KIOXIA

2021 Environmental Report

KIOXIA Corporation

Yokkaichi Plant

Introduction

Yokkaichi Plant Overview

Founded	January 1992
General manager	Tomoharu Matsushita
Location	Yokkaichi Plant: 800 Yamanoisshiki-cho, Yokkaichi-shi, Mie Prefecture, Japan
	Asahi Test Center: 2000 Nao, Asahi-cho, Mie-gun, Mie Prefecture, Japan
Site area	Yokkaichi Plant: 694,000 m^2
	Asahi Test Center: 47,862 m^2
Number of employees	6,300 (as of March 31, 2021)
Main products	Semiconductor memory devices (NAND flash memory, etc.)

Products

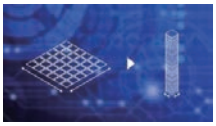
- Three-Dimensional Flash memory: BiCS FLASH™
- NAND Flash Memory with an Integrated Controller (e-MMC*1, UFS*2)
- SLC NAND Flash Memory (SLC NAND, BENAND™)
- Solid State Drives (Enterprise SSD, Data Center SSD, Client SSD)
- Personal Products (microSD Memory Cards, SD Memory Cards, USB Flash Drives)

*1 Abbreviation for "embedded Multi Media Card," used for embedded storage in products such as smartphones.
*2 Abbreviation for "Universal Flash Storage," used in a variety of products as embedded storage that is faster than e-MMC.

Features of BiCS FLASH™

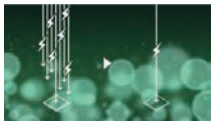
High Density and High Capacity

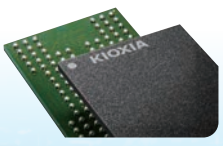
The vertically stacked three-dimensional (3D) flash memory, BiCS FLASH, has far higher die area density compared to the prior state-of-the-art technology, two-dimensional (2D) NAND flash memory.



Low Power Consumption

BiCS FLASH reduced the power consumption per unit of processing data by increasing the amount of data that can be processed in a unit of time (i.e., faster processing speed) compared to the 2D NAND flash memory.





BiCS FLASH™

Enterprize SSD

Data Center SSD

Client SSD

microSD Memory Card

SD Memory Card

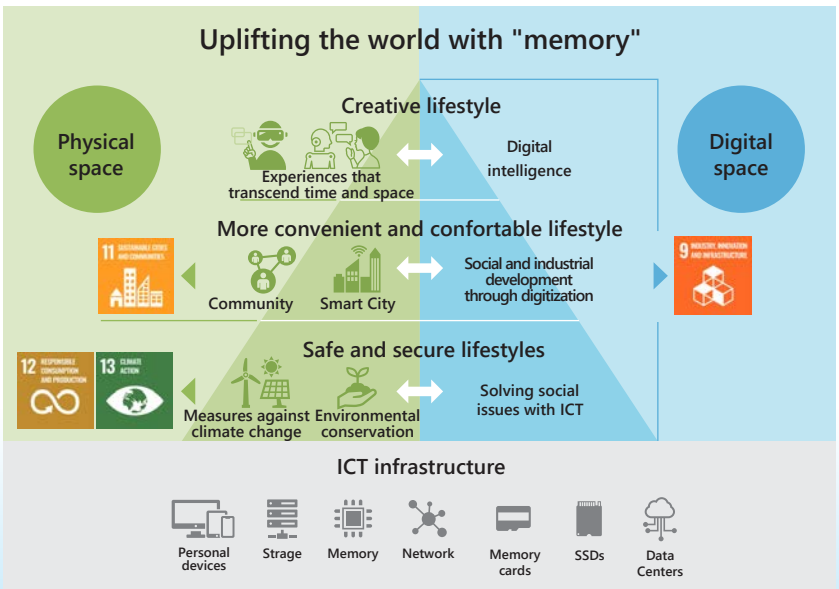
USB Flas Drive

Consumer SSD

Contributions to Achieving the SDGs through Our Products

The 17 Sustainable Development Goals (SDGs) set out in the 2030 Agenda for Sustainable Development, adopted at the UN Summit in September 2015, officially came into force on 1 January 2016. Based on the SDGs, which are universally applicable to all people until 2030, countries are joining their forces to end poverty in all its forms, fight inequality and address climate change while leaving no one behind.
The SDGs aim to end poverty in all its forms and call on all countries - poor, rich and middle-income - to protect the planet while pursuing prosperity.
The name "KIOXIA" reflects our strong determination to change the world by storing "memories" ("kioku" in Japanese) created by society and using them to create new "value" ("axia" in Greek). Our mission is to uplift the world with "memory."
The KIOXIA Group, which provides the value of "memory" to society through products such as flash memory and solid state drives (SSDs), will continue to develop a sustainable society by contributing to the SDGs through its business. Relevant SDG icons are shown for each environmental activity.

SUSTAINABLE DEVELOPMENT GOALS



Contents

Message from the General Manager

Yokkaichi Plant was founded in 1992 as a manufacturing base for semiconductor memory products, starting off with the production of DRAMs. Since 2002, we have been not only manufacturing NAND flash memories but also engaging in R&D of next-generation semiconductor devices.
Along with the growth of the market, Yokkaichi Plant continued to expand. We commenced the operation of Fab 5 in 2011, followed by New Fab 2 in 2016 that BiCS FLASH™ (i.e., next-generation devices in which NAND flash arrays are vertically stacked to increase storage capacity). In 2018, Fab 6 also came online to manufacture BiCS FLASH™. Yokkaichi Plant is constantly evolving to become the world's leading semiconductor fab.
NAND flash memories are used for data storage in various products, including USB sticks and other portable storage media, smartphones, tablets, feature phones, PCs, and digital cameras. NAND flash memories are now indispensable for people's lives. Nowadays, applications of NAND flash memories have expanded to the cloud and wherever big data is used. The amount of data generated worldwide is expected to continue growing. Our NAND flash memories will play an important role in storing ever-increasing information to be passed to the next generation.
At the same time, the expectations and demands of society for our plant are steadily increasing, as we contribute to the reduction of greenhouse gas emissions as agreed in the Paris Agreement and participate in the Sustainable Development Goals (SDGs) adopted by the United Nations. In order to meet these expectations, we will not only comply with laws and regulations and social norms, but also strive to contribute to solving social issues through our business.
Yokkaichi in Mie Prefecture is blessed with a rich natural environment, abundant human resources, and outstanding industrial foundations. We are deeply grateful to local residents and all the other people concerned for their understanding, guidance, and support, which have enabled us to operate in the international arena.
As a good corporate citizen, Yokkaichi Plant will continue to prioritize legal compliance, environmental protection, and social initiatives, thus fulfilling expectations concerning corporate responsibility. We will endeavor to help realize a better global environment and contribute to the development of society. Our aim is to make Yokkaichi Plant a factory loved and trusted by everyone. We look forward to your continued support and understanding.

Tomoharu Matsushita,
Managing Executive Officer of KIOXIA Corporation and General Manager of Yokkaichi Plant

Kioxia Group's Environmental Policy

- Mission -

Kioxia Group's Environmental Policy ensures we conduct business in a way that enhances and preserves the environment. Through purposeful, sustainable actions, we're prioritizing being responsible stewards of the environment to do our part in maintaining our planet's health for years to come.

- Policy -

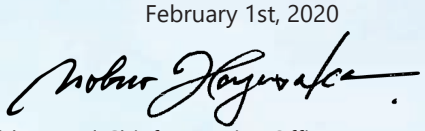
In addition to complying with environmental laws and regulations in the regions in which it operates, Kioxia Group considers environmental stewardship to be one of our primary responsibilities. We take actions to limit our environmental impact throughout our supply chain of memory, applied and related software products that support information infrastructure. From taking systematic and globally accredited steps to reduce our pollution and greenhouse gas emissions from our manufacturing processes, to regularly auditing and reviewing our activities to constantly improve our environmental management system, Kioxia Group takes deliberate action to ensure efficient and effective operations.

- Implementation -

1) We strive to make sustainable memory, applied and related software products by using high-capacity, miniaturized and power-saving technologies. We also perform ongoing environmental assessments of our products and manufacturing processes, as well as a targeted effort to reduce our overall raw material usage.
2) We are doing our part to help prevent global warming through initiatives that directly reduce greenhouse gas emissions. This includes the development of energy-saving technologies – especially within power systems and manufacturing machinery – productivity improvements and introducing clean energies.
3) We purposefully take actions aligned with the "three Rs" – reduce, reuse, recycle. Specifically, we focus on developing resource-saving technologies and implementing productivity efficiencies, as well as limiting the use of water resources around our plant sites and returning water used in production to the environment after effective purification treatment.
4) We limit environmental risk in our operations by being conscious of the chemicals we use in production and developing technologies that reduce our use of certain chemicals. Through responsible handling and management of production-related chemicals, we also strive to prevent associated pollution.
5) We strive to reduce the impact of our business activities on biodiversity, and pursue activities that aim to preserve biodiversity in order to help conserve the environment.
6) We regularly disclose information and updates on our sustainability efforts – including new energy-saving technologies – through environmental advertising, exhibitions and media and collaboration with various stakeholders including the local communities in which we operate.
7) We underscore the importance of environmental stewardship with our employees, who promise to keep sustainability top-of-mind in all business activities.

