

CSR REPORT 2018

Corporate Social Responsibility Report 2018

ESG Data Book



Editorial Policy

This Report discloses the detailed ESG data which are not included in ADEKA Group CSR Report 2018.

Period Covered by This Report

Fiscal 2017 (April 1, 2017 to March 31, 2018)

Some parts of this report refer to recent activities taking place in fiscal 2018.

* From January 1, 2017 to December 31, 2018 for overseas affiliated companies

Scope Covered by This Report

This Report covers the whole ADEKA Group. Where necessary, "ADEKA Group" and "the Group" refer to the entire ADEKA Group, while "ADEKA" refer to ADEKA Corporation.

Boundary of Reporting Organizations by Environmental Data

ADEKA

All Plants, R&D Laboratories, Offices

Group Companies in Japan

- ADEKA CHEMICAL SUPPLY CORP.
- ADEKA LIFE-CREATE CORP.
- OXIRANE CHEMICAL CORP.
- ADEKA CLEAN AID CORP.
- ADEKA FINE FOODS CORP.
- ADEKA ENGINEERING & CONSTRUCTION CORP.
- ADEKA LOGISTICS CORP.
- ADEKA FOODS SALES CORP.
- YONGO CO., LTD.
- UEHARA FOODS INDUSTRY CO., LTD.
- TOKYO ENVIRONMENTAL MEASUREMENT CENTER CO., LTD.

Overseas Companies (Plants)

- ADEKA FINE CHEMICAL (SHANGHAI) CO., LTD.
- ADEKA FINE CHEMICAL (CHANGSHU) CO., LTD.
- ADEKA FOODS (CHANGSHU) CO., LTD.
- ADEKA FINE CHEMICAL TAIWAN CORP.
- ADEKA KOREA CORP.
- ADEKA FOODS (ASIA) SDN.BHD.
- ADEKA (SINGAPORE) PTE.LTD.
- ADEKA FINE CHEMICAL (THAILAND) CO.,LTD.
- ADEKA POLYMER ADDITIVES EUROPE SAS
- AMFINE CHEMICAL CORP.
- AM STABILIZERS CORP.
- ADEKA AL GHURAIR ADDITIVES LLC

■ Chemicals business ■ Food business ■ Other business

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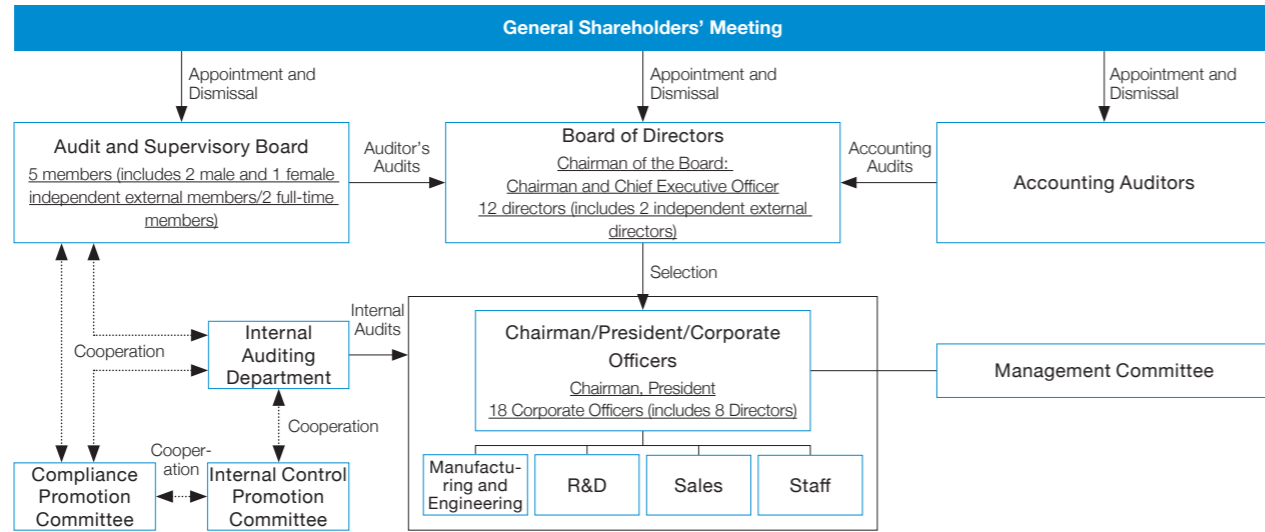
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Corporate Governance

Overview of Corporate Governance as of June 30, 2018

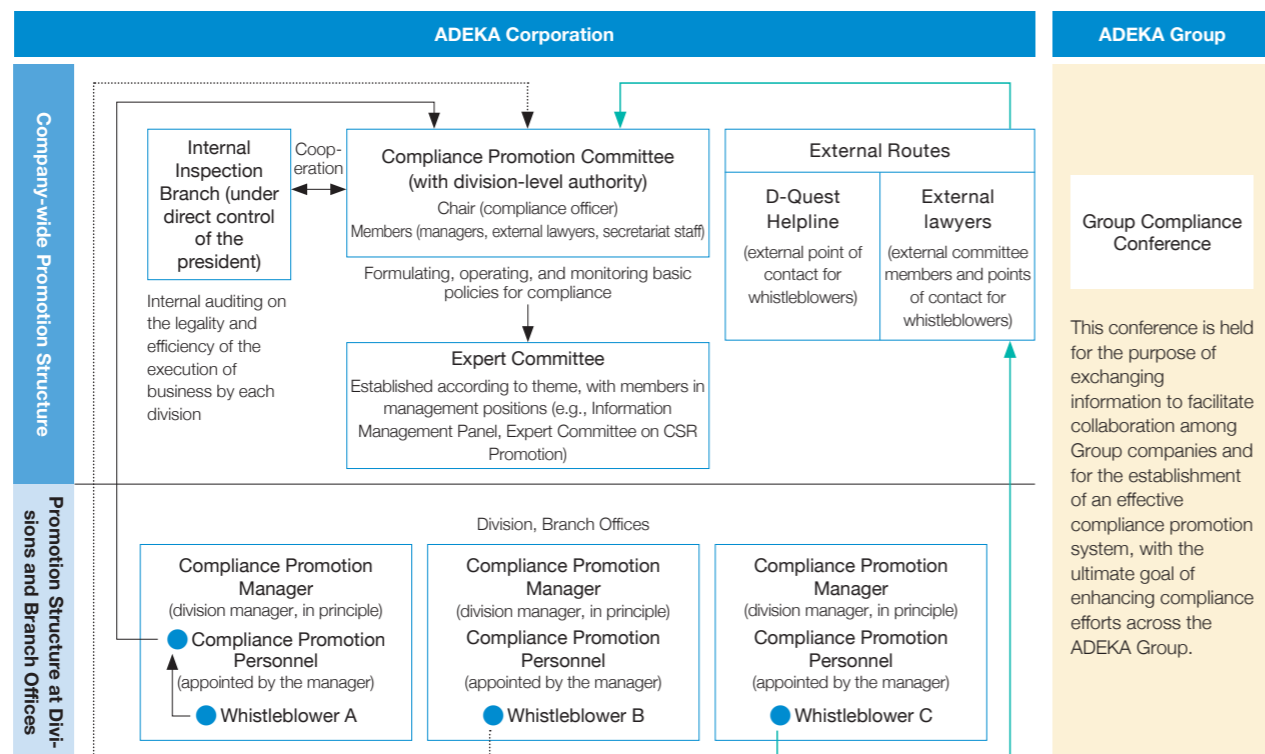


Corporate Governance Overview as of June 30, 2018

	Number of Members
Chairman of the board of directors	Chairman and Chief Executive Officer
Board directors (female)	12 (0)
External board directors (independent)	2 (2)
Corporate officers	18
Corporate officers doubling as board directors	8
Auditors (female)	5 (1)
External auditors (independent)	3 (3)

