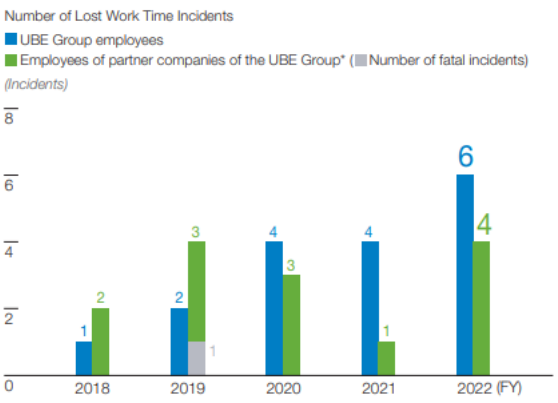
To make existing safety activities more comprehensive and effective, in fiscal 2016 we launched initiatives aimed at fostering a safety-driven corporate culture, encompassing eight elements. These are organizational governance, positive involvement, resource management, work management, motivation, learning and knowledge transmission, risk perception, and mutual understanding. In keeping with findings from assessments based on headquarters' evaluation standards, business sites identify issues and formulate and execute plans to cultivate a safety culture as part of ongoing improvement efforts.

Eliminating Major Disasters

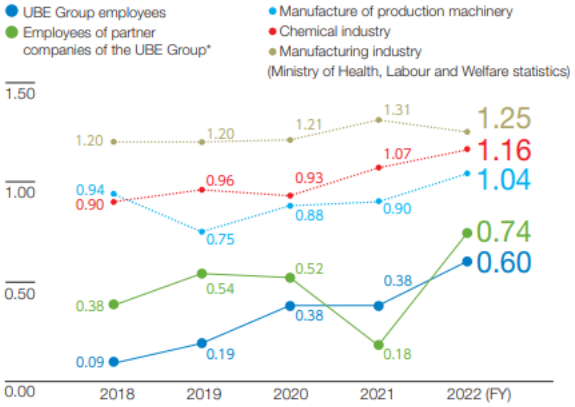
We have undertaken a range of activities to prevent occupational accidents. In fiscal 2018, we initiated efforts that centered on eliminating major incidents. We conduct risk assessments of work that is highly susceptible to serious accidents. We implement systematic risk reduction measures and endeavor to make operations inherently safe. From fiscal 2020, we undertook safety activities with partner companies* adding safety education and training from fiscal 2021 as a priority item.

We investigate the causes of all incidents regardless of whether they result in lost time, striving to prevent similar incidents by assessing and rolling out measures.

Number of Fatal and Lost Work Time Incidents among Domestic Operations



Lost Work Time Injury Frequency Rate



* Partner companies: Including construction and other contractors

Measures to Prevent Occupational Accidents

	Goals	Activities	Status and History of Initiatives
1. Setting occupational accident-related benchmarks	Prevent occupational accidents	Establish numerical goals	Fiscal 2022 goal: 0 incidents with lost work time and 14 without, for a total of 14 Fiscal 2022 result: 10 incidents with lost work time and 18 without, for a total of 28
2. Use of occupational accident information	Prevent similar accidents	Create occupational accident information database and publish it on intranet	We are using information on occupational accidents at each business site as important data sources for facilities and operational risk assessments.
3. Audits and inspections	Drive ongoing improvements at business sites • Improve weak areas • Enhance safety levels	(1) Audits • Audits conducted by the Head Office and business site environmental safety personnel • Quantitative evaluation of offices in line with checklists and feedback • Chemical substance management audits Audit three management areas (work, work environments, and health) as covered by the Occupational Safety and Health Act (2) Inspections • Members of the president-chaired inspection committee visit business sites • Confirming results of audit and activity achievements and conveying reviews	History of improvement activities inspired by audits and inspections • Fiscal 2013: Summarize outstanding activities in Best Practices and Safety and Health Guidelines and publish these on intranet • Fiscal 2016: Begin assessments according to eight culture of safety components, which are organizational governance, positive involvement, resource management, work management, motivation, learning and knowledge transmission, risk perception, and mutual understanding • Fiscal 2017: Start disclosing evaluation criteria and verifying gaps between these and self-evaluations • Fiscal 2018: Publish evaluation criteria on intranet and integrate UBE Group evaluation criteria in a culture of safety • Fiscal 2018: Audit all Chemicals business sites • Fiscal 2019: Audit Research and Development Department • Fiscal 2019: Establish Companywide criteria in three management areas, build database for substances handled in-house and related regulations, formulate quantitative risk assessment techniques for chemical substances, and sequentially and continuously improve • Fiscal 2017: Launch small safety team reports and group discussions
4. Safety and health rallies	Share information Encourage activities	Annual UBE Group health and safety rallies Participants: Approximately 300 people (Group executives and employees, including online) participating	Zero accident efforts and resolutions to enhance workplace environments • Recognition by the president (to entities and individuals for outstanding contributions to health and safety) • Small safety team presentations on experiences • Special lectures from outside instructors on safety and health management • Reciting safety goals after rallies

Initiatives on Safety and Health

UBE Group Safety and Health Rally

The UBE Group holds a safety and health rally every year. About 300 UBE Group officers and employees as well as business partners from across Japan participate, sharing information and fostering motivation. In addition, individuals and groups that have made particularly outstanding contributions to safety and health receive recognition from the company president. The event also features presentations from small safety groups on their experiences and special lectures from outside instructors about safety and health management, helping to raise safety awareness.

At the end of the rally, all participants, including officers, join together in reciting the Group's safety pledge, renewing their commitment to eliminating accidents and improving work environments.

Occupational Safety and Health Council

This is a forum in which representatives of the Companywide union and UBE's occupational safety and health officers gather to review annual occupational safety and health results and plans for the new fiscal year and discuss requests from both sides. Participants share prevailing issues and discuss ways to address them. We reflect forum results in the following year's plans. Many major accidents have occurred among subcontractors. Labor representatives and management recognize the importance of coordinating better with those firms. Our annual plans accordingly include measures to foster safety activities with subcontractors.

Labor-Management Councils

Following Occupational Health and Safety Council discussions with Companywide union representatives, regional business sites convene gatherings to discuss local union and management requests.

Initiatives for Health Management

Health management initiatives at UBE

Process Safety and Disaster Prevention

- Basic Approach to Process Safety and Disaster Prevention Initiatives
- UBE Group's Initiatives
- Zero equipment accidents
- Zero environmental accidents
- Enhancing Process Safety Capabilities at Certified High-Pressure Gas Facilities
- Implementing Natural Disaster Measures

Basic Approach to Process Safety and Disaster Prevention Initiatives

The UBE Group strives to keep process accidents to zero by developing worksite frameworks that prevent accidents by ensuring thorough identification of risks and systematic implementation of far-reaching measures to counter those identified risks.

UBE Group's Initiatives

We endeavor to eliminate process accidents through initiatives that ensure our facilities are safe and secure. We also undertake activities to minimize damage in the event of major natural disasters. In fiscal 2022, we focused on zero equipment accidents, zero environmental accidents, improving safety at high-pressure gas sites, and implementing natural disaster measures.

Zero equipment accidents

Through the Accident Information Liaison Committee, accident information is shared and each business site implements horizontal development to prevent similar accidents from happening again. We are also working to strengthen equipment maintenance and management through the Safety Management Liaison Committee.

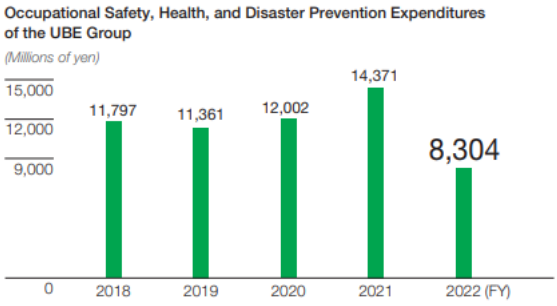
Zero environmental accidents

We identify environmental risks and promote environmental risk reduction measures.

UBE Group Facility-Related Accidents

	Number of Accidents				
(FY)	2018	2019	2020	2021	2022
UBE	4	4	13	5	5
Group companies	0	3	2	3	5

In fiscal 2022, the UBE Group recorded 10 accidents,
investigated their causes, and implemented recurrence prevention measures.



Enhancing Process Safety Capabilities at Certified High-Pressure Gas Facilities

For certified high-pressure gas sites, we set up an improvement agenda in line with assessment findings from the Japan Industrial Safety Competency Center and engage in systematic improvement initiatives.

Implementing Natural Disaster Measures

We push ahead with measures to address natural disasters by having each business site conduct self-assessments in line with self-assessment criteria for such measures, and pursue ongoing improvements.

Environmental Preservation

- Basic Approach to Environmental Preservation Initiatives
- Environmental Performance
- Environmental Accounting
- Water Resource Usage
- Emissions Data by Facility
- Suppressing Chemical Substance Emissions
- Establishing a Recycling-Based Society

Basic Approach to Environmental Preservation Initiatives

The UBE Group strives to keep environmental accidents to zero by working to reduce environmental risks. The Group also engages in continuous activities to reduce its environmental impact in order to help ensure sustainable social progress.

The UBE Group also responds to global environmental issues by ensuring that its corporate activities are in harmony with nature and helping to resolve climate change, conserve biodiversity, address the issue of marine plastics, and conserve water resources.

Environmental Performance

The UBE Group is committed to extensively managing atmospheric and water emissions of pollutants and contaminants, and endeavors to comply with agreements and voluntary standards. We are endeavoring to lower our environmental impact, managing it by checking progress with reduction plans in strategic management meetings and undertaking PDCA cycles. We will keep pursuing business activities that contribute to a circular economy by tackling environmental issues, lowering and using industrial waste, and constraining chemical substance emissions.

Overview of Group Environmental Impact (Fiscal 2018 through 2022)

Input

	(FY)	2018	2019	2020	2021	2022 Note 2
Total energy	Crude oil equivalent (Thousands of MWh)	21,970	22,140	20,920	21,340	7,841
Total raw materials (Thousands of tons)		16,383	16,298	15,381	15,819	2,177
Water resources (Million m³)	Freshwater used	92	97	94	96	68
	Seawater used	106	115	108	116	302 Note 1

Page 8 of Integrated Report Supplementary Information (Environment and Safety / Quality Assurance) shows water resource withdrawals by source and discharges by destination.