This Environmental Policy is core to Kioxia Group's operations – it is available internally to global employees of Kioxia Group and externally to customers, media and the general public. We are committed to pursuing corporate activities that are in line with this policy.

February 1st, 2020



President and Chief Executive Officer

Kioxia Holdings Corporation

Topics in 2020

Climate Change Action Minister of the Environment Award (FY2020)

KIOXIA's Yokkaichi Plant received "Climate Change Action Minister of the Environment Award (Mitigation field in the Dissemination/Promotion category)" in November 2020. Our plant has been implementing measures to reduce greenhouse gas emissions through energy conservation and other means to prevent global warming for many years. In addition, we are working to mitigate climate change through a variety of resource collection activities involving all employees, employee-participation events during Energy Conservation Month, and environmental education for children at nearby elementary schools in cooperation with the government.

* This award constitutes part of the promotion of measures tackling climate change issues, and recognizes individuals or groups who have made remarkable contributions towards the prevention of global warming.

Food Drive

The food drive is an activity where employees bring in surplus food from their homes, and donate it to people in need.
In order to cooperate with the Yokkaichi City Social Welfare Council's efforts to help people on welfare break out of poverty and live on their own income, we collected over 700 food items from the entire plant during the environmental month of June 2021.
On July 2, we donated them to the Yokkaichi City Council of Social Welfare and received a certificate of appreciation.

Collected food

Donation

Certificate of appreciation

Owl Conservation Project

We are working to conserve biodiversity in order to understand the impact of our business activities on biodiversity, to reduce the impact on biodiversity, and to promote social contribution activities.
In March 2018, our plant signed the Mie Biodiversity Partnership Agreement with the Mie Prefectural Yokkaichi West High School Nature Study Group to promote the "Owl Conservation Project". Based on this partnership, we support the activities of the Nature Study Group, which wishes to pass on the rich natural environment of the region to the next generation, through the installation of observation devices such as solar panels and cameras, in cooperation with the local community.

As part of these activities, a solar power generation system and cameras designed by our employees were installed in one of the nesting boxes set up by Yokkaichi Nishi High School in the Mie Prefectural Citizens' Forest, and we confirmed and adjusted the operation of the system in February, 2019. As a result, we were able to capture video of owls nesting, raising their young, and leaving the nest for three year in a row, starting in 2019. This project is facilitated through tripartite discussions.
In addition, we invited Mr. Tange from Yokkaichi Nishi High School and held a lecture on owl conservation activities to raise employees' environmental awareness in October, 2019.

Year	Main activities, outcomes, and future plans
2018	●Signed a "Mie Biodiversity Partnership Agreement" ●Determined specifications of the observation devices ●Installed and adjusted the observation devices ●Started to promote the project within and outside the company
2019	●Tripartite discussions about FY2018 activities and FY2019 plans ●Improved the observation devices (Solar panels, Batteries, Cameras, and Hard-disk video recorder)
2020	●Tripartite discussions about FY2019 activities and FY2020 plans ●Improved the observation devices (Replacement of hard disk, inverter, and looter)
2021	●Revised agreement ●Tripartite discussions about FY2020 activities and FY2021 plans


Installation of solar panels


Installation of cameras


Adjustment of observation devices


Nestlings (May, 2021)


Leaving the nest (May, 2021)


Lecture on owl conservation activities

Children's Environmental Education

The third environmental education class was held in August 2020 at Yokkaichi Pollution and Environmental Future Museum. Elementary and junior high school students and their parents participated in the lecture, where they learned about global warming through experiments and other activities and considered environmentally friendly ways of living. The event also provided an opportunity to get to know the plant through a virtual reality tour of its clean room.
In FY2020, we visited a total of five places in Yokkaichi city, a total of about 3,100 children have taken the course since 2007. The classes make use of the local mascot character and aim to make the classes fun and exciting for children.


Virtual reality tour in the clean room


Experimental scene

Children's impressions

- I felt that global warming is scary.
- I would like to take action while being conscious of saving water, electricity, and the 3Rs.
- I immediately started opening and closing the refrigerator more quickly.
- I knew the words SDGs, but I didn't know about each goal, so I learned a lot.


Chuo Elementary School (Fourth grade, 17 children)


Yasato-nishi Elementary School (Fourth grade, 35 children)


Mie-kita Elementary School (Fifth grade, 30 children)


Shiohama Elementary School (Fourth grade, 35 children)

CSR and Regional Communication

Social Contribution Activities through Resource Recovery

All employees, including those working onsite, are involved in a variety of social contribution activities.

1. Calendar and Notebook Collection (since 2007)

We collect calendars and notebooks that have become surplus in our plant, and donate them to the Yokkaichi City Council of Social Welfare. The calendars and notebooks are reused at nursing homes and facilities for the elderly, and the notebooks are used to communicate with the hearing impaired. (2020 results : 959 calendars and 336 notebooks)

2. Bottle Cap Collection (since 2008)

We collect plastic bottle caps and donates vaccines for children in developing countries through the Ecocap Movement, a non-profit organization. In April 2015, we changed the recipient of the bottle caps to a non-profit organization called "Re Lifestyle", and are continuing the collection activities. The collected bottle caps are donated to Re Lifestyle, and the proceeds from the sale of the caps are used to support polio prevention in developing countries through the Japan Committee for Vaccines for the World's Children, an authorized NPO. (2020 result : 650,000 pieces, equivalent to 1,300 vaccines)

3. Charity Eco-Bazaar

Since 2012, we have been holding an in-house bazaar where employees bring in unwanted items from their homes and sell them to employees. Through the bazaar, we are contributing to the greening of Yokkaichi City by donating the proceeds to the Yokkaichi City Greening Fund, in addition to the effective use (reduce and reuse) of unnecessary items. (2019* results: approximately 38,800 yen donated)

*Canceled due to the Corona disaster in 2020 and 2021.

4. Miswritten Postcard Collection (since 2014)

Our plant is cooperating with the World Terakoya Movement* (UNESCO Association of Japan), which supports education in developing countries by collecting miswritten postcards.. (2020 result : 311 sheets, equivalent 15,878 Yen)

*As of December 2019, there are approximately 64 million children in the world who are unable to go to school and 750 million adults (15 years of age and older) who cannot read or write. As part of our efforts to achieve the Sustainable Development Goals (SDGs), we will contribute to the creation of self-reliant and sustainable societies by fostering human resources in impoverished areas around the world through "learning spaces (terakoya)".

5. Used Stamp Collection (since 2015)

We collect used stamps, and donates them to a non-profit organization called "Live with Friends on the Earth (LIFE)". The proceeds are used to support agriculture in India and Indonesia. (2020 result : 2,739 sheets)

6. Down Products Collection (since 2016)

Our plant is cooperating with the "Down Project", in which we collect used down products and donate the sale proceeds to the Mie Community Chest of Japan. The proceeds are used to support local contribution activities in Yokkaichi City and Asahi Town. (FY2020 result : 2 down jackets)

7. Disposable Contact Lens Case Collection (since 2016)

Our plant is cooperating with the "Eye City eco project," a campaign to recycle the empty cases of disposable contact lenses run by HOYA Corporation, which operates the "Eye City" contact lens specialty store. Collected used contact lens cases are recycled as polypropylene, and part of the proceeds from their sale are donated to the Eye Bank Association. (2020 result : 29,075 pieces, equivalent to 940 Yen)

8. Aluminum Can Collection (since 2016)

In order to support the independence of the disabled, employees of the plant bring aluminum cans from their homes and donate them to the "Asahi Works", a facility to support the independence of people with disabilities. At the "Asake Works", the disabled crush the aluminum cans using a machine, which is then sold to a recycling company, and the proceeds are used to supplement their salaries. (2020 result: 3,103 cans, equivalent to 4,034Yen)

9. Used Book Collection (since 2018)

Our plant is cooperating with "ARIGATO-BON" project by Trusted Capital Foundation which supports NPOs through books that are no longer read. We support "Wakka", a non-profit organization that works to support the lives and employment of children and young people by creating places for children and operating a children's cafeteria. (July, 2021 result: 1,600Yen)

10. Mask Collection (2020, one-off activity)

We collected about 2,600 unneeded masks from the households of our plant employees and donated them to the Yokkaichi City Council of Social Welfare through the Next Step Research Association. These masks are now being used at welfare facilities.