Compliance

Compliance Structure



Compliance Training

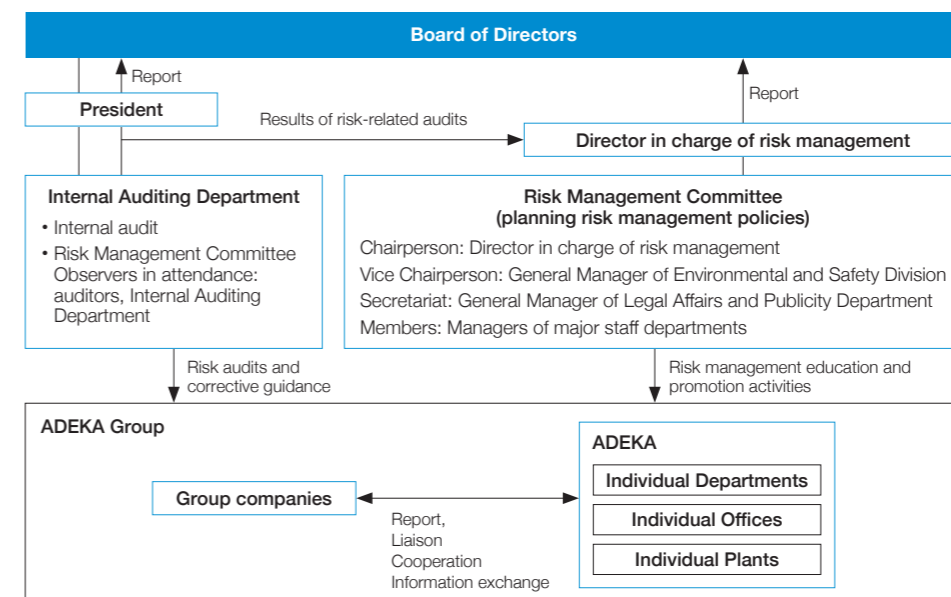
Type of Training	Theme	Date and Period	Target	Participants
Seminars	In-house compliance seminar	Conducted as needed	All divisions of ADEKA and its Group companies in Japan	Conducted at all those target companies
	Themes for each position	Conducted as needed	Employees in all positions at ADEKA (new employees, Class 1 employees, supervisors, deputy assistant managers, deputy section managers, and department managers)	233
	Global Compliance (training for global human resource development)	September 14, 2017	Those selected as ADEKA global human resources	24
	Compliance orientation for Group companies (conducted at each company)	Conducted as needed	Group companies (CROWN CO., LTD. AND ASAHI ARCHITECTS OFFICE CO., LTD.)	30
E-learning	Case Study on Compliance	July–December 2017	New employees, including mid-career personnel at ADEKA and its Group companies in Japan	144
	Practical and Continuous Study on Compliance	Started in March 2017 (ongoing)	Directors of Group companies, and employees of ADEKA and its domestic Group companies	124
	Information Security	July–September 2017	Employees of Group companies (on a voluntary basis)	1,555
	Introduction to Patents	March 2017–February 2018	Employees of Group companies (on a voluntary basis)	971
	Antisocial Forces and Corporate Countermeasures	Started in March 2017 (ongoing)	Employees of Group companies (on a voluntary basis)	387
	Promotion of Anti-bribery Initiatives	November 2017–February 2018	Employees of ADEKA (on a voluntary basis)	19
	Security Export Trade Control	March 2018	Group company (ADEKA Clean Aid Corp.)	127
Lectures and Orientations	Lecture on information security: "Threats at Hand: Can You Protect Your Company?"	September 6, 2017	Directors of Group companies, and employees of ADEKA and its domestic Group companies	588
	Lecture on compliance: "A Company that Performs Very Well Excels in Quality, Ethics and Communication"	December 6, 2017	Directors of Group companies, and employees of ADEKA and its domestic Group companies	450
	Orientation on insider trading regulations	October 17, 2017	Directors of Group companies, and employees of ADEKA and its domestic Group companies	270
	Orientation on antitrust acts	September 13, 2017	Directors of Group companies, and employees of ADEKA and its domestic Group companies	250

Number of Internal Reports

Fiscal Year	2013	2014	2015	2016	2017
Reports	7	3	4	9	9

Risk Management

Overview of Risk Management



Customers

Targets and Actual Results for Fiscal 2017 and Targets for Fiscal 2018

Item	Targets for FY2017	Results for FY2017	Targets for FY2018
Full compliance with the Product Liability Act	<ul style="list-style-type: none"> Develop country-specific SDS¹ using the automatic SDS creation system that complies with overseas regulations Operate a system capable of reinforcing the management of product information 	<ul style="list-style-type: none"> Developed part of country-specific SDS using the automatic SDS creation system Developed a system capable of reinforcing the management of product information 	<ul style="list-style-type: none"> Continue developing country-specific SDS using the automatic SDS creation system Standardize a series of work from the acquisition of test data to the input of test values to the management system and thoroughly manage test values Operate a system capable of reinforcing the management of product information
Management of chemicals	<ul style="list-style-type: none"> Maintain appropriate compliance with domestic and international regulations Survey and address the latest trends in Korea REACH², the USA (TSCA³), and Thailand (Chemical Substance Control Law) Achieve compliance in countries introducing GHS⁴, including Canada (June 2017) 	<ul style="list-style-type: none"> Achieved compliance with the Japan CSCL priority assessment chemical substances (addition) Submitted the performance report based on the revised TSCA in the USA (February 2018) Compliance with Canada's GHS is planned to be achieved in fiscal 2018 due to the delayed GHS implementation (June 2018) 	<ul style="list-style-type: none"> Maintain appropriate compliance with domestic and international regulations Survey and address the latest trends in Japan (CSCL), South Korea REACH, the USA (revised TSCA), Thailand and Vietnam (new CSCL) Achieve compliance in countries introducing GHS (Canada: June 2018, Mexico: October 2018, etc.)
Safety and assurance for food products	<ul style="list-style-type: none"> Continue providing reliable product information to customers including product standard documentation Continue gathering all regulatory information related to food labeling standards and maintain reliable responsiveness 	<ul style="list-style-type: none"> Continued to provide customers with reliable product information based on product standard documentation and quality management Established in-house rules and operational plans 	<ul style="list-style-type: none"> Continue providing customers with reliable product information based on product standard documentation and quality management Continue gathering all regulatory information related to food labeling standards and maintain reliable responsiveness

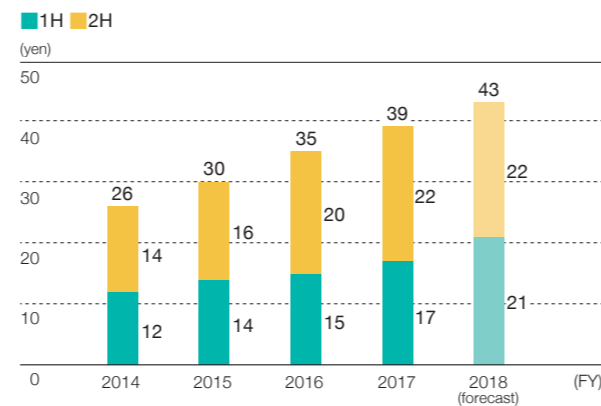
¹ Safety Data Sheets containing information such as the name of the chemical substance, its properties, hazards and necessary handling precautions.
² The Act on Registration and Evaluation of Chemicals of South Korea.
³ Toxic Substances Control Act.
⁴ Globally Harmonized System of Classification and Labeling of Chemicals.

Overview of Quality Management System



Shareholders and Investors

Annual Cash Dividends



Business Partners

Targets and Actual Results for Fiscal 2017 and Targets for Fiscal 2018

Item	Targets for FY2017	Results for FY2017	Self-evaluation	Targets for FY2018
Strengthen supplier management	<ul style="list-style-type: none"> Strengthen BCP Continue conducting supplier surveys 	<ul style="list-style-type: none"> Reduced risks by using multiple procurement channels Conducted a compliance questionnaire survey for new suppliers Conducted biennial audits of existing suppliers 	○	<ul style="list-style-type: none"> Develop the Basic Purchasing Policy/Guidelines
Strengthen global procurement system	<ul style="list-style-type: none"> Develop a global purchasing system 	<ul style="list-style-type: none"> Operated the Global Management System (GMS) throughout the Group 	○	<ul style="list-style-type: none"> Develop a centralized data sharing system for purchase data (utilization of GMS)
Sustainable palm oil procurement	<ul style="list-style-type: none"> Strengthen measures to address the issues related to palm oil procurement 	<ul style="list-style-type: none"> Conducted audits to obtain RSPO* supply chain certification 	○	<ul style="list-style-type: none"> Obtained RSPO supply chain certification

*Roundtable on Sustainable Palm Oil: Established with the objective of promoting the growth and use of sustainable palm oil products.

