

• Initiatives to Prevent Workplace Accidents and Injuries

At each ADEKA plant, occupational health and safety activities are generally reviewed by an audit conducted by the president and the Environmental and Safety Division in the first and second half of the year, respectively. The necessary action plans are then formulated for the issues identified by the audits and implemented through the PDCA cycle of the management system. We have been conducting onsite inspections of our overseas production bases where accidents had occurred in order to provide corrective feedback and guidance. As part of our preventive measures, we plan to conduct audits once every few years, starting in fiscal 2018.

To prevent accidents resulting from the lack of experience of young employees and newly transferred workers, we created a new basic safe practices manual (in Japanese, English and Chinese in fiscal 2017) and distributed it to all Group locations. In fiscal 2016, we continued adding to the contents of the safety awareness video, through which employees review serious accidents.

Furthermore, all our new employees in the R&D and production areas are required to participate in training at the safety experience training facility, set up in the Urawa R&D Laboratory. A total of 60 employees have taken part in the training.



Basic safe practices manual (ADEKA Group)

Safety experience training

Employee Health Management

• Strengthening Employee Health Management

The ADEKA Group is strengthening the management of the health and wellbeing of employees.

We offer periodic medical checkups for our employees twice a year, with an employee attendance rate of 100%. Also, follow-up checkups are performed by industrial doctors and public health nurses based on the initial results. The ADEKA Health Insurance Association, in which the domestic companies and subcontractors of the

Group are enrolled, promotes the “second phase health plan,” which was focused on diabetes in fiscal 2018. The plan is intended to prevent the onset of a disease or progression to more severe conditions by identifying subjects at risk based on analyzing medical expense data and medical examination information of the policyholders as well as the advice of industrial doctors and holding periodic consultations to improve lifestyle habits. We will use this data and the results of health guidance to better understand the health risks of our employees and apply a PDCA cycle to continue to improve the health services.

• Mental Health

The ADEKA Group promotes mental health in the workplace through efforts such as implementing improvement activities in each office according to the results of an annual stress test. In fiscal 2017, mental health training for general staff was conducted to help managers better understand their roles and prevent mental illness among employees, and 370 people took part. To help employees suffering from mental illness return to work, we have introduced the ADEKA Return to Work Program, which is applied under a short-time work system. Moreover, we offer an appropriate return to work program based on a second opinion and the contents of periodic consultations with industrial doctors.



Mental health self-care training

• Preventing Impaired Health from Chemical Substance

New findings have been recently announced on the hazardous properties of chemical substances, such as related to the rising occurrence of bladder cancer. Information on such hazardous properties and revisions to the Industrial Safety and Health Law are immediately distributed to plants and laboratories as soon as they are available. This is followed by actions, such as confirming the use of such substances and their control status, in order to prevent employee impairment resulting from chemical substances.



With the Environment

The ADEKA Group, which uses chemical substances and palm oil as raw materials, cares about the environment throughout the process of procurement and from production to disposal. Toward realizing a sustainable society, we are developing products with less environmental impact and engaging in energy-saving initiatives.

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 Initiative System

Under the annual policy determined by the Environmental and Safety Division, each office of the ADEKA Group formulates an execution plan and follows a PDCA cycle to implement environmental management activities that meet local needs. The Environmental and Safety Division conducts an audit every year at our offices and affiliate plants inside Japan. In and after fiscal 2018, the division plans to expand the scope of its auditees to include our overseas operation sites and audit them once every a few years. Among the Group's manufacturing sites, the rate of environmental management system ISO14001 certification is 73 percent.

