

ANNUAL REPORT

2024



Reference Materials

This pamphlet serves as a supplement to the JCIA Annual Report to introduce various data and initiatives relating to the activities of JCIA. It is intended to be read together with JCIA Annual Report 2024.



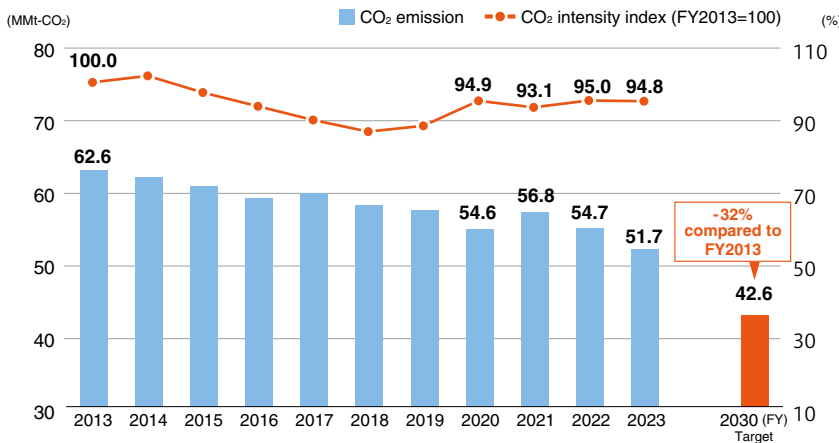
Japan Chemical Industry Association

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1 Environmental Protection (Prevention of Global Warming)

CO₂ emissions and intensity index



Data is reviewed annually.

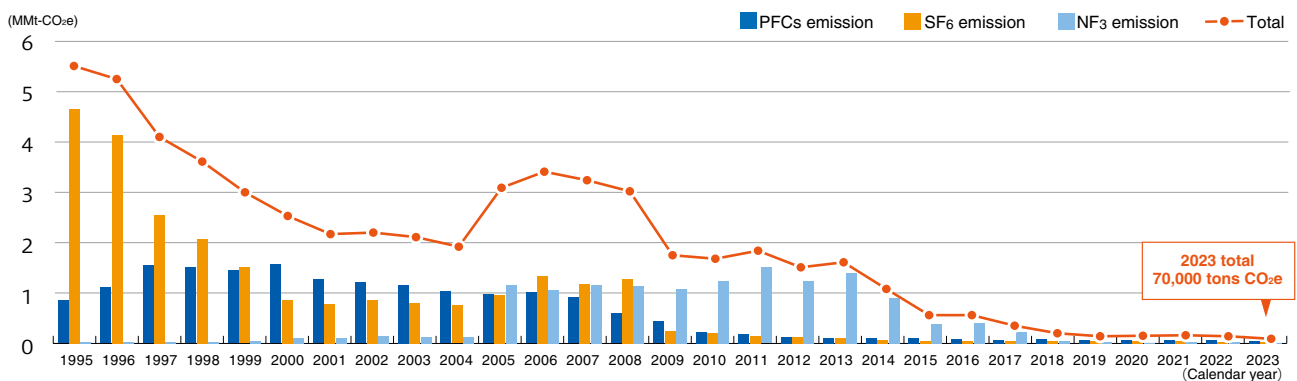
Changes in CO₂ Emissions

The CO₂ reduction target for FY2030 is a 32% reduction compared to FY2013 (base year). A 10,900,000 ton (17.4%) reduction in FY2023 compared to FY2013 and 2,940,000 ton (5.4%) reduction compared to FY2022 has been achieved. And progress toward the FY2030 reduction target was 54% in 2022. The CO₂ emission intensity index in FY2023 is 5.2 points higher than that of FY2013 and 0.2 points higher than that of FY2022.

Emissions of Three Alternative Fluorocarbons and Other Gases (PFCs, SF₆, NF₃)

We are working to reduce emissions of the three gases (PFCs, SF₆, and NF₃) during our production, and the amount of emissions (converted to CO₂) of the three gases in 2023 was approximately 70,000 tons. From 2021 onward, the global warming coefficients are based on the IPCC Fifth Report (AR5).