Employees

Management

Targets and Actual Results for Fiscal 2017 and Targets for Fiscal 2018

Item	Mid-term target	Ultimate target	Targets for FY2017	Results for FY2017	Targets for FY2018
Work-life balance	Support plan for nurturing the next generation (April 2015–March 2018)	Target utilization of childcare leave: more than 2 male employees and more than 80% utilization rate for female employees	Continue disseminating the system by using internal bulletin board, etc., to raise awareness of childcare leave	5 male employees took childcare leave; for female employees, the targeted rate was fully achieved	Target utilization of childcare leave: more than 2 male employees and more than 80% utilization rate for female employees (action plan for FY2018–FY2020)
		Continue initiative to reduce overtime working hours	As part of work-style reforms, promote flexible work styles and reduce long working hours	Conducted personnel assignments to level the amount of work	Continue initiative to reduce overtime working hours
Promotion of women's participation and advancement in the workplace	Plan on promoting the active roles of women in the workplace (April 2016–March 2021)	Achieve a ratio of 5% female managers by 2021		Ratio of female managers in FY2017: 2.6%	Achieve a ratio of 5% female managers by 2021

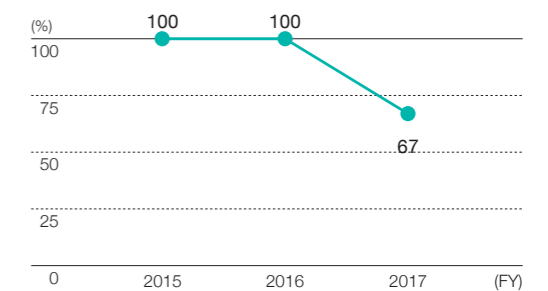
Diversity

Human Resources Data

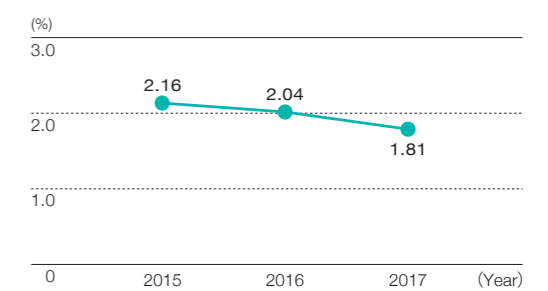
Item	Unit	FY2015	FY2016	FY2017
(1) Number of consolidated employees	Employees	3,241	3,375	3,551
(2) Number of non-consolidated employees	Employees	1,561	1,593	1,639
Male	Employees	1,355	1,373	1,415
Female	Employees	206	220	224
(3) Ratio of female employees	%	13.2	13.8	13.7
(4) Employee average age	Years	38.9	38.8	38.8
Male	Years	39.1	39.0	39.0
Female	Years	37.7	37.5	37.6
(5) Average length of employment	Years	15.9	15.7	15.7
Male	Years	16.1	15.9	15.9
Female	Years	14.7	14.5	14.6
(6) Employee turnover rate	%	2.8	2.5	2.8
Male	%	2.8	2.6	2.7
Female	%	2.8	2.2	3.4
(7) Ratio of female managers	%	2.7	2.9	2.6
(8) Number of new graduates hired	Employees	49	75	75
Male	Employees	46	59	62
Female	Employees	3	16	13

(1): ADEKA Group, (2)–(8): ADEKA

Rate of Employment of Retiree (scope: ADEKA)



Rate of Employment of People with Disabilities (scope: ADEKA)



As of March 31 of each year

Action Plan Based on the Act on Promotion of Women's Participation and Advancement in the Workplace (scope: ADEKA)

Period: April 1, 2016 to March 31, 2021

Goal: Raise the ratio of women in management positions to 5% by 2021.

Measures:

1. Enhance operational skills and nurture awareness about women's involvement in business operations
 April 2016: Promote job rotation that supports the career development of employees, encourage female employees to participate in external training programs, and enhance the quality of training for those who are in a quasi-management position.
 April 2017: Evaluate the effectiveness of the measures.
 April 2019: Identify issues that need to be addressed and strengthen efforts or implement new measures.

2. Raise the ratio of female employees

April 2016: Career development seminar of women,

conducted by senior female staff.

April 2017: Evaluate the outcome of the measure.

April 2018: Identify issues that need to be addressed and strengthen efforts or implement new measures.

3. Promote initiatives for work-life balance

April 2016: Start deliberations on the introduction of a half-day unit for nursing care leave and a multiple-period system for nursing care leave of absence.

January 2017: Introduce a multiple-period system for nursing care leave of absence.

April 2018: Revise brochures on childcare leave and nursing care leave.

Cultivating Human Resources

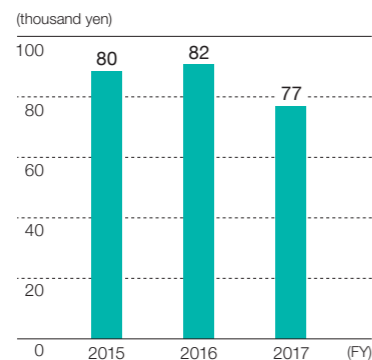
Overview of the Educational System (scope: ADEKA)

Position category	Training relevant to "nurture human resources who lead reforms (Basic Philosophy)"						Training relevant to "nurture human resources who can be trusted (Basic Philosophy)"			
	Level	Position-specific training	Selective training	Overseas training	Optional training			In-house OJT	Activities for local communities	Compliance education
Management positions	Department managers									
	Deputy department managers	Training for new deputy department managers								
	Assistant managers (Class 1)		Enrollment in a business school 2nd position levels							
	Assistant managers (Class 2)	Training for newly appointed section managers								
General staff	Deputy assistant managers	Training for new deputy assistant managers	Enrollment in a business school 1st position levels	Training for global human resources	Overseas training program (for staff in their 20s and 30s)	All job positions	All job positions	All job positions	All job positions	All job positions
	Supervisors	Training for new supervisors	Mentor training							
	Class 1	Training for new Class 1 employees								
	Class 2	Training for new employees								
	Class 3									

Global Human Resources Development Programs

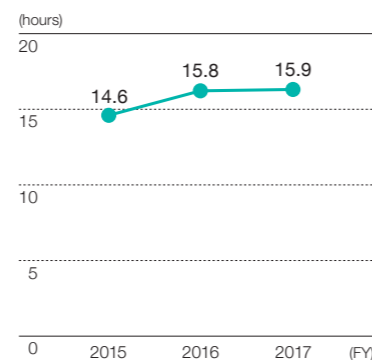
Ongoing initiatives	Description
Cultivating global human resources through selected employees	Aimed at developing personnel who can perform superbly outside Japan, the initiative provides selected young employees with opportunities to acquire marketing skills, finance and accounting knowledge, language skills, etc.
Overseas training program	For the purpose of developing core global human resources, selected employees in their 20s and 30s receive language training at a language school and business training at an overseas Group company for about six months.
Language study program	Language lessons are held by native teachers at ADEKA's worksites. Tuition support for a language school, pre-secondment language training, and other flexible programs are also available.
Accept employees from overseas Group companies	Local employees at overseas Group companies are dispatched to Japan to experience work in the ADEKA Group and life in Japan.
Developing management level employees at international locations	For developing managerial personnel for overseas Group companies, candidate employees receive OJT at production sites in Japan and deepen their understanding about their job and the ADEKA Group's management philosophy and values.

Training Costs per Employee (scope: ADEKA)

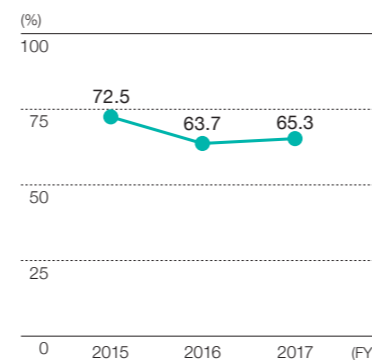


Promoting a Work-Life Balance

Average Monthly Overtime Working Hours (scope: ADEKA)



Utilization Rate of Annual Paid Leave* (scope: ADEKA)



Childcare and Nursing Care Support Programs (scope: ADEKA)

Program	Details	Number of employees who used the program
Maternity leave	6 weeks before birth (14 weeks in the case of twins) 8 weeks after birth	7
Spousal maternity leave	3 days or less in cases where the spouse has given birth or less in cases where the spouse has given birth	61
Childcare leave	Until the child reaches 1 year of age, in principle <u>an extension of up to 1 year may be approved under special circumstances</u> . (Calculated from the 1st day of childcare leave, special accumulated leave may be approved for up to 5 consecutive days. The period of special accumulated leave will be regarded as paid leave.)	9 (including 5 male employees) (percentage of employees who returned to work: 100%)
Childcare nursing leave	For employees raising children below <u>grade 4 of elementary school</u> , it is possible to take up to 10 days of leave per year, regardless of the number of children, for situations in which they have to take care of an injured or sick child (including vaccinations and health screenings for the child, as well as suspension of classes.)	50
Nursing care leave of absence	A total of up to 365 days for each person requiring care	0
Nursing care leave	A total of up to 20 days per year for each person needing care	5
Shortened working hours	Childcare: <u>Until the end of the child's 4th year in elementary school</u> Nursing care: A total of up to 365 days, combined with nursing care leave of absence (Both may be reduced up to a maximum of 2 hours in 15-minute units.)	26

The conditions underlined above are statutory levels.