► Environmental Initiatives System



► Targets and Results for Fiscal 2017 and Targets for Fiscal 2018

Self-evaluation: ● Exceeded target ○ In line with target △ Below target
((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	<ul style="list-style-type: none"> Reduce energy intensity by 1.0% or more year on year Reduce CO₂ emission intensity by 1.0% or more year on year 	<ul style="list-style-type: none"> Energy intensity at 0.1777 kl/t (1.0% reduction year on year) CO₂ emission intensity at 0.401 t-CO₂/t (1.1% reduction year on year) 	○	<ul style="list-style-type: none"> Reduce energy intensity by 1.0% or more year on year (seek a 3% reduction by FY2020 from the FY2017 level) Reduce CO₂ 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	<ul style="list-style-type: none"> 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) 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Achieve a green purchasing rate of 80% or more for 43 designated stationery items 	<ul style="list-style-type: none"> 77.3% (10,415 items among 13,469 items purchased) 	△	<ul style="list-style-type: none"> Achieve a green purchasing rate of 80% or more for 43 designated stationery items or heighten the rate by 1.0%

*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.

Initiatives on Global Warming Prevention

•Initiatives for Reducing CO₂ Emissions

The ADEKA Group seeks to reduce its emissions of CO₂, a greenhouse gas that wreaks havoc on a global scale.

Each of our operation sites has its own reduction target and is engaged in higher production efficiency or other improvement activities. Progress of those activities is checked through plant audits conducted by the president and the Environmental and Safety Division. In addition, before any renewal or investment is made for equipment, the Environment Safety & Quality Assurance Department examines whether the renewal or investment will contribute to the Group's energy conservation effort, bringing further energy saving.

In fiscal 2017, the ADEKA Group's CO₂ emission volume increased by 4.2 percent on the year as its production volume increased by 5.3 percent, although the CO₂ emission intensity was reduced by 1.1 percent. In addition, an inspection tour by the Energy Conservation Promotion Committee was conducted at the Kashima Plant during the year in an effort to share information about energy saving activities across the Group.

•Energy Saving Activities

In fiscal 2017, six of the Group's seven production sites in Japan attained their energy intensity targets.

►Initiatives by Major Sites in Fiscal 2017

Sites	Initiatives
Kashima Plant	<ul style="list-style-type: none"> Reduced steam usage through steam pressure reduction Reduced electricity consumption by replacing lighting with LEDs
Chiba Plant	<ul style="list-style-type: none"> Installed steam flow meters to analyze steam usage volume Repaired steam trap failures
Akashi Plant	<ul style="list-style-type: none"> Replaced all lighting in the manufacturing building with LEDs (All lighting at the plant will be replaced with LEDs by the end of fiscal 2019.) Enhanced the management for steam traps to reduce their failure rate Reduced the volume of steam to heat raw oil tanks

•CO₂ Reduction through our 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. It indirectly contributed to the CO₂ reduction of approximately 1.32 million tonnes during fiscal 2017, a volume equivalent to six times the volume of CO₂ emitted by ADEKA's plants that year.

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 manufacturing processes and by complying with relevant laws and regulations to reduce the environmental impact. In fiscal 2017, our regular self-inspection detected water discharge that slightly exceeded the sewage discharge standard at R&D laboratory, but no water-quality abnormality was observed in the final inspection by the sewage bureau. The cause was determined and measures to prevent recurrence were introduced. Also, the laboratory staff were reminded of the standards and now must promptly notify the control section if an abnormal water solution is mistakenly discharged in a drain.

•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 SO_x, NO_x, dust and soot.