Business activities (manufacturing) of the UBE Group

Output

	(FY)	2018	2019	2020	2021	2022
Airborne emissions	GHG (kt-CO2e/y)	12,010	12,110	11,270	11,840	3,820
	SOx*1 (t)	2,873	2,652	2,589	2,296	1,095
	NOx*2 (t)	16,149	16,071	15,274	14,956	3,275
	Dust (t)	356	371	392	364	115
	PRTR substances*3 (t)	198	180	190	194	143
Soil emissions	PRTR substances (t)	0	0	0	0	0
Waterborne emissions	Wastewater (Million m³)	147	163	152	159	345 Note 1
	COD*4 (t)	642	705	658	687	1,347
	Total phosphorus (t)	9	11	10	11	18
	Total nitrogen (t)	468	466	420	455	466
	PRTR substances (t)	97	112	82	91	72
Industrial waste emissions	External landfill disposal amount (t)	6,730	6,463	6,267	5,895	5,159
	Recycled volume (t)	370,451	389,000	340,543	379,024	214,755

Notes:
1. Fiscal 2022 data includes cooling seawater for private power generation.
2. Fiscal 2022 data excludes the former Construction Materials Company.

Data covers UBE factories, laboratories, and key domestic consolidated subsidiaries with factories shown on page 16 of Integrated Report Supplementary Information (Environment and Safety / Quality Assurance), representing 70% of such subsidiaries.

*1 Sulfur oxides (SOx) originate in the sulfur (S) component of fuels. Boilers are our main source of these oxides.

*2 Nitrogen oxides (NOx) stem from fuel combustion, primarily from Group boilers and cement kilns.

*3 Pollutant Release and Transfer Register (PRTR) Law: This legislation requires companies to identify business site chemical substance emissions and transfer volumes and report to the government. The Ministry of the Environment discloses the submitted information on its website. Such disclosure is designed to encourage voluntary efforts to improve chemical substance management.

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

Environmental Accounting

Environmental Preservation Costs

(Hundred millions of yen)

				Capital Investment			Costs		
	Category	Main Activity	(FY)	2021	2022	Difference	2021	2022	Difference
Cost by business area	Pollution prevention	Investing in and maintaining air pollution prevention facilities and water pollution prevention facilities		13.6	9.6	(4.0)	44.2	36.2	(8.0)
	Global environment preservation	Investing in and maintaining energy-saving facilities		6.1	2.7	(3.4)	33.4	1.5	(31.9)
	Resource recycling	Recycling and reducing industrial waste		2.6	0.1	(2.5)	32.1	8.7	(23.4)
Upstream/downstream costs		Container/packaging recycling, green purchasing		0.0	0.0	0.0	9.0	5.4	(3.6)
Costs of management activities		Acquiring, running, and maintaining environmental management systems		0.0	0.0	0.0	5.1	3.1	(2.0)
Research and development costs		R&D of environmentally friendly products and technologies		0.0	0.0	0.0	1.7	0.8	(0.9)
Costs of social activities		Greening and beautifying offices/facilities and their surroundings		0.2	0.2	0.0	3.9	0.8	(3.1)
Costs of cleaning up environmental damage		Payment of environment-related levy		0.0	0.0	0.0	1.3	0.9	(0.4)
Total				22.5	12.6	(9.9)	130.7	57.4	(73.3)

Economic Effect

(Hundred millions of yen)

Category	Main Activity	(FY)	2021	2022	Difference
Income effect	Proceeds from sales of marketable waste products		42.1	6.7	(35.4)
Savings effect	Savings achieved through resource recycling and energy conservation		66.4	31.5	(34.9)

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

Water Resource Usage

We installed pollutant monitoring facilities to manage the quality of water discharges into bodies of waters water. We maintain facilities to treat plant wastewater that could cause significant pollution.

UBE Group Water Resource Usage (Fiscal 2018 through 2022)

			(FY)	2018	2019	2020	2021	2022
Water resource withdrawals (Millions of cubic meters)	Chemicals Business	Tap water		0.2	0.2	0.2	0.2	0.2
		Groundwater		2.0	2.0	2.0	2.2	2.0
		Industrial water		79	84	81	83	64
		Seawater		105	114	107	115	302*1
		Subtotal		186	200	190	200	369†*2
	Machinery Business	Tap water		0.1	0.1	0.2	0.1	0.1
		Groundwater		0.0	0.0	0.0	0.0	0.0
		Industrial water		0.9	1.0	1.0	0.9	0.8
		Seawater		0.0	0.0	0.0	0.0	0.0
		Subtotal		1.0	1.1	1.2	1.0	1.0
	Total (UBE Group)			187	201	191	201	370
Water discharges (Millions of cubic meters)	Chemicals Business	Sewers		0.0	0.0	0.0	0.0	0.0
		Rivers and lakes		2.1	2.1	2.1	2.2	2.1
		Ocean areas		140	156	145	152	342*1
		Subtotal		142	158	147	154	345
	Machinery Business	Sewers*3		0.0	0.0	0.0	0.0	0.0
		Rivers and lakes		0.0	0.0	0.0	0.0	0.0
		Ocean areas		0.8	0.9	0.8	0.8	0.7
		Subtotal		0.8	0.9	0.8	0.8	0.7
	Total (UBE Group)			143	159	148	155	345

*1 Including in-house internal landfill disposal and recycled amount that are subject to calculation under the Plastic Resource Circulation Act

*2 The figure with "†" mark was assured by the third party assurance. Please see the assurance statement on page 14.

*3 Wastewater volume 10,000 m^3 or less

Data covers UBE factories, laboratories, and key domestic consolidated subsidiaries with factories shown on page 16 of Integrated Report Supplementary Information (Environment and Safety / Quality Assurance), representing 70% of such subsidiaries.

Emissions Data by Facility

Fiscal 2022 Environmental Impact Data by Facility

			Emissions into the Atmosphere *(t/y)*			Emissions into Water *(t/y)*		
			SOx*1	NOx*2	Dust	COD*3	Total Phosphorus	Total Nitrogen
In Japan								
Chemicals Business	UBE	Sakai Factory / Osaka Research & Development Center	0.0	1.4	0.0	0.7	0.0	0.7
		Ube Chemical Factory east and west area	17	59	2.1	398	5.5	352
		Ube Chemical Factory Fujimagari Area	530	333	2.5	203	5.0	50
		Power Management Dept. (private power generation)	532	2,755	100	713	6.4	48
		Ube Electronic and Industrial Materials Factory (Former Meiwa Plastic Industries, Ltd.)	—	—	—	0.0	0.0	0.0
		Ube Research Laboratory / Pharmaceutical Research Laboratory	—	—	—	0.2	0.0	0.2
		Future Tech Laboratory (Former Chiba Research Laboratory)*	—	—	—	0.0	0.0	0.0
		Subtotal	1,079	3,149	105	1,315	17	451
	API Corporation		2.6	5.9	0.1	12.6	0.3	10.2
	UBE Elastomer Co. Ltd.		0.6	31.7	0.2	11.5	0.1	3.3
	Ube Film, Ltd.		—	—	—	—	—	—
	UBE Hydrogen Peroxide, Ltd.*		0.0	0.0	0.0	0.4	0.0	0.3
	UBE EXSYMO CO., LTD.		0.0	0.6	0.1	3.7	0.0	0.0
	Total (Chemicals Business)		1,082	3,187	105	1,343	17	465
Machinery Business	UBE Machinery Corporation, Ltd.		0.1	—	—	1.1	0.2	1.4
	UBE Steel Co., Ltd.		13	88	9.4	2.6	—	—
	Fukushima Ltd.		—	—	—	—	—	—
	Total (Machinery Business)		13	88	9.4	3.7	0.2	1.4
Total (UBE Group)			1,095	3,275	115	1,347	18	466
Overseas								
Spain	UBE Corporation Europe, S.A. Unipersonal		8	442	5.5	130	1.0	58
Thailand	UBE Chemicals (Asia) Public Company Limited		3.5	20	4.7	29	0.7	1.9
	THAI SYNTHETIC RUBBERS COMPANY LIMITED		0.0	0.0	1.1	18	0.0	0.0
	UBE Fine Chemicals (Asia) Co., Ltd.		0.0	4.8	0.2	—	—	—
Total			11	468	11	177	2	60

* We reorganized or renamed these sites in fiscal 2022 or 2023. See Reorganizations and Renamings on page 16 of Integrated Report Supplementary Information (Environment and Safety / Quality Assurance).
Data covers UBE factories, laboratories, and key domestic consolidated subsidiaries with factories shown on page 16 of Integrated Report Supplementary Information (Environment and Safety / Quality Assurance), representing 70% of such subsidiaries.

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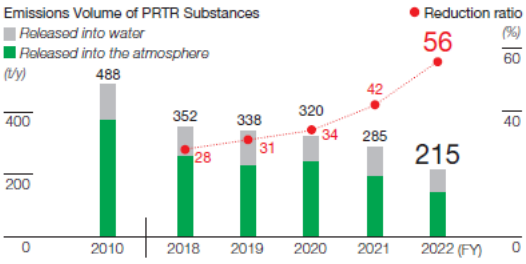
*2 Nitrogen oxides (NOx) stem from fuel combustion, primarily from Group boilers and cement kilns.

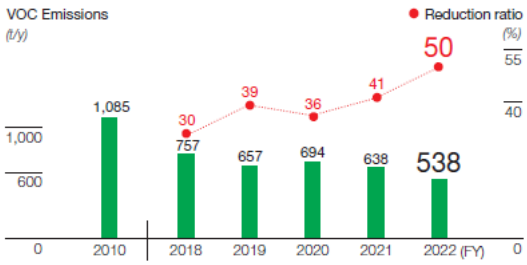
*3 Chemical Oxygen Demand (COD): This is an indicator of water pollution by organic substances and represents the amount of oxygen consumed in the chemical oxidation of organic matter.

Suppressing Chemical Substance Emissions

Total Emissions of 20 Chemical Substances
Fiscal 2024 Target: 32% reduction from fiscal 2010 level

The UBE Group accorded Companywide priority to 20 key chemical substances*3 with high emission volumes from among those subject to the PRTR Law*1 and VOCs*2, and endeavors to control their emissions. In fiscal 2022, we reduced the total emissions of 20 chemical substances by 38% from the fiscal 2010 level (in terms of PRTR substances and VOC emissions reductions, as shown above, down 56% and 50%, respectively, from fiscal 2010). The reduction target for fiscal 2024 is 32%. We will continue to cut our emissions.





Data covers UBE factories, laboratories, and key domestic consolidated subsidiaries with factories shown on page 16 of Integrated Report Supplementary Information (Environment and Safety / Quality Assurance), representing 70% of such subsidiaries.