Trends in PFCs, SF₆, and NF₃ emitted during manufacturing processes



1 2 Environmental Protection (Industrial Waste Reduction)

Voluntary Action Plan for Establishing a Sound Material-Cycle Society for FY2021 and Beyond

Since FY2016, JCIA has been working to achieve the target of reducing final disposal volume by about 70% in FY2020 compared to FY2000*1 in accordance with the Keidanren voluntary Action Plan for Establishing a Sound Material-Cycle Society and we have been promoting efforts to achieve this goal. On the other hand, the recycling rate of industrial waste has already reached close to 100%, and some waste is difficult to recycle. As a result, the recycling rate has remained almost flat since 2010. It has also been pointed out that further reduction of the final disposal volume may run counter to the realization of a low-carbon society, for example, by increasing energy consumption. Even under these circumstances, Keidanren will continue its efforts to reduce the volume of final disposal of industrial waste, the most representative indicator for industry in the formation of a Sound Material-Cycle Society, by setting a reduction target for industry as a whole, based on the idea of not increasing the volume of final disposal from the current level.

Therefore, JCIA has set the following new targets for FY2025:

- ▶ Reduce final landfill volume of industrial waste to 170,000 tons/year or less; and
 - ▶ Maintain the recycling rate at 65% or higher,
- and continue to work toward maintaining the current level.

*1 Final disposal amount reduction rate (vs. FY2000):

$$\frac{\text{FY2000 final disposal amount} - \text{FY2020 final disposal amount}}{\text{FY2000 final disposal amount}} \approx 70\%$$

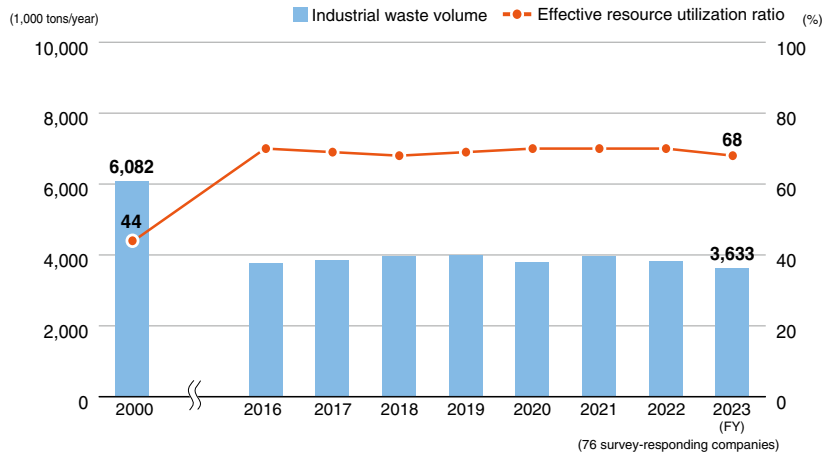
Industrial Waste Volume and Material Recycling Rate*2

Industrial waste volume in FY2023 was 3,633,000 metric tons, down 40% from the base year of FY2000. It was also reduced by 193,000 metric tons compared to the 2022 level. As well as reducing emissions, we are also making positive efforts to encourage sorting and reuse. In addition, the effective utilization rate of resources including heat recovery, which had been 43% in FY2000, was raised to 68% in FY2023 by not only strengthening recycling by thoroughly sorting materials but also aggressively switching from simple incineration to heat recovery for items that are difficult to recycle. As a result, JCIA members achieved ahead of schedule a level that exceeds the chemical industry's specific target of increasing the ratio to 65% or more by FY2025*2 in the Keidanren Voluntary Action Plan for Establishing a Sound Material-Cycle Society.

*2 The target for the chemical industry in the Keidanren Voluntary Action Plan on the Environment (Voluntary goals of JCIA): "Achieve a material recycling rate of 65% or higher by FY2025."

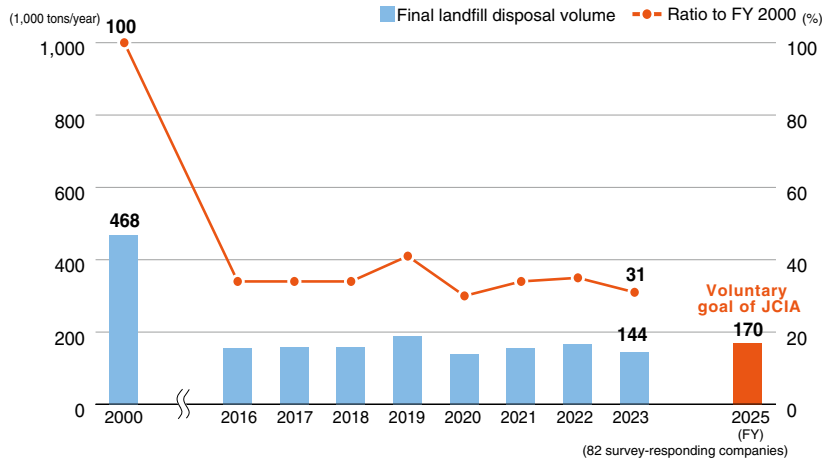
$$\text{Material Recycling Rate} = \frac{\text{Amount of recycled material}}{\text{Amount of industrial waste}}$$

Industrial Waste Volume and Effective Resource Utilization Ratio



Data is reviewed annually.