General Employer Action Plan Based on the Act for Measures to Support the Development of the Next Generation (scope: ADEKA)

Period: April 1, 2018 to March 31, 2021

Goals:

- Increase the number of male employees who take childcare leave to five or more and raise the ratio of female employees who take childcare leave to 80% or more during the plan period
- Create an environment that encourages men to become more involved in child-rearing
- Continue measures for reducing overtime working hours
- Reduce the number of employees who take fewer than five days off per year to zero

Measures:

- Revising in-house leaflets about childbirth and child-rearing and distribute them among eligible employees
- Through training programs, nurture a culture of encouraging employees to take childcare leave
- Enhance the "no overtime day" initiative
- Introduce IC cards at local offices so that they can objectively monitor working hours
- Share information about annual paid leaves between the employer and the labor union, and provide encouragement for departments or individuals not utilizing the program
- Revise the working hour management system toward visualizing the status of paid leaves taken

Occupational Health and Safety

Targets and Actual Results for Fiscal 2017 and Targets for Fiscal 2018

Item	Targets for FY2017	Results for FY2017	Targets for FY2018
Workplace safety and security reinforcement	<ul style="list-style-type: none"> Continue information-sharing toward achieving zero-accident workplaces Enrich the content of the safety awareness video Ensure that employees understand basic rules on safety; strengthen onsite inspections 	<ul style="list-style-type: none"> Made repeated and persistent calls to be attentive at workplaces Produced and distributed a safety awareness video to the Group's production sites and laboratories Inspected worksites where accidents resulting in lost workdays had occurred. Distributed a safety action book to worksites in Japan and overseas, which has been used as training material. 	<ul style="list-style-type: none"> Eliminate unsafe activities (inadvertent actions and shortcuts) and unsafe conditions Firmly implement measures to prevent recurrence of problems and promote horizontal implementation within each office and between offices
	<ul style="list-style-type: none"> Repeatedly drill young employees and transferees and continue "know-why" training Have all employees join emergency exercises 	<ul style="list-style-type: none"> Conducted "know-why" training at all plants and laboratories on an ongoing basis and confirmed the effectiveness of these educational activities through an audit Had all employees engage in emergency exercises and reviewed procedures 	<ul style="list-style-type: none"> Repeatedly drill young employees and transferees and continue "know-why" training
	<ul style="list-style-type: none"> ADEKA Mother Plant and Environment Safety & Quality Assurance Department will cooperate to continue providing safety support and guidance to overseas Group production bases 	<ul style="list-style-type: none"> Continued providing safety support and guidance through the ADEKA Mother Plant by sharing information on safety inspections conducted overseas 	<ul style="list-style-type: none"> Support activities for four areas of safety at bases in Japan and overseas and conduct safety audits

Number of Accidents by Year (Scope: ADEKA and subcontractors and the ADEKA Group's 13 production sites)

FY	2013	2014	2015	2016	2017
Accidents with lost workdays	6 (0)	8 (3)	8 (6)	9 (4)	11 (3)
Accidents without lost workdays	11 (8)	13 (9)	8 (5)	5 (4)	10 (9)

Figures in parentheses indicate data for ADEKA and domestic Group companies.

Frequency Rates of Accidents Resulting in Lost Workdays*1

Year	2013	2014	2015	2016	2017
ADEKA and its domestic manufacturing sites	0.00	0.57	0.97	0.55	0.36
Overseas sites	3.38	2.84	1.00	2.42	3.70
Average among chemical plants*2	0.82	0.76	0.81	0.88	0.81

*1 Rates calculated by dividing the number of employees involved in an accident resulting in lost workdays with the total working hours (one million hours).

*2 Source: Survey on Industrial Accidents by the Ministry of Health, Labor and Welfare of Japan; frequency rates are by calendar year.

Management

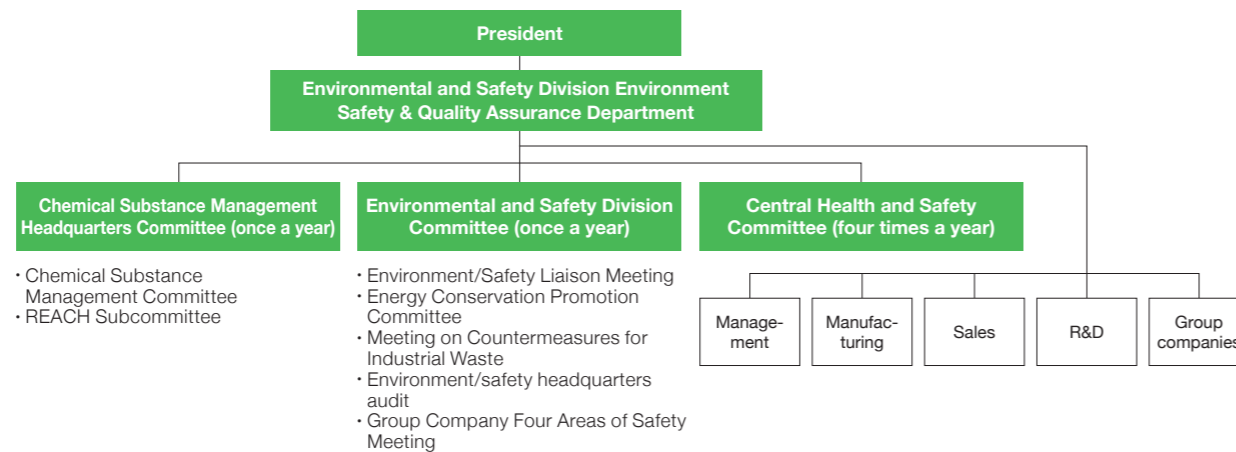
Targets and Actual Results for Fiscal 2017 and Targets for Fiscal 2018

Self-evaluation: ● Exceeded target ○ In line with target △ Below target
(scope: (1): ADEKA; (2) & (3): ADEKA and eleven domestic Group companies)

Item	Targets for FY2017	Results for FY2017	Self-evaluation	Targets for FY2018
(1) Promote energy conservation	• Reduce energy intensity by 1.0% or more year on year	• Energy intensity at 0.1777 kl/t (1.0% reduction year on year)	○	• Reduce energy intensity by 1.0% or more year on year (seek a 3% reduction by FY2020 from the FY2017 level)
	• Reduce CO ₂ emission intensity by 1.0% or more year on year	• CO ₂ emission intensity at 0.401 t-CO ₂ /t (1.1% reduction year on year)	○	• Reduce CO ₂ emission intensity by 1.0% or more year on year (seek a 3.0% reduction by FY2020 from the FY2017 level)
(2) Reduce industrial waste	• Promote and maintain zero emissions* ¹ through recycling • Promote appropriate disposal of industrial waste (reviewing contracts, inspecting subcontractors, preventing resale of food waste, and other actions)	• Landfill disposal volume at 55.6 tonnes (0.11%* ² of industrial waste generated) • Food waste management was added as a new audit item for the Food Division, and the regular audit confirmed that a proper control to prevent resale was in place	○* ²	• Promote and maintain zero emissions through recycling • Promote appropriate disposal of industrial waste (reviewing contracts, inspecting subcontractors, preventing resale of food waste, and other actions) • Attain the food recycling rate of 95% in FY2020 (target percentage for food manufacturers)
(3) Promote green purchasing	• Achieve a green purchasing rate of 80% or more for 43 designated stationery items	• 77.3% (10,415 items among 13,469 items purchased)	△	• Achieve a green purchasing rate of 80% or more for 43 designated stationery items or heighten the rate by 1%

*1 ADEKA defines "complete elimination" as landfill waste that amounts to less than 0.1% of the total volume of industrial waste output.
*2 Self-evaluated as "○" because the emission rate for business activities was 0.08%, although the rate exceeded 0.1% temporarily due to an increase in landfill disposal arising from construction.

Environmental Initiatives System



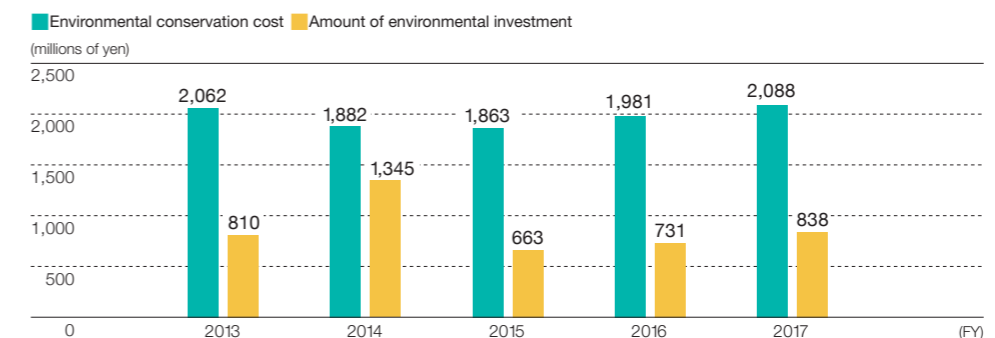
Environmental Accounting (scope: ADEKA (production and research divisions), ADEKA FINE FOODS CORP., Oxirane Chemical CORP., UEHARA FOODS INDUSTRY CO., LTD.)