Total Volume of PRTR Substances Emitted/Transferred in Fiscal 2022

	Handling Volume (t)	Emissions Volume (t)				Transfer Volume (t)	Number of PRTR Substances
		Atmosphere	Public Water	Soil	Total		
UBE	186,418	94.4	71.6	0.0	166.0	3,462	55
Other Group companies	107,397	49.0	0.0	0.0	49.0	262	13
Total (UBE Group)	293,816	143.4	71.6	0.0	215.0	3,724	68

Volumes of Individual PRTR Substances Emitted/Transferred in Fiscal 2022 (Substances emitted 1 ton or more per year and dioxins)

Ordinance Designation No.	Chemical Substance	Handling Volume (t)	Total Emissions Volume (t)				Transfer Volume (t)
			Atmosphere	Public Water	Soil	Total	
300	Toluene	835	55.4	13.9	0.0	69.3	203.3
76	Epsilon-caprolactam	97,916	0.0	49.9	0.0	49.9	251.3
104	Chlorodifluoromethane	20	20.3	0.0	0.0	20.3	0.0
400	Benzene	66	12.9	0.1	0.0	13.0	0.0
128	Chloromethane	12	12.3	0.0	0.0	12.3	0.0
80	Xylene	128	10.4	0.0	0.0	10.4	11.4
53	Ethylbenzene	23	9.4	0.0	0.0	9.4	10.7
213	N,N-dimethylacetamide	605	8.2	0.0	0.0	8.2	267.6
240	Styrene	186	4.9	0.0	0.0	4.9	0.6
405	Boron compound	27	0.1	4.3	0.0	4.4	6.2
374	Hydrogen fluoride and its water-soluble salts	5	0.0	2.6	0.0	2.6	0.4
349	Phenol	76,213	1.9	0.1	0.0	2.0	1,342.1
13	Acetonitrile	525	1.8	0.0	0.0	1.8	426.1
296	1,2,4-Trimethylbenzene	123	1.6	0.0	0.0	1.6	3.1
351	1,3-Butadiene	105,045	1.6	0.0	0.0	1.6	0.0
243	Dioxins (Note) mg-TEQ/year	—	83.3	2.5	0.0	85.8	0.0

Note: Contains various compounds

Scope of coverage: UBE's domestic plants and laboratories and key domestic consolidated subsidiaries with plants (see page 16), representing 70% of such subsidiaries

*1 Pollutant Release and Transfer Register (PRTR) Law: This legislation requires companies to identify business site chemical substance emissions and transfer volumes and report to the government. The Ministry of the Environment discloses the submitted information on its website. Such disclosure is designed to encourage voluntary efforts to improve chemical substance management.

*2 Volatile organic compounds (VOCs): These organic chemicals evaporate or sublimate easily, entering the atmosphere as gases. They are factors in the forming of suspended particulate matter (PM) and photochemical oxidant pollution.

*3 20 chemicals selected independently: Methyl alcohol, butyl alcohol, toluene, epsilon-caprolactam, styrene, ammonia, cyclohexane, cyclohexanone, oxalic acid, vinyl acetate, xylene, n-hexane, ethylbenzene, chloromethane, benzene, dimethyl phthalate, N,N-dimethylacetamide, boric acid compound, phenol, hydrogen fluoride and its water-soluble salts

Establishing a Recycling-Based Society

Using Resources Effectively

Flow of Plastic Resources (UBE Corporation, Fiscal 2022)

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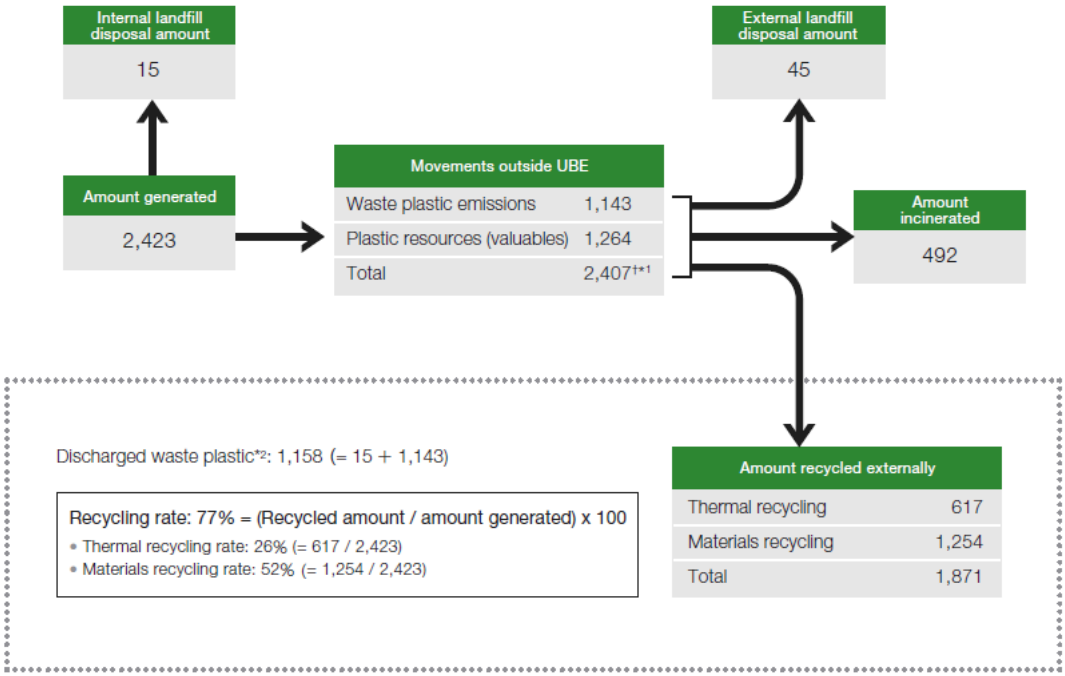


*1 The figure with "†" mark was assured by the third party assurance. Please see the assurance statement on page 14.
*2 Including in-house internal landfill disposal and recycled amount that are subject to calculation under the Plastic Resource Circulation Act

The Plastic Resource Circulation Act, which went into effect in April 2022, requires businesses to minimize and recycle waste plastic. UBE's efforts to use plastic resources effectively resulted in a 77% recycling rate in fiscal 2022. We will continue to push ahead with plastic recycling.

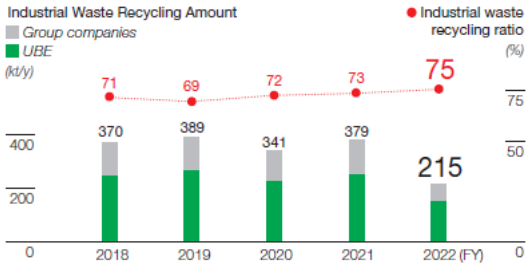
Data covers eight UBE business sites. These are the Sakai Factory, Ube Chemical Factory, Ube Chemical Factory Fujimagari Area, Ube Electronic and Industrial Materials Factory, Ube Research Laboratory, Pharmaceutical Research Laboratory, Future Tech Laboratory, and Osaka Research & Development Center.

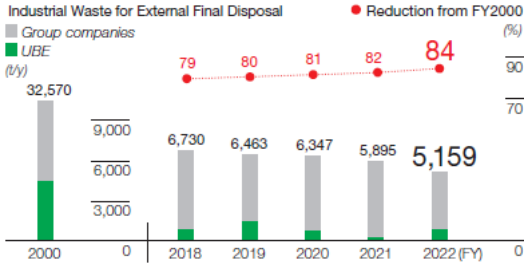
Reducing Industrial Waste

Waste for External Final Disposal

Fiscal 2024 target: 87% reduction from fiscal 2000 level

The UBE Group is reducing and recycling industrial waste to help create a circular economy. Our medium-term goal is to cut external final disposal by 87% from the fiscal 2000 level by fiscal 2024. We have taken steps to reach that target. In fiscal 2022, our external landfill disposal amount was 84% below that of fiscal 2000. We will keep striving to reduce industrial waste.





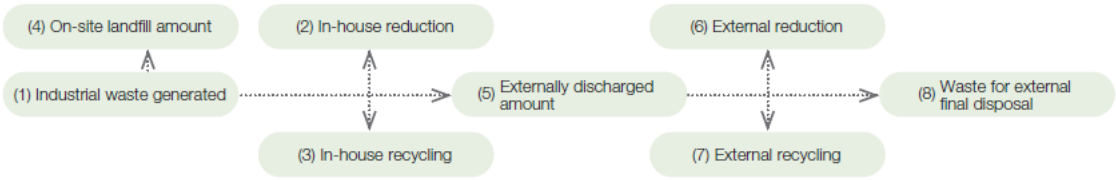
Overall Flow of Industrial Waste

(t)

(FY)		(1) Industrial waste generated	In-House (2) Reduction	In-House (3) Recycling	In-House (4) Final disposal	External (5) Discharged amount	External (6) Reduction	External (7) Recycling	External (8) Final disposal
2018		517,033	120,719	242,835	207	155,272	20,685	127,616	4,971
2019		561,591	145,425	247,568	263	168,335	20,440	141,432	6,463
2020		476,127	105,940	220,559	126	149,502	23,171	119,984	6,347
2021		522,644	114,866	233,175	127	174,476	22,732	145,849	5,895
2022	Chemicals Business	234,247	46,743	9,180	706	177,618†*	18,239	158,523	856
	Machinery Business	51,534	0	31,476	0	20,058	179	15,576	4,303
	Total	285,780	46,743	40,656	706	197,676	18,418	174,099	5,159

* The figure with "†" mark was assured by the third party assurance. Please see the assurance statement on page 14.

Scope of coverage: UBE's domestic plants and laboratories and key domestic consolidated subsidiaries with plants. See page 16 for details.



Polychlorinated Biphenyl (PCB) Waste Disposal

We thoroughly audit stabilizers and other equipment using PCBs. In addition, we are endeavoring to complete PCB waste disposals by the deadline set under the amended Act on Special Measures concerning Promotion of Proper Treatment of PCB Wastes. We comply with storage and disposal laws and ordinances processing, and utilize Japan Environmental Storage & Safety Corporation (JESCO) and certified detoxification contractors to systematically dispose of PCB waste.