Final Landfill Disposal Volume



Data is reviewed annually.

	FY2023 results	
	Relative to FY2000	Relative to FY2020
Industrial waste volume	40% decrease	5% decrease
Effective resource utilization ratio	24% increase	marginal change
Final disposal by JCIA members	69% decrease	13% decrease

Final Landfill Disposal Volume

The final landfill disposal of FY2023 was 144,000 tons, which is a decrease of about 22,000 tons from FY2022, and the reduction rate compared to the base year of FY2000 was 69%, an improvement of 4%. The main reasons for this are that in FY2022 there was a large amount of non-routine industrial waste from construction and dredging, etc., and in FY2023 sludge was greatly reduced due to improved wastewater treatment processes, increased drying facilities, and the promotion of resource recycling through cooperating with treatment companies. In addition, the final disposal volume, which increased in FY2019 due to import restrictions on waste plastics enforced in Asian countries, decreased significantly in FY2020 due to the stagnation of economic activity caused by the impact of COVID-19, but it increased from 2021 onwards due to the recovery of economic activity. However, in FY2023, we reduced the amount of waste sent to final disposal by promoting self-supporting efforts and strengthening cooperation with the recycling industry, and we also achieved the target for the chemical industry (JCIA's voluntary goal) in the Keidanren Voluntary Action Plan for Establishing a Sound Material-Cycle Society (reduce the final landfill volume of industrial waste to 170,000 tons or less by FY2025*3) ahead of schedule. We will continue reducing, reusing, and recycling industrial waste in conjunction with heat recovery.

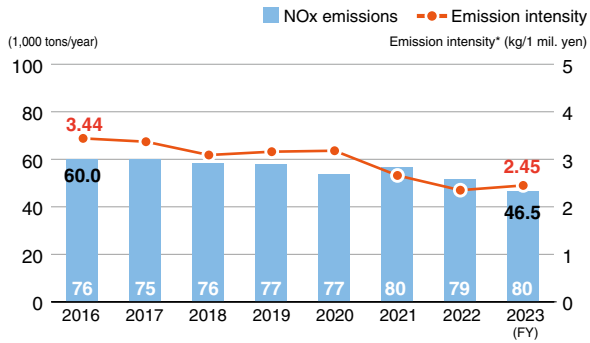
*3 The target for the chemical industry in the Keidanren Voluntary Action Plan on the Environment (Voluntary goals of JCIA): "Reduce the final landfill volume of industrial waste to 170,000 tons or less by FY2025."

1 3 Environmental Protection (Prevention of Atmospheric Pollution and Water Pollution)

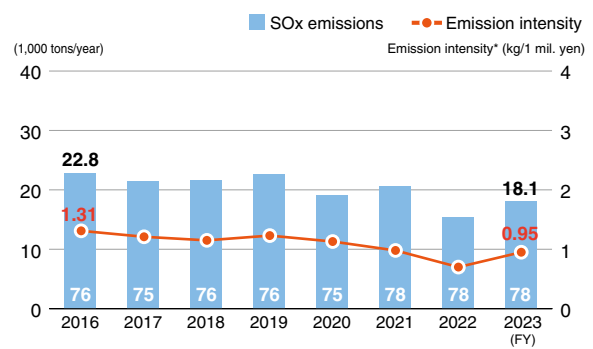
Prevention of Atmospheric Pollution and Water Pollution

JCIA members in Japan have significantly reduced their emissions of air and water pollutants compared to around 2000. In recent years, the rate of emission reductions has slowed, but emission intensity has been declining. JCIA members comply both with regulatory standards and agreements with municipalities. They also set their own voluntary management criteria, which are more rigorous than government standards, to intensify their ongoing efforts to reduce emissions.

