As a supplement to the contents of JCIA Annual Report 2019, this pamphlet introduces various data and initiatives relating to the activities of JCIA. Please read it together with JCIA Annual Report 2019.
Environmental Protection (Prevention of Global Warming)

**CO₂ Emissions Index**

CO₂ emissions have been decreasing with each passing year since the "Commitment to a Low Carbon Society" activities began in FY2013, with emissions dropping by 9.9 million metric tons (14.5%) last fiscal year compared to the reference year of FY2005. In FY2018, JCIA announced a new target of reducing the absolute quantity of CO₂ emissions before FY2030, by 6.79 million metric tons compared to FY2013.

**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 2018 were down 12% from the base years (=100%).
Environmental Protection (Industrial Waste Reduction)

Progress in Achievement of FY 2018 Target for Final Disposal Volume
- Already achieved FY 2018 target
- Expected to be achieved in FY 2019
- Uncertain whether or not can achieve target
- Not expected to achieve target

Progress in Achievement of FY 2018 Target for Final Disposal Volume
Starting from FY2016, we have set a new target in accordance with the Keidanren Voluntary Action Plan for Establishing a Sound Material-Cycle Society (reducing FY2020’s final landfill disposal volume by about 70% from the volume in FY2000) and are currently undertaking a process to achieve this target.

Industrial Waste Volume and Effective Resource Utilization Ratio
- Industrial waste volume
- Effective resource utilization ratio

Industrial Waste Volume and Effective Resource Utilization Ratio
Industrial waste volume in FY2018 was 4.03 million metric tons, down 35% from the level in the base year of FY2000. 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 43% in FY2000 to 68% in FY2018, thus achieving the goal, ahead of the original schedule, of increasing the ratio to 65% by FY2020, 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
FY2018’s final landfill disposal volume was 166 thousand metric tons which is 500 metric tons less than FY2017 and a reduction of 70% compared to FY2000. These results also show that, ahead of the original schedule, we have achieved the goal of reducing 70% of final landfill disposal by FY2020, which is stipulated in the Keidanren Voluntary Action Plan for Establishing a Sound Material-Cycle Society that started 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 manifestos, and the inspection of final disposal sites.
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

![SOx Emissions Graph]

NOx Emissions

![NOx Emissions Graph]

Dust Emissions

![Dust Emissions Graph]

COD Emissions

![COD Emissions Graph]

Total Nitrogen Emissions

![Total Nitrogen Emissions Graph]

Total Phosphorous Emissions

![Total Phosphorous Emissions Graph]

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

Emissions of PRTR* Substances
The emissions of PRTR designated substances in FY2018 was 10,200 metric tons, a reduction of approximately 78% compared to FY2000. These have been decreasing year by year since FY2011. The breakdown of the emission quantities was 99% for emissions into the air and 7% for emissions into water areas. No emissions into the soil were reported.

* 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 17,000 metric tons of substance emissions surveyed by JCIA voluntarily, achieving a 69% reduction compared to FY2000. 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 FY2000 to 2009: 126 substances
- From FY2010 to 2012: 106 substances
- From FY2013 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 FY2018 amounted to 24,900 metric tons, a 72% reduction compared to the FY2000 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 acetae.

Environmental Protection (Environmental Investment)

Investment in Environmental Measures
In FY2018, 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 ¥77.3 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.
### Process Safety and Disaster Prevention (Efforts to Prevent Plant Accidents)

**Accident Occurrences**

In FY2018, the total number of accidents at plants (96) and the number of accidents at plants per company (1.25) significantly increased compared to FY2017. Among other items, the number of leakage accidents increased by 30% from last year.

**Investment in Safety, Security, and Disaster-Prevention Measures**

The investment in safety and disaster prevention, and the ratio of investment to sales in FY2018 were ¥129.2 billion (up 6% from FY2017) and 0.69% (no change from FY2017) respectively, remaining almost unchanged from last year. Member companies are investing in safety and disaster prevention measures in a planned and sustained manner.

### Industrial Health and Safety

#### Occurrence of Occupational Accidents

**LTIR** (Lost Time Injury Rate) Trends

![Graph showing LTIR trends](image)

In 2018, 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.

