

JCIA

ANNUAL REPORT 2020

Reference Materials

As a supplement to the contents of JCIA Annual Report 2020, this pamphlet introduces various data and initiatives relating to the activities of JCIA. Please read it together with JCIA Annual Report 2020.



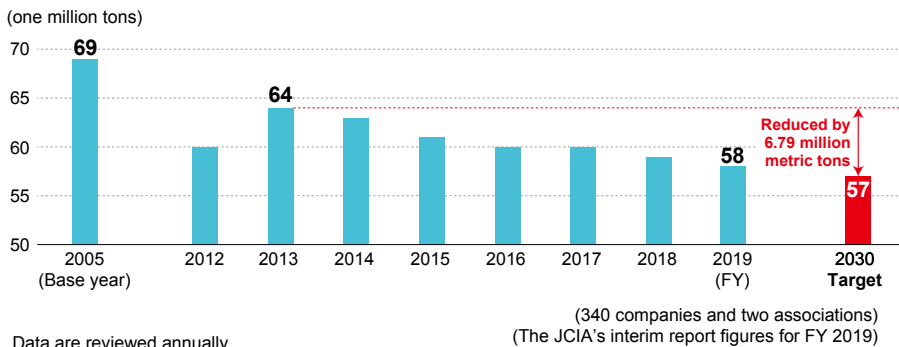
Japan Chemical Industry Association

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1-1 Environmental Protection (Prevention of Global Warming)

CO₂ Emissions Index



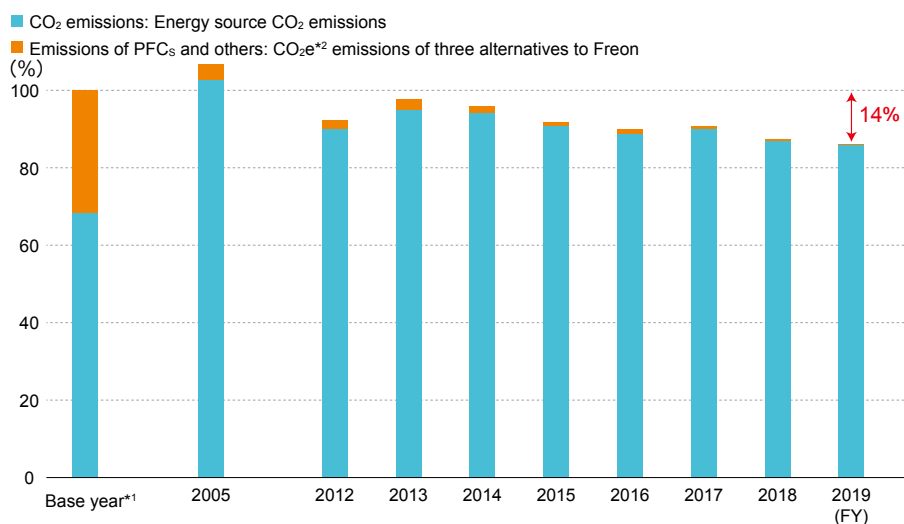
Data are reviewed annually.

CO₂ Emissions Index

CO₂ emissions have been decreasing with each passing year since the "Commitment to a Low Carbon Society" activities began in FY 2013, with emissions dropping by 10.9 million metric tons (15.8%) last fiscal year compared to the reference year of FY 2005. In FY 2018, JCIA announced a new target of reducing the absolute quantity of CO₂ emissions before FY 2030, by 6.79 million metric tons compared to FY 2013.

During FY 2019, we reduced CO₂ emissions by an additional 0.85 million tons from FY 2018, which makes for a total reduction of 5.94 million tons, leaving 0.85 million tons more to achieve the goal.

Reduction of Emissions of CO₂ and Three Alternatives to Freon



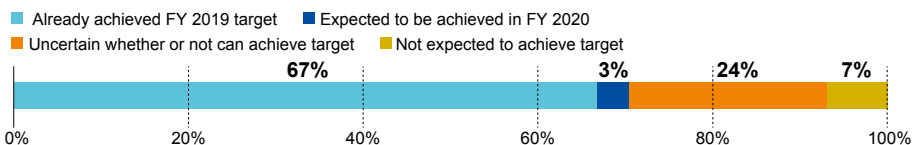
*₁ Base years: The base year for CO₂ emissions is FY1990; the base year for estimated emissions associated with manufacturing of PFCs and others is 1995 (calendar year)

*₂ CO₂e (CO₂ equivalent): Corresponding value of CO₂ emissions

Emissions of CO₂ and Three Alternatives to Freon

When the reduction of CO₂ emissions and the reduction of emissions in the manufacture of three alternatives to Freon (PFCs, SF₆, NF₃) are combined, emissions in 2019 were down 14% from the base years (=100%).

