

Environmental Report 2024

Aiming to coexist in harmony with the natural environment



Amano Enzyme Inc.

*This is a machine translation of the Japanese environmental report.

Index

- 1. About Us
- 2. Environmental Policy
- 3. Acquisition status of

Environmental management systems

4. Environmental Management Organization and Internal Environmental Audits

5. Environmental Targets and Results for FY2023

- 6. Activities inside and outside the office
- 7. Environmental Impact of Business Activities
- 8. Prevention of global warming and

rationalization of energy use

- Greenhouse gas (CO2) emissions
- Changes in energy intensity
- 9. Efforts to conserve energy
- 10. Initiatives to Reduce Environmental Impact from Hazardous Substances
- Prevention of ozone layer depletion by CFC gas
- Prevention of mercury contamination

of water and soil

- 11. Pollution Prevention Initiatives
- Prevention of air pollution
- Prevention of water pollution and odors
- 12. Promote industrial waste reduction and recycling
- 13. FY2021 Environmental Accounting
- 14. Social Activities and

Community Communication Report

About Us

About the Environmental Report 2024

Editorial Policy

This report presents a compilation of data on the environmental protection activities undertaken by Amano Enzyme Ltd on a company-wide basis.

Target Period

The period covered by this report is 1 April 2023 - 31 March 2024.

Target Organization

The organizations covered by this report are Nagoya Plant, Yoro Plant, Shiga Plant, Innovation Centre and Head Office.







Upper left: Nagoya Plant Upper right: Yoro Plant Left: Shiga Plant

Company Name	Amano Enzyme Inc.
Established	August 26, 1948
Found	1899
Representative	President and CEO Motoyuki Amano
Business Activities	1. Manufacture and sale of enzyme agents for the pharmaceutical, food, and manufacturing industries, and for diagnostic reagents
	2. Manufacture and sale of pharmaceuticals, veterinary medicines, and feed additives
Capital	¥390 million
Employees	440
Locations	2-7, 1-Chome, Nishiki, Naka-ku, Nagoya 460-8630 Japan
Phone	81-(0)52-211-3032
FAX	81-(0)52-211-3054

Environmental Policy

Coexist with nature / reduce environmental impact and continuously protect a prosperous future

Amano Enzyme is committed to business activities for the sustainable growth and development of society, based on the management philosophy of 'Coexistence (Tomoiki)'. As a leading company in the enzyme industry, we strive to protect the global environment by accurately assessing the impact of our development, procurement, manufacturing, distribution and services.

- 1. Comply with environmental laws, regulations and agreements with local communities.
- 2. Strive to protect the global environment through new technologies and efficiency improvements.
 - (1) Reduce greenhouse gas emissions from the entire life cycle.
 - (2) Reduce energy consumption and promote the use of renewable energy.
 - (3) Reduce consumption of exhaustible resources by reducing and recycling waste.
 - (4) Maximise productivity through the effective use of natural resources.
- 3. We will promote planned and continuous environmental conservation activities through the dissemination of environmental policies and the operation of an environmental management system.
- 4. Build ongoing partnerships with customers, suppliers and local communities to promote environmental protection activities.
- 5. Strive to maintain up-to-date information and prevent environmental risks.

2024.4.1 Amano Enzyme Inc. Motoyuki Amano

Status of acquisition of environmental management systems

Amano Enzyme acquired ISO 14001 certification in January 2000 as a mechanism for promoting environmental improvements at its production sites (Nagoya, Yoro and Shiga Plants), R&D site (Innovation Centre) and head office, and is promoting continuous environmental protection activities.

Training of environmental management organisations and environmental auditors

To ensure the effective operation of the environmental management system, the EMS Committee and the Environmental Committee have been established as operating organisations, and their responsibilities, authorities, roles and functions are clearly defined and addressed in their activities. In addition, to ensure the continuous implementation of the environmental management system, training and education of personnel involved in environmental matters is carried out as required.

2023 Environmental targets and results

Amano Enzyme continuously implements initiatives to reduce the environmental impact of its corporate activities and to protect the global environment. The company carries out detailed environmental conservation and management activities by setting medium-term environmental targets and implementation plans with three years as a unit, and formulating targets and plans for implementing these targets and plans for each single year.