11. Food Drive (since 2021)

A food drive is an activity in which households bring in surplus food and donate it to people in need. We are cooperating with the efforts of the Yokkaichi City Council of Social Welfare to help those who are receiving public assistance to get out of poverty and live on their own income. (June, 2021 result: 736 items)

12. Wheelchair Collection (2021, one-off activity)

Our plant donated wheelchairs to the Yokkaichi City Council of Social Welfare to replace wheelchairs that had been in use for 10 years. The donated wheelchairs are used for lending to people living in the city.

Environmental Liaison Meeting with the Local Community Association

Our plant holds regular liaison meetings with the local community association. At the liaison meetings, our plant reports on environmental measurement data on water and air quality, preparedness for the Tokai earthquake, and the status of environmental conservation efforts that will lead to safety and security in the region, and gives tours of its environmental facilities.
In order to promote corporate activities close to the local community, our plant will continue to promote communication with them.

Environmental Liaison Meeting

Environmental Internship Program

Every year, we accept students from Mie University for an environmental internship program*. In September 2019, five Mie University students participated in an environmental internship at our plant. Through the experience of environmental work, including environmental management systems, environmental measurements and waste management, they had the opportunity to think about their future jobs and careers.
*Canceled due to the Corona disaster in 2020 and 2021.

Student Impressions

- I have learned so many different things, such as the manufacturing process , wastewater treatment after manufacturing, and environmental analysis. I would like to make the most of my experience here and continue to do my best in the future.
- This plant not only treats the various substances discharged, but also spends money to steadily measure the water quality of rivers and oceans. I thought they were recognized by the general public as an environmentally conscious plant..
- This plant has an environment where we can work safely and securely, and trust each other. I also felt that this plant had a good atmosphere.
- I am glad that I was able to experience something that I would never be able to experience in my normal school life.

Sampling

Analysis

Presentation

Environmental Exhibition

We participate in environmental exhibitions organized by Yokkaichi City, Mie Prefecture, and other organizations to introduce our environmental conservation activities and our memory products. In 2020 and 2021, these exhibitions were canceled due to the Corona disaster, so we exhibited our environmental panels at a nearby our plant to introduce our activities.

Summer Eco-fair

Introduction at Mie Environmental Learning Information Center

Publishing an Environmental Report

In order to help more people understand our plant's environmental efforts, We have been publishing an environmental report (Site Report) since 2003, and this is the 19th edition. We will continue to publish the environmental report in the future with the aim of making it easy to read.
We also publish an "Environmental Pamphlet" for children.

Environmental Report

Environmental Pamphlet

Education and Training

Environment Education

Once a year, we provide environmental education to all employees working in the Yokkaichi Plant premises, including those who work on the premises. The educational textbook includes not only global warming prevention and compliance, but also matters of global interest such as the Paris Agreement, SDGs and ESG investment.
Each division also prepares its own educational textbooks on environmental activities that require independent efforts by each department, providing an opportunity for employees to become actively involved in environmental activities.
In addition to specific employee training for those engaged in tasks with the potential to have a large impact on the environment, we also provide environmental education for heads of departments, newly assigned employees, internal environmental auditors, and other employees at different levels.

	Course	Theme
Stratified education	For heads of departments	Responsibilities and authority
	For all employees	Revisions to EMS, Environmental policy, Objectives and, targets
	For newly assigned employees	Global Environmental issues, EMS, Environmental policy
Functional education	For specific employees	Compliance with environmental laws, environmental impact incurred by nonconformance with operation standards and procedures for specific jobs
	For environmental auditors	Roles and responsibilities, Revisions to environmental laws

Monthly Events

Every year, during Environment Month in June, 3Rs* Promotion Month in October, and Energy Conservation Month in February, we hold employee-participation events to raise employees' environmental awareness. In order to prevent the spread of the new coronavirus, events with risk of infection, such as tours, have been canceled since February 2020.

*3Rs: Reduce, Reuse and Recycle

1. Tour of External Environmental Facilities

We visited the Chubu Electric Power Company's West Nagoya Thermal Power Station in February 2019, , which was recognized by Guinness World Records for the world's highest power generation efficiency in March 2018, which led to an increased awareness of energy conservation. Also, we visited the Yokkaichi City Clean Center in October 2019, and were able to deepen our understanding of Yokkaichi City's waste disposal and resource utilization methods.

Nishi-Nagoya Thermal Power Plant, Chubu Electric Power Company

2. 3R Master Certification

Our own 3R Master Certification, which has been held annually since 2014, was held in October 2019. 51 employees took the exam, and 44 masters were born. The total number of Masters is 170. Masters are working to promote the 3Rs as key personnel in each department.

Yokkaichi City Clean Center

3. Charity Eco-Bazaar

We held an in-house bazaar in October 2019. Employees brought in unwanted household items and sold them to employees. Through the bazaar, we contribute to the effective use of unwanted items (reduce and reuse) and also contribute to the greening of Yokkaichi City by donating the proceeds to the Yokkaichi City Greening Fund (2019 results: 38,800Yen). We also received an award from the mayor of Yokkaichi City for our contribution to the greening of the city. (October, 2020)

3R Master Certification

4. Mask Collection

Unnecessary masks were collected from the homes of our employees. Approximately 2,600 collected masks were donated to the Yokkaichi City Council of Social Welfare through the Next Step Study Group for use at welfare facilities. (June and July 2020)

5. Road Cleaning around the Plant

Every year during Environment Month and 3R Promotion Month, our plant employees, including the general manager, clean up the roads around the plant. In October 2019, we collected approximately 14 kg of trash during the clean-up activity.

Mask Collection

6. Raising Environmental Awareness through Quizzes

We published a quiz in our Energy-saving Wall Newspaper to help employees deepen their understanding of energy conservation.(February 2019)
To deepen employees' knowledge of the Sustainable Development Goals (SDGs), we published information on the SDGs for the first time in the environmental magazine "Eco Time" in the form of a quiz, and more than 1,500 employees applied for the quiz, helping them to deepen their understanding of the SDGs. (June 2020)

Charity Eco-Bazaar

Donating the Proceeds to the Yokkaichi City Greening Fund

Sorting out Trash for Road Cleaning around the Plant

General Manager takes the Lead in participating in Cleanup Aactivities

Greening Activities on site

We have been filling the area around each of our buildings with flowers since June 2017 with the aim of raising environmental awareness, improving our image, and creating a healing space for our employees.

In November 2019, we held our fifth replanting event, which was attended by many employees from all departments. In addition, employee volunteers replanted in the flower beds of each building.

Replanting event

Replanting of flowerbeds in Memory Development Center

Replanting of flowerbeds in the manufacturing building No.2

Publication of Energy-saving Wall Newspapers and Environmental Information "Eco Time"

Since April 2014, we have been publishing the energy-saving wall newspapers, which introduces topics of the plant's energy conservation activities, interviews with energy conservation staff in each division, and energy conservation trends in Japan and abroad.
In May 2017, our plant also began publishing "Eco Time," an environmental newsletter that introduces topics in the plant's environmental activities, environmental activities unique to each division, eco-friendly initiatives that can be carried out at home, and environmental trends in Japan and abroad. In recent years, we have made an effort to provide information on various initiatives to prevent global warming, trends in renewable energy, environmental laws and regulations in various countries, the SDGs, ESG investment, and other issues that are in the global spotlight.

Energy-saving Wall Newspaper

"Eco Time"

Evaluation from External Parties

Urban Greening Meritorious Achievement Award (2020)

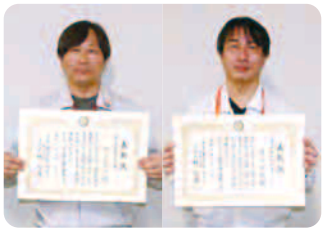
In recognition of our continuous donation of proceeds from the charity eco-bazaar to the Yokkaichi City Greening Fund, we received the urban greening meritorious achievement award from Yokkaichi City.

*his award is given to individuals and organizations that cooperate with the urban greening of Yokkaichi City.

Commendation Ceremony

Energy Conservation Merit Award (2020)

Two employees of our plant received the Energy Conservation Center Tokai Branch Manager's Award for Distinguished Contributions to Energy Conservation, which is given to individuals who have contributed to energy conservation in a variety of fields, including energy management and education on energy conservation.



Winners of the Energy Conservation Merit Award

Yokkaichi City Environmental Activity Award (2019)

We received the Yokkaichi City Environmental Activity Award in recognition of our social contribution activities through children's environmental classes, support for owl protection activities, and resource collection in cooperation with the community and local government.

Commendation Ceremony

Plastic Bottle Cap Collection Meritorious Achievement Award (2017)

In October 2008, our plant began collecting plastic bottle caps and donating vaccines for children in developing countries through the Eco-cap Promotion Association, a non-profit organization.
In April 2015, we changed the recipient of the bottle caps to the NPO Re Lifestyle, and has continued to collect the caps. Our plant received a "service award" for its three-year effort*.

*Approximately 7.5 tons (equivalent to about 6,000 polio vaccines) were collected.