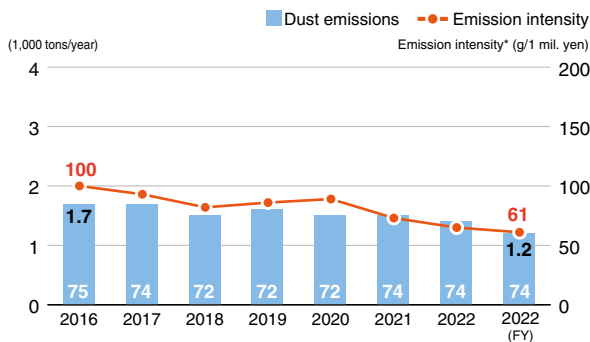
NOx Emissions



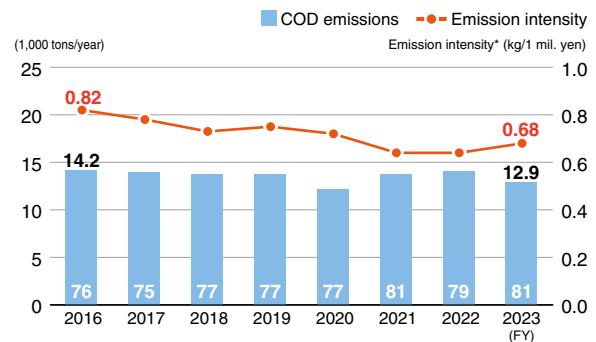
SOx Emissions



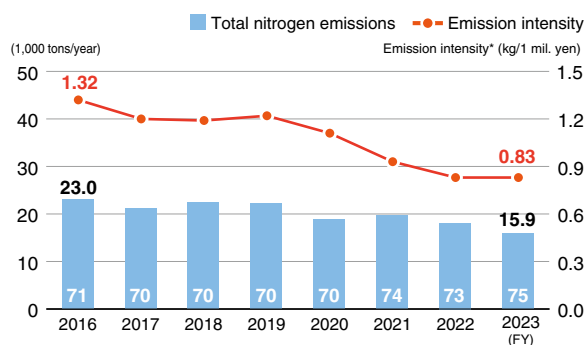
Dust Emissions



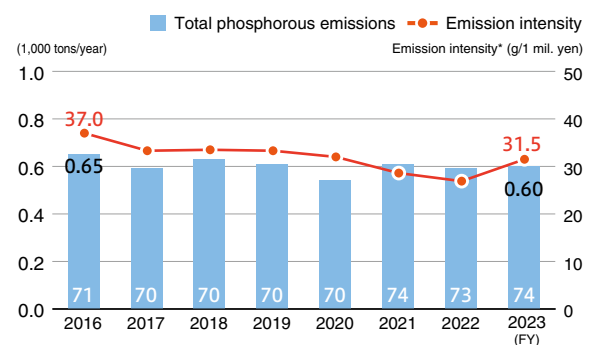
COD Emissions



Total Nitrogen Emissions



Total Phosphorous Emissions

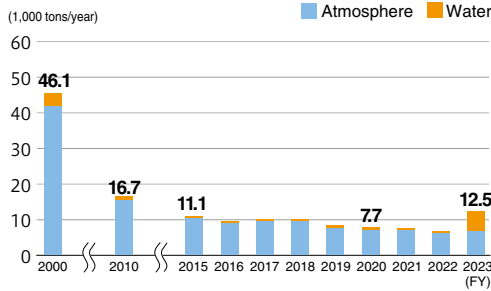


*Emission intensity: Emissions per ¥1 million sales. The figures in the bars indicate the number of companies that submitted data.

1 4

Environmental Protection (Reduction of Chemical Emissions)

Emissions of PRTR Substances

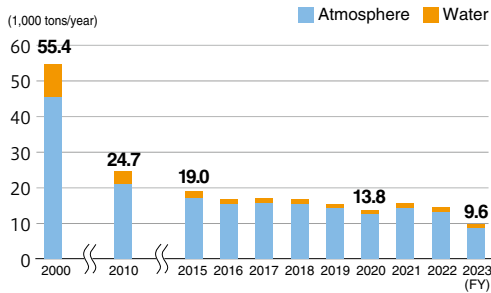


Emissions of PRTR*1 Substances

JCIA members' emissions of PRTR designated substances in FY2023 was 12,500 metric tons, a reduction of approximately 73% compared to FY2000 and 25% compared to FY2010. JCIA members achieved their voluntary target for FY2025.*3 However, compared to emissions in FY2022, emissions in FY2023 increased by 5,700 tons. This is because the number of designated substances increased due to a revision of the law in FY2023.*1 The breakdown of emissions is as follows: 53% into the atmosphere, 47% into water, and less than 0.1% into soil. Due to an increase in the number of designated substances,*1 the amount released into water has increased.