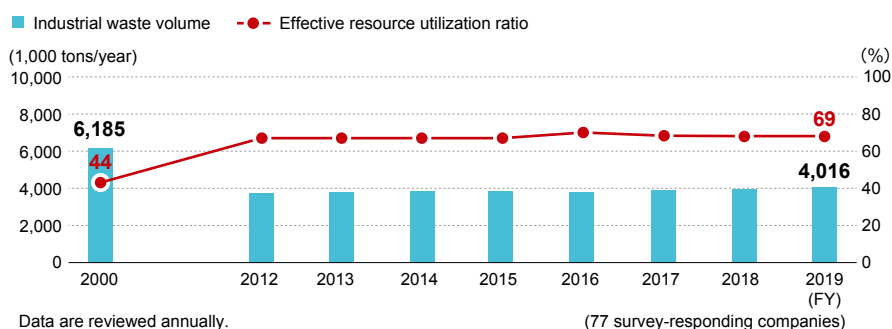
Progress in Achievement of FY 2019 Target for Final Disposal Volume



Progress in Achievement of FY 2019 Target for Final Disposal Volume

Starting from FY 2016, we have set a new target in accordance with the Keidanren Voluntary Action Plan for Establishing a Sound Material-Cycle Society (reducing FY 2020's final landfill disposal volume by about 70% from the volume in FY 2000) and are currently undertaking a process to achieve this target.

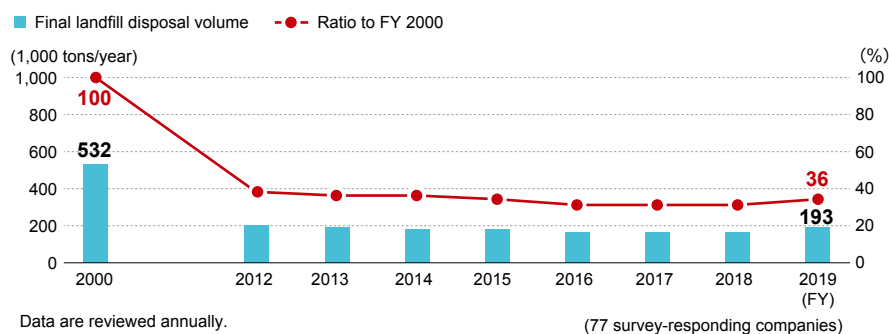
Industrial Waste Volume and Effective Resource Utilization Ratio



Industrial Waste Volume and Effective Resource Utilization Ratio

Industrial waste volume in FY 2019 was 4.016 million metric tons, down 36% from the level in the base year of FY 2000. We are also making positive efforts to encourage sorting and reuse. The effective resource utilization ratio (the ratio of the volume of effectively utilized resources to the volume of waste generation) increased from 44% in FY 2000 to 69% in FY 2019, thus achieving the goal, ahead of the original schedule, of increasing the ratio to 65% by FY 2020, which is stipulated in the Keidanren Voluntary Action Plan for Establishing a Sound Material-Cycle Society that started in 2016.

Final Landfill Disposal Volume



Final Landfill Disposal Volume

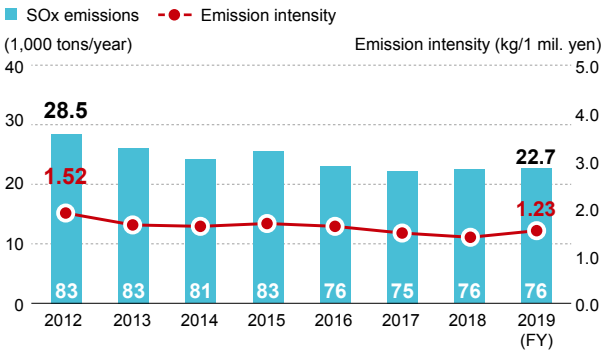
The final disposal of FY 2019 was 193,000 tons, which is a 30,000-ton increase from FY 2018, which ended in a 64% reduction in comparison with the 70% reduction (compared to FY 2000) target to be achieved by FY 2020 as per the Keidanren Voluntary Action Plan for Establishing a Sound Material-Cycle Society commenced by the Keidanren in 2016. Furthermore, as well as reducing the final landfill disposal volume, member companies are strengthening their verification of the proper disposal of waste in accordance with legal revisions, through the issuance, recovery and verification of industrial waste manifests, and the inspection of final disposal sites.