Number of Units of Equipment Incorporating PCB Stored
(As of April 2023 for UBE Corporation)

	In Use	In Storage	Total
High-concentration PCB	0	0	0
Low-concentration PCB	23	26	49

UBE Corporation completely disposed of high-concentration PCB waste in fiscal 2021. It is endeavoring to systematically collect and dispose of all low-concentration PCB waste by the deadline set under the amended Act on Special Measures concerning Promotion of Proper Treatment of PCB Wastes.

Global Environmental Issues

UBE Group Policy for Achieving Carbon Neutrality by 2050

Taking a further step forward from the UBE Group Environmental Vision 2050 that was announced in May 2020, the UBE Group in April 2021 announced a policy to achieve carbon neutrality by 2050. The policy calls for the UBE Group to achieve net-zero emissions of greenhouse gases (GHGs) from its business activities. The Group will also strive to help the broader society become carbon neutral by pursuing R&D for products and technologies that are beneficial for the environment and the practical application of eco-friendly innovations. The UBE Group will work as a leading solution provider to help realize a decarbonized society.

UBE Group Policy for Achieving Carbon Neutrality by 2050

1. Achieve carbon neutrality for the Group's business activities (minimizing GHG emissions and developing innovative technologies), by:

1. Practicing rigorous energy conservation and making process improvements
2. Maximizing the use of CO_2-free energy
3. Realigning the business structure to reduce dependency on fossil resources (minimize the use of fossil resources)
4. Pursuing R&D and bringing products to market in fields such as CO_2 utilization technology and non-fossil raw materials

2. Help the broader society become carbon neutral, by:

1. Supplying products that, when used, contribute to reduction of CO_2 emissions
2. Contributing to reduction of CO_2 emissions in customer supply chains (supplying products such as biomass-derived polymers, biodegradable polymers, and polymers with both of those properties, as well as recycled and re-used chemicals)

UBE Group Announces New Medium-Term Targets by 2030 for Achieving Carbon Neutrality by 2050

In April 2022, the UBE Group has revised its medium-term environmental targets for fiscal 2030 and set new targets to reduce greenhouse gas (GHG) emissions by 50% by fiscal 2030 (compared to fiscal 2013) and raise the share of environmentally friendly products and technologies it sells to at least 60% of consolidated net sales.

In 2021, the UBE Group announced its Policy for Achieving Carbon Neutrality by 2050, setting out the goal of achieving net-zero emissions of GHGs from its business activities. Also, as medium-term targets on the road to carbon neutrality, the group set the targets of achieving an 20% reduction in GHGs emissions in the chemicals segment by 2030 (compared to fiscal 2013).

The UBE Group, which spined-off and transferred its cement business to Mitsubishi UBE Cement Corporation and shifted to a business portfolio focused on the specialty chemicals business, reviewed its previous targets. The Group further strengthen its efforts to address global environmental issues, and strive to help the broader society become carbon neutral.

Fiscal 2030 Targets

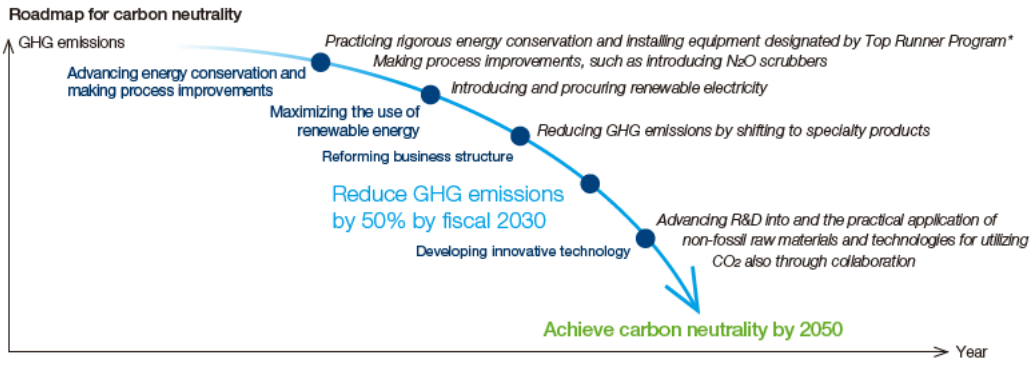
1. GHG emission reduction targets:
   50% reduction compared to FY2013 (previously 20% reduction in the chemicals segment)
2. Target percentage of consolidated net sales comprising environmentally friendly products and technologies:
   60% or more (previously 50% or more)

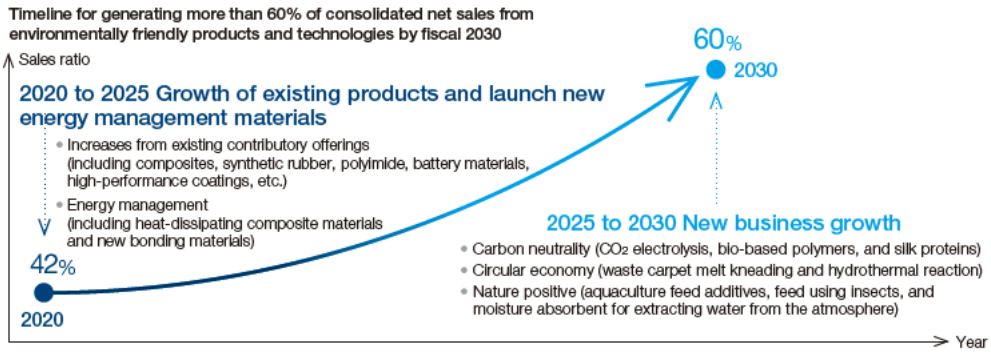
Measures for Carbon Neutrality

1. Advancing energy conservation and making process improvements
   The Group will minimize the use of fossil resources by continuously working on practicing rigorous energy conservation and making process improvements.
2. Maximizing the use of renewable energy
   The Group will maximize the use of renewable energy by introducing solar power generation systems in its factories and procuring electricity generated by utilizing renewable energy such as wind power, solar power and biomass power.
3. Reforming business structure
   The shift to specialty products, which have a relatively low energy burden, will help reduce the Group's GHG emissions by minimizing the use of fossil resources, and will also facilitate the development of a resilient business structure that is not greatly influenced by market conditions for raw materials and fuel. The UBE Group aims to create a business structure with a low environmental impact focused on specialty products to drive profitability and growth potential, while creating high added value for basic chemicals and carrying out business structure reforms.
4. Innovative technology development
   Innovative technological development is essential to achieving carbon neutrality by 2050. Accordingly, with a medium- to long-term outlook, the Group will also work on research and development into and the practical application of non-fossil raw materials and technologies for utilizing CO_2, and these efforts may involve collaboration with other companies.

Percentage of consolidated net sales comprising environmentally friendly products and technologies

The UBE Group has formulated guidelines based on the revised ISO 14001:2015, and has defined environmentally friendly products and technologies. The Group aims to help the broader society become carbon neutral by further driving the development of environmentally friendly products and technologies and providing them to more customers.





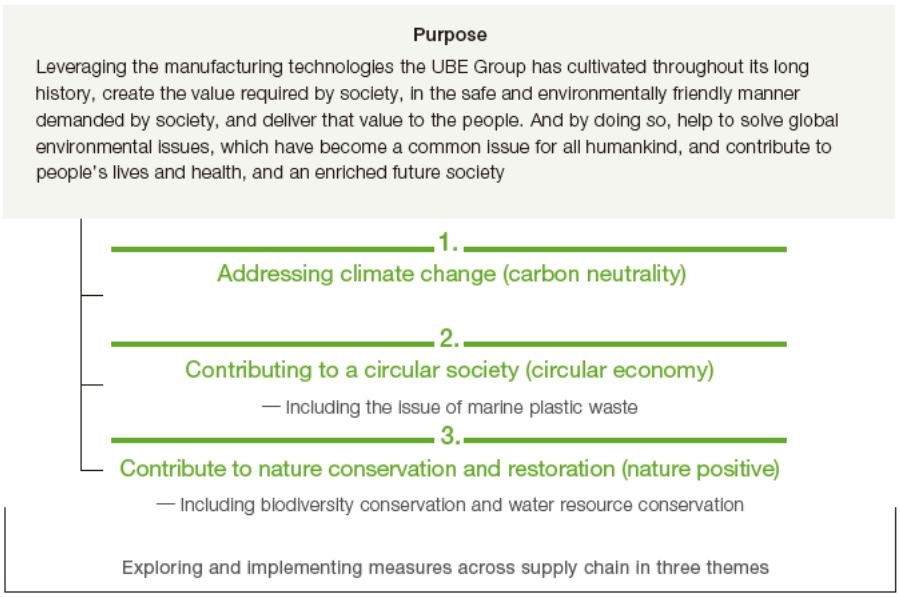
Governance Structure

The UBE Group established the Environmental Issues Committee to identify and act on problems in that regard. The President and CEO chairs Strategic Management Meeting, which receives deliberation reports from the Environmental Issues Committee, provides instructions as needed, and constantly monitors countermeasures progress. A report on important matters goes to the Board of Directors once annually.

Environmental Issues Governance Structure

Basic Guidelines for Addressing Global Environmental Issues

The UBE Group focuses on responding to climate change (carbon neutrality), and on contributing to a circular economy and nature conservation and restoration (nature positive). We are helping resolve environmental issues by steadily implementing strategic measures. These include reducing GHG emissions across the value chain, providing environmentally friendly products, technologies, and services, and engaging with stakeholders.



Basic Activities Policy on Environmental Issues

To realize “Addressing climate change (carbon neutrality),” “Contributing to a circular society (circular economy),” and “Contributing to nature conservation and restoration (nature positive),” we have formulated the following strategies and KPIs and are steadily implementing them.

- Ensuring that the management cycle works properly by analyzing materiality, identifying risks and opportunities, formulating strategies and KPIs, and disclosing information
- Minimizing the impacts of internal operations
- Continuing to engage
- Reach out to entire value chain (suppliers, employees, customers, investors, and communities) to resolve issues in everything from product and services purchases to in-house manufacturing and product processing, usage, and disposal
- Disclose information appropriately to all stakeholders and encourage collaboration to resolve environmental issues

1. Addressing climate change (carbon neutrality)

【Strategy】

- Reduce internal GHG emissions.
- Keep developing and providing environmentally friendly products and technologies that help cut GHG emissions.

【Targets and Business Plan】

We have formulated a business plan that encompasses overhauling our business structure reforms and deploying measures to conserve energy so we can reach our fiscal 2030 target of halving GHG emissions from fiscal 2013 levels to aim for becoming carbon neutral by 2050.