•Properly Managing the Disposal of Industrial Waste

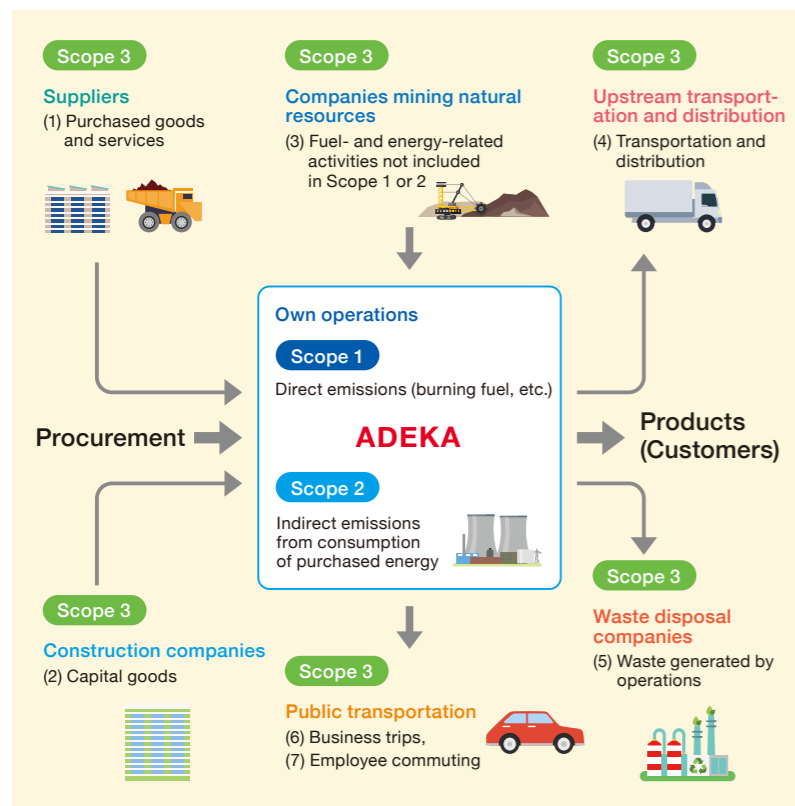
ADEKA and its domestic Group companies inspect their industrial waste disposal contractors on a regular basis to ensure that outsourced disposal of industrial waste is being conducted properly. Disposal management at our operation sites is audited by the Environmental and Safety Division, which also inspects waste disposal at contractors.

The Mie Plant reduced its environmental impact by switching the disposal of 1,790 tonnes of waste alkali from outsourcing to self-disposal.

•Reducing VOCs through our Products

Since fiscal 1997, the ADEKA Group has quantitatively calculated the amounts of PRTR*¹ substances used for and emitted from its manufacturing processes in order to manage them properly. Moreover, the Group is engaged in the research and development of products that contribute to the reduction of VOCs (volatile organic compounds) emissions. In particular, our water-borne coating material is widely used as a painting additive for buildings, contributing to the reduction of some 50 thousand tonnes of VOCs during fiscal 2017.