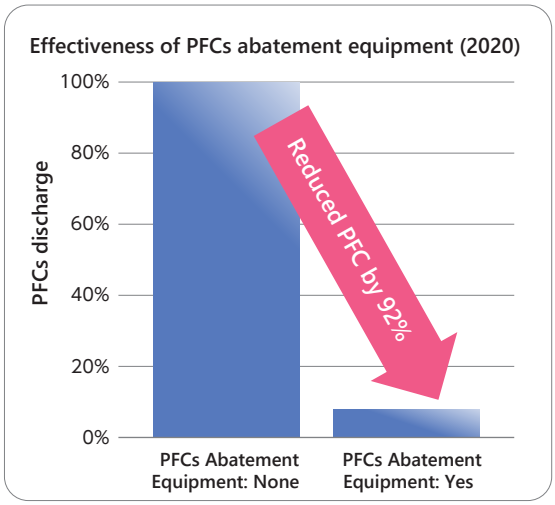
Merit Award for Collecting Plastic Bottle Caps

Reducing Environmental Impact in Manufacturing

Reduction of Greenhouse Gases

Efforts to Reduce Emissions at Manufacturing

In the manufacturing process, a large quantity and variety of greenhouse gases (PFCs) are used in the P-CVD (plasma CVD) process to form thin films on wafers and in the DRY (dry etching) process, which is a metal-CVD process for microfabrication of wiring and contact holes. As part of our efforts to combat global warming, we are focusing on reducing emissions from our manufacturing processes. We are focusing our efforts on "reduction from source to discharge."
In fiscal 2020, we implemented the following measures to reduce PFCs emissions:
(1) Installing abatement equipment that breaks down PFCs into gases with low global warming potential and discharges them;
(2) Optimizing the reaction chamber cleaning frequency ;
(3) Introducing high-efficiency equipment for cleaning the reaction chamber; and
(4) optimizing the reaction chamber conditioning.
In particular, the installation rate for (1) has always been 100%, which has made a significant contribution to the reduction of greenhouse gases emissions.
For new products planned for release in the future, we are working to reduce PFCs emissions by implementing measures to reduce consumption linked to manufacturing.



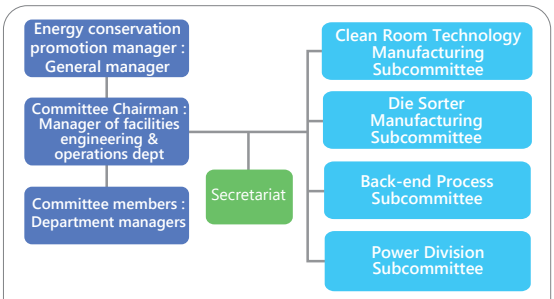
No.	Measure	Process	Target gas	Remark
1	Installation of abatement equipment	P-CV, DRY, Metal	CF_4, C_4F_8, CHF_3, SF_6, NF_3 , CH_2F_2, CH_3F, CH_4, N_2O	Continued installation on new equipment
2	Optimization of reaction hamber cleaning frequncy	CVD	NF_3, N_2O	Continued introduction to new equipment
3	Introduction of high-efficiency plasma sources	CVD	NF_3	Continued introduction to new equipment
4	Optimization of reaction chamber conditioning	DRY	CF_4	2020: Finished

PFC Abatement Equipment

Reduction of Energy-derived CO_2

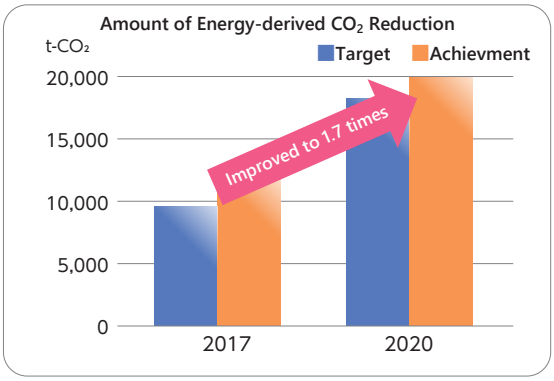
Efforts to Reduce Greenhouse Gases Emissions

The production technology, manufacturing, and facilities divisions of our plant have organized an Energy Conservation Committee to work across the organization to reduce energy-derived CO_2 emissions, and have formed specialized subcommittees (Clean Room Technology Manufacturing Subcommittee, Die Sorter Manufacturing Subcommittee, Back-end Process Subcommittee, and Power Division Subcommittee) as subordinate organizations.
Every year, each subcommittee sets energy-derived CO_2 reduction targets, and implements energy-saving measures for manufacturing and power equipment. The amount of energy-derived CO_2 reduction in FY2020 was 20,103t-CO_2, 1.7 times more than in FY2017.



Energy Conservation Committee Organization

Specialized Subcommittees	Measure
Clean Room Technology Manufacturing Subcommittee	84 measures including throughput improvement, heater-less and chiller-less manufacturing equipment
Die Sorter Manufacturing Subcommittee	4 measures including installation of energy-saving equipment
Back-end Process Subcommittee	4 measures including improvement of processing capacity by updating facilities
Power Division Subcommittee	87 measures including optimization of power equipment operation



Reduction of Wastes

Although the amount of waste generated is on the rise due to the expansion of the scale of this plant, we are promoting the reduction of chemicals and gas usage by improving the manufacturing process, etc., and are actively working to increase the recycling of generated waste and the conversion of waste into valuable resources. In addition, we have built a second recycling center in line with the expansion of the plant in November, 2018.

Examples of Effective Use of Resources

Waste hydrofluoric acid generated in the manufacturing process is treated in the artificial fluorite manufacturing facility and recovered as calcium fluoride (artificial fluorite). As a result, we have reduced the amount of sludge containing hydrofluoric acid by about 30%.
The recovered calcium fluoride (artificial fluorite) is used by fluorine product manufacturers as a fluorine-based products. Through these efforts, we are helping to reduce the use of fluorite, which is a natural resource.

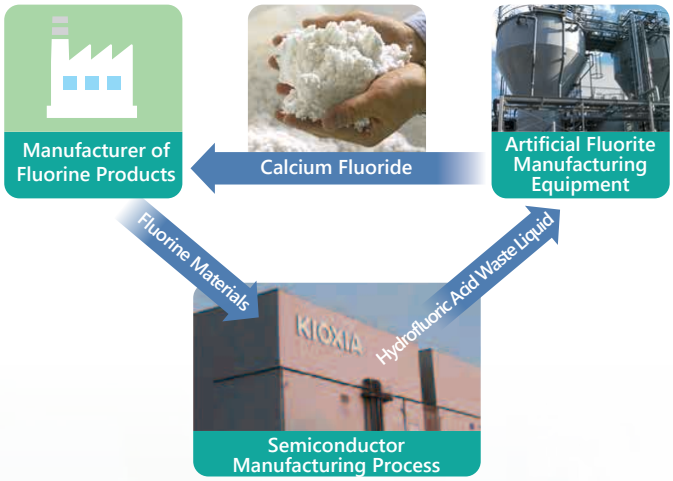

表彰状

四日市工場殿
旭硝子株式会社千葉工場殿
オルガノ株式会社殿

小渕優子

METI Minister's Award 2014 for Resources Recirculation Technologies and Systems

Recycling Building No. 2



Management of Chemical Substances

We manage chemical substances based on the principles of "using as few chemical substances as possible," "striving to reduce or substitute chemical substances whenever possible," and "managing chemical substances appropriately when they are used. "
Before starting the use of new chemical substances, we conduct environmental assessments to confirm whether or not they contain any of the regulated substances specified by our company and how to properly dispose of them, in order to reduce the environmental impact. After starting the use of new chemical substances, we use an online totaling system to manage changes in the amount used every month.