【Significance】

- The increase of GHG emissions into the atmosphere due to human activities is causing global warming and major changes in the climate.
- This could transform the natural environment and degrade ecosystem services. Rapid climate change could profoundly affect lives and businesses. It is our social responsibility and mission to tackle these changes as swiftly as possible.

【Initiatives】

Please see Addressing Climate Change (Carbon Neutrality) on pages 54–55.

2. Contributing to a circular society (circular economy)

【Strategy】

We will tap discarded and other resources effectively and recycle them. We will develop and provide circular materials, products, and technologies.

【Targets and Business Plan】

Our goal is to increase the sales ratio of environmentally friendly products and technologies, including products that contribute to the realization of a circular economy, to 60% by 2030. In addition, we aim to effectively utilize and reduce waste such as plastics generated by our own operations.

3. Contribute to nature conservation and restoration (nature positive)

【Strategy】

We will identify the impacts and dependencies of our business activities on nature, identify risks and opportunities, and contribute to the conservation and restoration of the natural environment and the sustainable use of ecosystem services. We also provide products, technologies, and services that help realize nature positive.

【Targets and Business Plan】

- Water sources: We analyze water stress trends based on the water conditions (context) and water supply and demand scenario at each site. At sites where water stress is expected to rise, we will reduce water withdrawal and improve water recycling rates by formulating water use strategies and monitoring KPIs.
- Environmental impacts of our operations, including from air, water, and soil pollution: We monitor and reduce pollutant emissions to eliminate environmental incidents.
- Engagement: We will work with the supply chain (environmental impact assessment), employees (education), customers (provision of environmentally friendly products and technologies), investors (provision of information and exchange of opinions), and local communities (environmental improvement activities). We will verify adverse effects (trade-offs) on the natural environment and minimize negative impacts.

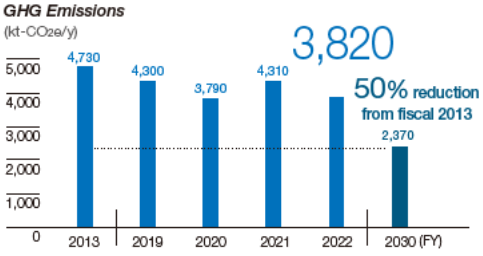
【Significance】

A lot of the products, services, and energy supporting our lives are the fruits of nature. Protecting the environment, restoring nature, and preserving ecosystem services will help safeguard our living environment and livelihoods. Nature conservation and restoration can reduce weather related disasters while protecting cultures and traditions, landscapes, and our diets.

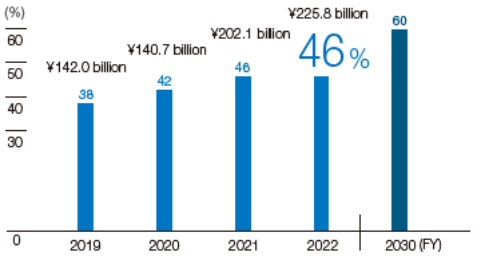
Addressing climate change

Initiatives to Reduce GHG Emissions

Progress toward GHG Emissions Reduction Targets*1



Sales of Environmentally Friendly Products and Technologies*1



*1 Excluding cement-related business transferred to Mitsubishi UBE Cement Corporation.
*2 Electricity purchased from external sources was renewables based.

GHG Emissions in Fiscal 2022

	kt-CO_2e/y		
Business sites	Scope 1	Scope 2	Total
Chemicals business	3,230	400	3,630
Japan	2,360	110	2,470
Thailand	600	280	880
Spain	270	10*2	280
UBE Machinery Group	170	20	190
Total	3,400	420	3,820

Note: Numbers may not add up due to rounding.

Estimated Contributions to GHG Emissions Reductions of Environmentally Friendly Products and Technologies Fiscal 2021: Approx. 11,800 kt-CO_2e/y

Note: Calculations based on the UBE Group's market shares and sales volumes of environmentally friendly products based on CO_2 reductions in usage stages compared with conventional counterparts for end products incorporating UBE Group environmentally friendly products (based on CO_2 reductions for one year of use based on volumes of end products used during fiscal 2021).

Commitment Letter Submitted to Science Based Targets Initiative

In March 2023, the UBE Group submitted a commitment letter to the Science Based Targets initiative. We made this move to secure certification from that body for our targets for reducing GHG emissions across our supply chain over the next five to 10 years in keeping with the criteria of the Paris Agreement, an international treaty on climate change. We made this move in view of growing interest in environmental protection and sustainability in recent years. Our efforts to reduce our environmental impact extend beyond in-house operations to encompass our whole supply chain, from raw materials procurement through product use and disposal.

Deploying System to Calculate Product GHG Emissions Data

UBE and NTT DATA Japan Corporation jointly created a system to calculate product GHG emissions. In January 2023, we began providing data from that system to customers. This information makes it easy for customers to assess GHG emissions across their supply and value chains and contribute to efficiently implement measures to reduce these emissions.

We are using this system for some Ube Chemical Factory offerings, and look to extend its product and plant coverage.

Participating in GX League's Emissions Trading Scheme

In October 2022, we announced our endorsement of the GX (for green transformation) League. Japan's Ministry of Economy, Trade and Industry leads that initiative, which aims to reach the nation's GHG emissions goals by 2030 and achieve carbon neutrality by 2050. We also announced our participation in the league's voluntary emissions trading schemes, which will be fully operational from 2026. We consider our involvement in the league an opportunity to grow sustainably by reducing our GHG emissions while becoming more competitive.

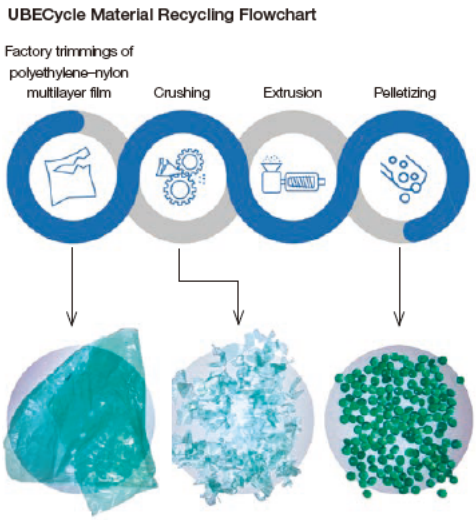
Initiatives to a circular society (circular economy)

About UBECycle Recycled Multilayer Film

Contemporary social demands and regulations are driving the use of raw materials derived from recycled materials across the industry landscape. Prime examples are the packaging, automotive, electrical, electronics, construction, and other sectors. It is against this backdrop that the UBE Group seeks to recycle offerings incorporating its nylon while drawing on its end-product expertise, partner company network, and technical prowess.

A good example of Group endeavors was UBE Corporation Europe, S.A. Unipersonal (UCE)'s launch of UBECycle. This product is recycled from multilayer film waste. UCE will collect the factory trimmings of the film from film manufacturers to recycle (crush, extrude, and pelletize) them. The UBE Group plans to upcycle materials, including this nylon, for in-house production and commercialization.

UCE has earned certification of this innovative polyethylene–nylon multilayer film from recycling bodies such as RecyClass and APR.



Developing Upcycling Technology for Composite Plastics

As most waste plastics are composites, they cannot be reused in regular recycling processes, so they are mostly incinerated. UBE is developing upcycling technologies for composites, adding new features to aluminum and plastic of pharmaceutical press-through-pack sheets. We are collaborating with aluminum manufacturers and recyclers to create an efficient system to collect these sheets. We are employing proprietary upcycling technology to cultivate applications for the collected sheets.

In coming years, we look to refine our composites upcycling technologies. We will endeavor to grow as a chemicals manufacturer that helps resolve environmental issues, such as by cutting CO2 emissions by reducing the use of petroleum-derived raw materials and tackling marine plastic waste.

Initiatives to nature conservation and restoration (nature positive)

To respond to the conservation of the natural environment (biodiversity) and water resources, we conduct risk analysis at each business site.

Water Risk Assessment Results

We maintain five water risk levels for our key business sites. We take into account information we secure from the World Resources Institute's Aqueduct water risk atlas and other external sources, as well as by our sites.

Water Risks	Business Sites	Key Risk Factors
High	Not applicable	
High to moderate	Not applicable	
Moderate	Key sites in Thailand	Constraints on water supply and demand and droughts
Low to moderate	Key sites in Spain Key sites in Japan	Flooding
Low	Not applicable	

Key business sites in Thailand and Spain formulated the following KPIs, and are addressing projected increases in water stress from 2030.

Business Sites	KPIs
Key sites in Thailand	Reduction in water consumption per unit of production By 2024, down 5% from the 2021 level Water recycling rate As of 2024, 26%
Key sites in Spain	Reduction in water consumption per unit of production By 2030, down 10% from the 2022 level Water recycling rate As of 2030, 10%

We draw on the Integrated Biodiversity Assessment Tool and local information to check the proximity of key business sites to nature conservation areas and locations that are important for conserving biodiversity and constantly check potential impacts and extents.

- Not near Ramsar Sites
- The sea level near the Ube area is in the International Union for Conservation of Nature's management category VI for protected areas.
- The Ube-Fujimagari area borders key biodiversity areas (Suonada and the Koto River estuary).
- The national government regulates the seawater area bordering the Ube area, fishing rights there.

Fiscal 2022 Initiatives

Ube Chemical Factory

Marine Plastic Waste

- Participated in year-end street cleanup that an Ube City volunteer group organizes
- Patrolled waste storage sites every quarter
- Recycled waste plastic

Biodiversity Conservation

- Participated in Mine Agriculture, Forestry and Fisheries Office's forestation initiatives to protect water
- Helped exterminate Argentine ants by contributing to administrative reports and exterminated nests to prevent infestations from spreading beyond business sites

Sakai Factory

Marine Plastic Waste

- Undertook joint cleanups with neighboring companies

Biodiversity Conservation

- Took part in forestation initiative on January 14, 2023
- Attended Osaka metropolitan government and Sakai City government seminars

Water Resource Conservation

- Implemented measures to conserve water, including by installing sensors on office washing basin faucets

UBE Machinery Group

Marine Plastic Waste

- Separately disposed of plastic bottle caps

Water Resource Conservation

- Upgraded waterworks facilities and stepped up wastewater management

Employees participating in the 15th Forest Creation Experiential Activity for Water Conservation

Environmental Performance Data

GHG Emissions

(FY)	kt-CO2e/y 2020	2021*2	2022*2	
Scope 1	10,690	3,790	3,400†*1	Direct GHG emissions from a reporting entity, due to fuel use, etc.
Scope 2	580	520	420†*1	Indirect GHG emissions from electricity and heat purchased from other entities
Scope 3	13,460	13,410	12,230	Indirect GHG emissions throughout the supply chain, such as those that occur during material procurement, transport and product processing, use and disposal
Total	24,730	17,720	16,050	

*1 The figure with "†" mark was assured by the third party assurance. Please see the assurance statement on page 14.