	Result of FY 2019	
	Relative to FY 2000	Relative to FY 2018
Industrial waste volume	Reduced by 36%	2% increase
Effective resource utilization ratio	Improved by 26 points	Slight reduction
Final disposal by JCIA members	Reduced by 65%	18% increase

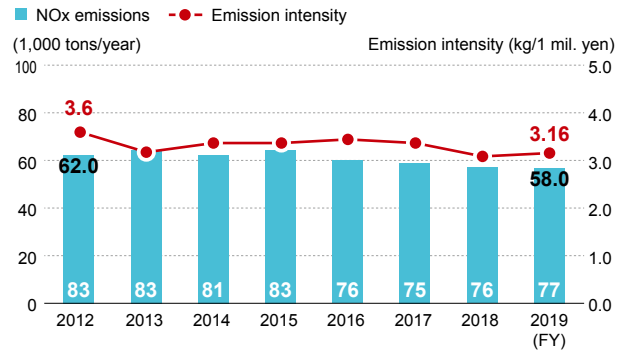
Prevention of Atmospheric Pollution and Water Pollution

Chemical industrial companies in Japan have significantly reduced their emissions of air and water pollutants. Member companies comply not only with regulatory standards, but also 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.

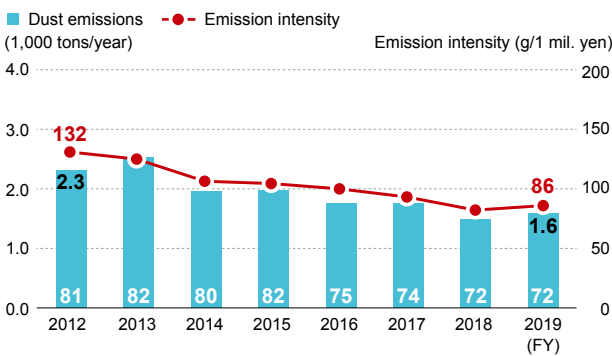
SOx Emissions



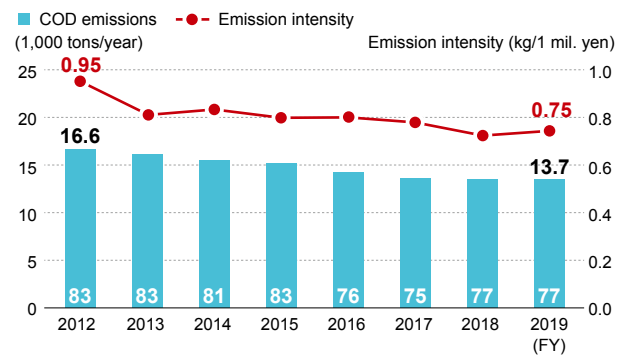
NOx Emissions



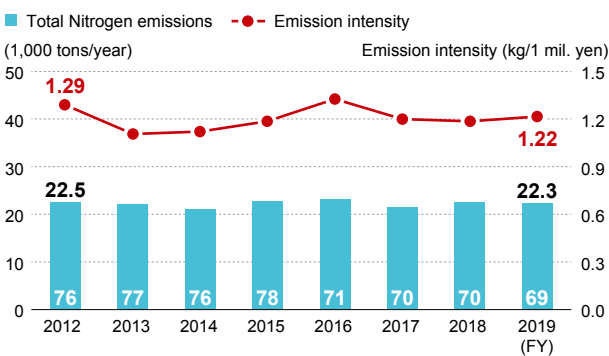
Dust Emissions



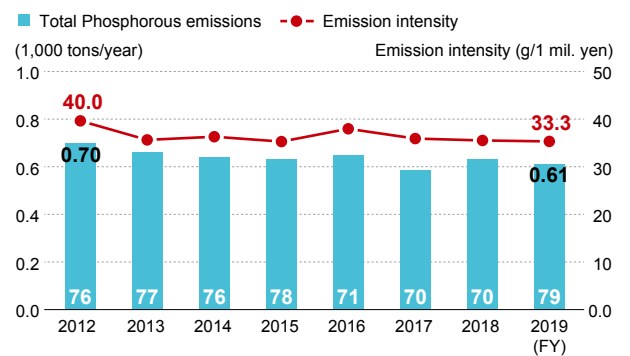
COD Emissions



Total Nitrogen Emissions



Total Phosphorous Emissions

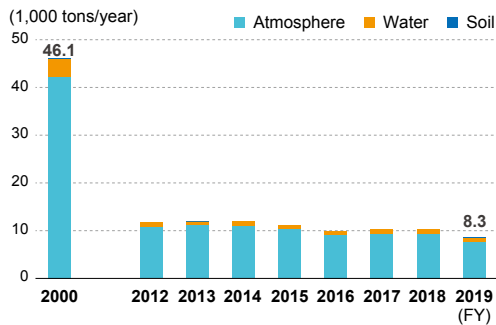


(Emission intensity: Emissions per ¥1 million sales, The figures in the bars indicate the numbers of companies that submitted data.)

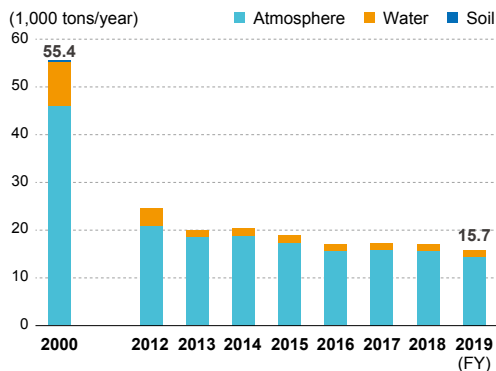
1-4

Environmental Protection (Reduction of Chemical Emissions)

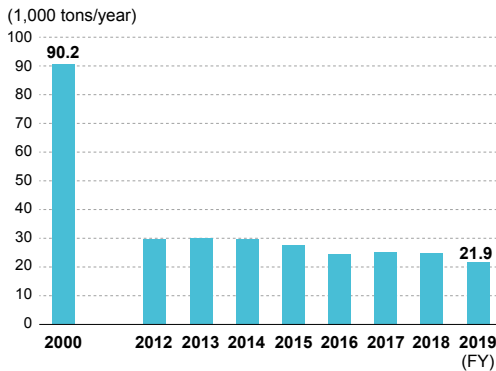
Emissions of PRTR Substances



Emissions of Voluntary Surveyed Substances



VOC Emissions



Emissions of PRTR* Substances