Environmental Assessment of Chemical Substances

R&D

Submission of information on environmental impact

- Name and composition ratio of components
- Certificate of non-inclusion of procurement-prohibited substances
- Conditions of use
- Exhaust gas, wastewater and waste treatment methods

Application for evaluation

Evaluation by Dedicated Department

Environmental Protection Group
Assessment of air and water quality, and waste disposal

Occupational Health Physician
Assessment of impact on employee health

Safety Group
Evaluation of safety measures based on the Health and Safety Law

General Affairs Group
Evaluation of hazardous material measures under the Fire Service Act and the Poisonous and Deleterious Substances Control Law

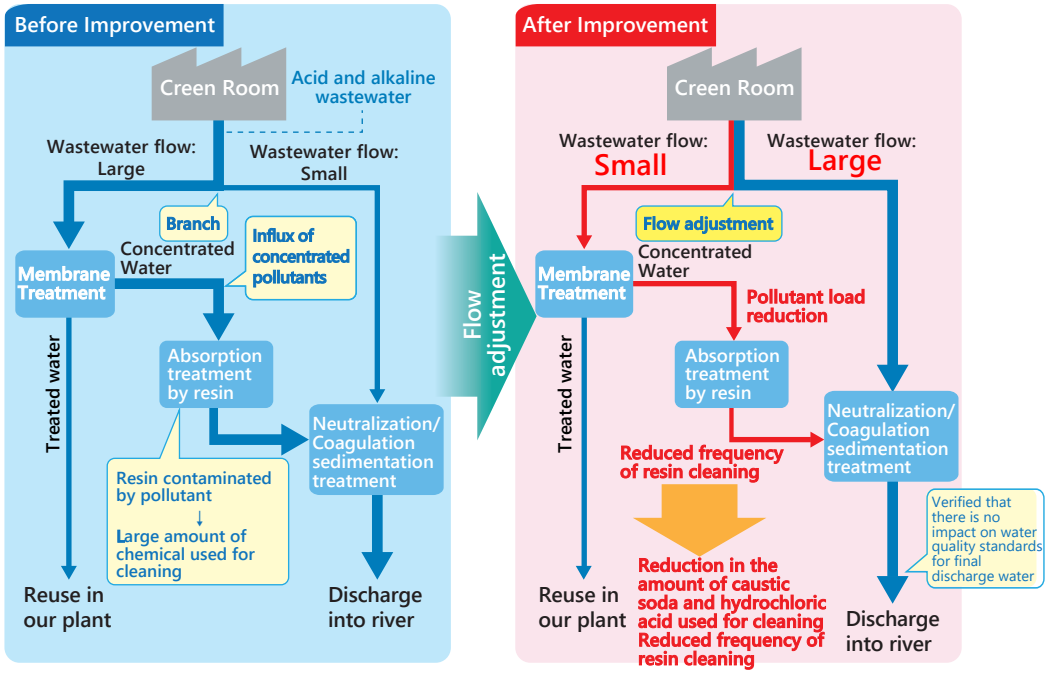
Permission to use chemical substances

Management of chemical substance usage

Reduction of Chemical Substances

Examples of reduced chemical substance emissions

In order to effectively reduce or replace the use of chemical substances, we evaluate the existence of laws and regulations and the risks involved in case of leakage, and identify chemical substances for which we should focus on implementing measures to reduce environmental impact.
For example, by changing the treatment conditions for acid and alkaline wastewater, we were able to reduce the use of hydrochloric acid and caustic soda by 20%.
We will continue to develop technologies with the 3Rs (Reduce, Reuse and Recycle) in mind to reduce environmental impact.



Management of Chemical Substances in Products

Regulations on chemical substances in products are being tightened every year. In addition to the EU's RoHS Directive, the Packaging Materials Directive and the REACH Regulation have been enforced. Outside the EU, laws and regulations similar to the EU's RoHS Directive are in place in countries around the world. In order to comply with these regulations, "prohibited substances" and "controlled substances" are selected and substances that must not be included in products or must be controlled are defined.

We conduct product environmental assessments at the product development stage to check information on new raw materials and chemical substances contained in our products. Through these efforts, we are striving to select materials with lower environmental impact to minimize the use of hazardous substances in our products and manufacturing processes to the extent possible.

Category	Definition
Procurement-Prohibited Substances*1	"Procurement-Prohibited Substances" mean group of substances that are prohibited to be included in Deliverables procured by KIOXIA. Except for the exempted applications specified in the guidelines, no intentional addition shall be approved to deliverables of any applications. If there is a restrict value, the impurity concentration must be less than the restrict value.
Procurement-Controlled Substances*2	"Procurement-Controlled Substances" mean group substances that is subject to control for contain/inclusion in deliverables procured by KIOXIA. Unlike procurement-prohibited substances, procurement-controlled substances do not restrict intentional addition in deliverables, and instead refer to substances for which the presence/absence and concentration value should be fully grasped. Suppliers are required to disclose information on the presence/absence and concentration values of substances that correspond to procurement-controlled substances that were intentionally added to deliverables or included as known impurities.

*1 Lead and its compounds, Mercury and its compounds, Cadmium and its compounds, Hexavalent Chromium compounds, Polybrominated Biphenyls (PBBs), Polybrominated diphenyl ethers (PBDEs including DecaBDE), Specific Substances of Phthalic acid esters, Asbestos, Certain Azo dyes and Azo pigment that may generate certain Amines, Ozone depleting substances (CFCs, HCFCs, HBFCs, carbon tetrachloride, etc.), Polychlorinated Biphenyls (PCBs), and Polychlorinated Terphenyls (PCTs), Polychlorinated naphthalene (with 2 or more chlorine atoms), Radioactive substances, Short-chained Paraffin Chloride (Carbon chain length 10-13), Tributyltin (TBT), Triphenyltin (TPT), and other substances in the 63 categories specified by KIOXIA.

*2 Antimony and its compounds, Arsenic and its compounds, Beryllium and its compounds, Bismuth and its compounds, Polycyclic Aromatic Hydrocarbons (PAHs), Bromine and its compounds, Nickel and its compounds, bismuth and its compounds Selenium and its compounds, Zinc and its compounds, Chlorinated paraffin, Trivalent Chromium compounds, Cobalt and its compounds, Cyanogen and its compounds, Perfluorocarbons (PFC), Hydrofluorocarbons (HFC), Chlorine and its compounds, Manganese and its compounds, Organic tin compounds, Sulfur hexafluoride (SF6), PFASs, and other substances in the 28 categories specified by KIOXIA.

Green Procurement

The KIOXIA Group aims for the realization of a sustainable society, as formulated in Kioxia Group's Environmental Policy. In support of this aim, we have formed a Green Procurement Working Group centered on our Environment, Quality Control and Procurement divisions. We have also formulated Green Procurement Guidelines aimed at ensuring compliance with the laws and regulations of each country and at reflecting customers' requirements and other requests, and we periodically update these. The guidelines are based on our philosophy of reducing the environmental burden caused by materials procurement; they summarize our requirements for the handling of hazardous chemical substances and are shared with our suppliers.
Green Procurement activities ("Green Procurement") are the procurement of products parts, materials, and so on that have the smallest negative impact on the environment by encouraging our suppliers to actively promote environmental protections. Activities across our supply chain are critical in order to conduct business activities while taking into consideration the reduction of environmental impacts and risks due to hazardous chemical substances, etc., and the cooperation of our suppliers-important business partners-is essential.
We evaluate the environmental impacts of our products as well as the substances used in parts and materials in advance during the development and design stages. We strive to select lower environmental impacts to minimize the use of hazardous substances in our products and in the manufacturing processes of our products.

Green Procurement Guidelines

Promotion of environmental protections by our suppliers

KIOXIA asks our suppliers to take proactive measures to protect the environment. We prioritize companies that take a proactive approach to environmental protections in procurement. KIOXIA asks all of our suppliers to establish management systems for environmental protections, including the management of chemical substances containing in products. We recommend the acquisition of ISO14001 and ISO9001 certification as the international standards.

Management of chemical substances contained in Deliverables

For any items delivered to KIOXIA ("Deliverables"), in order to manage contained chemical substances, we ask for the through implementation of the following:

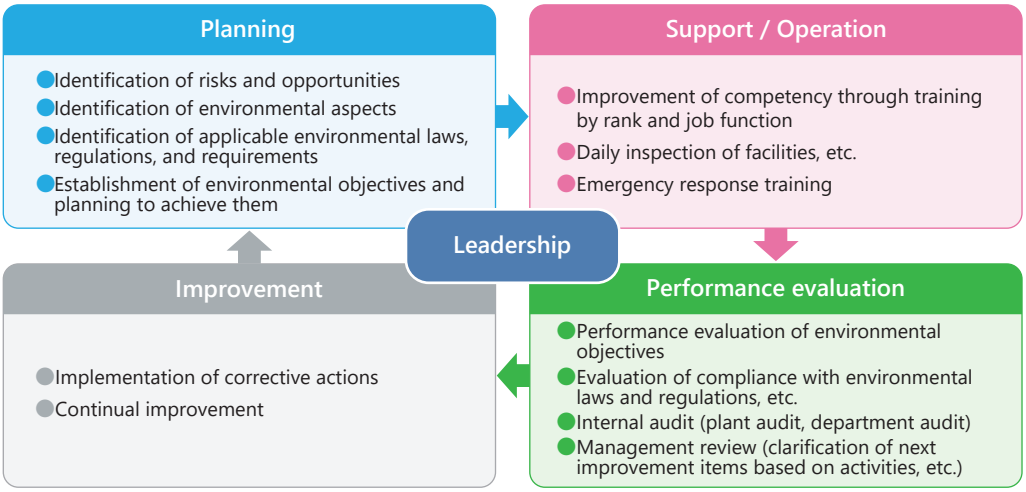
1. Establishment of management system for chemical substances contained in Deliverables
2. Green procurement of parts and materials with low environmental impacts, such as reducing hazardous chemical substances
3. Measures to prevent the transfer and transition of chemical substances to Deliverables through contact and so on
4. Responses to various surveys requested by KIOXIA, including surveys on chemical substances content

Environmental Management System

ISO14001

Our plant has established an environmental management system (EMS) in accordance with the international standard ISO 14001 and is committed to continuous improvement and upgrading. We evaluate the environmental impact of our business activities, products and services, including the impact on the environment, including biodiversity, and develop proactive environmental measures by setting environmental objectives and targets related to reducing the environmental impact, preventing pollution, and creating products with reduced environmental impact. In 2020, we clarified the relationship between our environmental activities (initiatives to reduce the environmental impact of our business activities and social contribution activities through the environment) and the SDGs. In addition, we have worked to disseminate the SDGs to our plant employees through initiatives that lead to increased awareness of the SDGs.