►Flow Chart of ADEKA's Scope 3 Emissions



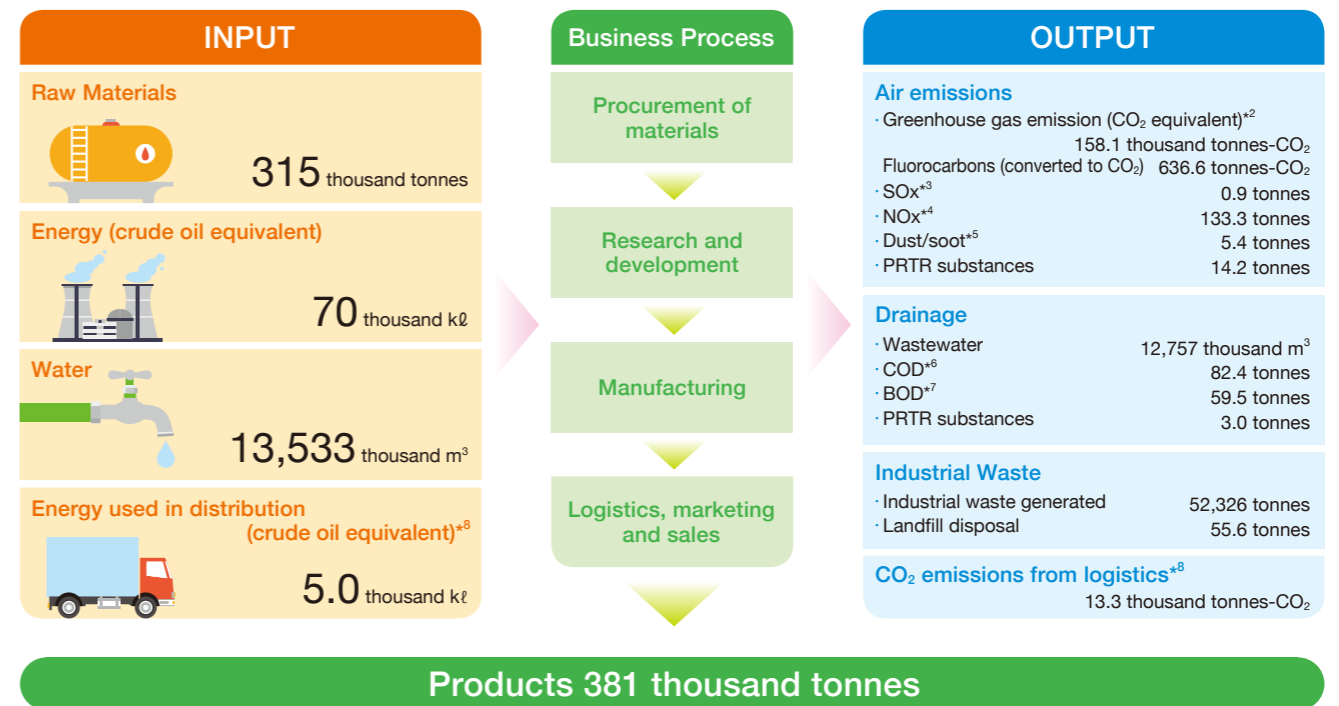
►CO₂ Emissions and Scope 3 Breakdown (scope: ADEKA)

(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

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



*¹ 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. *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

●Promoting Biodiversity

In accordance with the ADEKA Group Biodiversity Policy, the 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. The biotope is naturally inhabited by 68 species of plants, including the Asian lizard's tail.

ADEKA Group Biodiversity Policy

1. Consider biodiversity when procuring naturally derived raw materials
2. Promote activities for conserving biodiversity at our business premises
3. Strive to develop biodiversity-oriented products
4. Work in collaboration with local communities

With Local Society



The ADEKA Group owes its existence to the local communities that have provided the company with a sense of understanding as well as cooperation. To be a good corporate citizen, the Group respects the culture and social environment of the countries or regions in and outside of Japan where it operates. Moreover, it seeks coexistence and co-prosperity with society by working alongside of and engaging in dialogue with it.

Promoting the Modal Shift toward Logistics with Higher Efficiency

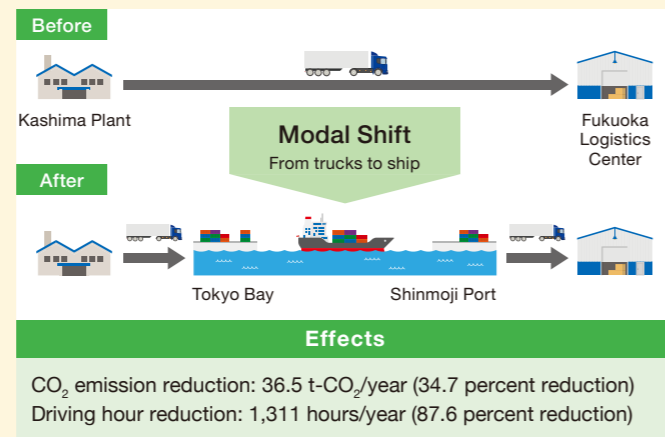
Since 2003, ADEKA and ADEKA LOGISTICS CORP. have promoted the Modal Shift (a government initiative to switch the modes of transportation from trucks to ships or railway) for the purposes of reducing impact on the environment and truck drivers and ensuring safe transportation.

