

CORPORATE SOCIAL RESPONSIBILITY
CSR **2016**
REPORT
Environmental Data



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Environmental Data

Period Covered by This Report

2015 Fiscal Year ended March 31, 2016

*From January 1, 2015 to December 31, 2016 for overseas affiliated companies

Scope of This Report

Covers ADEKA and the major domestic and overseas companies in the ADEKA Group.

*Included overseas Group companies are increasing, so there is fluctuation in the figures (nine companies were included from FY2011 to FY2012, ten from FY2013 to FY2014, and 11 in FY2015).

Domestic affiliated companies		Overseas affiliated companies	
● ADEKA CHEMICAL SUPPLY CORP.	● ADEKA LOGISTICS CORP.	● AMFINE CHEMICAL CORP.	● ADEKA FINE CHEMICAL (CHANGSHU) CO., LTD.
● ADEKA CLEAN AID CORP.	● YONGO CO., LTD.	● ADEKA (SINGAPORE) PTE. LTD.	● ADEKA FINE CHEMICAL (THAILAND) CO., LTD.
● ADEKA FINE FOODS CORP.	● ADEKA LIFE-CREATE CORP.	● ADEKA KOREA CORP.	● ADEKA FOODS (CHANGSHU) CO., LTD.
● ADEKA ENGINEERING & CONSTRUCTION CORP.	● UEHARA FOODS INDUSTRY CO., LTD.	● ADEKA FINE CHEMICAL TAIWAN CORP.	● ADEKA AL GHURAIR ADDITIVES LLC
● OXIRANE CHEMICAL CORP.	● TOKYO ENVIRONMENTAL MEASUREMENT CENTER CO., LTD.	● ADEKA PALMAROLE SAS	● ADEKA FOODS (ASIA) SDN. BHD.
● ADEKA FOODS SALES CORP.		● ADEKA (SHANGHAI) CO., LTD.	

In this Environmental Data, "ADEKA Group" and "the Group" refer to the entire ADEKA Group, while "ADEKA" and "the Company" refer to ADEKA Corporation.

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Basic Environmental Policy

1. Strive to conserve resources and energy, recycle resources, and reduce the generation of waste, in order to prevent environmental pollution.
2. Comply with domestic and foreign laws and regulations related to the environment, and at the same time strive to strengthen voluntary management and achieve further environmental conservation.
3. Be aware that corporate activities are dependent upon the blessings produced through biodiversity, and seek to protect biodiversity.
4. Take a proactive stance in procuring raw materials that impose a low burden on the environment, and contribute to the realization of a recycling-oriented society.
5. Disclose the results of environmental conservation activities to society.
6. Communicate with stakeholders and provide support to society and local communities in environmental conservation activities.

Environmental Initiatives System

Under the policy set by Environmental Protection Division headed by an operating officer, each business office formulates an execution plan and makes efforts for continuous improvement of environmental management activities by implementing PDCA cycle.



Environmental Action Goals, Plans

ADEKA has established quantitative targets for important items related to environmental conservation, and we conduct our business activities toward achieving these targets.

Scope of quantitative assessment: ADEKA Corporation

Category	Scope	Medium- and Long-term Goals	FY2015 Goals	Performance in FY2015	Future Tasks
Promote energy conservation	Production division	Over 1% improvement in annual rate of energy consumption *1	Reduce energy intensity by 1% or more year on year	<ul style="list-style-type: none"> Achieved energy intensity of 0.1846 kiloliters per tonne (0.6% reduction from previous fiscal year) 	<ul style="list-style-type: none"> Strengthen management toward reduction of fixed energy with a focus on electricity and steam Energy conservation through improvements in manufacturing processes
Reduction of Greenhouse Gas Emissions	Production division	Over 1% reduction in annual rate of unit CO ₂ emissions	Reduce CO ₂ emissions by 1% or more year on year	<ul style="list-style-type: none"> Generated 141,290 tonnes of CO₂ emissions (0.8% reduction from previous fiscal year) 	
Reduce industrial waste generated	All ADEKA Offices	Promotion of appropriate processing of industrial waste Sustained achievement of zero emissions*2	Reduce industrial waste output by 1% or more year on year	<ul style="list-style-type: none"> Generated 40,508 tonnes of industrial waste (2.6% reduction from previous fiscal year) 	<ul style="list-style-type: none"> Curb generation of waste through improvement in production technology Curb the generation of long-term stock-in-hand and surplus products through production planning and sales planning Explore channels to convert things into valuable resources, and recycle waste Bolstering of measures to prevent illegal resales (e.g., expanded usage of electronic manifests) On-site inspections of industrial waste processing companies
			Sustained achievement of zero emissions	<ul style="list-style-type: none"> Landfill disposal volume: 18.9 t Achievement of zero emissions (0.047%) for four years running 	
Reduce Environmental Pollutant Emissions	Production division and R&D division	Reduce emission of PRTR*3 substances by 20% compared by FY2020 with FY2010 level	Strive to reduce emissions of PRTR substances, while managing them	<ul style="list-style-type: none"> Air emissions: 5.0 t (152.6% compared with FY2010 levels. 26.4% increase from previous fiscal year) 	<ul style="list-style-type: none"> Maintenance and continuation of management strengthening towards the reduction of PRTR substances
				<ul style="list-style-type: none"> Emissions into public water: 3.0 t (12.3% compared with FY2010 levels. 1.1% increase from previous fiscal year) 	
				<ul style="list-style-type: none"> PRTR transferred amount: 152.3 t (61.6% compared with FY2010 levels. 5.1% increase from previous fiscal year) 	
Promote green purchasing	All ADEKA Offices	Boosting the ratio of green procurement of designated stationary to over 80% by FY2020		<ul style="list-style-type: none"> Stationery items: 78.2% (6,370 items procured out of 8,141 items) 	<ul style="list-style-type: none"> Promotion of continued green procurement

*1 An objective indicator for production efficiency. Refers to the energy needed to produce a unit quantity of products (crude oil equivalent).