Environmental Management System



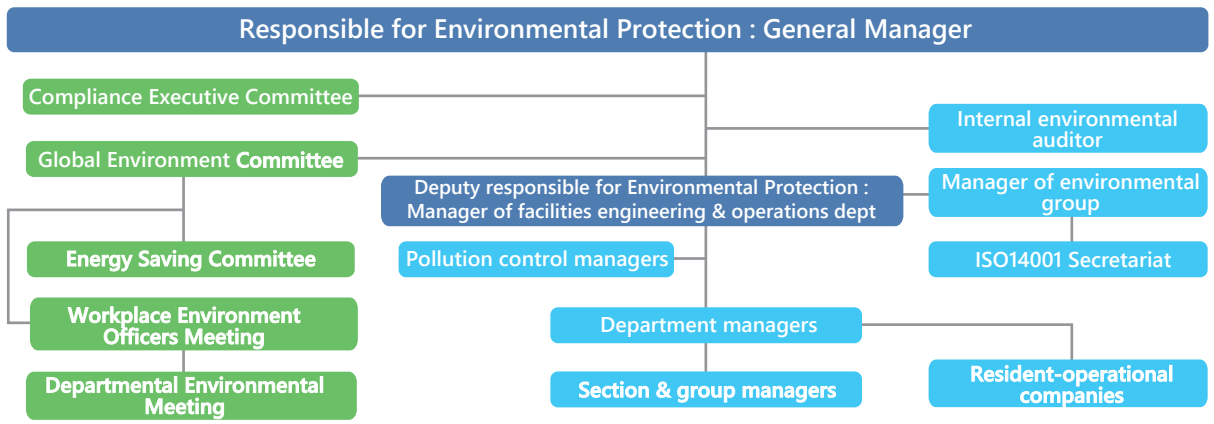
ISO 14001 Certificate of Registration

Environmental Protection Structure

In order to promote environmental protection activities continuously and effectively, we have established an environmental protection system headed by the plant manager to clearly define responsibilities and authority, and have established the Global Environment Committee as the highest deliberative body for environmental protection, where EMS, environmental objectives, and implementation plans are discussed.

We have also established a Compliance Executive Committee to oversee compliance with laws and regulations. In addition, all employees, including those who work on site, are actively involved in activities to reduce the environmental impact of our business activities and contribute to society through the environment.

Our plant's environmental protection system



Environmental Target

Every year, we set environmental targets by reflecting the results of our environmental impact assessment on our progress and performance in achieving the previous year's environmental goals, our performance, our requirements for our plant, and changes in environmental conditions.

In 2020, we cancelled the "External Environmental Event" and "Charity Eco Bazaar" to prevent the spread of the new coronavirus, but achieved the targets for the other items through various measures.

Environmental Target and Results in 2020

No.	Environmental objective	Environmental target	Target	Result
1	Creating products that consider environmental impact and providing them to society	Creating products that consider environmental impact by nanofabrication process	3 measures/year	3 measures
2	Preventing global warming	Reducing energy-derived CO_2 (The amount of reduction due to measures)	17,686 t-CO_2/year or more	20,103 t-CO_2
3		Improving the intensity* of greenhouse gas emissions (2013 Basis)	66.6 % or less	60.2 %
4	Efficient use of resources	Improving the intensity* of total waste generation (including valuable materials) (2013 Basis)	22.2 % or less	21.4 %
5		Improving the intensity* of industrial waste (2013 Basis)	31.5 % or less	30.4 %
6		Improving the intensity* of water resources received (2013 Basis)	24.6 % or less	23.8 %
7	Reducing environmental risks	Improving the intensity* of chemical emissions (2013 Basis)	22.4 % or less	20.2 %
8	On-site greening	Creating a healing space for employees and improving the image of our company to customers and others (planting of flower beds in each building)	Year-round	Year-round implementation (replanting, maintenance)
9	Promoting social contribution activities and environmental communication	Exhibiting at external environmental events (Summer Eco-Fair, Yokkaichi Environmental Fair,Mie Environmental Fair)	3 cases/year	Canceled due to corona disaster
10		"Jiba-san Mie" Season Exhibition	Once a year	Once (April to June)
11		"Mie Prefecture Environmental Learning Information Center" Seasonal Exhibition	Once a year	Once (Octover and November)
12		Holding environmental liaison meetings with the local community association	Once a year	Once (December)
13		Publication of environmental reports	-Japanese version:August -English version:December	-Japanese version:September -English version:December
14		Environmental Education for Children (Yokkaichi Pollution and Environmental Museum, neighboring elementary schools)	Two locations	Five locations
15		Charity eco bazaar (Support for greening by Yokkaichi City)	Once a year	Canceled due to corona disaster
16		Collection of surplus calendars and notebooks (For use in nursing homes, kindergartens and nurseries, etc.)	Once a year	959 calendars and 336 notebooks
17		Collection of miswritten postcards (Supporting Education in Developing Countries)	Year-round	311pcs (equivalent to 15,878yen)
18		Collection of used stamps (Agricultural support in India and Indonesia)	Year-round	2,739 pcs
19		Collection of disposable contact lens cases (Support for corneal transplant awareness and dissemination)	Year-round	29,075 pcs
20		Collection of down products (Support for Social Contribution Activities in Yokkaichi City and Asahi Town)	Year-round	2 down
21		Collection of plastic bottle caps (Supporting Polio Prevention in Developing Countries)	Year-round	652,000 pcs (equivalent to 1,304 vaccines)
22		Collection of masks (Utilization in welfare facilities)	Once a year	2,617 pcs
23	creasing environmental awareness	Environmental emphasis month (Environment Month, 3R Promotion Month, Energy Conservation Month)	3 times a year	3 times
24		Publication of the environmental information magazine "Eco Time".	6 times a year	6 times
25	Biodiversity Conservation	Support for owl conservation activities (Mie Biodiversity Partnership Agreement)	Year-round	Observation equipment improvements, installation complete（December）

* For PFC, waste, water, and chemical substances, volume-based memory capacity is used as an indicator for basic-unit goals that allows appropriate assessment.

Monitoring System

In order to preserve the environment of the atmosphere, rivers, and the sea, we have established voluntary management standards that are stricter than legal regulations, and we monitor the environment 24 hours a day.

Regulated Items by Law

Nitrogen Oxides (NOx), Sulfur Oxides (SOx), Total Nitrogen (T-N), Total Phosphorus (T-P), Chemical Oxygen Demand (COD), Suspended Solids (SS), Fluorine (F), and Hydrogen Ion Index (pH) are automatically monitored continuously for 24 hours. Other items are monitored by sampling.

Non-legislative Items

Non-legislative items are also voluntarily managed through sampling to strengthen management.

Analysis Center

We have set up an analysis center in our plant, which analyzes about 38,000 items per year (of which about 2,000 are legal items).

Automatic Wastewater Analyzer

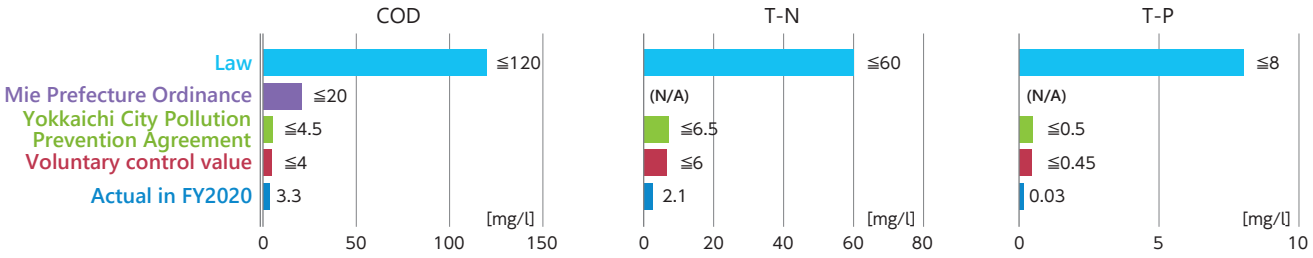

Water Treatment Facility Monitoring System


Analysis Center

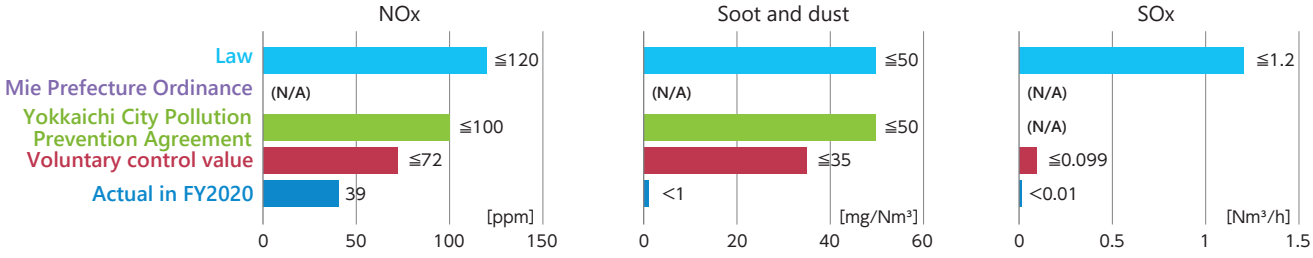
Air and Water Quality Management

To ensure compliance with laws, ordinances, and agreements, we set our voluntary control values and manage them on a daily basis. Shows the status of drainage (COD, T-N, T-P) and exhaust gas (NOx, soot, SOx) management.