In fiscal 2017, ADEKA in a joint effort with ADEKA LOGISTICS CORP. and SENKO Co., Ltd., switched the transport mode for food products manufactured at the Kashima Plant to ships equipped with refrigerators. As a result, 36.5 tonnes of CO₂ emissions and 1,311 hours of driving time were eliminated. This was recognized as a successful case based on the Act on Advancement of Integration and Streamlining of Distribution Business and won the Environmental Logistics Special Award of the Japan Association for Logistics and Transport.

ADEKA's modal shift rate* is 7.5% as of the end of fiscal 2017, and we are working toward the target rate of 10%.

*Proportion of goods transported by rail or sea among those transported for a distance of 500 kilometers or more.

▶ ADEKA's Modal Shift Outline



Environmental Logistics Special Award

Activities for Local Communities

●Dialogue with Local Communities

At the ADEKA Group, we actively participate in social events because we believe that interacting with people in the communities results in valuable opportunities for dialogue.



Supporting a local NGO through a fund (AMFINE CHEMICAL CORP., U.S.A.)



Donating to a welfare organization (Kashima Plant)

Dialogue with Overseas Governments

Aiming to globalize further, the ADEKA Group has joined hands with its overseas Group companies in 12 countries or regions and pursues coexistence and co-prosperity with each of the communities in which those organizations are based.

ADEKA AL GHURAIR ADDITIVES LLC is the only Japanese manufacturer operating in Abu Dhabi, capital of the United Arab Emirates, and its plant and warehouse are equipped with cutting-edge technologies. By actively sharing information and knowhow with the UAE government, the Company is seeking to expand its business in the Middle East and contribute to the UAE's development under the guidance of the Japanese Embassy and amid ongoing negotiations between the two countries over bilateral investment treaties.

VOICE

From the UAE to the rest of the world, we are seeking prosperous coexistence with the UAE government



Mohamed Sayed
Mohamed ElGouhari
ADEKA AL GHURAIR ADDITIVES LLC

At the Company, we are receiving many people from the UAE government, and they have shown great interest in our 5S and other management systems as well as our state-of-the-art production lines and warehouse. Our sharing of information with them is highly recognized by the country's labor ministry, which raised our grade from C2 to B2. The B2 grade is the highest rank that can be granted to a company having fewer than 100 employees and whose parent company is located outside the UAE. We also had the honor of receiving visits from high-ranking officers of the executive office, including the president, who evaluated the Company with a high regard and great interest, and we were more than honored and delighted with that response.

We make our best efforts to improve our business quality and contribute to society.

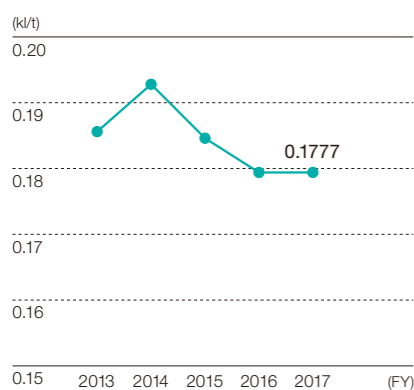


A Christmas cake, made using our products, is given to a welfare organization (Akashi Plant)

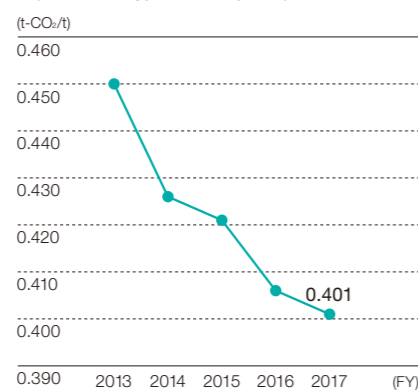
Environmental Data

Scope: (1) ADEKA (the manufacturing division alone)
(2) ADEKA and 11 Group companies in Japan

▶ (1) Energy Intensity Index



▶ (2) CO₂ emission Intensity Index (from energy consumption)



▶ (3) Zero Emissions Rate for Landfill Disposal of Industrial Waste