*1 PRTR (Pollutant Release and Transfer Register): The PRTR system is designed to identify, collect and disseminate data on the amounts and sources of a variety of toxic chemicals released into the environment or transferred outside of facilities in the form of waste. PRTR Law: Act on Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof. Due to a revision of the law in 2023, the number of designated substances (subject to notification) increased from 462 to 515.

Emissions of Voluntary Surveyed Substances



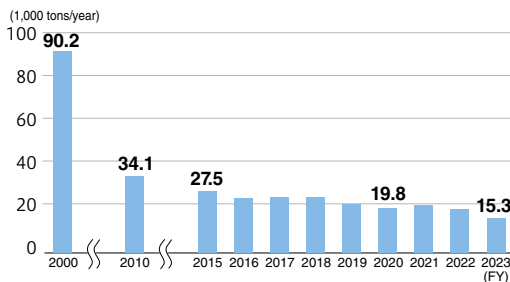
Emissions of Voluntary Surveyed Substances

JCIA has independently established voluntary survey substances^(†) and is working to further reduce their emissions. According to the substance emissions surveyed by JCIA voluntarily^(†), 9,600 metric tons of such substances were emitted in 2023, representing an 83% reduction compared to FY2000 and a 61% reduction compared to FY2010. JCIA members have continued to reduce the amount, and they achieved their voluntary target for FY2025*3 ahead of schedule. In addition, compared to emissions in 2022, emissions in 2023 were reduced by 4,900 tons. The breakdown of emissions was 91% into the atmosphere and 9% into water. No emissions into the soil were reported.

(†) Change in the number of substances voluntarily surveyed by JCIA:

- From FY2000 to 2009: 126 substances
- From FY2010 to 2012: 106 substances
- From FY2013 to 2022: 90 substances
- From FY2023 to the current: 26 substances (Many of the voluntary survey substances have been moved to the designated substances. In addition, substances for which the emissions over the last three years have all been less than 1 ton per year have been excluded.)

VOC Emissions



VOC*2 Emissions

JCIA members are making tremendous efforts to reduce VOC emissions, including changing and reducing the amount of the solvents they use, installing abatement equipment, and improving their processes. In FY2023, VOC emissions amounted to 15,300 metric tons, an 83% reduction compared to FY2000 and a 55% reduction compared to FY2010. Thus, JCIA members have achieved significant reductions along with their voluntary target for FY2025.*3 In addition, compared to emissions in FY2022, emissions in FY2023 were reduced by 4,000 tons.

*2 VOC (volatile organic compound): VOC is a collective term for a wide variety of volatile organic compounds that turn into gas and enter the atmosphere, including toluene, xylenes, and ethyl acetate.

*3 FY2025 voluntary target: Reduce PRTR/VOC emissions to no worse than FY2010 levels in FY2020 and beyond. As for highly toxic substances, reduction efforts should be continued individually.

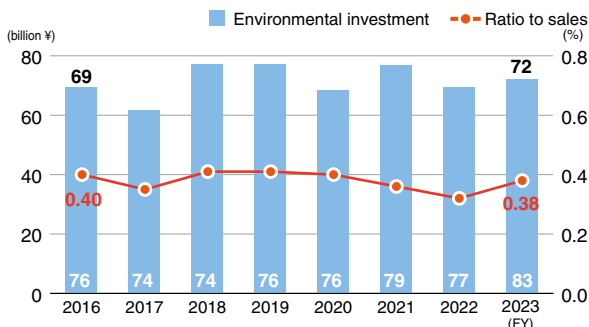
1 5

Environmental Protection (Investment in Environmental Measures)

Investment in Environmental Measures

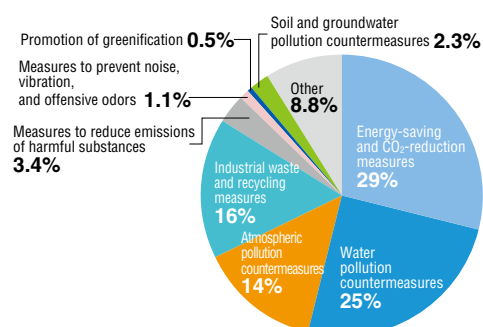
In FY2023, the sum of investments by JCIA members for the installation and maintenance of environmentally friendly equipment, such as energy-saving and CO₂ reducing equipment, and investments in the development of environmentally friendly products and technologies amounted to ¥72.3 billion. This represents a ratio of investment to sales of 0.38%. The amount of investment in environmental protection measures continues to be around 70 billion yen, and the ratio to sales continues to be just under 0.4%. The performance of investments in environmental protection measures by JCIA members has been steadily improving.