■Drainage into river (actual measured value: 2020 average value)



■Exhaust Gas (actual measured value: 2020 average value)



Environment-related Facilities

In order to prevent contamination by chemical substances and reduce contamination risk, KIOXIA has established its Structural Design Guidelines to reduce the risk of a leak of chemicals at environment-related facilities.

Examples

Waste gas scrubber

Structures and specifications for stable processing

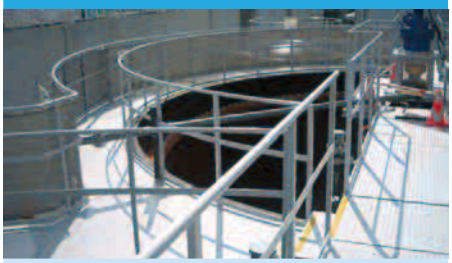
Overhead piping

Reducing soil contamination risks

Drainage dike

Preventing wastewater from discharging into under or public water areas

Wastewater treatment



Stable processing system and preventing outflow of wastewater

Double joints in piping

Monitoring and preventing liquid leakages

Six-sided inspection

Seismic structure to store safely, Drainage dike, Oil level alarm

Emergency Response Training

We use a variety of chemicals in our plant. We have selected equipment and operations with high environmental risks that may be subject to emergencies due to breakdowns of the equipment that handles them or natural disasters, and we have standardized all of our response procedures.
In 2020, a total of 24 training sessions were conducted with a total of 365 employees participating, including those of the company stationed on the premises. After the training sessions, the effectiveness of the response methods was confirmed and response procedures were improved as necessary..

Response training in case of hydrochloric acid leakage

Compliance with Laws and Regulations

In addition to clarifying the environmental laws, regulations, and other requirements that apply to our plant, we also check for compliance with applicable laws and regulations in the procurement of manufacturing and power equipment to ensure that we do not fail to comply with the laws and regulations.

Centralized Management of Laws and Regulations

We regularly check the content of legal amendments to ensure that we are up-to-date with constantly changing environmental laws and regulations. The content of the legal amendments applicable to our plant is incorporated into the "Legal Registration List and Compliance Evaluation Table" for centralized management.

Compliance Assessment

Each year we evaluate compliance with the environmental laws and regulations applicable to our plant. In 2020, we had no problems with all legal requirements.

Compliance Checks on Equipment Investment and Procurement

At the time of equipment investment and procurement, all 10 laws and regulations, including the Water Pollution Control Act and county ordinances, are checked for compliance. For facilities that are subject to the laws and regulations, notification is made as necessary.

Visualization of Compliance Management

Stickers indicating the relevant laws and regulations are placed on the subject equipment to ensure the visualization of legal management.

Compliance System

Check for compliance before procuring equipment.

Visualization of Compliance Management with Stickers

FAQ

Q Smoke from the building roof?

A The air discharged from the cooling tower is cooled by the outside air and turns into water vapor that appears white.

Cooling Tower

Measurement Data on the Environment

Atmospheric Measurement Results

	Regulatory value	Voluntary control value	Measured value	Measurement frequency
NOx (ppm)	130 or less	72 or less	39.0	Once a year
SOx (Nm^3/h)	1.2 or less	0.099 or less	<0.01	Once a year
Soot and dust (mg/m^3)	50 or less	35 or less	<1	Twice a year

Measured values are averages for FY2020

Drainage measurement results (No.1 drainage outlet: river)

	Regulatory value	Voluntary control value	Measured value	Measurement frequency
pH	5.8-8.6 *1	6.5-8.0	7.2-7.6	Once a month
BOD (mg/l)	20 or less *1	4.0 or less	1.0	Once a month
COD (mg/l)	20 or less *1	4.0 or less	3.3	Once a week
SS (mg/l)	70 or less *1	3 or less	1	Once a month
Nitrogen (mg/l)	60 or less *2	6.0 or less	2.1	Once a week
Phosphorus (mg/l)	8 or less *2	0.45 or less	0.03	Once a month
Fluorine (mg/l)	8 or less *2	4.5 or less	1.7	Once a week

*1 Mie Prefectural Ordinance for Living Environment Conservation
*2 Water Pollution Prevention Law

Measured values are averages for FY2020

Drainage measurement results (No.2 drainage outlet: sea area)

	Regulatory value	Voluntary control value	Measured value	Measurement frequency
pH	5.0-9.0 *	6.5-8.0	6.9-7.7	Once a month
COD (mg/l)	120 or less *	10 or less	4.8	Once a week
SS (mg/l)	150 or less *	8 or less	1	Once a month
Nitrogen (mg/l)	60 or less *	15 or less	3.2	Once a week
Phosphorus (mg/l)	8 or less *	1 or less	0.13	Once a month
Fluorine (mg/l)	15 or less *	12 or less	5.0	Once a week

* Water Pollution Prevention Law

Measured values are averages for FY2020

Sound Noise and Vibration Measurement Results (West Area)

	Measurement location: Time	Regulatory value	Voluntary control value	Measured value	Measurement frequency
Sound noise (dB)	Site boundaries: morning and evening	Not applicable	55 or less *	54	4 times a year
	Site boundaries: Daytime	Not applicable	60 or less *	54	4 times a year
	Site boundaries: Night	Not applicable	55 or less *	54	4 times a year
Vibration (dB)	Site boundaries: Daytime	Not applicable	50 or less *	<30	Once a year
	Site boundaries: Night	Not applicable	50 or less *	<30	Once a year

* For the West Area and East Area regulation values, the strictest regulation value and the actual measurement value are shown because the applicable regulation value differs depending on the point.

Sound Noise and Vibration Measurement Results (East Area)

	Measurement location: Time	Regulatory value	Voluntary control value	Measured value	Measurement frequency
Sound noise (dB)	Site boundaries: morning and evening	50 or less *1 *2	Not applicable	44	4 times a year
	Site boundaries: Daytime	55 or less*1 *2	Not applicable	50	4 times a year
	Site boundaries: Night	45 or less *1 *2	Not applicable	44	4 times a year
Vibration (dB)	Site boundaries: Daytime	60 or less *1 *2	Not applicable	<30	Once a year
	Site boundaries: Night	55 or less *1 *2	Not applicable	<30	Once a year

*1 Mie Prefecture Ordinance on the Preservation of the Living Environment
*2 For the West Area and East Area regulation values, the strictest regulation value and the actual measurement value are shown because the applicable regulation value differs depending on the point.

Material Balance

Input

		2018	2019	2020
Chemicals *	t	47,661	47,173	53,905
City Water	thousand m^3	78	30	21.8
Industrial Water	thousand m^3	19,463	19,766	21,076

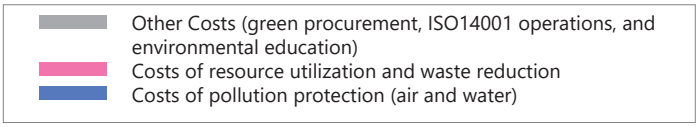
* Substances to be reduced as specified by the KIOXIA Group

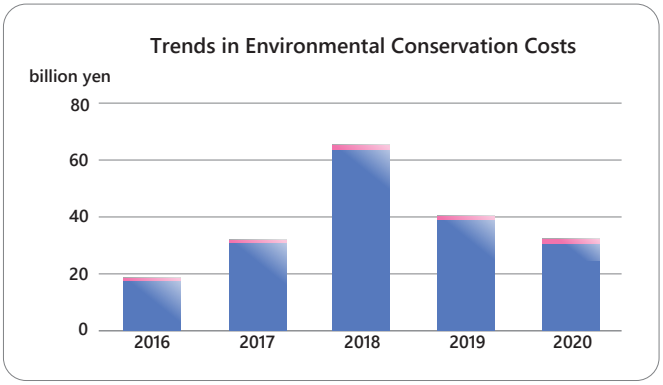
Output

		2018	2019	2020
Greenhouse gas	thousand t-CO_2	2,065	2,135	2,205
Chemicals *	t	653	518	586
Waste	t	80,203	81,211	90,161
Drainage	thousand m^3	14,777	14,733	15,857
NOx	t	28.0	27.0	25.0
SOx	t	0	0	0

Environmental Accounting

Every year we record the cost of measures to reduce the environmental impact in accordance with the "Environmental Accounting Guidelines 2005" set by the Ministry of the Environment.
In fiscal 2020, we invested 32.7 billion yen in environmental protection, including the introduction of exhaust gas abatement and treatment equipment. In 2018, we invested heavily in environmental measures for the construction of fab 6. Since fab 7 is currently under construction, we expect to increase our investment in environmental measures for fab 7 in 2021.