*2 Defined as landfill waste that amounts to less than 0.1% of the volume of industrial waste output (as defined by ADEKA Corporation).

*3 A system in which the Japanese government, together with business operators and other bodies, obtains, computes, and publishes data on the sources and amounts of toxic chemical substances released in the environment, and amounts externally transferred in waste.

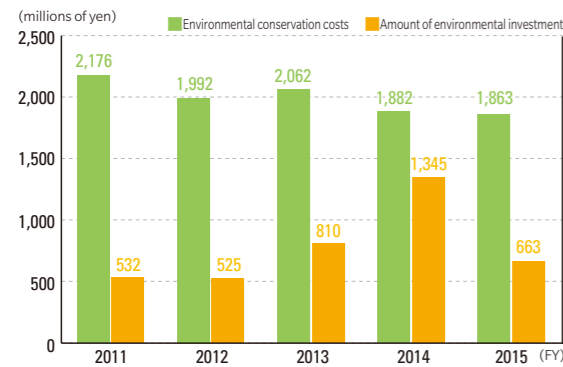
Environmental Accounting

ADEKA Group calculates and verifies costs required for environmental conservation and its effect in order to facilitate environmental management. As tools to quantitatively assess the effects of environmental conservation activities, we have adopted “Environmental Accounting Guidelines 2005” and “Environmental Conservation Cost Category Handbook 2003” published by the Ministry of Environment, as well as “Environmental Accounting Guidelines for Chemical Companies” published by the Japan Chemical Industry Association. With these tools, we disclose environmental accounting information with a focus on reliability, comparability, and verifiability.

Survey target: ADEKA Corporation (production and R&D divisions), ADEKA Fine Foods Corp., Oxirane Chemical Corp., UEHARA FOODS INDUSTRY CO., LTD.

Category	Description of Main Initiatives	Cost of Environmental Initiatives	Amount of Investment
1. Business area cost	All environmental conservation activities aimed at limiting environmental impact	1,614	653
(1) Pollution prevention costs	Prevention of air, water, and soil pollution, and of noise, stench, and land subsidence	1,017	366
(2) Global environmental conservation costs	Preventing global warming (conserving energy), preventing damage to the ozone layer	287	246
(3) Resource recycling costs	Reducing and recycling resources, and minimizing the generation of waste material	309	41
2. Upstream/downstream cost	Green procurement, reducing the environmental burden imposed by containers and packaging, collecting and re-commercializing products	13	0
3. Administration cost	Environmental ISO, disclosure of environmental information, environmental impact monitoring, greening	84	0
4. R&D cost	R&D expenses for environmental conservation	148	10
5. Social activity cost	Greening and beautification of areas outside the offices and plants, donating and supporting environmental conservation organizations	3	0
6. Environmental remediation cost	Purification efforts to improve water quality and remove soil pollution, restoration of nature	2	0
Total		1,863	663

