



# Environmental Conservation Initiatives

Recognizing that environmental conservation is essential to the existence and activities of any company, the ADEKA Group actively considers environmental impacts and works to reduce them.

## Message from General Manager

The ADEKA Group maintains a solid grasp of the environmental impact of its business and is fully compliant with laws and regulations to prevent air, water, and soil pollution. Furthermore, to prevent environmental pollution, we regularly monitor our emissions into the air and water as well as the volume of emissions and transfers with regard to substances designated by the PRTR Law<sup>\*2</sup>.

In our efforts to prevent global warming, we periodically inspect freezers and refrigerators in compliance with Japan's revised law on fluorocarbons and continue to make improvements under the energy saving law.

<sup>\*2</sup> Law for improving the monitoring and control of emissions of designated chemical substances into the environment.



**Koji Shishido**

Operating Officer and General Manager, Environmental Protection Division  
General Manager, Environmental Safety & Quality Assurance Department

## 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 annual policy determined by the Environmental Protection Division, led by the operating officer, each office formulates an execution plan and follows a PDCA cycle to implement environmental management activities that meet local needs.

## Chemical Substance Management

### Basic Policy

The ADEKA Group will consistently seek to mitigate the risks associated with chemical substances by exercising proper management, reducing environmental impact, and ensuring safe use throughout the product life cycle.

### Environmental Initiatives System



### Targets and Actual Results for Fiscal 2016 and Targets for Fiscal 2017

Self-evaluation: ● Exceeded target ○ In line with target △ Below target

Item	Targets for FY2016	Actual results for FY2016	Self-evaluation	Targets for FY2017
Promote energy conservation	• Reduce energy intensity by 1% or more year on year	• Energy intensity: 0.1794 kJ/t (2.8% reduction from previous year)	●	• Reduce energy intensity by 1% or more year on year
	• Reduce CO <sub>2</sub> emissions by 1% or more year on year	• CO <sub>2</sub> emissions: 0.406 t-CO <sub>2</sub> /t (3.7% reduction from previous year)	●	• Reduce CO <sub>2</sub> emissions by 1% or more year on year
Reduce industrial waste	• Maintain complete zero emission <sup>*1</sup> rate	• Maintained complete zero emission <sup>*1</sup> rate • Landfill disposal volume: 27.3 tonnes (0.064% of industrial waste generated)	○	• 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)
Promote green purchasing	• Achieve green purchasing rate of 80% or more for 43 designated stationery items	• 79.5% (6,435 items out of 8,091 items purchased)	△	• Achieve green purchasing rate of 80% or more for 43 designated stationery items

<sup>\*1</sup> ADEKA defines "complete elimination" as landfill waste that amounts to less than 0.1% of the total volume of industrial waste output.

## Initiatives on Global Warming Prevention

### Initiatives for Reducing CO<sub>2</sub> Emissions

ADEKA seeks to reduce its emissions of CO<sub>2</sub>, a greenhouse gas that wreaks havoc on a global scale.

In fiscal 2016, ADEKA's production sites engaged in continuous activities for reducing CO<sub>2</sub> emissions, including efficient production plans and elimination of waste. As a result, CO<sub>2</sub> intensity decreased by 3.7% on the year to 0.406 t-CO<sub>2</sub>/t.

### Energy Saving Activities

The Energy Saving Committee, set up at the Akashi Plant, periodically inspects the production line to identify and repair sections that are prone to leaking steam, thereby preventing wasteful loss of energy. Meetings are held every 3 months to monitor progress. Despite production volume rising by 1.2 times over the past 10 years, the plant has consistently met its target of reducing energy intensity by 1% each year by controlling its energy consumption.

### Development of Eco-Friendly Products

The ADEKA Group develops highly eco-efficient products as well as those that protect the environment.

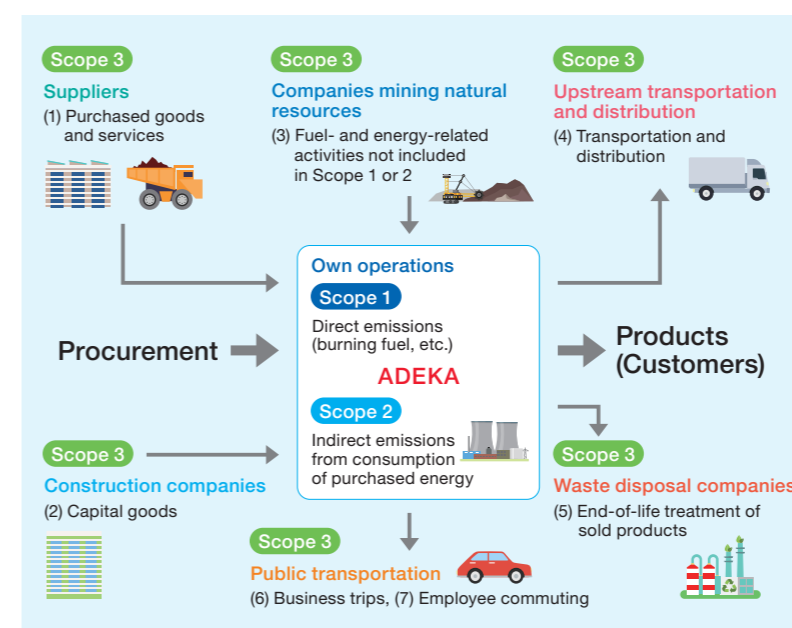
ADEKA SAKURA-LUBE is an automotive lubricant additive used in engine oil and grease that excels in raising fuel efficiency when added to engine oils. Calculations show that use of the product in a million automobiles would reduce fuel consumption by 7,000 kiloliters and CO<sub>2</sub> emissions by 39,000 tonnes per year.