The emissions of PRTR designated substances in FY 2019 was 8,300 metric tons, a reduction of approximately 82% compared to FY 2000. These have been decreasing year by year since FY 2012. The breakdown of emissions is: 92% of the emissions to the atmosphere, 8% to water, and less than 0.1% to soil.

* 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 to 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

Emissions of Voluntary Surveyed Substances

There were 15,700 metric tons of substance emissions surveyed by JCIA voluntarily, achieving a 72% reduction compared to FY 2000. The breakdown of the emission quantities was 92% for emissions into the air and 8% for emissions into water areas. No emissions into the soil were reported.

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

From FY 2000 to 2009: 126 substances

From FY 2010 to 2012: 106 substances

From FY 2013 to the current: 90 substances

VOC* Emissions

Member companies are making tremendous efforts to install equipment and improve the processes for controlling emissions of VOCs.

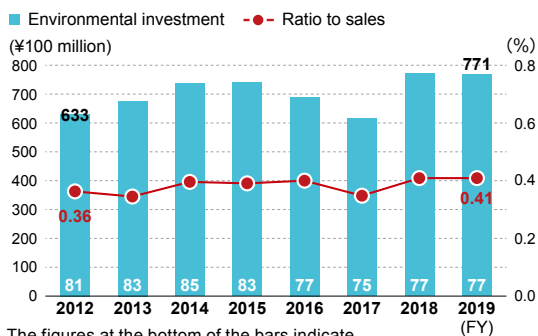
The VOC emissions in FY 2019 amounted to 21,900 metric tons, a 76% reduction compared to the FY 2000 level, continuing a significant downward trend.

* 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.