Investment in Environmental Measures



* Emission intensity: Emissions per ¥1 million sales. The figures in the bars indicate the number of companies that submitted data.

Breakdown of Environmental Investment in FY2023

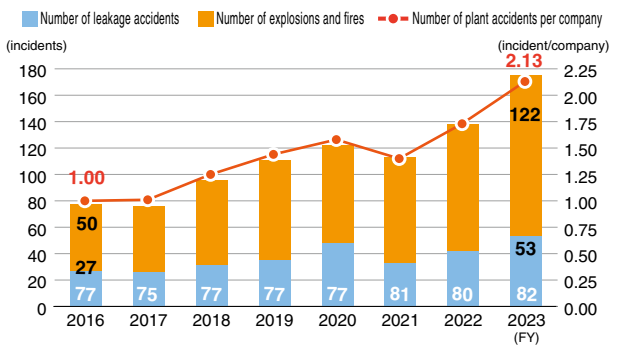


2 Process Safety and Disaster Prevention (Efforts to Prevent Plant Accidents)

Accident Occurrences

In FY2023, the number of equipment accidents (175) and the number of equipment accidents per member company (2.13) both increased significantly for the second consecutive year, reaching record highs. There are concerns that equipment is becoming increasingly outdated.

Accident Occurrences

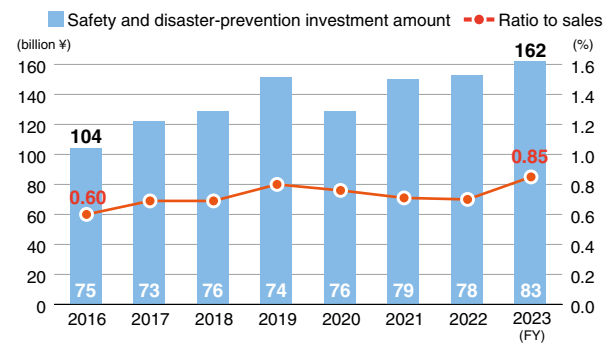


The figures at the bottom of the bars indicate the number of companies that submitted data.

Investment in Safety, Security, and Disaster-Prevention Measures

JCIA members' investment in safety and disaster-preventive maintenance for FY2023 was 162 billion yen, a 5.9% increase compared with FY2022, with the ratio of investment to sales standing at 0.85%, a 22.4% increase compared with FY2022. Both were significantly higher than the previous fiscal year and were record highs.

Investment in Safety, Security, and Disaster-Prevention Measures

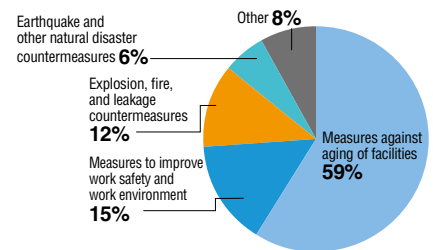


The figures at the bottom of the bars indicate the number of companies that submitted data.

Breakdown of Safety and Disaster-Prevention Investment Amount

The breakdown of investment costs for safety and disaster-preventive maintenance in FY2023 shows that maintenance of aging facilities accounts for nearly 60% of this investment, and this figure is increasing year on year. This trend indicates that countermeasures for aging facilities have been a major investment item over the past several years.

Breakdown of Safety and Disaster-Prevention Investment Amount



3 Industrial Health and Safety

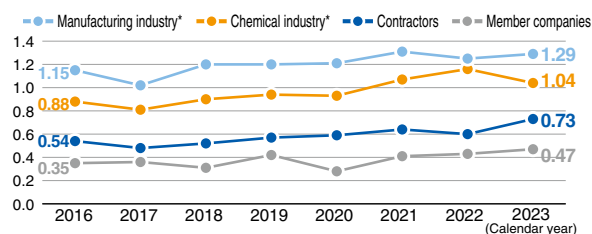
Occurrence of Occupational Accidents

Lost Time Injury Rate (LTIR) Trends

$$LTIR^{*1} = \frac{\text{Number of lost time injuries}}{\text{Total working hours (per one million hours)}}$$

*1 LTIR: Indicator that shows the frequency of lost time injuries

LTIR Trends



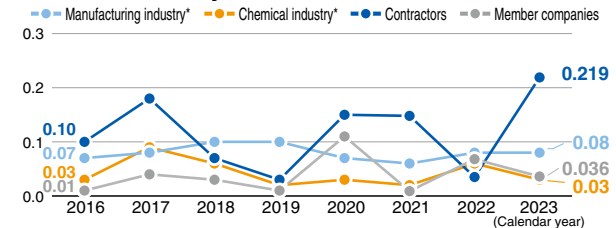
Frequency rates for JCIA members and their subcontractors in 2023 are below those for the manufacturing and chemical industries as a whole, but they are trending upward overall.