Environmental Conservation Costs (millions of yen)			
Category	Description of Main Initiatives	Cost of Environmental Initiatives	Amount of Investment
1. Business area cost		1,966	838
(1) Pollution prevention costs	Prevention of air, water, and soil pollution, and of noise, stench, and land subsidence	1,172	326
(2) Global environmental conservation costs	Preventing global warming (conserving energy), preventing damage to the ozone layer	412	342
(3) Resource recycling costs	Reducing and recycling resources, and minimizing the generation of waste material	381	170
2. Upstream/downstream cost		18	0
3. Administration cost		98	0
4. R&D cost		0	0
5. Social activity cost		3	0
6. Environmental remediation cost		3	0
Total		2,088	838

Environmental conservation effect					
Classification	Environmental Performance Indicators	Unit	FY2016	FY2017	Year-on-year
Resources for business activities	Quantity of containers and packaging used Quantity of specific managed substances input	t	18,055	19,719	109.2%
Goods and services produced by business activities	Quantity of products transported Circulation and usage of used products, containers, and packaging	t	446	389	87.1%
	Quantity of containers and packaging used	t	6,107	5,850	95.8%
Other	Emissions of environmentally hazardous substances from logistics	t	0	0	—
	Transportation volume of materials and products	Million t-kilometers	135	135	100.0%

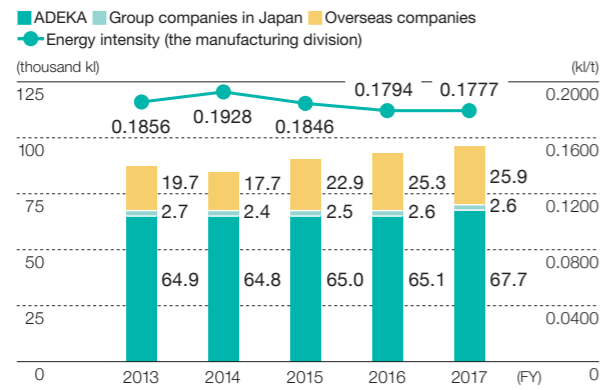
Economic Effects with Environmental Conservation Measures (millions of yen)	
Details of effects	Amount
Income earned by recycling, profits from the sale of valuable resources, etc.	163
Reduction in costs through introducing resources from the environment into business activities	219
Reduction in the burden imposed by business activities on the environment and costs related to the generation of waste material	72
Reduction in costs related to dealing with environmental damage	0
Reduction in other costs	11
Total	465
Degree of effects (calculated by dividing the economic effects resulting from environmental conservation activities by the costs of these activities)	15.9%

Cost of Environmental Initiatives and Amount Invested (scope: ADEKA (production and research divisions), ADEKA FINE FOODS CORP., Oxirane Chemical CORP., UEHARA FOODS INDUSTRY CO., LTD.)

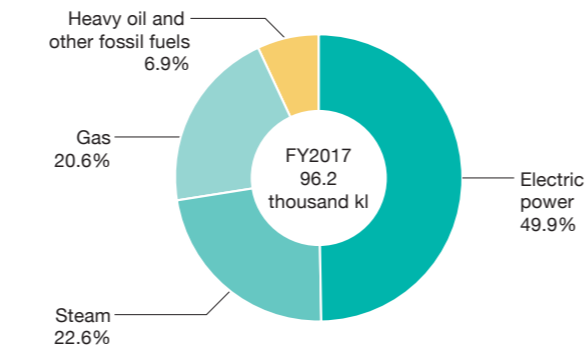


Preventing Global Warming

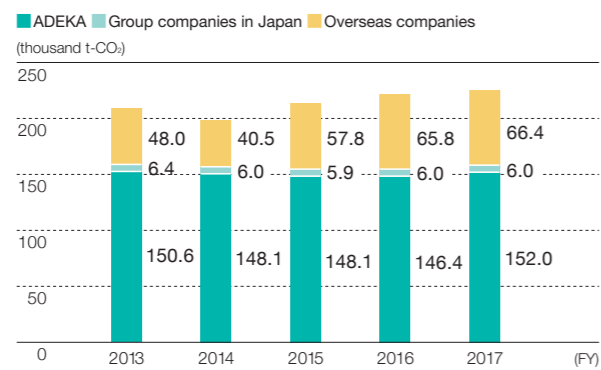
Energy Consumption by Crude Oil Equivalent and Energy Intensity Index



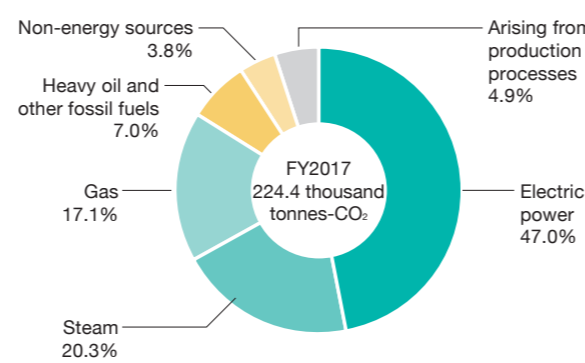
Breakdown of Energy Consumption



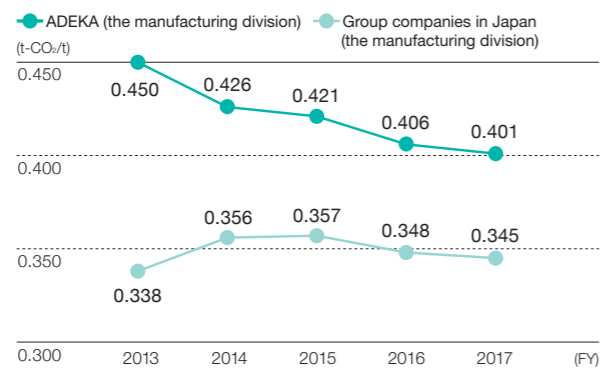
Greenhouse Gas Emissions



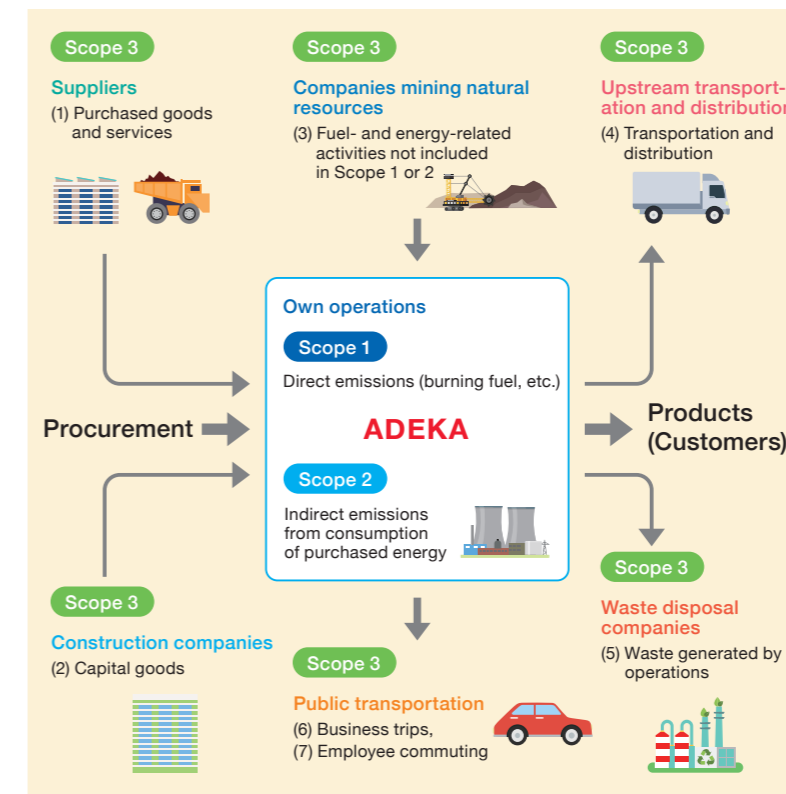
Breakdown of Greenhouse Gas Emissions



CO2 Emission Intensity Index (from energy consumption)



Flow Chart of ADEKA's Scope 3 Emissions



CO2 Emissions and Scope 3 Breakdown (scope: ADEKA)