1-5

Environmental Protection (Environmental Investment)

Investment in Environmental Measures

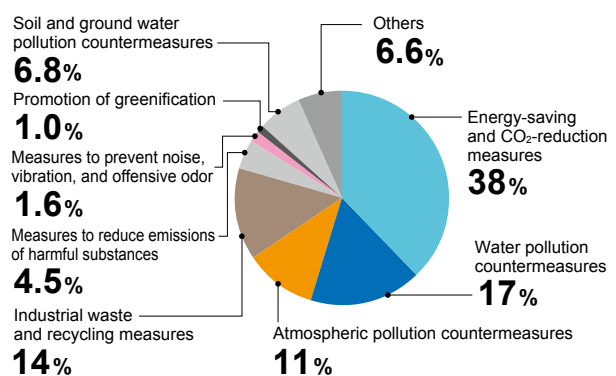


The figures at the bottom of the bars indicate the number of companies that submitted data.

Investment in Environmental Measures

In FY 2019, the sum of investments in the installation and maintenance of environment-friendly equipment, such as energy saving and CO₂ reduction equipment, and investments in the development of environment-friendly products and technologies amounted to ¥77.1 billion. This represents a ratio of investment to sales of 0.41%. While the investment amount fluctuates from year to year depending on the number of companies submitting data, the ratio of investment to sales remains at roughly the same level every year. The planned investments in environmental protection measures by member companies have been steadily improving their environmental performance.

Breakdown of Environmental Investment in FY 2019



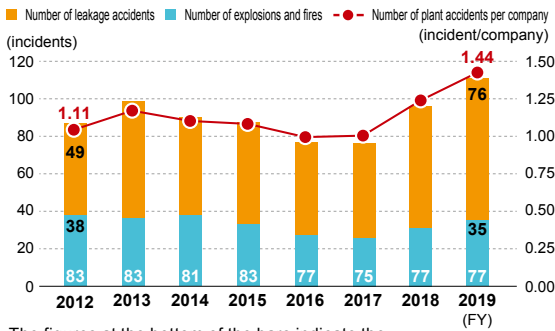
Accident Occurrences

In FY 2019, the total number of accidents at plants (111) and the number of accidents at plants per company (1.44) significantly increased compared to FY 2018. In particular, the number of leak accidents has been on an increasing trend since FY 2018, and this is presumed to be an impact of the change in the interpretation of the Act on Rational Use and Proper Management of Fluorocarbons.

Investment in Safety, Security, and Disaster-Prevention Measures

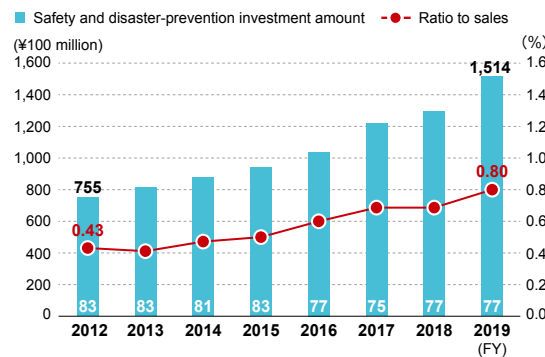
The investment in safety and disaster-preventive maintenance for FY 2019 was 151.4 billion yen (17% increase compared with FY 2018), with the ratio of investment to sales being 0.8% (0.11% increase compared with FY 2018), both of which increased year-on-year. Member companies are investing in safety and disaster prevention measures in a planned and sustained manner.

Accident Occurrences (Explosions, fires, leakage, etc.)



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

Investment in Safety, Security, and Disaster-Prevention Measures

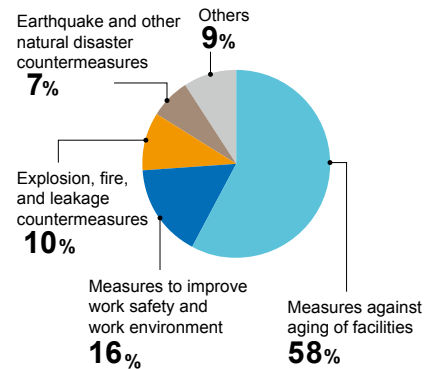


The figures at the bottom of the bars indicate the number of companies that submitted data.