*2 Data for fiscal 2021 and beyond is aggregated and excludes the former Construction Materials Company.

Scope 3 Emissions by Category

Category	(FY)	GHG Emissions (kt-CO2e/y) 2020*1	2021	2022
1 Purchased goods and services		2,040	3,080	2,490
2 Capital goods		100	40	70
3 Fuel and energy-related activities not included in Scope 1 or Scope 2		460	350	300
4 Upstream transportation & distribution		700	160	140
5 Waste generated in operations		10	20	40
6 Business travel		0	0	10
7 Employee commuting		0	10	10
8 Upstream leased assets		0	0	0
9 Downstream transportation & distribution		540	70	70
10 Processing of sold products		180	450	460
11 Use of sold products		7,650	1,510	1,630
12 End-of-life treatment of sold products		1,760	1,100	910
13 Downstream leased assets			No relevant activities	
14 Franchises			No relevant activities	
15 Investments		20	6,620*2	6,110*2
Total		13,460	13,410	12,230

Note: Numbers may not add up due to rounding.

*1 Domestic activities only in fiscal 2020

*2 Category 15 for fiscal 2021 and beyond includes equity-based shares of GHG emissions of Mitsubishi UBE Cement Corporation (former Construction Materials Company).

GHG Emissions by Sector in Fiscal 2022

Business Sites		kt-CO2e/y Scope 1	Scope 2	Total
Chemicals Business		3,230	400	3,630
	Domestic	2,360	110	2,470
	Thailand	600	280	880
	Spain	270	10*1	280
Machinery Business		170	20	190
Total		3,400†*2	420†*2	3,820

Note: Numbers may not add up due to rounding.

*1 Electricity purchased externally is renewables-based.

*2 The figure with "†" mark was assured by the third party assurance. Please see the assurance statement on page 14.

Emissions Data by GHG Category

GHG Categories	(FY)	kt-CO2e/y 2020	2021*2	2022*2
CO_2		10,410	3,390	3,140
CH_4*1		10	0	0
N_2O		850	920	680
HFC*1		0	0	0
PFC		0	0	0
SF_6*1		0	0	0
NF_3		0	0	0
Total		11,270	4,310	3,820

*1 Less than 10,000 t-CO2e/y

*2 Data for fiscal 2021 and beyond is aggregated and excludes the former Construction Materials Company.

GHG Emission Intensity (GHG emissions per unit of production)

	(FY)	t-CO2e/t-Lc 2020	2021*	2022*
GHG emission intensity		3.263	2.521	2.733

* Data for fiscal 2021 and beyond is aggregated and excludes the former Construction Materials Company.

Energy Consumption Data

	MWh/year 2020		2021*		2022* (FY)		
	Total	Derived from Renewable Energy	Total	Derived from Renewable Energy	Total	Derived from Renewable Energy	Notes
Fuel consumption	19,030,000	670,000	8,417,000	0	6,131,000	0	Biomass
Purchased electricity consumption	840,000	60,000	800,000	176,000	629,000	160,000	Power from renewable energy
Purchased steam consumption	1,050,000	0	1,425,000	0	1,079,000	0	
Private power generation (renewable energy)	2,000	2,000	2,000	2,000	2,000	2,000	Solar power
Total	20,920,000	730,000	10,644,000	178,000	7,841,000	162,000	

Note: Numbers may not add up due to rounding.

* Data for fiscal 2021 and beyond is aggregated and excludes the former Construction Materials Company.

Energy Type Consumption Data

Energy Type	(FY)	MWh/year 2020	2021*	2022*
Thermal coal		16,170,000	6,963,000	5,144,000
Kerosene and light oil		370,000	263,000	157,000
Liquefied natural gas		650,000	626,000	391,000
Liquefied petroleum gas		130,000	138,000	129,000
Petroleum coke		520,000	0	0
Heavy oil		270,000	201,000	122,000
Gas and oil by-products		250,000	226,000	188,000
Biomass		670,000	0	0
Total		19,030,000	8,417,000	6,131,000

* Data for fiscal 2021 and beyond is aggregated and excludes the former Construction Materials Company.

Water Resource Usage

UBE Group Water Resource Usage (Fiscal 2018 through 2022)

			(FY)	2018	2019	2020	2021	2022
Water resource withdrawals (Millions of cubic meters)	Chemicals Business	Tap water		0.2	0.2	0.2	0.2	0.2
		Groundwater		2.0	2.0	2.0	2.2	2.0
		Industrial water		79	84	81	83	64
		Seawater		105	114	107	115	302*1
		Subtotal		186	200	190	200	369†*2
	Machinery Business	Tap water		0.1	0.1	0.2	0.1	0.1
		Groundwater		0.0	0.0	0.0	0.0	0.0
		Industrial water		0.9	1.0	1.0	0.9	0.8
		Seawater		0.0	0.0	0.0	0.0	0.0
		Subtotal		1.0	1.1	1.2	1.0	1.0
	Total (UBE Group)			187	201	191	201	370
Water discharges (Millions of cubic meters)	Chemicals Business	Sewers		0.0	0.0	0.0	0.0	0.0
		Rivers and lakes		2.1	2.1	2.1	2.2	2.1
		Ocean areas		140	156	145	152	342*1
		Subtotal		142	158	147	154	345
	Machinery Business	Sewers*3		0.0	0.0	0.0	0.0	0.0
		Rivers and lakes		0.0	0.0	0.0	0.0	0.0
		Ocean areas		0.8	0.9	0.8	0.8	0.7
		Subtotal		0.8	0.9	0.8	0.8	0.7
	Total (UBE Group)			143	159	148	155	345

*1 Including cooling seawater for private power generation

*2 The figure with " † " mark was assured by the third party assurance. Please see the assurance statement on page 14.

*3 Wastewater volume 10,000 m3 or less

Response to the Fluorocarbon Emission Restriction Law

Promulgated in April 2015, the Act on Rational Use and Appropriate Management of Fluorocarbons is aimed at reducing leaks of fluorocarbon refrigerants (chlorofluorocarbon, hydrochlorofluorocarbon, and hydrofluorocarbon) to help prevent global warming and the further destruction of the ozone layer. We comply strictly with laws and regulations relating to chlorofluorocarbon refrigeration and air conditioning equipment inspections. We endeavor to prevent fluorocarbon leaks by improving their recovery and filling methods and strengthening equipment operations management.

We are systematically replacing chlorofluorocarbon refrigeration equipment from our processes with alternatives that use low global warming potential hydrofluorocarbons or non-chlorofluorocarbon refrigerants.

Flow of Plastic Resources (UBE Corporation, Fiscal 2022)

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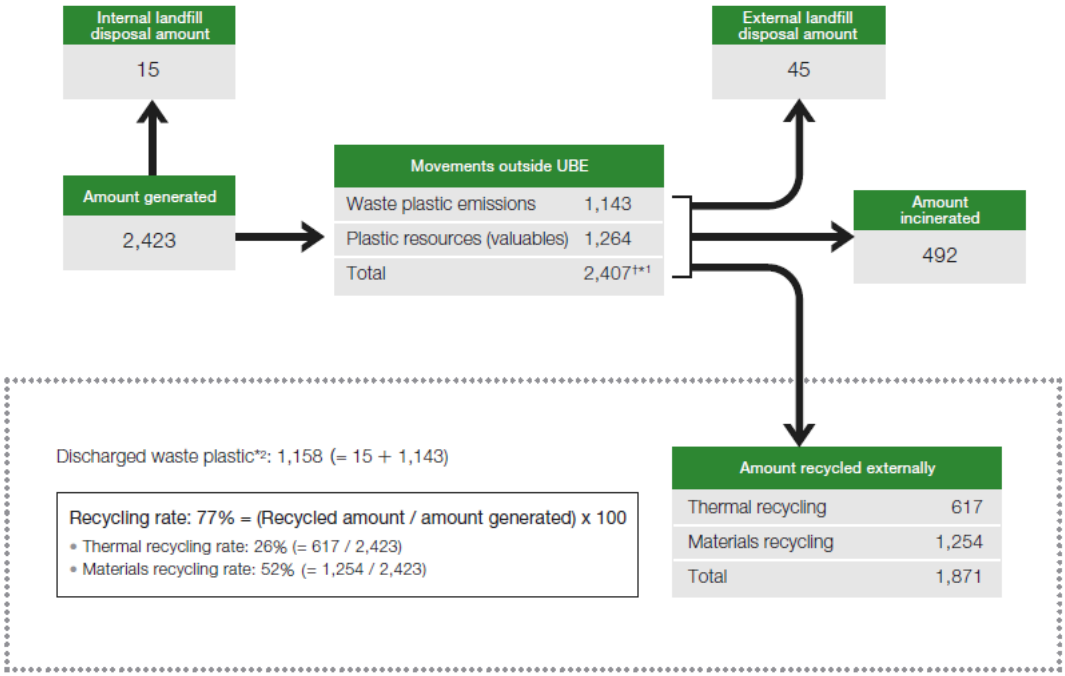


*1 The figure with " † " mark was assured by the third party assurance. Please see the assurance statement on page 14.

*2 Including in-house internal landfill disposal and recycled amount that are subject to calculation under the Plastic Resource Circulation Act

The Plastic Resource Circulation Act, which went into effect in April 2022, requires businesses to minimize and recycle waste plastic. UBE's efforts to use plastic resources effectively resulted in a 77% recycling rate in fiscal 2022. We will continue to push ahead with plastic recycling.

Data covers eight UBE business sites. These are the Sakai Factory, Ube Chemical Factory, Ube Chemical Factory Fujimagari Area, Ube Electronic and Industrial Materials Factory, Ube Research Laboratory, Pharmaceutical Research Laboratory, Future Tech Laboratory, and Osaka Research & Development Center.