Cost of Environmental Initiatives and Amount Invested



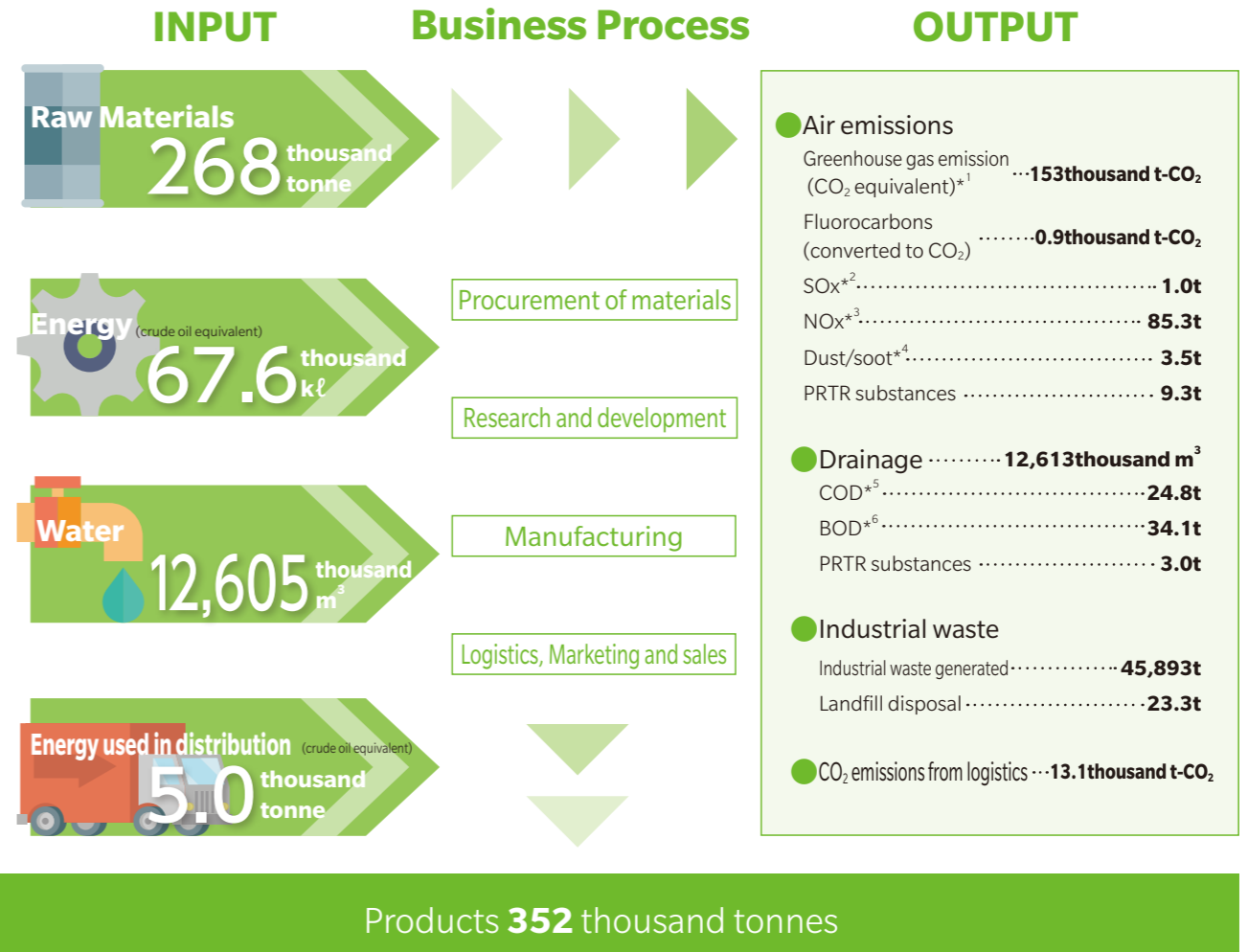
Economic Effects with Environmental Conservation Measures (millions of yen)

Details of effects	Amount (millions of yen)
Income earned by recycling, profits from the sale of valuable resources, etc.	162
Reduction in costs through introducing resources from the environment into business activities	202
Reduction in the burden imposed by business activities on the environment and costs related to the generation of waste material	54
Reduction in costs related to dealing with environmental damage	0
Reduction in distribution cost and other costs	11
Total	429

Material Flow

The ADEKA Group has put in place initiatives to reduce and recycle the volume of waste material generated through our production processes.

Survey target: ADEKA Corporation and the main 11 domestic affiliated companies



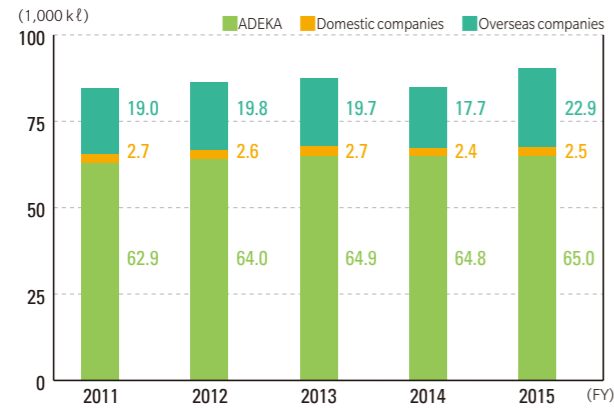
*1 Total emissions arising from energy sources, non-energy sources, and processes
 *2 Sulfur oxides that are generated during the use of fuels that contain sulfur
 *3 Nitrogen oxide that is generated during combustion in Plant boilers and incinerators
 *4 Fine particles that are generated during the combustion of fuels and other materials

*5 Amount of oxygen that is consumed during the oxidation of organic substances
 *6 Amount of oxygen required during the mineralization and gasification of contaminants in river water and industrial wastewater by microorganisms

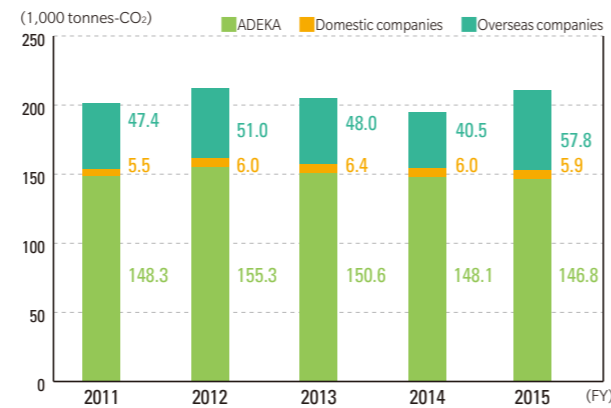
Prevention of Global Warming

Aiming for the realization of a sustainable society through its business activities, the ADEKA Group is striving to promote energy conservation by improving processes, implementing systematic reductions in bound energy consumed by the sustained heating of steam pipes and tanks, and cutting the consumption of all kinds of energy used during production.