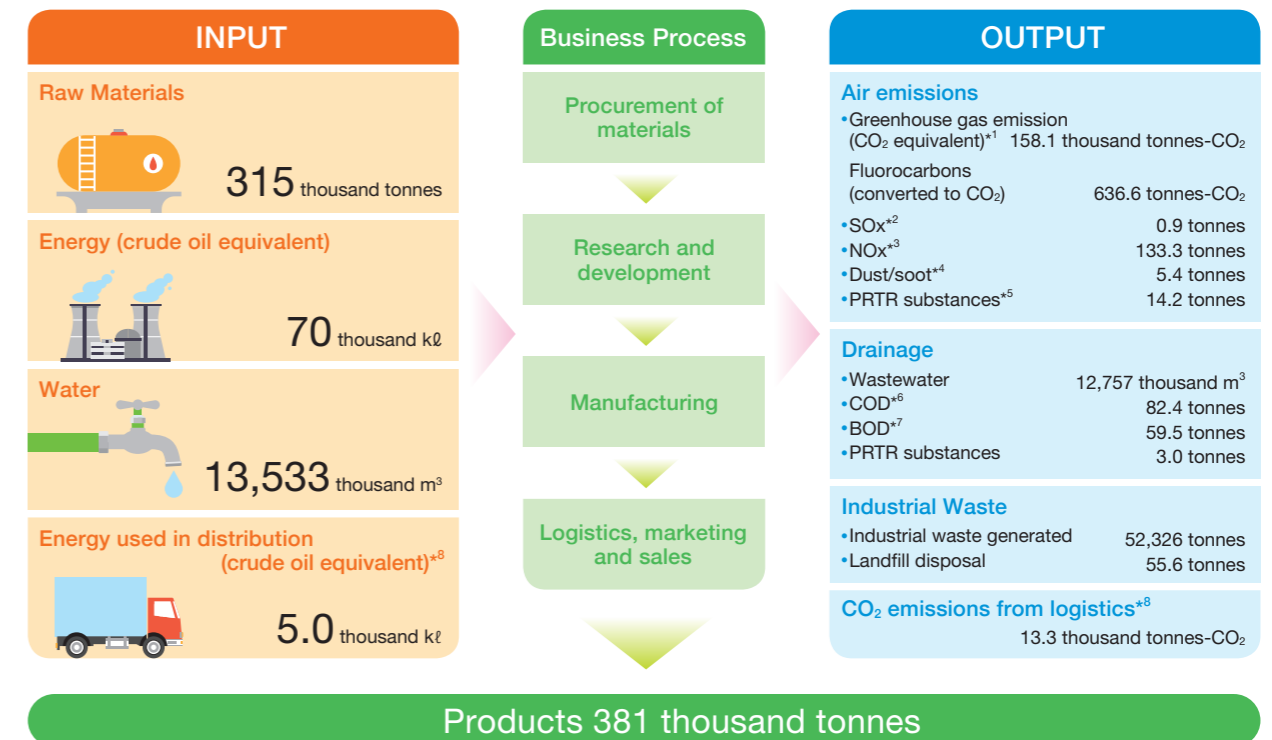
(Unit: thousand tonnes-CO₂)

Scope category	Emissions	
Scope 1	63.3	
Scope 2	88.7	
Scope 3	865.4	
Category 1	Purchased goods and services	768.3
Category 2	Capital goods	59.4
Category 3	Fuel- and energy-related activities not included in Scope 1 or 2	12.5
Category 4	Transportation and distribution	13.3
Category 5	Waste generated by operations	11.1
Category 6	Business trips	0.2
Category 7	Employee commuting	0.6

Total: 1,016.4 thousand tonnes-CO₂

Material Flow

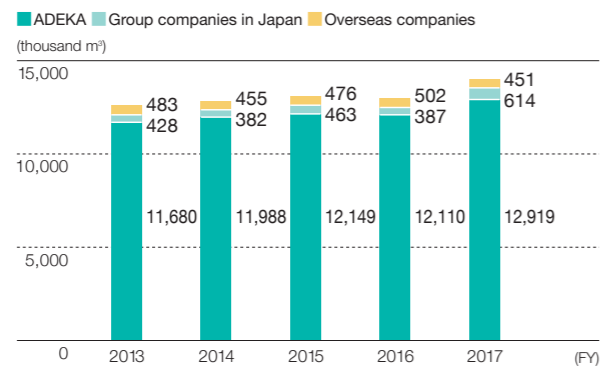
Environmental Initiatives System (scope: ADEKA and Group companies in Japan)



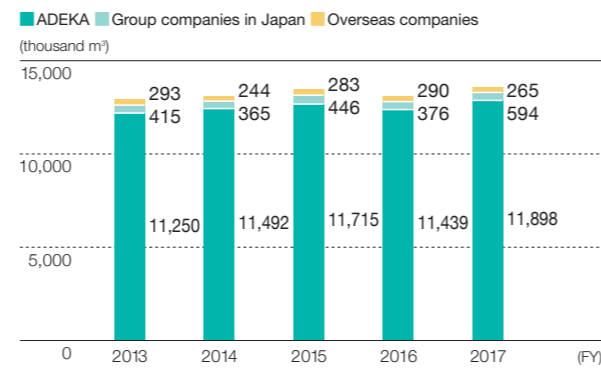
*1 Total emissions arising from energy sources, non-energy sources, and processes.
 *2 Sulfur oxides generated during the use of fuels that contain sulfur.
 *3 Nitrogen oxide generated during combustion in plant boilers and incinerators.
 *4 Fine particles generated during the combustion of fuels and other materials.
 *5 The PRTR Regulation is a law to encourage companies, etc. to be aware of their emissions of certain chemical substances and improve their management thereof.
 *6 Amount of oxygen consumed during the oxidation of organic substances.
 *7 Amount of oxygen required during the mineralization and gasification of contaminants in river water and industrial wastewater by microorganisms.
 *8 Scope: ADEKA