Breakdown of Safety and Disaster-Prevention Investment Amount

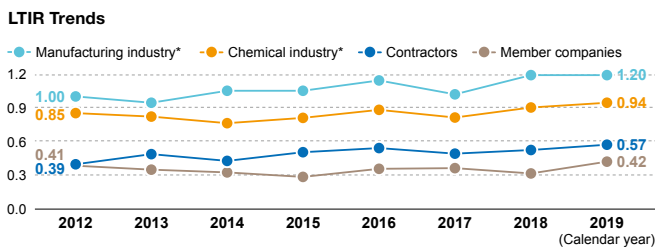
The breakdown of investment costs for safety and disaster-preventive maintenance in FY 2019 shows that the maintenance for aging facilities accounts for nearly 60% of this investment, increasing year by year. This trend is presumed to be resulting from this continuous increase in the expenses for the maintenance of aging facilities.

Breakdown of Safety and Disaster-Prevention Investment Amount



Occurrence of Occupational Accidents

LTIR* (Lost Time Injury Rate) Trends

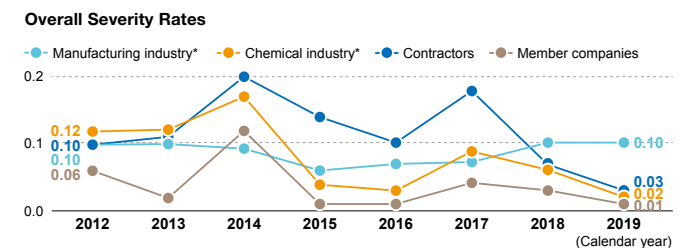


$$LTIR^{*1} = \frac{\text{Number of lost time injuries}}{\text{Total working hours (per one million hours)}}$$

In 2019, the lost time injury rate for member companies and their subcontractors was lower than both the manufacturing industry as a whole and the chemical industry as a whole, although the figure is hovering at around the same level.

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

Lost Time Injury Severity Rate* Trends



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

In 2019, there were no fatal accidents at both member companies and their subcontractors, so the severity rate improved further compared to 2018.

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

Number of Fatalities from Occupational Accidents

	2012	2013	2014	2015	2016	2017	2018	2019
Member companies	2	0	5	0	0	1	1	0
Contractors	2	2	4	1	1	3	1	0
Chemical industry*	17	17	11	22	12	12	18	12
Manufacturing industry*	199	201	180	160	177	102	183	141

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

Number of Fatalities from Occupational Accidents

As for the number of fatalities in 2019, both member companies and their subcontractors were able to achieve zero fatality. We will continue to strive for zero fatality.

4 Social (Regional) Dialogue

Implementation of Regional Dialogue Meetings

Areas where implemented in FY 2019	Western Yamaguchi, Kawasaki, Sakai & Senboku, Iwakuni & Otake
Areas where implemented in FY 2018	Eastern Yamaguchi, Okayama, Hyogo, Yokkaichi, Aichi, Chiba, Kashima

Implementation of Regional Dialogue Meetings

The Responsible Care Committee convenes meetings and maintains a dialog with the local communities once every two years in each area where there is a concentration of member company sites, especially chemical complexes. Due to the impact of COVID-19, the regional dialogue meetings were not held in Oita, Toyama-Takaoka, and Northern Niigata.

5 Members' Self-Assessment

Details of Self-Assessment Scores (Average scores for all member companies based on a five-level assessment system)

Code	MS	EP	PS	OSH	DS	CPS	SD
Assessed item	Important items						
Policy	4.8	4.7	4.6	4.7	4.3	4.6	4.5
Identification of striking environmental aspects, identification of dangerous and harmful factors, etc.	4.5	4.6	4.6	4.6	4.0	4.5	—
Legal and other requirements	4.7	—	—	—	—	—	—
Objectives	4.7	4.6	4.4	4.5	4.0	4.2	3.8
Plans	4.6	4.2	4.4	4.6	4.1	4.2	3.9
Organization	4.4	—	—	—	—	—	—
Education and training	4.3	4.2	4.4	4.4	4.1	4.2	3.6
Communication	4.3	4.1	3.8	4.7	4.3	4.3	4.1
Documentation and document management	4.4	—	—	—	—	—	—
Operation management	4.4	4.3	—	—	4.2	3.9	—
Response to emergency situations	4.5	—	4.1	—	3.6	—	—
Inspection and monitoring	4.5	4.5	4.4	4.4	3.8	4.4	3.7
Corrections and preventive measures	4.5	4.5	4.5	4.6	4.1	4.4	—
Collection of information and management of records	4.4	—	—	—	—	—	—
Auditing	4.6	—	—	—	—	—	—
Revisions by management	4.7	—	—	—	—	—	—
(Overall assessment)	4.5	4.4	4.4	4.5	4.1	4.3	3.9

Details of Self-Assessment Scores (Average scores for all member companies)

On a scale of 5, scores in the 4-point range were recorded for all important items in the categories of management system, environmental protection, and occupational health and safety, showing that the PDCA cycle is rotating at a high rate in these categories.