Energy Consumption by Crude Oil Equivalent*

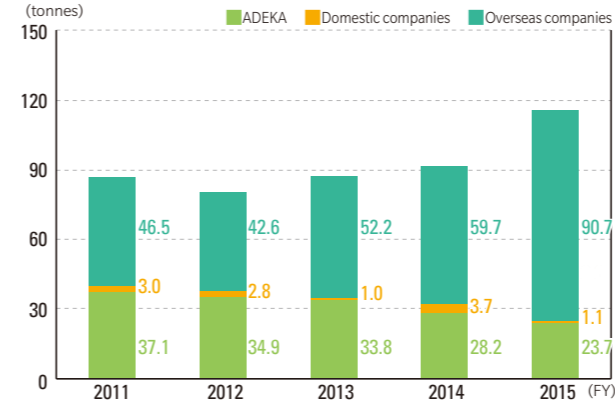


CO₂ Emissions*

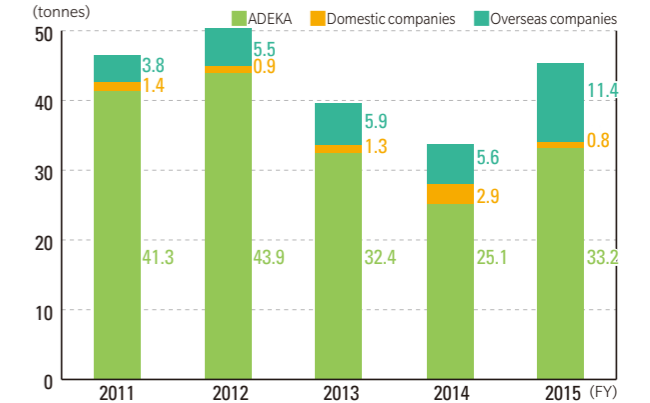


*The values differ from those reported last year as the result of revising the scope of the aggregate.

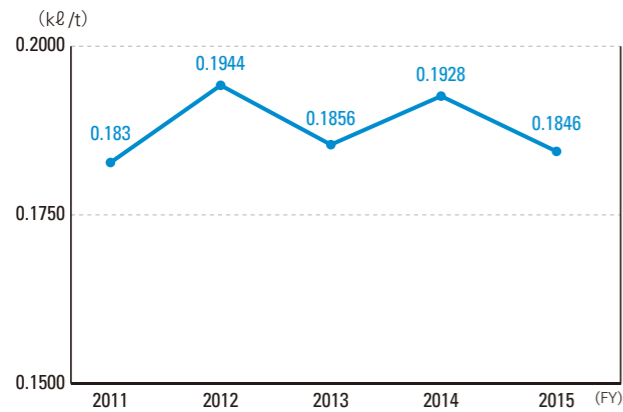
Chemical Oxygen Demand emissions



Biological Oxygen Demand emissions

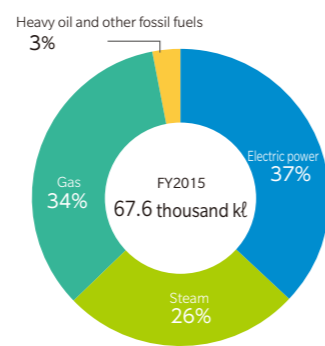


Energy Intensity Index from Manufacturing(ADEKA Corporation :production divisions)



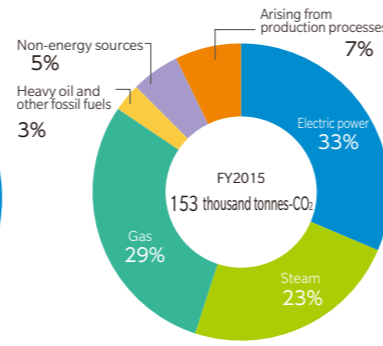
Breakdown of energy consumption

*Excluding overseas group companies



Breakdown of greenhouse gas emissions

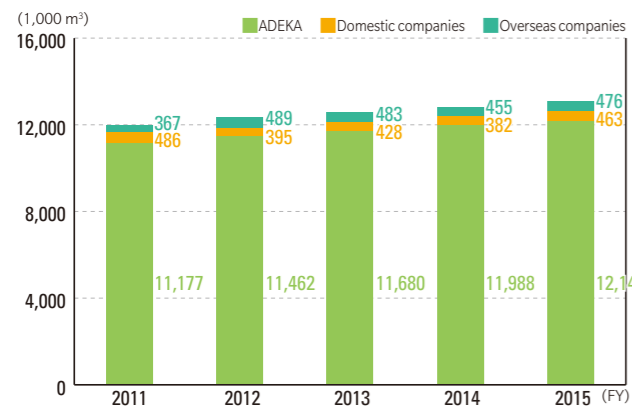
*Excluding overseas group companies



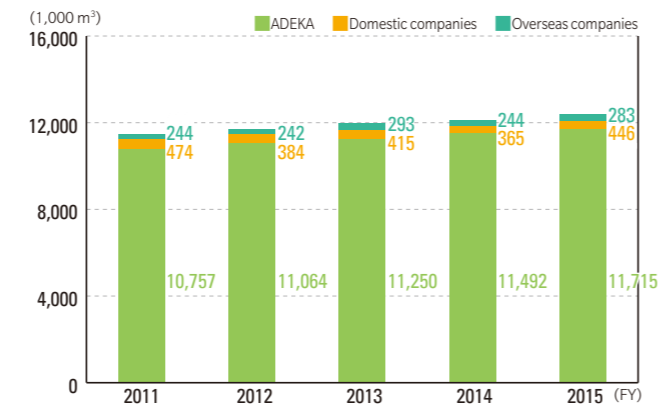
Prevention of Water Pollution

The ADEKA Group collects, recycles, and reuses wastewater from production processes, with the aims of preventing water pollution and the conservation of water resources, which are vital for a recycling-based society. The Group is also committed to reducing the environmental effects of wastewater, in accordance with various laws and regulations.