Preventing Water Pollution

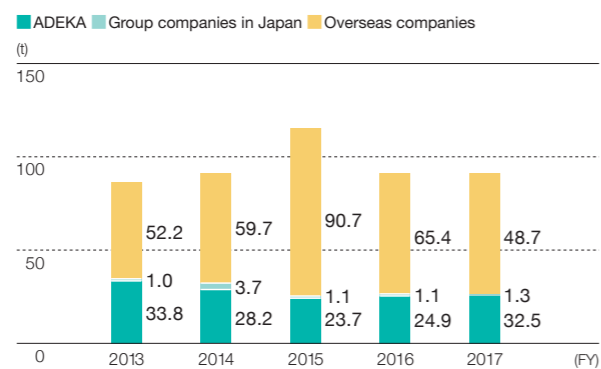
Usage of Water



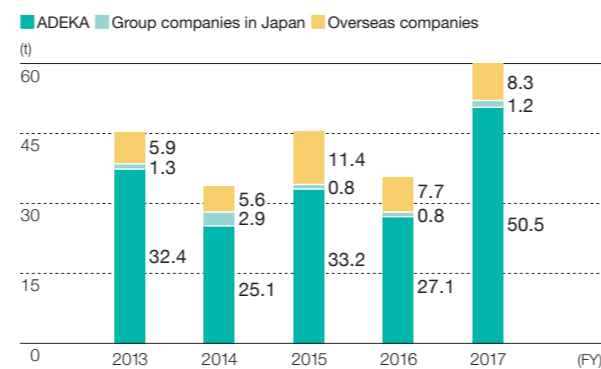
Waste Water Discharge



Chemical Oxygen Demand Emissions

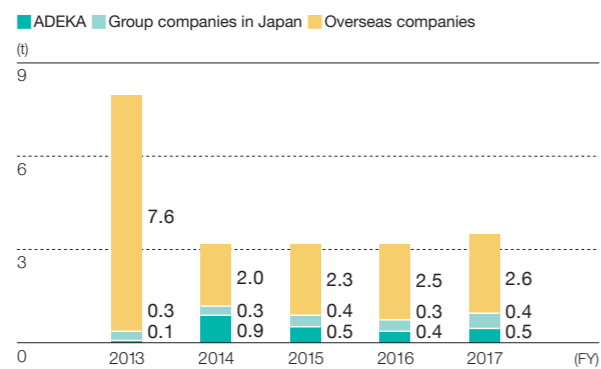


Biological Oxygen Demand Emissions

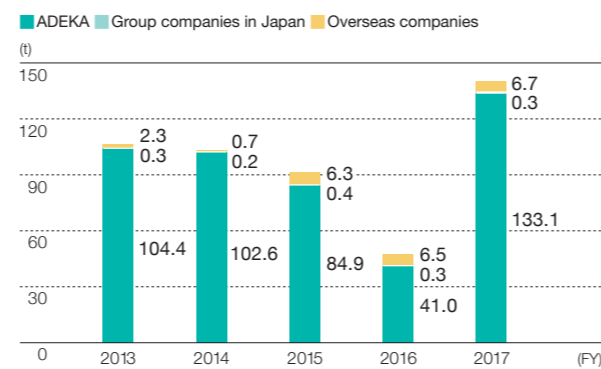


Preventing Air Pollution

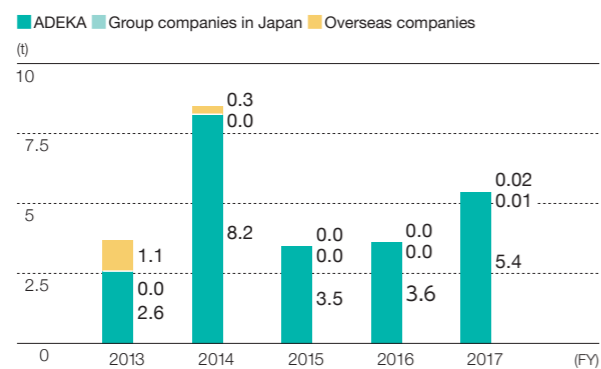
SOx Emissions



NOx Emissions

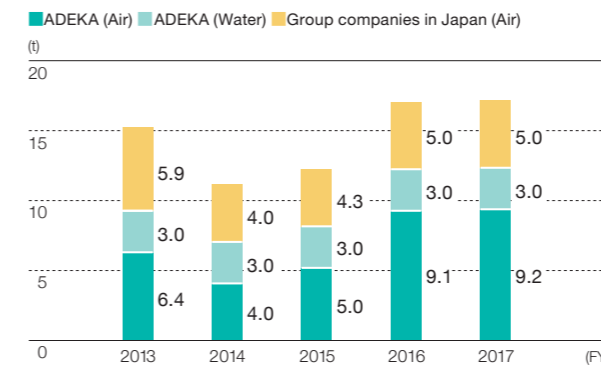


Soot/Dust Emissions

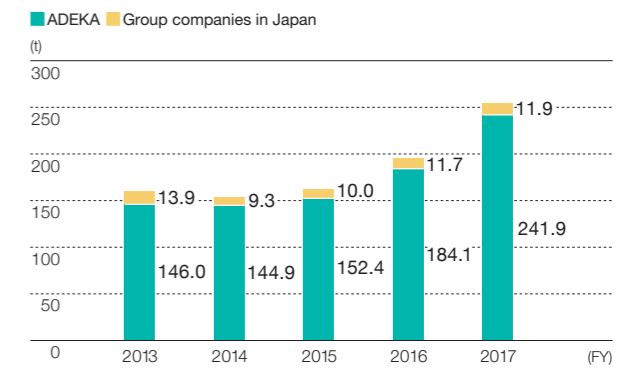


Appropriate Managing Chemical Substances

Discharge of PRTR Substances



Transfer of PRTR Substances

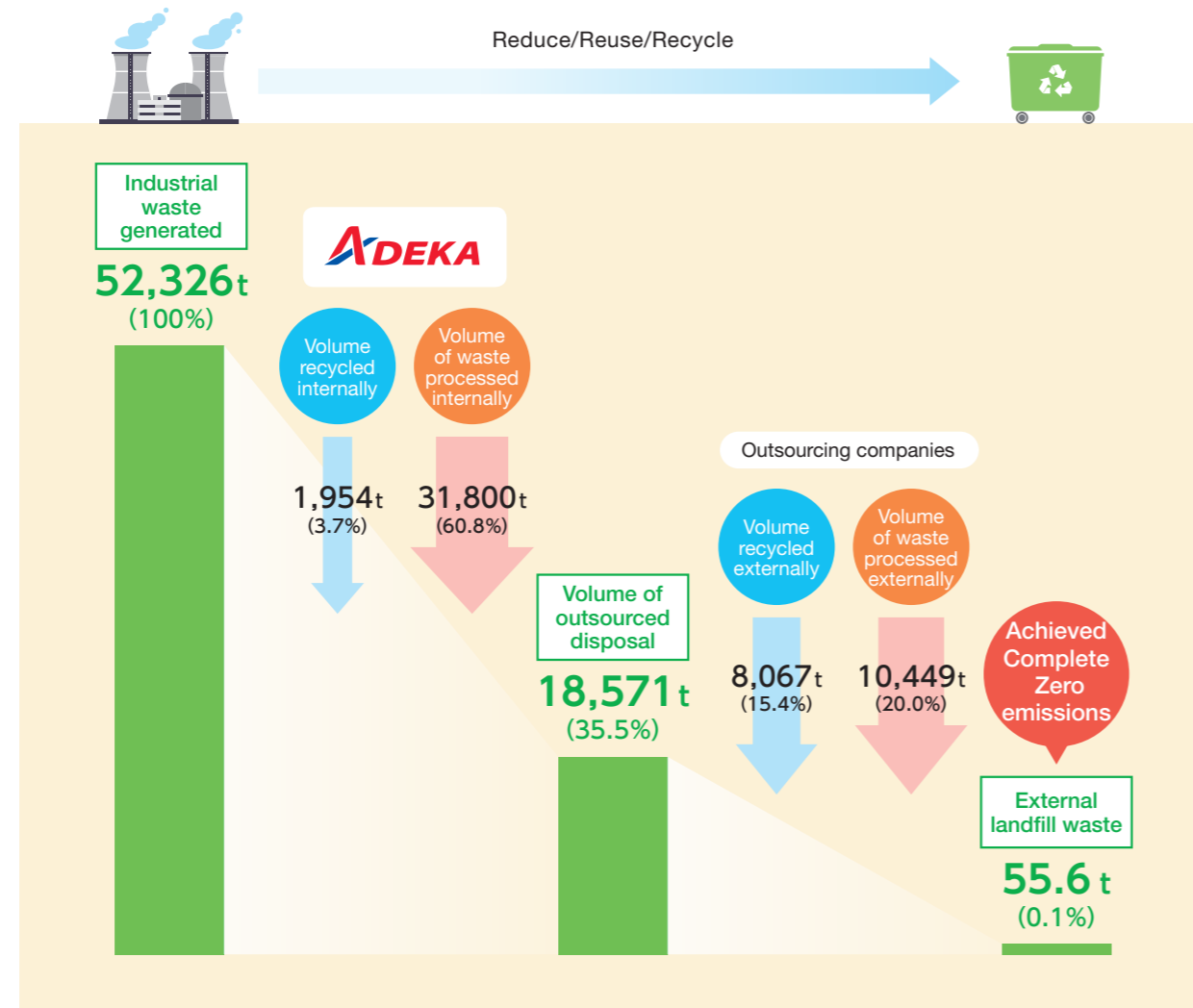


Discharge and Transfer of Chemical Substances (scope: ADEKA (production and research divisions), Oxirane Chemical CORP.) (t)

Substance	Discharge				Transfer	
	Air	Public Waters	Soil	Landfill Waste	Sewage	External Transfer
53 Ethylbenzene	0.0	0.0	0.0	0.0	0.0	19.0
65 Epichlorohydrin	0.1	0.0	0.0	0.0	0.0	0.0
80 Xylene	0.0	0.0	0.0	0.0	0.0	14.1
125 Chlorobenzene	0.6	0.0	0.0	0.0	0.0	26.0
128 Chloromethane	0.2	0.0	0.0	0.0	0.0	0.0
157 1,2-Dichloroethane	2.6	0.0	0.0	0.0	0.0	140.0
186 Dichloromethane	0.2	0.0	0.0	0.0	0.0	6.2
207 Dibutylhydroxytoluene	0.0	0.0	0.0	0.0	0.0	1.1
232 N,N-dimethylformamide	0.0	0.0	0.0	0.0	0.0	0.3
257 Decyl alcohol	0.1	0.0	0.0	0.0	0.0	0.0
277 Triethylamine	0.0	0.2	0.0	0.0	0.0	7.8
300 Toluene	4.1	0.0	0.0	0.0	0.0	9.1
302 Naphthalene	0.0	0.0	0.0	0.0	0.0	0.2
318 Carbon disulfide	2.5	0.0	0.0	0.0	0.0	0.0
342 Pyridine	0.0	0.0	0.0	0.0	0.0	1.3
392 N-hexane	3.4	0.0	0.0	0.0	0.0	14.0
395 Water-soluble salts of peroxodisulfuric acid	0.0	2.8	0.0	0.0	0.0	0.0
453 Molybdenum and its compounds	0.1	0.0	0.0	0.0	0.0	0.5
458 TRIS(2-ETHYLHEXYL)	0.2	0.0	0.0	0.0	0.0	14.0
Sub-total	14.0	3.0	0.0	0.0	0.0	253.6
Other substances (52 types)	0.2	0.0	0.0	0.0	0.0	0.2
Total	14.2	3.0	0.0	0.0	0.0	253.8

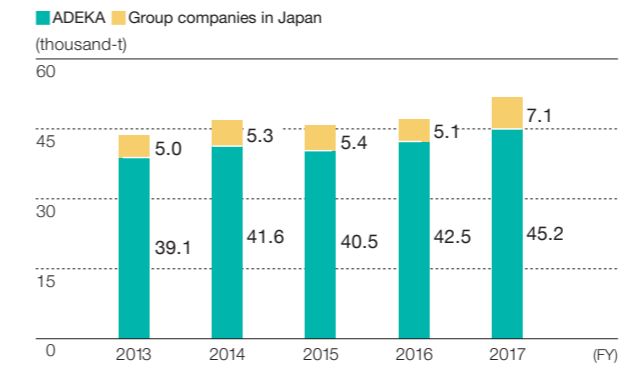
Appropriate Managing the Disposal of Industrial Waste

► The Entire Flow of Recycling and Disposal of Waste (scope: ADEKA and Group companies in Japan)

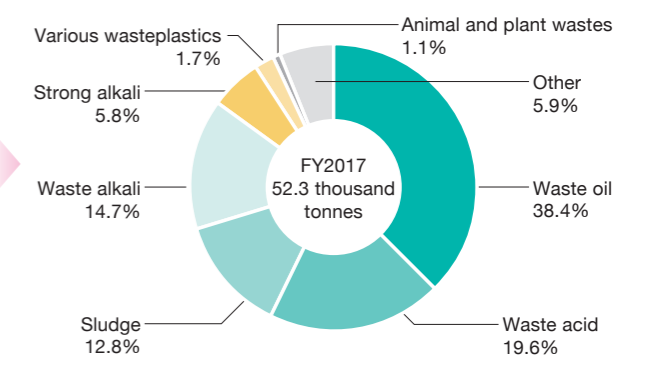


Within the brackets are the relative proportions of industrial waste.