### Scope 3 Calculations

In fiscal 2016, ADEKA began calculating greenhouse gas emissions across its entire supply chain in accordance with the Scope 3 international standards for reporting emissions. ADEKA will promote reductions in greenhouse gases by visualizing CO<sub>2</sub> emissions along its supply chain, upstream to downstream.

Japanese Ministry of the Environment website:  
[https://www.env.go.jp/earth/ondanka/supply\\_chain/gvc/en/](https://www.env.go.jp/earth/ondanka/supply_chain/gvc/en/)

### Flow Chart of ADEKA's Scope 3 Emissions



### CO<sub>2</sub> Emissions and Scope 3 Breakdown (scope: ADEKA)

(Unit: thousand tonnes-CO<sub>2</sub>)

Scope category	Emissions	
Scope 1	60.9	
Scope 2	85.5	
Scope 3	767.4	
Category 1	Purchased goods and services	702.3
Category 2	Capital goods	26.9
Category 3	Fuel- and energy-related activities not included in Scope 1 or 2	12.0
Category 4	Transportation and distribution	13.2
Category 5	Waste generated by operations	12.2
Category 6	Business trips	0.2
Category 7	Employee commuting	0.6

**Total: 913.8 thousand tonnes-CO<sub>2</sub>**

## Reduction of Environmental Impact

### Preventing Water Pollution

The ADEKA Group seeks to preserve water resources that are essential for creating a recycling-oriented society. It prevents water pollution by collecting and recycling wastewater from its production process and by complying with relevant laws and regulations to reduce the environmental impact of its wastewater.

### Preventing Air Pollution

The ADEKA Group's production and R&D divisions have strived to protect the environment by consistently working to prevent air pollution by reducing their emissions of SOx, NOx, dust, and soot.

### Reducing Disposal of Industrial Waste

In light of the illegal resale of products by industrial waste disposal companies that had been reported in 2016, ADEKA reviewed its waste disposal contracts for food products and revised related portions of these agreements. No problems were found in waste disposal contracts for chemical products signed by affiliates and plants in Japan.

Japan's revised food recycling law came into effect in January 2017, and guidelines were published by the Ministry of the Environment. The ADEKA Group will continue to promote the proper disposal and management of food waste.

## Promoting Biodiversity



Eagerly observing the native plants Fun observation time with children

In accordance with the ADEKA Group Biodiversity Policy, the ADEKA Group will implement initiatives to promote the preservation of biodiversity and its sustainable use.