Usage of Water*



Waste water Discharge

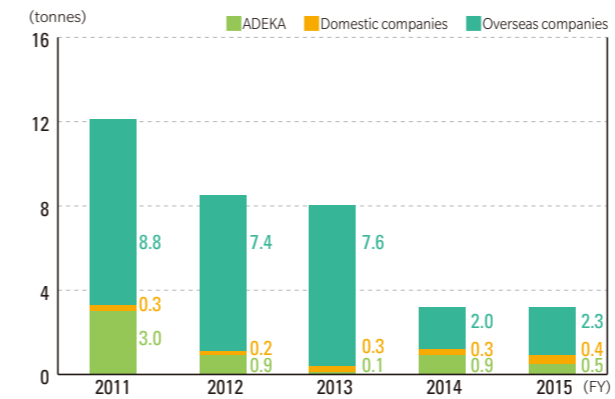


*The values differ from those reported last year as the result of revising the scope of the aggregate.

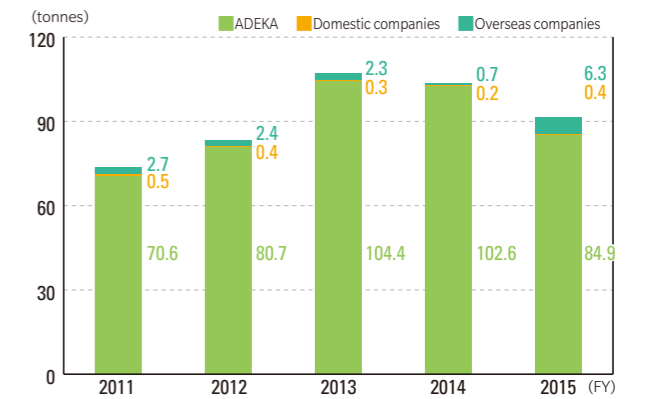
Air Pollution Prevention

As part of environmental conservation measures put in place by our production and R&D divisions, the ADEKA Group strives constantly to prevent air pollution, and is committed to efforts to minimize the emission of SO_x, NO_x, dust and soot into the air.