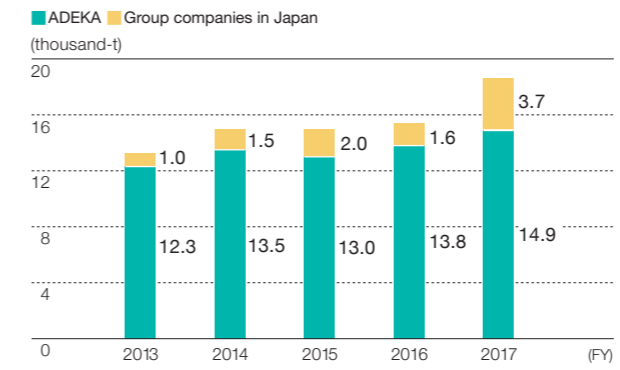
► Industrial Waste Generated



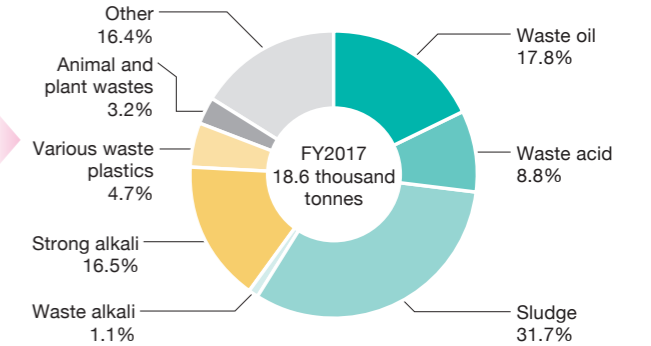
► Breakdown of Industrial Waste



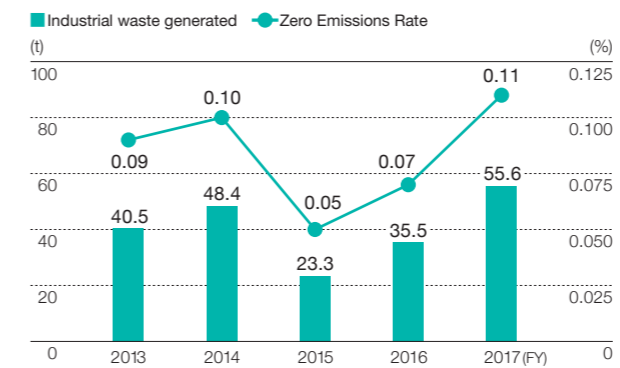
► Outsourced Disposal of Industrial Waste



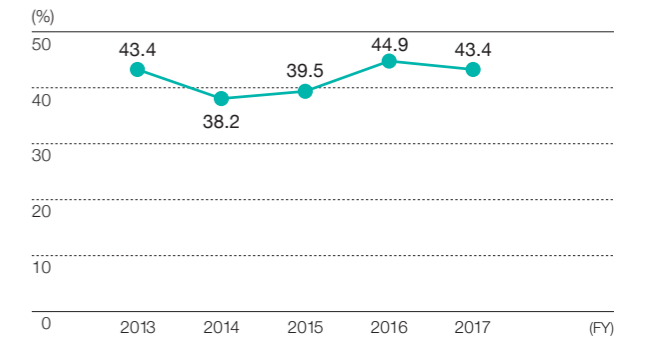
► Breakdown of the Total Volume of Waste Treated by External Contractors



► Zero Emissions Rate for Landfill Disposal of Industrial Waste (scope: ADEKA and Group companies in Japan)



► Recycling Rate (scope: ADEKA and Group companies in Japan)



Acquisition of Management System Certification

Others

▶ ISO 22301 (BCM: Business continuity management)

Head Office relevant departments and Soma Plant (Nov. 2013)

▶ ISO 9001 (Quality Management Systems)

Mie Plant (Jun. 1993)

Kashima Plant, Kashima Plant–West (Apr. 1996)

Fuji Plant (Jan. 1997)

Chiba Plant (Jul. 1997)

ADEKA POLYMER ADDITIVES EUROPE SAS (Jul. 1997)

OXIRANE CHEMICAL CORP. (Oct. 1997)

Soma Plant (Aug. 1998)

ADEKA CLEAN AID CORP. (Oct. 1999)

ADEKA KOREA CORP. (Jan. 2000)

AMFINE CHEMICAL CORP. (Oct. 2001)

ADEKA ENGINEERING & CONSTRUCTION CORP. (Mar. 2002)

KUKDO CHEMICAL (KUNSHAN) CO., LTD. (Mar. 2004)

ADEKA FINE CHEMICAL (SHANGHAI) CO., LTD. (May 2005)

ADEKA FINE CHEMICAL (CHANGSHU) CO., LTD. (May. 2005)

TOKYO ENVIRONMENTAL MEASUREMENT CENTER CO., LTD. (Aug. 2005)

UEHARA FOODS INDUSTRY CO., LTD. (Nov. 2005)

ADEKA (SINGAPORE) PTE.LTD. (Apr. 2006)

FELDA IFFCO OIL PRODUCTS SDN.BHD. (Jun. 2006)

ADEKA FINE CHEMICAL TAIWAN CORP. (Jul. 2006)

ADEKA FINE CHEMICAL (THAILAND) CO.,LTD. (Dec. 2006)

ADEKA AL GHURAIR ADDITIVES LLC (Aug. 2012)

AM STABILIZERS CORP. (Mar. 2013)

▶ ISO 14001 (Environmental Management Systems)

Mie Plant (Dec. 1996)

Kashima Plant, Kashima Plant–West (Mar. 1998)

Fuji Plant (Apr. 2000)

Chiba Plant (May. 2000)

Soma Plant (Aug. 2000)

Akashi Plant (Mar. 2001)

OXIRANE CHEMICAL CORP. (Mar. 2001)

TOKYO ENVIRONMENTAL MEASUREMENT CENTER CO., LTD. (Feb. 2003)

ADEKA KOREA CORP. (Jan. 2006)

ADEKA FINE CHEMICAL (CHANGSHU) CO., LTD. (Jul. 2006)

ADEKA FINE CHEMICAL TAIWAN CORP. (Feb. 2007)

AMFINE CHEMICAL CORP. (Sep. 2007)

ADEKA FINE CHEMICAL (SHANGHAI) CO., LTD. (Jan. 2009)

ADEKA FOODS (CHANGSHU) CO., LTD. (Aug. 2009)

ADEKA FINE CHEMICAL (THAILAND) CO.,LTD. (Jan. 2010)

ADEKA POLYMER ADDITIVES EUROPE SAS (Aug. 2010)

▶ ISO 14064-1 (Standard concerning calculation, reporting, and verification of emissions and reduced amount of greenhouse gases)

ADEKA FINE CHEMICAL TAIWAN CORP. (Mar. 2013)

▶ IMS (Integrated Management System)

Soma Plant (Dec. 2004)

Kashima Plant, Kashima Plant–West (Nov. 2008)

Fuji Plant (Dec. 2009)

Chiba Plant (Aug. 2011)

▶ FSSC 22000 (Food Safety System Certification)

Kashima Plant–West (Dec. 2011)

Kashima Plant (Dec. 2014)

Akashi Plant (Mar. 2015)

ADEKA FINE FOODS CORP. (Apr. 2016)

ADEKA (SINGAPORE) PTE.LTD. (May. 2016)

ADEKA FOODS (CHANGSHU) CO.,LTD. (Sep. 2016)

ADEKA FOODS (ASIA) SDN.BHD. (Oct. 2017)

▶ HACCP (Hazard Analysis and Critical Control Point)

Kashima Plant (Mar. 2002)

ADEKA (SINGAPORE) PTE.LTD. (Aug. 2004)

ADEKA FOODS (ASIA) SDN.BHD. (Apr. 2015)

▶ TPM (Received Total Productive Maintenance)

Chiba Plant: 1994 Excellence Award

Mie Plant: 1995 Excellence Award

OXIRANE CHEMICAL CORP.: 1995 Excellence Award

Akashi Plant: 2000 Excellence Award

Kashima Plant, Kashima Plant–West: 2007 Excellence Award

—Special Award for TPM Achievement

Fuji Plant: Award for TPM Excellence, Category A (2010)

▶ OHSAS 18001 (Occupational Health and Safety Management Systems)

Mie Plant (Sep. 2000)

Kashima Plant, Kashima Plant–West (Nov. 2002)

Soma Plant (Dec. 2002)

Akashi Plant (Mar. 2003)

Chiba Plant (Oct. 2003)

Fuji Plant (Dec. 2003)

ADEKA FINE CHEMICAL TAIWAN CORP. (Jun. 2007)

ADEKA FINE CHEMICAL (CHANGSHU) CO., LTD. (Jul. 2009)

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ADEKA KOREA CORP. (Apr. 2010)

ADEKA POLYMER ADDITIVES EUROPE SAS (Dec. 2013)