<table>
<thead>
<tr>
<th>Year</th>
<th>Manufacturing industry</th>
<th>Chemical industry</th>
<th>Contractors</th>
<th>Member companies</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>0.12</td>
<td>0.14</td>
<td>0.06</td>
<td>0.07</td>
</tr>
<tr>
<td>2012</td>
<td>0.13</td>
<td>0.15</td>
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<tr>
<td>2013</td>
<td>0.14</td>
<td>0.16</td>
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<td>0.07</td>
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<td>2014</td>
<td>0.15</td>
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<td>0.07</td>
</tr>
<tr>
<td>2015</td>
<td>0.16</td>
<td>0.18</td>
<td>0.02</td>
<td>0.07</td>
</tr>
<tr>
<td>2016</td>
<td>0.17</td>
<td>0.19</td>
<td>0.01</td>
<td>0.07</td>
</tr>
<tr>
<td>2017</td>
<td>0.18</td>
<td>0.20</td>
<td>0.00</td>
<td>0.07</td>
</tr>
<tr>
<td>2018</td>
<td>0.19</td>
<td>0.21</td>
<td>0.00</td>
<td>0.07</td>
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</tbody>
</table>

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

#### Lost Time Injury Severity Rate Trends

![Graph showing lost time injury severity rate trends](image)

While one fatal accident case each was reported from a member company and a subcontractor in 2018, the lost time injury severity rate was improved compared to 2017.

**Lost Time Injury Severity Rate** = \( \frac{\text{Number of lost time injuries}}{\text{Total working hours (per one million hours)}} \)

#### Number of Fatalities from Occupational Accidents

- While the number of fatalities among member companies remained at one in 2018, unchanged from last year, the number of fatalities among subcontractors decreased from 2017.

**Number of Fatalities from Occupational Accidents**

<table>
<thead>
<tr>
<th>Year</th>
<th>Member companies</th>
<th>Contractors</th>
<th>Manufacturing industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>1</td>
<td>1</td>
<td>182</td>
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<tr>
<td>2012</td>
<td>1</td>
<td>1</td>
<td>195</td>
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<td>2016</td>
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<td>102</td>
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<td>2017</td>
<td>2</td>
<td>1</td>
<td>185</td>
</tr>
<tr>
<td>2018</td>
<td>4</td>
<td>5</td>
<td>222</td>
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* Data publicly announced by Ministry of Health, Labour and Welfare (MHLW)
Social (Regional) Dialogue

Implementation of Regional Dialogue Meetings

<table>
<thead>
<tr>
<th>Areas where implemented in FY 2018</th>
<th>Areas where implemented in FY 2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eastern Yamaguchi, Okayama, Hyogo, Yokkaichi, Aichi, Chiba, Kashima</td>
<td>Oita, Western Yamaguchi, Iwakuni &amp; Otsake, Sakai &amp; Senboku, Toyama &amp; Takaoka, Kawasaki</td>
</tr>
</tbody>
</table>

Members’ Self-Assessment

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

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

Classification of Self-assessment scores

<table>
<thead>
<tr>
<th>Classification</th>
<th>Self-assessment score</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unsatisfactory</td>
<td>Under 2.5 points</td>
<td>OSH</td>
</tr>
<tr>
<td>Somewhat unsatisfactory</td>
<td>2.5 to under 3.5 points</td>
<td>EP</td>
</tr>
<tr>
<td>Satisfactory</td>
<td>3.5 to under 4.5 points</td>
<td>PS</td>
</tr>
<tr>
<td>Very satisfactory</td>
<td>4.5 points or over</td>
<td>MS</td>
</tr>
</tbody>
</table>

Occupational health and safety |

Social dialogue |

Chemicals and product safety |

Disaster prevention |

Responsible Care Verification

Companies Undergoing a Responsible Care (RC) Verification

In FY2018, 11 companies underwent an RC verification (all 11 for verification of reports and none for verification of actions). The total number of companies that have undergone an RC verification is 218 (173 for verification of reports and 45 for verification of actions).


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
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TEL 03 3297 2555 FAX 03 3297 2615

October 23 is Chemistry Day

Nikka-chan: JCIA’s official character

https://www.nikkakyo.org/