In the category of process safety and disaster prevention, an enhancement in communication is desirable.

As for distribution safety, while emergency response and inspection/monitoring have some outstanding issues, the other items all scored 4 points or higher.

In the category of social dialogue, there are still many issues with objectives, plans, education and training, in addition to inspection and monitoring.

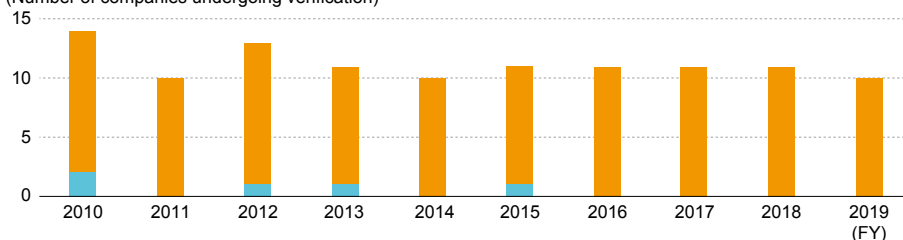
Abbreviation	Code	Abbreviation	Code	Self-assessment score	Classification
MS	Management system	DS	Distribution safety	4.5 points or over	Very satisfactory
EP	Environmental protection	CPS	Chemicals and product safety	3.5 to under 4.5 points	Just about satisfactory
PS	Process safety and disaster prevention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

6 Responsible Care Verification

Companies Undergoing a Responsible Care Verification

■ Verification of actions ■ Verification of reports

(Number of companies undergoing verification)

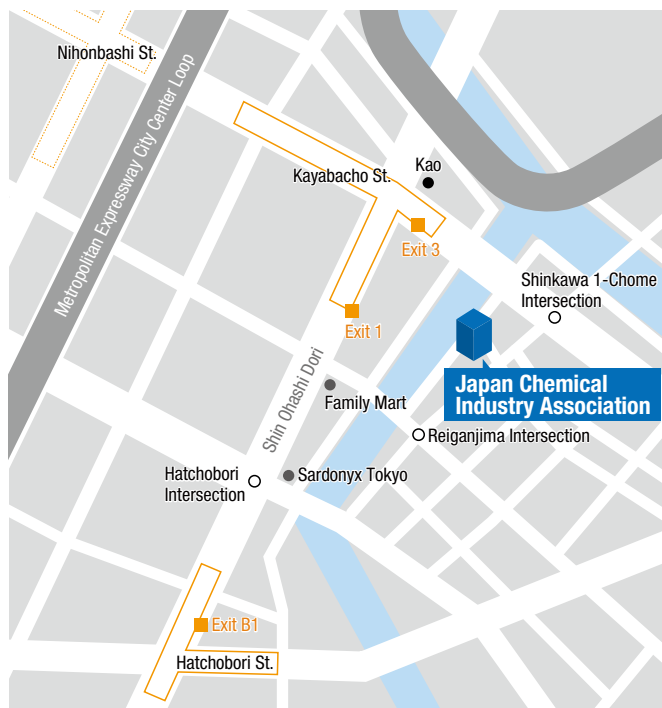


Companies Undergoing a Responsible Care (RC) Verification

In FY 2019, 10 companies underwent an RC verification (all 10 for verification of reports and none for verification of actions). The total number of companies that have undergone an RC verification is 228 (183 for verification of reports and 45 for verification of actions).

Verification of reports (10 companies): Sanyo Chemical Industries, Ltd., Daicel Corporation, Nippon Shokubai Co., Ltd., Asahi Kasei Corporation, Ube Industries, Ltd., JSR Corporation, Shin-Etsu Chemical Co., Ltd., Sumitomo Seika Chemicals Company Ltd., Nippon Soda Co., Ltd., and Tokyo Ohka Kogyo Co., Ltd.

Please refer to the publications posted on the JCIA website regarding other information such as the aggregate results on the questionnaire for member companies.



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)
 Approximately 8 minutes on foot from Exit B1

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

October 23 is
Chemistry Day



Nikka-chan:
 JCIA's official character