Environmontal policy	2023 Environmental goals and results			
Environmental policy	Target	Track record		
Compliance with regulations, etc.	 Clarify applicable environmental laws, regional agreements, etc. at each site and regularly evaluate them to ensure compliance with legal and agreed values. At sites with wastewater treatment facilities, comply with legal limits and voluntary control limits (additional limits) based on the 9th Total Volume Regulation by ensuring operation and management. Comply with legal limits for odour, noise, vibration, etc. and avoid generating environmental complaints. 	 Inspections and notifications based on applicable laws, regulations and agreements were reliably carried out as planned, and compliance with laws and regulations was regularly assessed. The target was achieved with zero cases of non- compliance with laws and regulations. In waters that have become eutrophic due to increases in nitrogen, phosphorus, etc., the biota that make up the ecosystem change, and the direction of change is towards a decrease in biodiversity. In wastewater treatment, our company has worked to reduce the environmental burden by complying with legal limits based on the 9th Total Volume Control. Exceeding legal limits: 0 cases (However, exceeding voluntary limits due to trouble: 3 cases) One odour and noise complaint each due to equipment problems. 		
	■ Improve energy consumption per unit of production by at least 3% by the end of FY2025	 Energy consumption per unit production104% compared to FY2022 CO2 emissions per unit production07% 		
Conservation of the natural environment and protection of natural resources	 compared to the actual value for FY2022 Reduce CO2 emissions per unit of production by at least 50% by the end of FY2031 compare to the actual value for FY2019 Improve water consumption per unit of production by at least 3% by the end of FY2025 compared to the actual value for FY2022 Prevent the leakage of CFCs from CFC equipment and reduce the use of CFC (CFC, HCFC) equipment to zero Reduce the amount of industrial waste to th same level or less than the actual amount of industrial waste. 	 CO2 emissions per unit production97% compared to FY2019 Water consumption per unit production106% compared to FY2022 Fluorocarbon emissions: 167.3t-CO2/year The amount of industrial waste generated per unit of production is 110% of the 2022 level. 		
Continuous improvement	 We will work to improve operational efficiency and reduce our environmental impact. We will actively promote improvement activities that lead to energy conservation, with a focus on the summer months (July and August) when electricity demand is high. In research and development, we will promote themes for product and application development that can contribute to reducing our customers' environmental impact. 	 Continue to improve operational efficiency through Kaizen proposal activities, small group activities, etc. Continue to implement proposal activities Introduce high-efficiency equipment such as boilers, air conditioners, and refrigerators, and improve the thermal efficiency of existing equipment, etc. Promoting re-evaluation of the enzymes produced by the company's leading candidate stocks that are expected to reduce environmental impact 		
Communication	 Ensure communication with the local community (sharing information about odours, noise, construction, etc.) to maintain a relationship of trust As part of our contribution to the local community, we will cooperate in activities to beautify the environment around our offices and in resource recovery, etc. 	 Monthly transmission of information on predicted odour emissions to local residents (Nagoya Plant) Implementation of beautification activities around business sites (all business sites) 		

Achievements of activities inside and outside the establishments

The table below shows Amano Enzyme's EMS activities both inside and outside its sites and its performance in complying with various laws, regulations and ordinances in FY2023.

	Apr.	 2023: Submit and pay the pollution load levy (Nagoya, Yoro, Shiga Factories) 2023: Submit a report on private industrial water supply (Nagoya Factory) Submit a report on changes regarding the use of sewage treatment facilities (Innovation Centre)
23	Мау	 Submitted energy consumption statistics survey (Nagoya, Yoro, Shiga factories) Submitted a report on the implementation of measures to combat global warming and a survey on the sludge load of specified discharge water (Nagoya Plant) Submitted a business operator action plan and report under the Shiga Prefecture Ordinance on the Promotion of the Creation of a Low-Carbon Society (Shiga Plant) Submitted a general waste reduction plan and a report on the results of the waste reduction plan (Yoro Plant) Submitted a business waste reduction plan (Head Office)
	Jun.	 Submitted industrial waste disposal plan, implementation status report, and industrial waste management table delivery status report (Nagoya, Yoro, and Shiga plants) Submitted a report on the status of the issuance of industrial waste management tables, etc. (Innovation Centre) Submitted a report on the status of the transport of industrial waste from outside the prefecture (Nagoya, Yoro, Shiga Factories and Innovation Centre) Submitted a survey form on the amount of waste generated (Yoro Factory and Innovation Centre)
	Jul.	 Submitted greenhouse gas emission reduction plan and reduction plan performance report (Nagoya, Yoro, Shiga Plants) Submitted air pollutant load survey form (Nagoya Plant) Submitted medium- to long-term plan and regular report based on the Act on the Rational Use of Energy (Nagoya, Yoro, Shiga Plants) Submitted Konan City Environmental Conservation Agreement water quality results report (Shiga Plant)
	Aug.	Submission of a report on the implementation of measures to combat global warming (Nagoya Plant)
	Sep.	(Activity performance report N/A)
	Oct.	■ISO14001 Renewal Audit
	Nov.	■Comprehensive survey sheet on air pollutant emissions submitted (Shiga Plant).
	Dec.	Submit change reports on the use of sewage treatment facilities (Innovation Centre).
	Jan.	(Activity performance report N/A)
24	Feb.	Notification of out-of-prefecture industrial waste delivery submitted (Yoro Plant, Innovation Centre).
	Mar.	(Activity performance report N/A)

Environmental impact of business activities

At Amano Enzyme, the Nagoya, Yoro, Shiga and Innovation Centres, as well as the head office, we are engaged in a comprehensive range of activities, from research and development to production and administrative activities. Each and every employee is aware of the inputs and outputs of environmental impact generated by these activities, and strives to reduce environmental impact by taking concrete action.

At 1 AT * 9 1 7 . 9 . 1 * . 9 . 1 *.





Research • Development Production

Business

Prevention of global warming and rationalization of energy use



[L/t] 800 700 600 500 400 300 200 100 0 2022 2023 2019 2020 2021 Electricity City gas, heavy oil A, LNG

Changes in energy intensity

Greenhouse gas emissions in FY2023 were 5% lower than the previous year.