Lost Time Injury Severity Rate* Trends

$$\text{Lost Time Injury Severity Rate}^{*2} = \frac{\text{Number of work days lost}}{\text{Total work hours (per thousand hours)}}$$

*2 Lost Time Injury Severity Rate: Indicator that shows the severity of occupational accidents

Overall Severity Rates



In 2023, one fatal accident occurred at a member company, and four fatal accidents occurred at subcontractors, so the severity rate for subcontractors deteriorated significantly compared to 2022, and the figure exceeded that for the chemical industry as a whole.

Number of Fatalities from Occupational Accidents

	2016	2017	2018	2019	2020	2021	2022	2023
Member companies	0	1	1	0	2	0	3	1
Contractors	1	3	1	0	2	2	0	4
Chemical industry*	12	12	18	12	10	12	19	14
Manufacturing industry*	177	102	183	141	136	137	140	138

* Data publicly announced by Ministry of Health, Labour and Welfare (MHLW)

Number of Fatalities from Occupational Accidents

In 2023, there was one fatality at a member company and four fatalities at subcontractors due to work-related accidents.

4 Social (Regional) Dialogue

Implementation of Regional Dialogue Meetings

Areas of implementation in FY2023	Face-to-face meetings: Iwakuni & Otake, Oita, Okayama, Sakai & Senboku, Kawasaki Document-based meetings: Western Yamaguchi, Northern Niigata
Areas of implementation in FY2022	Face-to-face meetings: Eastern Yamaguchi, Yokkaichi Document-based meetings: Hyogo, Osaka, Toyama & Takaoka, Aichi, Chiba, Kashima

Implementation of Regional Dialogue Meetings

JCIA's Responsible Care Committee convened meetings and maintained dialogue with regional communities once every two years in each area where there is a concentration of JCIA member sites, especially chemical complexes. In FY2023, five regions used the face-to-face method, and two regions used the document-based method for dialogue.

5 Members' Self-Assessment

Details of Self-Assessment Scores (Average scores reported by JCIA members)

Assessed item Code	Important items						
	MS	EP	PS	OSH	DS	CPS	SD
1 Policy	4.6	4.6	4.5	4.6	4.3	4.5	4.4
2 Identification of striking environmental aspects, identification of dangerous and harmful factors, etc.	4.5	4.5	4.6	4.6	4.0	4.5	-
3 Legal and other requirements	4.6	-	-	-	-	-	4.2
4 Objectives	4.7	4.4	4.2	4.4	4.1	4.2	3.9
5 Plans	4.7	4.2	4.6	4.6	4.2	4.3	3.8
6 Organization	4.3	-	-	-	-	-	-
7 Education and training	4.3	4.2	4.4	4.4	4.2	4.2	3.7
8 Communication	4.4	4.0	4.2	4.7	4.1	4.2	4.0
9 Response to emergency situations	4.4	-	4.1	-	3.7	-	-
10 Documentation and document management	4.4	-	-	-	-	-	-
11 Operation management	4.5	4.2	4.4	4.5	4.0	3.9	3.7
12 Inspection and monitoring	4.5	4.6	4.4	4.4	3.8	4.4	3.5
13 Corrections and preventive measures	4.5	4.5	4.6	4.6	4.2	4.5	4.0
14 Collection of information and management of records	4.5	-	-	-	-	-	-
15 Auditing	4.5	-	-	-	-	-	-
16 Revisions by management	4.6	-	-	-	-	-	-
(Overall assessment)	4.5	4.4	4.4	4.5	4.1	4.3	3.9

Details of Self-Assessment Scores (Average scores reported by JCIA members)

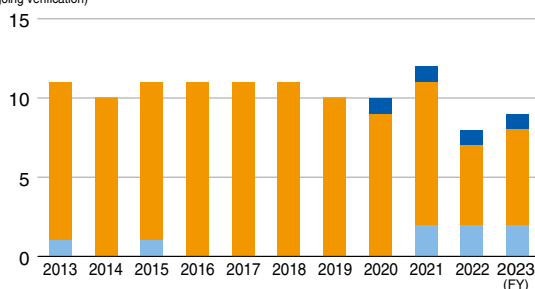
On a scale of 5, scores in the 4-point range were recorded for all important items in the categories of management systems, environmental protection, safety and disaster prevention, and occupational health and safety, indicating that the PDCA cycle is being implemented at a high level. Regarding distribution safety, there are still issues to be addressed in terms of emergency response and inspection/monitoring, but the other areas scored in the 4-point range. In terms of chemicals and product safety management, it is somewhat concerning that operation management has dropped 0.2 points from the previous year, falling into the 3-point range. Regarding social dialogue, it is clear that there are still many issues to be addressed in terms of plans, education and training, operation management, and inspection and monitoring.