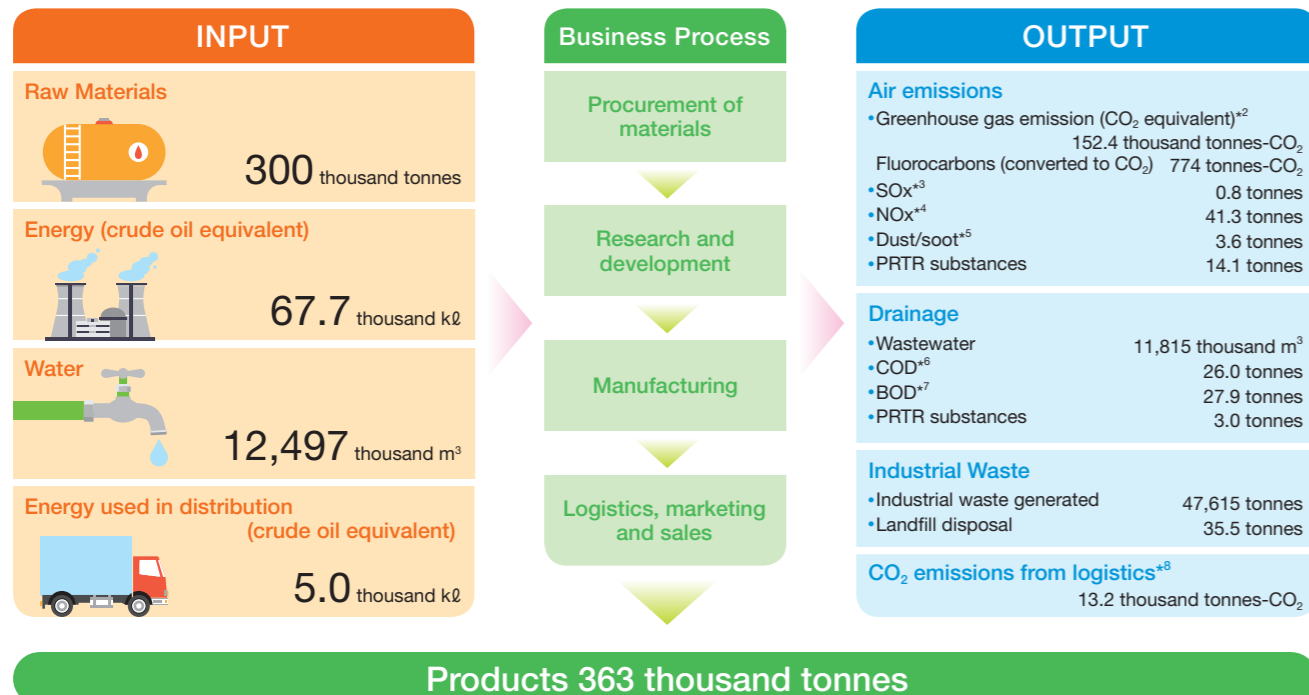
The Fuji Plant has been maintaining a biotope within its grounds since fiscal 2014. A nature observation workshop held in April 2017 was attended by employees and their families. Under the guidance of an environmental adviser from Fuji City, 20 participants conducted fixed-point observations of the surrounding environment and enjoyed being close to nature.

Of the 68 plant species that inhabit the biotope, 48 are native to Japan while 20 are non-native, and the naturalization rate\*1 was 29%. Participants were able to find rare species, such as the Asian lizard's tail.

The Group will continue to assess the environment around its production plants.

\*1 The percentage of non-native (naturalized) species among plants that grow in a specified area. Surveying and comparing naturalization rates provides a measure of the vegetation naturalness of that area.

### Environmental Initiatives System (scope: ADEKA and 11 Group companies in Japan)



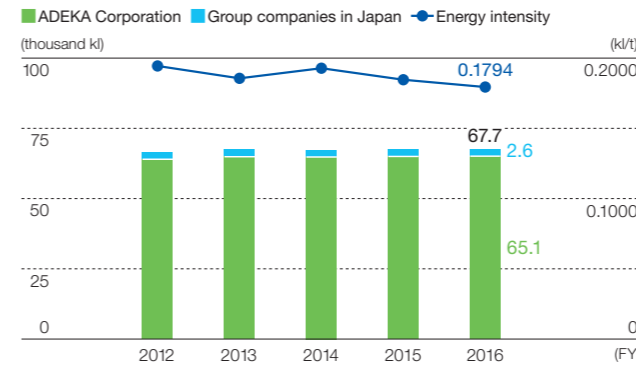
\*2 Total emissions arising from energy sources, non-energy sources, and processes / \*3 Sulfur oxides generated during the use of fuels that contain sulfur / \*4 Nitrogen oxide generated during combustion in plant boilers and incinerators / \*5 Fine particles generated during the combustion of fuels and other materials / \*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

## Environmental Data

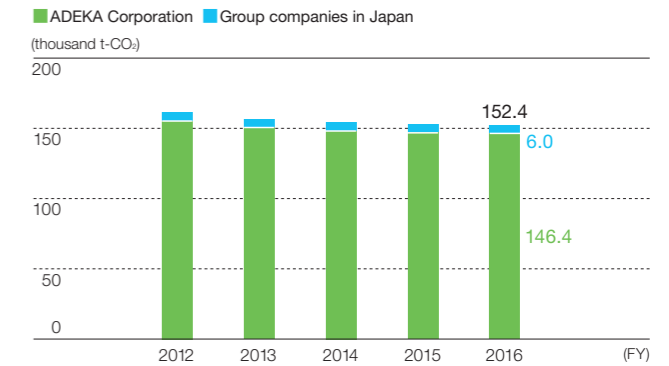
Scope: ADEKA and 11 Group companies in Japan

Note: Detailed ADEKA Group environmental data, including overseas Group companies, is available in the Environmental Data report published in September 2017.