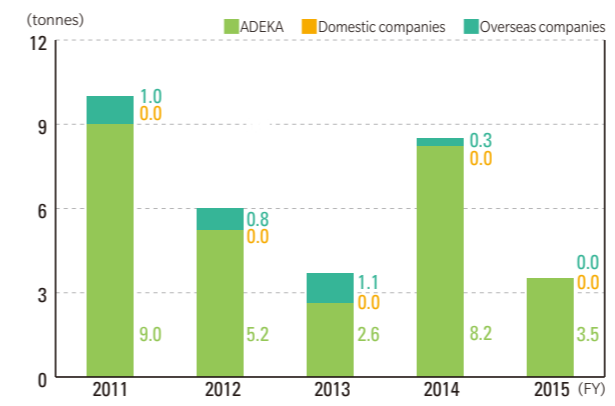
SO_x emissions



NO_x emissions



Soot/Dust emissions



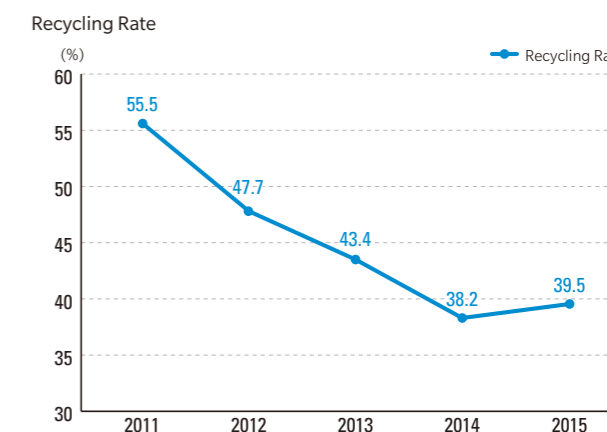
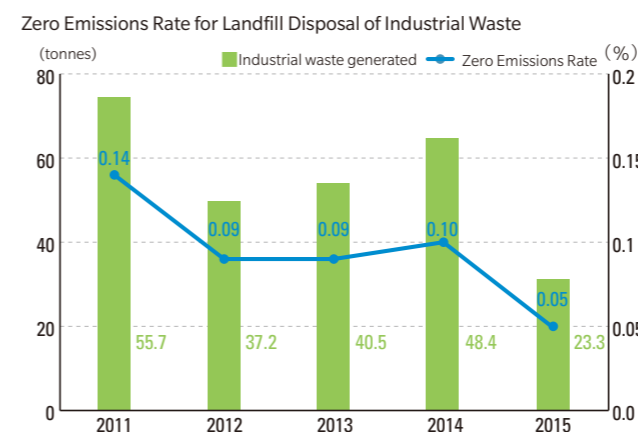
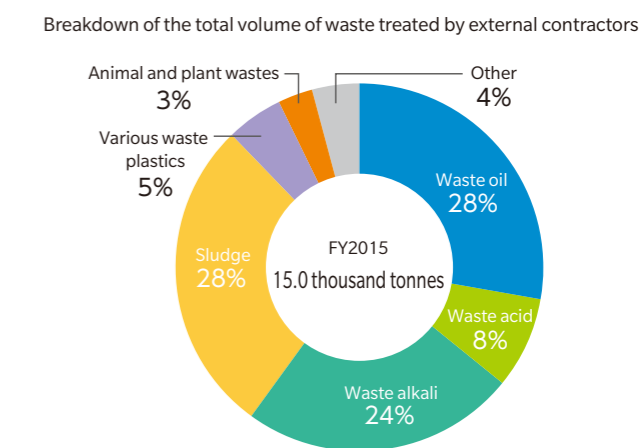
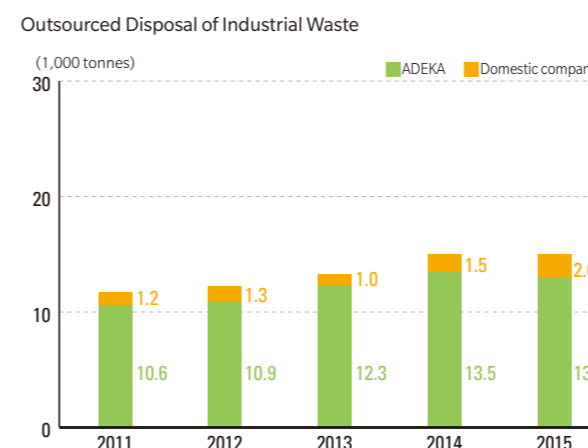
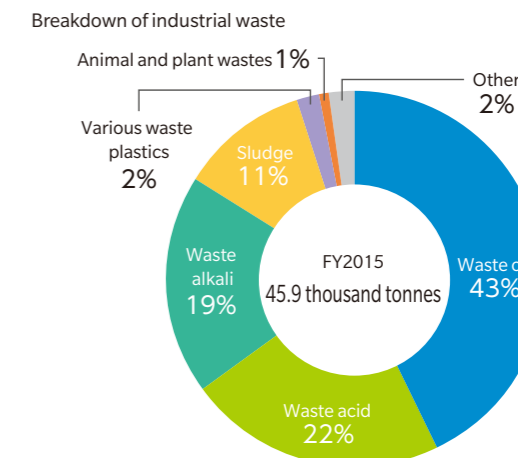
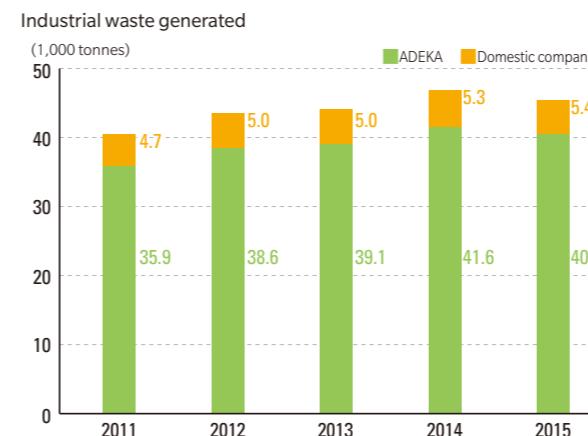
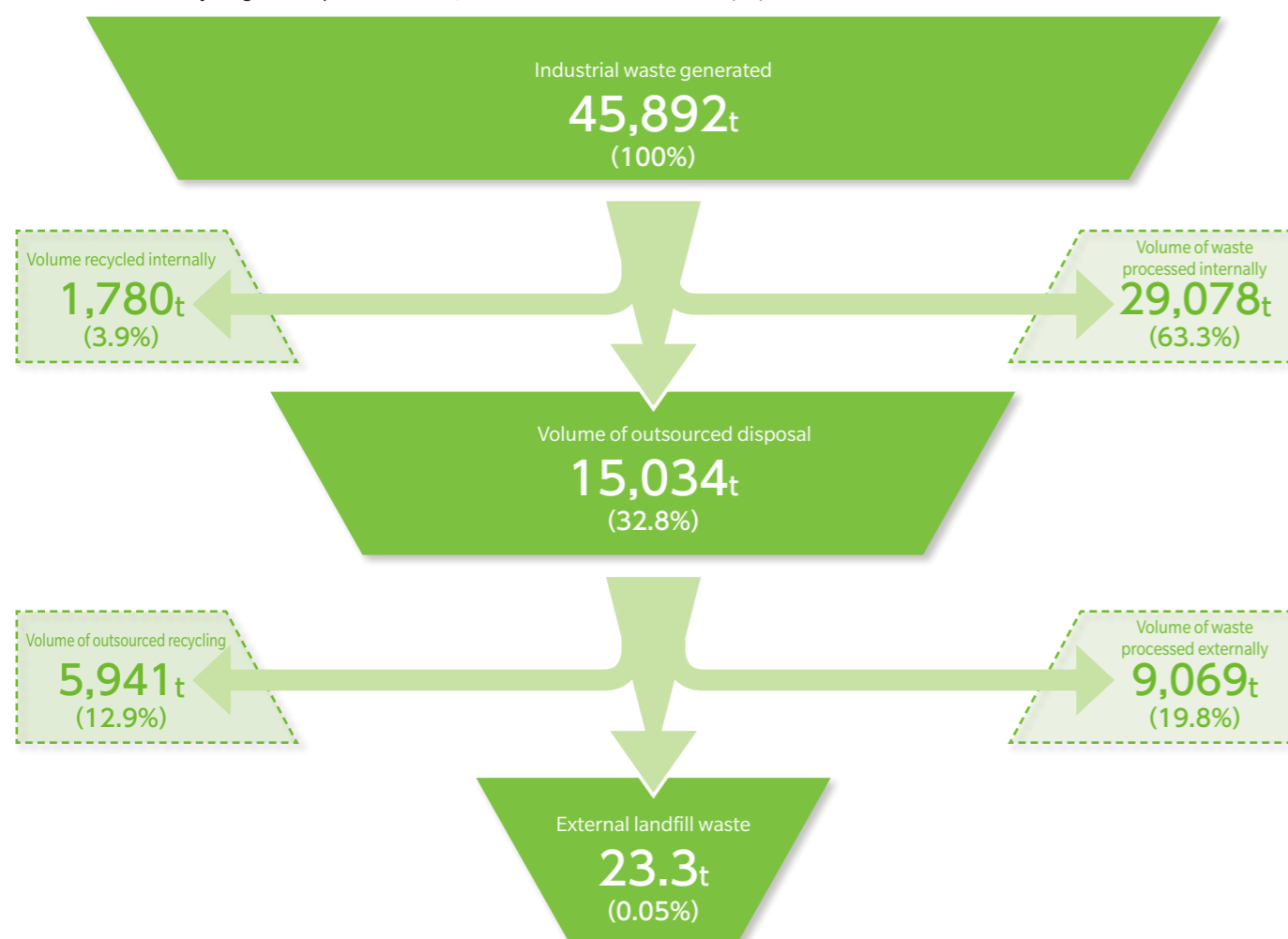
Reducing Industrial Waste