Environmental Performance

Overview of Group Environmental Impact (Fiscal 2018 through 2022)

Input

		(FY)	2018	2019	2020	2021	2022 Note 2
Total energy	Crude oil equivalent (Thousands of MWh)		21,970	22,140	20,920	21,340	7,841
Total raw materials (Thousands of tons)			16,383	16,298	15,381	15,819	2,177
Water resources (Million m³)	Freshwater used		92	97	94	96	68
	Seawater used		106	115	108	116	302 Note 1

Business activities (manufacturing) of the UBE Group

Output

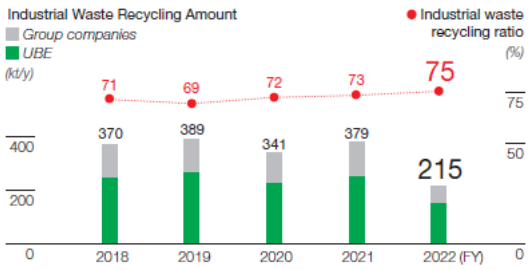
		(FY)	2018	2019	2020	2021	2022
Airborne emissions	GHG (kt-CO2e/y)		12,010	12,110	11,270	11,840	3,820
	SOx*1 (t)		2,873	2,652	2,589	2,296	1,095
	NOx*2 (t)		16,149	16,071	15,274	14,956	3,275
	Dust (t)		356	371	392	364	115
	PRTR substances*3 (t)		198	180	190	194	143
Soil emissions	PRTR substances (t)		0	0	0	0	0
Waterborne emissions	Wastewater (Million m³)		147	163	152	159	345 Note 1
	COD*4 (t)		642	705	658	687	1,347
	Total phosphorus (t)		9	11	10	11	18
	Total nitrogen (t)		468	466	420	455	466
	PRTR substances (t)		97	112	82	91	72
Industrial waste emissions	External landfill disposal amount (t)		6,730	6,463	6,267	5,895	5,159
	Recycled volume (t)		370,451	389,000	340,543	379,024	214,755

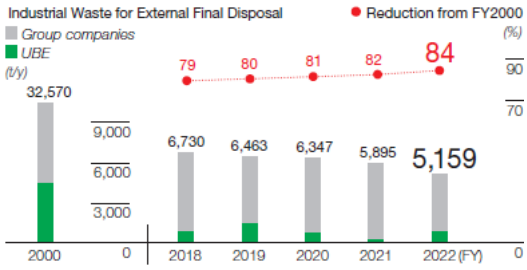
Page 8 of Integrated Report Supplementary Information (Environment and Safety / Quality Assurance) shows water resource withdrawals by source and discharges by destination.

Notes:
1. Fiscal 2022 data includes cooling seawater for private power generation.
2. Fiscal 2022 data excludes the former Construction Materials Company.

The UBE Group is committed to extensively managing atmospheric and water emissions of pollutants and contaminants, and endeavors to comply with agreements and voluntary standards. We are endeavoring to lower our environmental impact, managing it by checking progress with reduction plans in strategic management meetings and undertaking PDCA cycles. We will keep pursuing business activities that contribute to a circular economy by tackling environmental issues, lowering and using industrial waste, and constraining chemical substance emissions.

Reducing Industrial Waste





Waste for External Final Disposal

Fiscal 2024 target: 87% reduction from fiscal 2000 level

The UBE Group is reducing and recycling industrial waste to help create a circular economy. Our medium-term goal is to cut external final disposal by 87% from the fiscal 2000 level by fiscal 2024. We have taken steps to reach that target. In fiscal 2022, our external landfill disposal amount was 84% below that of fiscal 2000. We will keep striving to reduce industrial waste.

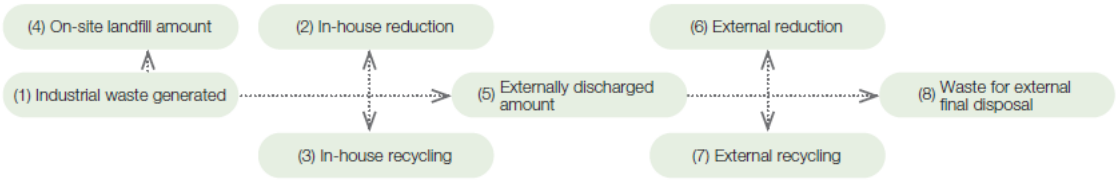
Overall Flow of Industrial Waste

(t)

(FY)		(1) Industrial waste generated	In-House (2) Reduction	In-House (3) Recycling	In-House (4) Final disposal	External (5) Discharged amount	External (6) Reduction	External (7) Recycling	External (8) Final disposal
2018		517,033	120,719	242,835	207	155,272	20,685	127,616	4,971
2019		561,591	145,425	247,568	263	168,335	20,440	141,432	6,463
2020		476,127	105,940	220,559	126	149,502	23,171	119,984	6,347
2021		522,644	114,866	233,175	127	174,476	22,732	145,849	5,895
2022	Chemicals Business	234,247	46,743	9,180	706	177,618†*	18,239	158,523	856
	Machinery Business	51,534	0	31,476	0	20,058	179	15,576	4,303
	Total	285,780	46,743	40,656	706	197,676	18,418	174,099	5,159

* The figure with "†" mark was assured by the third party assurance. Please see the assurance statement on page 14.

Scope of coverage: UBE's domestic plants and laboratories and key domestic consolidated subsidiaries with plants. See page 16 for details.



Polychlorinated Biphenyl (PCB) Waste Disposal

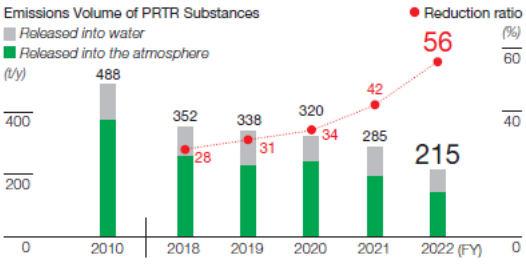
We thoroughly audit stabilizers and other equipment using PCBs. In addition, we are endeavoring to complete PCB waste disposals by the deadline set under the amended Act on Special Measures concerning Promotion of Proper Treatment of PCB Wastes. We comply with storage and disposal laws and ordinances processing, and utilize Japan Environmental Storage & Safety Corporation (JESCO) and certified detoxification contractors to systematically dispose of PCB waste.

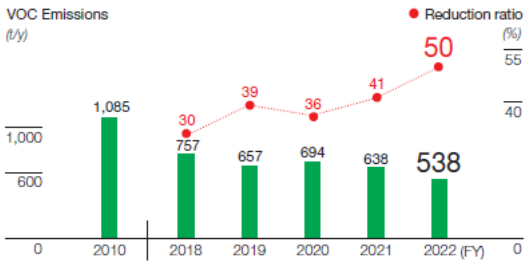
Number of Units of Equipment Incorporating PCB Stored (As of April 2023 for UBE Corporation)

	In Use	In Storage	Total
High-concentration PCB	0	0	0
Low-concentration PCB	23	26	49

UBE Corporation completely disposed of high-concentration PCB waste in fiscal 2021. It is endeavoring to systematically collect and dispose of all low-concentration PCB waste by the deadline set under the amended Act on Special Measures concerning Promotion of Proper Treatment of PCB Wastes.

Suppressing Chemical Substance Emissions





Data covers UBE factories, laboratories, and key domestic consolidated subsidiaries with factories shown on page 16 of Integrated Report Supplementary Information (Environment and Safety / Quality Assurance), representing 70% of such subsidiaries.

Total Emissions of 20 Chemical Substances

Fiscal 2024 Target: 32% reduction from fiscal 2010 level

The UBE Group accorded Companywide priority to 20 key chemical substances[*3] with high emission volumes from among those subject to the PRTR Law[*1] and VOCs[*2], and endeavors to control their emissions. In fiscal 2022, we reduced the total emissions of 20 chemical substances by 38% from the fiscal 2010 level (in terms of PRTR substances and VOC emissions reductions, as shown above, down 56% and 50%, respectively, from fiscal 2010). The reduction target for fiscal 2024 is 32%. We will continue to cut our emissions.

Total Volume of PRTR Substances Emitted/Transferred in Fiscal 2022	Handling Volume (t)	Emissions Volume (t)				Transfer Volume (t)	Number of PRTR Substances
		Atmosphere	Public Water	Soil	Total		
UBE	186,418	94.4	71.6	0.0	166.0	3,462	55
Other Group companies	107,397	49.0	0.0	0.0	49.0	262	13
Total (UBE Group)	293,816	143.4	71.6	0.0	215.0	3,724	68

Volumes of Individual PRTR Substances Emitted/Transferred in Fiscal 2022 (Substances emitted 1 ton or more per year and dioxins)

Ordinance Designation No.	Chemical Substance	Handling Volume (t)	Total Emissions Volume (t)				Transfer Volume (t)
			Atmosphere	Public Water	Soil	Total	
300	Toluene	835	55.4	13.9	0.0	69.3	203.3
76	Epsilon-caprolactam	97,916	0.0	49.9	0.0	49.9	251.3
104	Chlorodifluoromethane	20	20.3	0.0	0.0	20.3	0.0
400	Benzene	66	12.9	0.1	0.0	13.0	0.0
128	Chloromethane	12	12.3	0.0	0.0	12.3	0.0
80	Xylene	128	10.4	0.0	0.0	10.4	11.4
53	Ethylbenzene	23	9.4	0.0	0.0	9.4	10.7
213	N,N-dimethylacetamide	605	8.2	0.0	0.0	8.2	267.6
240	Styrene	186	4.9	0.0	0.0	4.9	0.6
405	Boron compound	27	0.1	4.3	0.0	4.4	6.2
374	Hydrogen fluoride and its water-soluble salts	5	0.0	2.6	0.0	2.6	0.4
349	Phenol	76,213	1.9	0.1	0.0	2.0	1,342.1
13	Acetonitrile	525	1.8	0.0	0.0	1.8	426.1
296	1,2,4-Trimethylbenzene	123	1.6	0.0	0.0	1.6	3.1
351	1,3-Butadiene	105,045	1.6	0.0	0.0	1.6	0.0
243	Dioxins [Note] mg-TEQ/year	—	83.3	2.5	0.0	85.8	0.0

Note: Contains various compounds

Scope of coverage: UBE's domestic plants and laboratories and key domestic consolidated subsidiaries with plants (see page 16), representing 70% of such subsidiaries

*1 Pollutant Release and Transfer Register (PRTR) Law: This legislation requires companies to identify business site chemical substance emissions and transfer volumes and report to the government. The Ministry of the Environment discloses the submitted information on its website. Such disclosure is designed to encourage voluntary efforts to improve chemical substance management.

*2 Volatile organic compounds (VOCs): These organic chemicals evaporate or sublimate easily, entering the atmosphere as gases. They are factors in the forming of suspended particulate matter (PM) and photochemical oxidant pollution.