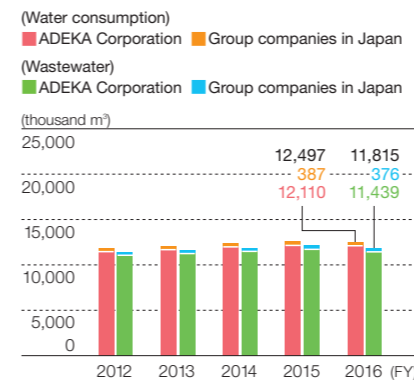
### Energy Consumption by Crude Oil Equivalent and Energy Intensity Index from Manufacturing



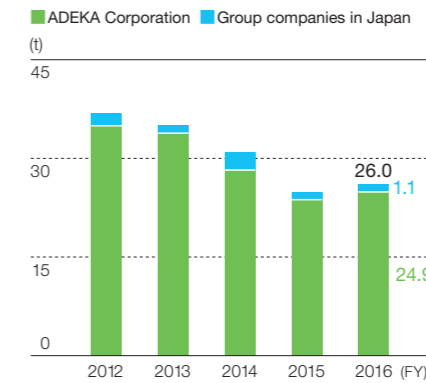
### CO<sub>2</sub> Emissions



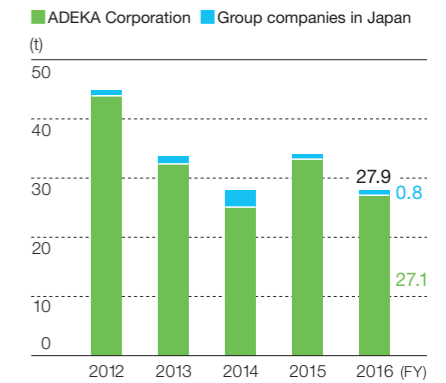
### Usage of Water and Wastewater Discharge



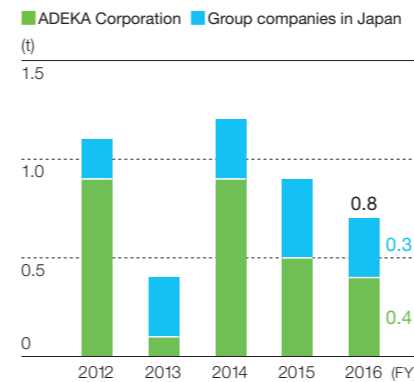
### Chemical Oxygen Demand Emissions



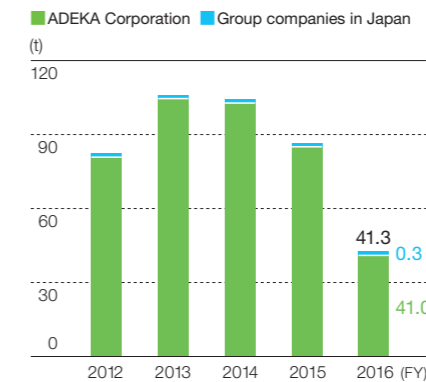
### Biological Oxygen Demand Emissions



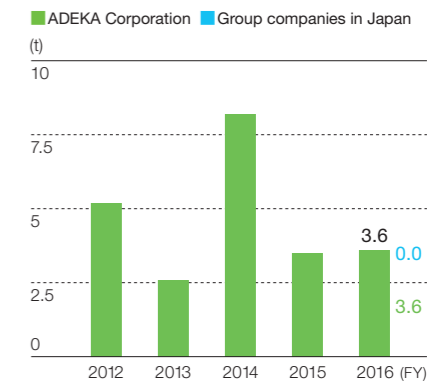
### SOx Emissions



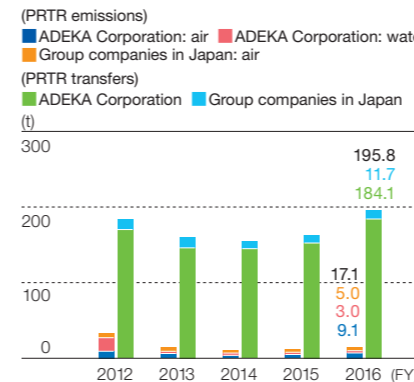
### NOx Emissions



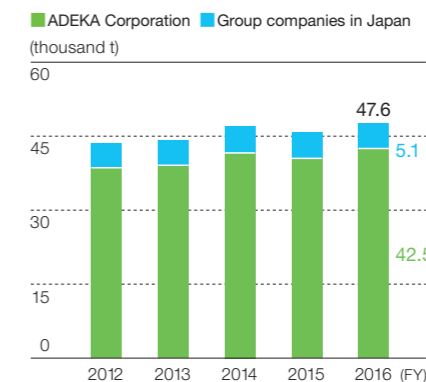
### Soot/Dust Emissions



### Discharge and Transfer of PRTR Substances



### Industrial Waste Generated



### Zero Emissions Rate for Landfill Disposal of Industrial Waste