The ADEKA Group implements the 3R approach of “reduce, reuse, recycle” to reduce the amount of industrial waste discharged, and has achieved zero emissions since 2007.

Production volume in FY2015 increased 0.9% year-on-year, but the volume of industrial waste generated over the same period decreased 2.2%, testifying to the achievement of resource-efficient production activities. Moreover, great progress was made in the delayed treatment of PCB contaminated waste, and a plan has finally been laid down to complete its disposal. Moving forward, the Group will continue to make effective use of resources, and promote the proper treatment of industrial waste.

Survey target: ADEKA Corporation and the main 11 domestic affiliated companies

The entire flow of recycling and disposal of waste (Within the brackets are the relative proportions of industrial waste)



Reducing Emissions of Chemical Substances

ADEKA Group began conducting studies on PRTR in fiscal 1997. We strive to ensure appropriate management by carrying out quantitative assessments of the quantity of target chemical substances used as well as the quantity generated through our production processes.

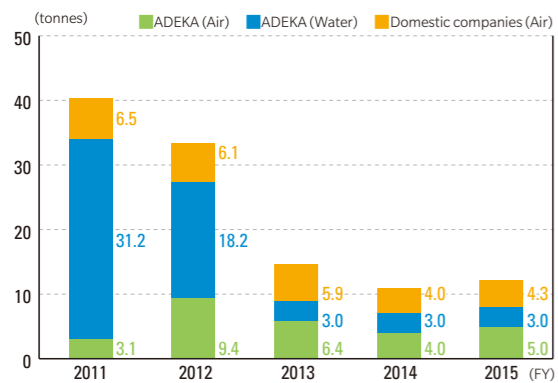
With the revision of the law for PRTR, the number of target substances in the fiscal 2011 report was 462. For fiscal 2014, we will report on 71 of these 462 substances.

Survey target: ADEKA Corporation (production and research divisions), Oxirane Chemical Corp.