[Nagoya Plant Initiatives]

Installed additional biogas boilers. Reduced the amount of city gas used by increasing the amount of gas recovered (84t-CO2 reduction)

Installed heat recovery compressors (reduced energy use by using them to heat boiler water) (63t-CO2 reduction)

[Initiatives at the Yoro Plant]

Upgraded to high-efficiency (water-sealed) compressors (37.3t-CO2 reduction)When updating the cubicles, introduced highefficiency transformers (37.2t-CO2 reduction)

[Initiatives at the Shiga Plant]

Upgraded compressors to high-efficiency equipment (20t-CO2 reduction)





[Other initiatives]

Improving productivity

• Introducing energy-saving equipment and devices

• Promoting energy-saving activities through energy-saving proposals (272 proposals)

In order to continue to improve our energy consumption rate in FY2024, we will continue to work to reduce our energy consumption rate by improving the operation of existing equipment and actively introducing high-efficiency and energy-saving equipment.

What is Amano Enzyme's basic unit?
Specific unit = Crude oil equivalent of electricity or city gas, heavy oil
A or LNG [L] / volume of oil to be prepared [t].
The value is calculated as follows.



Energy conservation initiatives

- The Nagoya plant is working to improve the operation of biogas recovery through anaerobic treatment of wastewater (using biogas as fuel), which started in 2018, to increase the amount of gas recovered.A 25% increase has been achieved compared to the year of introduction (2018).
- At the Yoro Plant, the compressor efficiency is improved by cooling the culture compressor intake air, and energy-saving equipment: water-sealed compressors (55 kW) and high-efficiency transformers have been installed at the Yoro Plant.
- The Shiga plant is systematically converting to high-efficiency equipment. In addition, regular inspections are carried out to eliminate energy wastage, such as defective steam traps and heat dissipation losses.













Initiatives to reduce the environmental impact of hazardous substances

Prevention of ozone layer depletion by CFC gases.

The use of CFC gas, which causes ozone depletion and global warming, is reduced by introducing CFC or non-CFC equipment and equipment as required, for example by replacing cooling equipment that used CFC gas as a refrigerant with equipment that uses alternative CFC gas, and regular inspections are carried out to prevent leakages.

Preventing mercury pollution of water and soil

LED lighting fixtures have been installed in line with activities to eliminate fluorescent and mercury lamps that use mercury, which is harmful to the human body. This eliminates the risk of mercury pollution of water and soil and saves energy.





Pollution prevention initiatives

Prevention of water pollution and odours

Proper operation of wastewater treatment plants

Each plant and innovation centre is equipped with wastewater treatment facilities to treat wastewater discharged from plants and other facilities. In addition to the 9th Total Volume Regulation and local government bylaws, the company also complies with its own voluntary water quality standards in an effort to prevent water pollution.

AX 1 AT * 0 0 * 0 0 * 0 0 *

In addition, as a measure to prevent odour pollution to the neighbouring areas of the plant, the plant ensures that treatment processes appropriate for the wastewater of each production item are carried out, and also strives to prevent odour pollution by strengthening the sealing of the liquid waste storage tank to reduce odour leakage and by spraying deodorising agents to reduce odours.



Promoting industrial waste reduction and recycling

Industrial waste generated

Industrial waste emissions at all sites increased by approximately 7% compared to the previous year. This was mainly due to an increase in production, which was 1% lower than the previous year in terms of waste intensity divided by the amount of raw materials prepared. Combustible materials are supplied with heat outside the site through residual heat utilisation facilities at municipal waste treatment plants, and completely burnt incinerator ash is reused as a cement raw material.

Recycling activities

As part of its efforts to reduce industrial waste, the Nagoya Plant is switching to packaging containers that are easier to recycle. The Shiga Plant is also working on the reuse of used container containers. We will continue our efforts to reduce the amount of industrial waste generated and maintain the recycling rate.





2023 Environmental accounting

The following table shows the amount of investment in environmental measures and environmental protection costs for all establishments in 2023.



Environmental accounting



Classification	Main contents	2022	2023
1 : Pollution prevention costs	Wastewater treatment plant maintenance / Compressor renewal and maintenance / Maintenance of power receiving and transforming equipment	300,952	309,130
2 : Global environmental protection costs	Refrigeration unit renewal and maintenance / Air conditioning renewal and maintenance	160,203	160,305
3 : Resource recycling costs	Industrial waste recycling	219,524	189,401
4 : Environmental management costs	Green space management in factories / Environmental impact monitoring / EMS activity related	293,804	317,226
5 : Others	Support for community activities / Environmental protection activities	787	767
Total	-	975,269	976,829

Social activities and community communication report

• As part of local environmental beautification activities, we regularly clean the roads and ditches around our business sites every month (all business sites)

• We cooperate with the collection of waste paper by the neighbourhood community development council (Yoro Plant)

• The Shiga Plant participates in the 'Lake Biwa Beautification Campaign' organised by the prefecture and carries out litter picking. (Shiga Plant)