Law concerning Pollutant Release and Transfer Register (PRTR)

The PRTR Law of Japan mandates a system to monitor the amounts of chemical substances released to the environment (air, water area or soil), the amounts transferred, etc., and to aggregate the results and disclose data to the public. This law, the Act on Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof, requires reporting of the amounts released and transferred if the amount handled of a Class I Designated Chemical Substance per year is 1 ton or more (0.5 ton or more for a Specified Class I Designated Chemical Substance).
KIOXIA Group voluntarily discloses the amounts handled, consumed, removed and recycled in addition to the amounts released and transferred for each Class I Designated Chemical Substance.

2020 PRTR Substance Data

(unit: t)

Substance number	Chemical substance name	Amount handled	Amount released					Amount transferred			Amount consumed*1	Amount removed*2	Amount recycled*3
			Air	Public Water	Soil	Landfill	Total amount	Waste	Sewerage	Total amount			
80	Xylene	2.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.93
272	Copper salts(water-soluble, except complex salts)	3.99	0.00	0.00	0.00	0.00	0.00	3.99	0.00	3.99	0.00	0.00	0.00
296	1,2,4-Trimethylbenzene	3.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.12	0.00	0.00
302	Naphthalene	5.20	0.02	0.00	0.00	0.00	0.02	5.18	0.00	5.18	0.00	0.00	0.00
374	Hdrogen fluoride and its water-soluble salts	6854.04	2.46	0.00	0.00	0.00	2.46	14.92	0.00	14.92	0.00	4713.05	2123.61
395	Water-soluble salts of peroxodisulfuric acid	41.54	0.00	0.00	0.00	0.00	0.00	0.83	0.00	0.83	0.00	40.71	0.00
405	boron compounds	1.24	0.00	0.00	0.00	0.00	0.00	1.24	0.00	1.24	0.00	0.00	0.00
438	Methylnaphthalene	11.52	0.05	0.00	0.00	0.00	0.05	11.47	0.00	11.47	0.00	0.00	0.00
453	Molybdenum and its compounds	1.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.04	0.00

*1 Amount consumed is the amount of a substance used in or associated with a product and shipped out of the Operations.
*2 Amount removed is the amount of a substance transformed into other substances by neutralization, decomposition or reaction treatment performed at the Operations.
*3 Difference between the amount of waste transferred and the amount recycled depends on whether waste is processed with charge or without charge. When waste disposal is outsourced with charge even for recycling purposes, the amount is considered as the amount of waste transferred.

History of the Yokkaichi Plant

Plant History	Year	Product History
	1987	Invented the world's first NAND Flash memory
	1991	Commercialized the world's first 4Mbit NAND Flash memory
Constructed Yokkaichi Plant	1992	
Commenced operation of Fab 1	1993	
Commenced operation of Fab 2	1996	
	2000	Commercialized SD memory cards
Commenced operation of Fab 3	2005	
Commenced operation of Fab 4	2007	Announced the world's first 3D Flash memory technology

Plant History	Year	Product History
Commenced operation of Fab 5 (Phase 1)	2011	
Commenced operation of Fab 5 (Phase 2)	2014	Commercialized the world's first 15nm NAND Flash memory
	2015	Commercialized a 48-layer BiCS FLASH™ 3D Flash memory with the world's highest density
Commenced operation of New Fab 2	2016	Created a prototype of a 64-layer BiCS FLASH™ 3D Flash memory with the world's highest density
	2017	Prototyped a 96-layer BiCS FLASH™ 3D Flash memory
Commenced operation of Fab 6	2018	Inaugurated the Memory Development Center
	2019	Developed XL-FLASH, a storage-class memory

History of Environmental Activities

1990	• Concluded pollution control agreement with Yokkaichi City, Mie Prefecture
1991	• Concluded pollution control agreement with Yamanoisshiki-cho, Yokkaichi City • Started holding Yamanoissiki-cho local meetings
1996	• Gained BS7750 environmental management system certification • Gained ISO14001:1996 environmental management system certification
1999	• Received the prize of Recycling Promotion Council
2000	• Received the Chubu Ministry of Economy, Trade, and Industry Minister's Award (heat category) • Received the prize of the Chairman of Energy Conservation Center, Japan
2001	• Received the Chubu METI Minister's Award (electricity category, contribution to energy management)
2003	• Received the Director-General, Agency for Natural Resources and Energy Award (heat category) • Started publishing Yokkaichi Plant's environmental report
2004	• Received the Director-General, Agency for Natural Resources and Energy Award (electricity category)
2005	• Gained ISO14001:2004 environmental management system certification
2006	• Received Energy Saving Center's Award for outstanding performance at conference of successful cases of energy saving
2007	• Started Kid's ISO14000 program (environmental education for children)
2008	• Received the PRTR Outstanding Performance Award (Jury's Special Award)
2009	• Started Kid's Yokkaichi CO_2 diet program (environmental education for children) • Received the Gold Boiler Management Establishment Award
2010	• Received the Encouraging Prize of Kansai Eco-Office Grand Award • Started the Eco-kid's CO_2 diet program (environmental education for children)
2011	• Received the Technology Prize in the 48th All Japan Boiler Conference
2012	• Received the Prize of the Chairman of ECCJ of Energy Conservation Group Prize • Received the Prize of the Chairman of the 3R's (Reduce, Reuse, Recycle) promoter Prize • Received the silver prize in an international section of Green Apple Award
2013	• Received the Chubu METI Director's Award (energy management) • Received the Prize of the Manager of Tokai branch office, ECCJ • Received the Prize of the Chairman of the 3R's (Reduce, Reuse, Recycle) promoter Prize • Received 1st place at 2nd Mie Environmental Awards
2014	• Received the Prize of the Chairman of the 3R's (Reduce, Reuse, Recycle) promoter Prize • Received the METI Minister's Awards for Resources Recirculation Technologies and Systems
2015	• Received the Prize of the Manager of Tokai branch office ECCJ (Recognition of distinguished people in promoting energy saving)
2016	• Received the "Recognition of distinguished people of city greening" award • Received the letter of appreciation at the 65th Mie prefecture social welfare convention • Received the Prize of the Manager of Tokai branch office, ECCJ (Recognition of distinguished people in promoting energy saving)
2017	• Gained ISO14001:2015 environmental management system certification • Received the Prize of the Manager of Tokai branch office, ECCJ (Recognition of distinguished people in promoting energy saving)
2018	• Starting an environment class at the Yokkaichi Pollution and Environmental Future Museum • Received the "Achievement Award" from NPO "Re lifestyle" (Collecting PET bottle caps) • Received the Prize of the Manager of Tokai blanch office, ECCJ (Recognition of distinguished people in promoting energy saving)
2019	• Received the Yokkaichi City Environmental Activity Award • Received the Prize of the Manager of Tokai branch office, ECCJ (Recognition of distinguished people in promoting energy saving)
2020	• Received the "Recognition of distinguished people of city greening" award • Received "Climate Change Action Minister of the Environment Award • Received the Prize of the Manager of Tokai branch office, ECCJ (Recognition of distinguished people in promoting energy saving)

Editorial Policy

The purpose of this report is to help you further understand the environmental management of KIOXIA Corporation's Yokkaichi Plant (environmental management, reduction of environmental impact in business activities, etc.).
This report has been edited with reference to the Environmental Reporting Guidelines 2018 issued by the Ministry of the Environment.

Period covered by the report description

The activity performance data focuses on activities for fiscal year 2020 (April 1, 2020 - March 31, 2021), but includes some earlier or 2021 activities.

Target Organizations

Yokkaichi Plant* and Asahi Test Center, KIOXIA Corporation

* Including representative divisions and companies

Environmental information is available on our website.

Kioxia Group Sustainability

https://www.kioxia-holdings.com/en-jp/sustainability.html

Yokkaichi Plant Environmental Initiatives

https://about.kioxia.com/en-jp/about-us/yokkaichi/environment.html

KIOXIA Corporation

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