Substance	Discharge				Transfer	
	Air	Public Waters	Soil	Landfill Waste	Sewage	External Transfer
Ethylbenzene	0.0	0.0	0.0	0.0	0.0	14.0
Epichlorohydrin	0.1	0.0	0.0	0.0	0.0	0.0
Ferric chloride	0.0	0.0	0.0	0.0	0.0	2.4
Xylene	0.0	0.0	0.0	0.0	0.0	11.0
Chlorobenzene	0.3	0.0	0.0	0.0	0.0	14.0
Chloromethane	0.1	0.0	0.0	0.0	0.0	0.0
1,2-Dichloroethane	1.6	0.0	0.0	0.0	0.0	68.0
Dichloromethane	0.2	0.0	0.0	0.0	0.0	8.9
dibutylhydroxytoluene	0.0	0.0	0.0	0.0	0.0	0.7
N,N-dimethylformamide	0.0	0.0	0.0	0.0	0.0	0.2
Decyl alcohol	0.1	0.0	0.0	0.0	0.0	0.0
Triethylamine	0.0	0.2	0.0	0.0	0.0	8.9
Toluene	1.9	0.0	0.0	0.0	0.0	15.3
Naphthalene	0.0	0.0	0.0	0.0	0.0	0.1
Carbon disulfide	1.5	0.0	0.0	0.0	0.0	0.0
Pyridine	0.0	0.0	0.0	0.0	0.0	1.6
N-hexane	3.0	0.0	0.0	0.0	0.0	12.0
Water-soluble salts of peroxodisulfuric acid	0.0	2.8	0.0	0.0	0.0	0.0
Molybdenum and its compounds	0.0	0.0	0.0	0.0	0.0	0.4
TRIS(2-ETHYLHEXYL)	0.1	0.0	0.0	0.0	0.0	4.4
Sub-total (t)	9.1	3.0	0.0	0.0	0.0	162.1
Other substances (51 types) (t)	0.2	0.0	0.0	0.0	0.03	0.3
Total (t)	9.3	3.0	0.0	0.0	0.03	162.3
Dioxins*	7.1	9.5 × 10 ⁻⁴	0.0	0.0	0.0	0.1

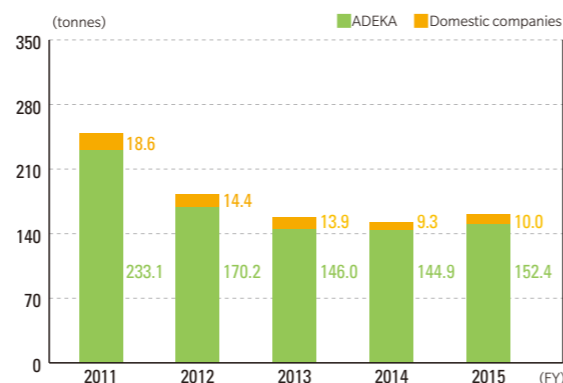
*Dioxins: Unit: mg-TEQ

Discharge of PRTR Substances



*There are no emissions into the waters of domestic Group companies.

Transfer of PRTR Substances



Acquisition of Management System Certification

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 PALMAROLE SAS (Aug. 2008)
- ADEKA FINE CHEMICAL (SHANGHAI) CO., LTD. (Jan. 2009)
- ADEKA FOODS (CHANGSHU) CO., LTD. (Aug. 2009)
- ADEKA FINE CHEMICAL (THAILAND) CO., LTD. (Jan. 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. 2007)
- ADEKA FOODS (CHANGSHU) CO., LTD. (Aug. 2009)
- ADEKA KOREA CORP. (Apr. 2010)
- ADEKA PALMAROLE SAS (Dec. 2013)

ISO 22000 (Certification for Food Safety)

- ADEKA FOODS (CHANGSHU) CO., LTD. (Apr. 2007)
- ADEKA (SINGAPORE) PTE.LTD. (May 2009)

FSSC 22000 (Certification for Food Safety)

- Kashima Plant-West (Nov. 2011)
- Kashima Plant (Nov. 2014)
- Akashi Plant (Mar. 2015)
- ADEKA FINE FOODS CORP. (Apr. 2016)
- ADEKA (SINGAPORE) PTE.LTD. (May 2016)

HACCP (Hazard Analysis and Critical Control Point)

- Kashima Plant (Mar. 2002)
- ADEKA (SINGAPORE) PTE.LTD. (Aug. 2004)
- ADEKA FOODS (ASIA)SDN.BHD. (Apr. 2015)

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 PALMAROLE SAS (Jul. 1997)
- OXIRANE CHEMICAL CORP. (Oct. 1997)
- Soma Plant (Aug. 1998)
- ADEKA CLEAN AID CORP. (Oct. 1999)
- AMFINE CHEMICAL CORP. (Jan. 2000)
- KUKDO CHEMICAL (KUNSHAN) CO., LTD. (Mar. 2001)
- ADEKA ENGINEERING & CONSTRUCTION CORP. (Mar. 2002)
- ADEKA KOREA CORP.(Oct. 2004)
- ADEKA FINE CHEMICAL (SHANGHAI) CO., LTD. (May 2005)
- TOKYO ENVIRONMENTAL MEASUREMENT CENTER CO., LTD. (Aug. 2005)
- ADEKA FINE CHEMICAL (CHANGSHU) CO., LTD. (Oct. 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. 2008)
- AM STABILIZERS CORP. (Mar. 2013)

IMS (Integrated Management System)

- Soma Plant (Dec. 2004)
- Kashima Plant, Kashima Plant-West (Dec. 2008)
- Fuji Plant (Dec. 2009)
- Chiba Plant (Aug. 2011)

TPM (Received Total Productive Maintenance)

- Chiba Plant: 1994 Excellence Award
- Mie Plant: 1995 Excellence Award
- OXIRANE CHEMICAL CORP.: 1995 Excellence Award
- Akashi Plant: 2004 Excellence Award
- Kashima Plant, Kashima Plant-West: 2007 Excellence Award
—Special Award for TPM Achievement
- Chiba Plant: Award for TPM Excellence, Category A (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)

ISO 22301 (BCM: Business continuity management)

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