Abbreviation	Code	Self-assessment score	Classification
MS	Management system	4.5 points or over	Very satisfactory
EP	Environmental protection	3.5 to under 4.5 points	Just about satisfactory
PS	Process safety and disaster prevention	2.5 to under 3.5 points	Somewhat unsatisfactory
OSH	Occupational health and safety	Under 2.5 points	Unsatisfactory
DS	Distribution safety		
CPS	Chemicals and product safety		
SD	Social dialogue		

6 Responsible Care Verification

Companies Undergoing RC Verification

■ Verification of actions ■ Verification of reports ■ Verification of GHG*
(Number of companies undergoing verification)



Companies Undergoing Responsible Care (RC) Verification

In FY2023, nine JCIA members underwent RC verification (six companies for verification of reports, two companies for verification of actions, and one company for GHG verification). The total number of JCIA members that have undergone RC verification is 266 (211 companies for verification of reports, 51 companies for verification of actions, and 4 companies for GHG verification).

Verification of reports (Six companies):

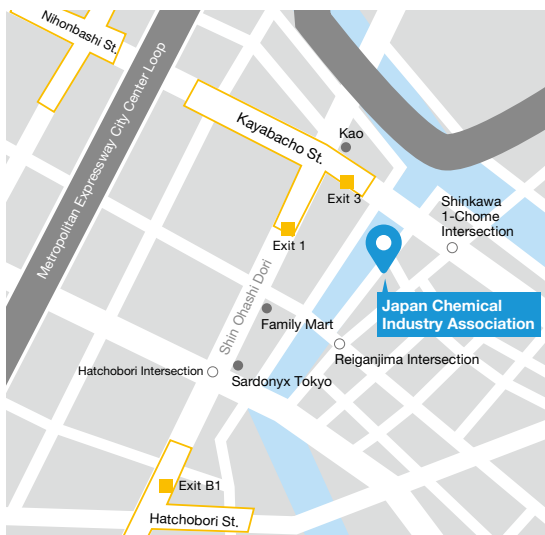
Sanyo Chemical Industries, Ltd., Asahi Kasei Corporation, Shin-Etsu Chemical Co., Ltd., Sumitomo Seika Chemicals Company, Ltd., Nippon Soda Co., Ltd., Tokyo Ohka Kogyo Co., Ltd.

Verification of actions (Two companies):

Sanyo Chemical Industries, Ltd., N.E. Chemcat Corporation

GHG verification (One company):

Shin-Etsu Chemical Co., Ltd.



Access Information

Kayabacho St. (Tokyo Metro Hibiya Line, Tozai Line)
 Approximately 3 minutes on foot from Exit 1 or Exit 3
 Hatchobori St. (JR Keiyo Line)

Contact

General Affairs Department

TEL 03-3297-2550
 FAX 03-3297-2610

International Affairs Department

TEL 03-3297-2576
 FAX 03-3297-2612

Labor Department

TEL 03-3297-2563
 FAX 03-3297-2606

Environment and Safety Department

TEL 03-3297-2568
 FAX 03-3297-2606

Responsible Care Department

TEL 03-3297-2583
 FAX 03-3297-2615

Dream Chemistry 21 Committee

TEL 03-3297-2555
 FAX 03-3297-2615

Public Relations Department

TEL 03-3297-2555
 FAX 03-3297-2615

Department of Business/ Economic Information

TEL 03-3297-2559
 FAX 03-3297-2606

Technical Affairs Department

TEL 03-3297-2578
 FAX 03-3297-2606

Chemical Management Department

TEL 03-3297-2567
 FAX 03-3297-2612

Chemical Products PL Consulting Center

TEL 03-3297-2602
 FAX 03-3297-2604

ANNUAL REPORT 2024

October 23 is
 Chemistry Day



Nikka-chan:
 JCIA's official character



Japan Chemical Industry Association

7F Sumitomo Fudosan Rokko Building, 1-4-1 Shinkawa, Chuo-ku, Tokyo 104-0033
 TEL 03-3297-2555 FAX 03-3297-2615



<https://www.nikkakyo.org/>