*3 20 chemicals selected independently: Methyl alcohol, butyl alcohol, toluene, epsilon-caprolactam, styrene, ammonia, cyclohexane, cyclohexanone, oxalic acid, vinyl acetate, xylene, n-hexane, ethylbenzene, chloromethane, benzene, dimethyl phthalate, N,N-dimethylacetamide, boric acid compound, phenol, hydrogen fluoride and its water-soluble salts

Fiscal 2022 Environmental Impact Data by Facility

			Emissions into the Atmosphere (t/y)			Emissions into Water (t/y)		
			SOx*1	NOx*2	Dust	COD*3	Total Phosphorus	Total Nitrogen
In Japan								
Chemicals Business	UBE	Sakai Factory / Osaka Research & Development Center	0.0	1.4	0.0	0.7	0.0	0.7
		Ube Chemical Factory east and west area	17	59	2.1	398	5.5	352
		Ube Chemical Factory Fujimagari Area	530	333	2.5	203	5.0	50
		Power Management Dept. (private power generation)	532	2,755	100	713	6.4	48
		Ube Electronic and Industrial Materials Factory (Former Meiwa Plastic Industries, Ltd.)	—	—	—	0.0	0.0	0.0
		Ube Research Laboratory / Pharmaceutical Research Laboratory	—	—	—	0.2	0.0	0.2
		Future Tech Laboratory (Former Chiba Research Laboratory)*	—	—	—	0.0	0.0	0.0
		Subtotal	1,079	3,149	105	1,315	17	451
	API Corporation		2.6	5.9	0.1	12.6	0.3	10.2
	UBE Elastomer Co. Ltd.		0.6	31.7	0.2	11.5	0.1	3.3
	Ube Film, Ltd.		—	—	—	—	—	—
	UBE Hydrogen Peroxide, Ltd.*		0.0	0.0	0.0	0.4	0.0	0.3
	UBE EXSYMO CO., LTD.		0.0	0.6	0.1	3.7	0.0	0.0
	Total (Chemicals Business)		1,082	3,187	105	1,343	17	465
Machinery Business	UBE Machinery Corporation, Ltd.		0.1	—	—	1.1	0.2	1.4
	UBE Steel Co., Ltd.		13	88	9.4	2.6	—	—
	Fukushima Ltd.		—	—	—	—	—	—
	Total (Machinery Business)		13	88	9.4	3.7	0.2	1.4
Total (UBE Group)			1,095	3,275	115	1,347	18	466
Overseas								
Spain	UBE Corporation Europe, S.A. Unipersonal		8	442	5.5	130	1.0	58
Thailand	UBE Chemicals (Asia) Public Company Limited		3.5	20	4.7	29	0.7	1.9
	THAI SYNTHETIC RUBBERS COMPANY LIMITED		0.0	0.0	1.1	18	0.0	0.0
	UBE Fine Chemicals (Asia) Co., Ltd.		0.0	4.8	0.2	—	—	—
Total			11	468	11	177	2	60

* These sites reorganized or changed their names in fiscal 2023. See Reorganizations and Renamings on page 16 for details.
Scope of coverage: UBE's domestic plants and laboratories and key domestic consolidated subsidiaries with plants (see page 16), representing 70% of such subsidiaries

*1 Sulfur oxides (SOx) originate in the sulfur (S) component of fuels. Boilers are our main source of these oxides.

*2 Nitrogen oxides (NOx) stem from fuel combustion, primarily from Group boilers and cement kilns.

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

Internal Carbon Pricing

The UBE Group sets internal carbon pricing as a guideline for evaluating carbon prices in capital investment.

Objectives	1. Raise awareness of importance of CO_2 measures 2. Promote investments to reduce CO_2 such as energy conservation and fuel conversion
Start date	April 1, 2010
Targeted greenhouse gas	Energy-related CO_2
Listed items	Increase/decrease in CO_2, economic indices when CO_2 is considered (CO_2 increase/decrease of 1,000t-CO_2 or more per year)
Materials and text covered	1. Descriptions of facility plans to be discussed by Strategic Management Meeting members 2. Written requests for approval (at time of execution)
Carbon price	10,000 yen/t-CO_2 (~FY2023) However, notifications will be issued as needed in the even of significant changes brought about by regulatory trends, etc. Carbon pricing subject to change.

Chemical Substance Management

Basic Approach

The UBE Group complies with the chemical-related laws and regulations of countries worldwide, including Japan. We ensure rigorous chemical product management throughout distribution systems and proactively disclose safety information about our chemical products. Across these efforts, chemical substance management at Ube Industries takes into account health, safety, and the environment.

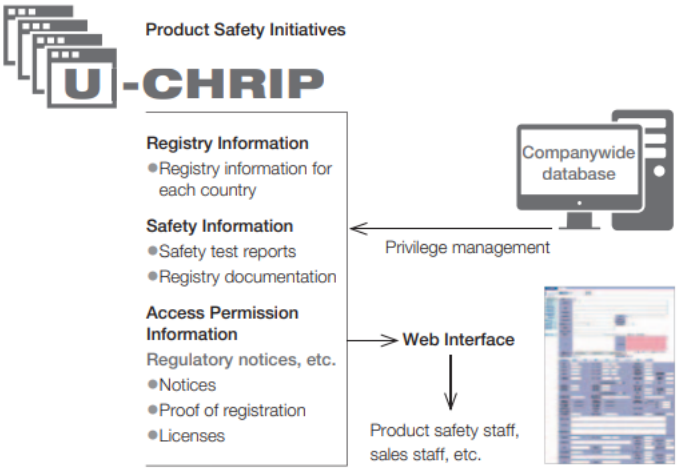
Management System

UBE Group's Product Safety (Chemical Substance Management) System

We have established a management system to ensure that all departments involved in our business operations manage chemical substances appropriately. Considering the regional nature of laws and regulations pertaining to chemical substance management, UBE (Japan) has jurisdiction over Asia, while UBE Corporation Europe (Spain), our European manufacturing base, has jurisdiction over Europe and North America. In Japan, we have standardized an annual schedule for compliance with the Act on the Regulation of Manufacture and Evaluation of Chemical Substances, the Industrial Safety and Health Act, and other laws and regulations to ensure that no omissions occur. For China, Taiwan, and South Korea, where export volumes are increasing, we work closely with dedicated personnel at each local subsidiary to ensure compliance with revisions to the laws and regulations of each country or region.

Complying with Chemical Substance Management Laws and Regulations

Product safety is part of quality, and we work to manage this in line with our quality management system. We use our (SDS)[*1] production support system, as well as UBE-CHemical Regulation Information Platform (U-CHRIP), a comprehensive database developed by UBE, for managing information about chemical substances, and other ICT to manage hazard information[*2] of substances we use and the compliance status of substances we handle to ensure that we adhere to laws and regulations.



U-CHRIP: UBE-CHemical Regulation Information Platform

Supply Chain Communication

UBE supplies local-language versions of SDSs and product labels for all products, complying with regulations in each country or region to ensure the safe use of chemical products throughout their life cycles. We make SDSs for key products available for download from our website.

To realize green procurement*3, we are identifying hazardous chemical substances in our products and informing customers.

For logistics safety, we have also been working on the development of emergency contact numbers that can be used in the event of transportation accidents. In fiscal 2021, we prepared to expand the coverage area of our 24-hour emergency contact service to the entire world, and we began operating the service in fiscal 2022.

Cooperating with Industry Associations

Since fiscal 2011, we have participated in the Japan Chemical Industry Association (JCIA)'s voluntary chemical substance risk management activities while gathering and disseminating hazard information and risk assessments.

We support the International Council of Chemical Association (ICCA)'s voluntary Long-Range Research Initiative, which focuses on the effects of chemical substances on human health and the environment.

*1 Safety Data Sheet (SDS): Documentation containing hazard and toxicity information about chemical substances that manufacturers disclose when supplying chemical substances and products incorporating them.

*2 Hazard information: Information on the inherent risks of chemical substances.

*3 Green procurement: Corporate purchases of raw materials, parts, and manufacturing facilities with minimal environmental footprints.

SDS

SDSs are necessary and important documents for proper communication of hazard information on chemical products through the supply chain. UBE considers SDSs to be an integral part of its products and, regardless of the product-specific hazards, prepares and provides SDSs to customers. You can download the SDSs that you need by registering as a user on the UBE Chemical Information website.

Transport Safety

Logistics

Transport Safety

To ensure the safe transport of chemical substances, the UBE Group provides transport companies and drivers with safety information to use in case of an accident during transport. This is only part of the Group's commitment to preventing logistics accidents and enhancing logistics quality.

Logistics

Responsible Care Activities

The UBE Group's activities are based on the principles of Responsible Care (RC).

Responsible Care

RC is a set of principles and practices inviting corporations that handle chemical substances to make voluntary efforts to protect the environment, safety and health at all stages of the process of chemical substance handling — from development, manufacturing, distribution, and use, to final consumption, disposal and recycling. It also entails disclosing the results of these activities and engaging in dialogue and communication with society.

The UBE Group embraces RC principles and implements RC activities across all of its business segments including chemicals, construction materials, machinery, and energy and environment.

The UBE Group implements the following six RC initiatives.

1. **Environmental Preservation**
   Initiatives for the health of the earth's people and natural environment
2. **Process Safety and Disaster Prevention**
   Initiatives for the prevention of accidents at facilities and mitigation of natural disasters.
3. **Occupational Safety and Health**
   Initiatives for the health and safety of workers.
4. **Logistics Safety**
   Initiatives for the prevention of accidents related to logistics, and for disaster mitigation.
5. **Product Stewardship**
   Disclosure and communication of the properties and handling methods of chemicals, for the safety and health of all persons who handle chemicals including customers, and for conservation of the environment.
6. **Publication of performance reports and dialogue with society**
   Open reporting of the details and outcomes of activities, and social and community dialogue.

RC community dialogue meeting

Plant tour

The UBE Group actively pursues RC in line with these objectives.

Management System Certification Acquisitions

The acquisition of occupational health and safety and environmental management system certifications at UBE can be seen here.

Responsible Care Report

In 2005 and after, the Responsible Care Report was included in the CSR Report. Since 2018, it has been part of the new Integrated Report.

- CSR Report
- Integrated Report

Responsible Care Report 2004	(1,110KB)
Responsible Care Report 2003	(558KB)
Responsible Care Report 2002	(676KB)

Links marked will open in a new window.