As a supplement to the contents of JCIA Annual Report 2015, this pamphlet introduces various data and initiatives relating to the activities of the Japan Chemical Industry Association. Please read it together with JCIA Annual Report 2015.

Access

Kayabacho Station (Tokyo Metro Hibiya and Tozai Lines)
Walk straight ahead from Exit No. 3 and turn right at the Shinkawa 1-chome Intersection. Approximately 3 minutes on foot

Kayabacho Station (Tokyo Metro Hibiya Line)
Walk straight ahead from Exit No 1, turn left at the intersection with the Family Mart store, and then turn left at the Reiganjima Intersection. Approximately 3 minutes on foot

Hatchobori Station (JR Keiyo Line)
Approximately 8 minutes on foot from Exit No. B1

Contacts

General Affairs Department
TEL 03-3297-2550  FAX 03-3297-2610

Public Relations Department
TEL 03-3297-2555  FAX 03-3297-2615

International Affairs Department
TEL 03-3297-2576  FAX 03-3297-2615

Department of Business/Economic Information
TEL 03-3297-2559  FAX 03-3297-2615

Labor Department
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Technical Affairs Department
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Environment and Safety Department
TEL 03-3297-2568  FAX 03-3297-2606

Chemicals Management Department
TEL 03-3297-2567  FAX 03-3297-2612

Long-range Research Initiative (LRI)
TEL 03-3297-2575  FAX 03-3297-2612

Responsible Care Department
TEL 03-3297-2583  FAX 03-3297-2606

Dream Chemistry 21 Committee
TEL 03-3297-2555  FAX 03-3297-2615

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

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Environmental Protection (Prevention of Global Warming)

CO₂ Emissions Index

Reduction of Emissions of CO₂ and Four Alternatives to Freon

Industrial Waste Volume and Effective Resource Utilization Ratio

Final Landfill Disposal Volume

Progress in Achievement of FY 2015 Target for Final Disposal Volume

Industrial Waste Volume and Effective Resource Utilization Ratio

Final Landfill Disposal Volume

Progress in Achievement of FY 2015 Target for Final Disposal Volume

Industial waste volume in FY 2014 was 4,041,000 tons, down 54,000 tons from the FY 2013 level and down 51% 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 to the volume of waste discharged by effectively used resources) increased from 36% in FY 2000 to 66% in FY 2014.

Final Landfill Disposal Volume

The final landfill disposal volume in FY 2014 was 197,000 tons, down 1,000 tons from FY 2013 and down 65% from the FY 2000 level. Furthermore, as well as reducing the final landfill disposal volume, in accordance with legal revisions member companies are strengthening their verification of the proper disposal of waste, among other things, the issuance, recovery, and verification of industrial waste manifests and the inspection of final disposal sites.

Progress in Achievement of FY 2015 Target for Final Disposal Volume

In accordance with the Kaitakai (Japan Business Federation) Voluntary Action Plan on the Environment, JClA has set a new target since FY 2011 (a reduction in final disposal volume by about 85% from the FY 2000 level by FY 2015) and is making efforts to achieve that goal.

Industrial Waste Volume and Effective Resource Utilization Ratio

The “Commitment to a Low-carbon Society” activities were launched in FY 2013. Compared with FY 2005 taken as the base year, CO₂ emissions have been reduced by 8,000,000 tons.

Reduction of Emissions of CO₂ and Four Alternatives to Freon

When the reduction of CO₂ emissions and the reduction of emissions in the manufacture of four alternatives to Freon (HFCs, PFCs, SF₆, NF₃) are combined, emissions in 2013 were down 28% from the base years (= 100%).

Environmental Protection (Industrial Waste Reduction)

When the reduction of CO₂ emissions has been reduced by 6,000,000 tons.
Environmental Protection (Reduction of Chemical Emissions)

- **Emissions of PRTR** Substances
  - In FY 2014 Emissions of PRTR substances amounted to 11,800 tons, a reduction of about 74% from the FY 2000 level. Because the number of designated substances increased following a revision of the law, the volume of emissions temporarily increased in FY 2010, but since then the downward trend has continued. Emissions into the atmosphere accounted for 93.2% of the total, and emissions into water areas for 6.8%. No emissions to 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
  - The emissions of voluntary surveyed substances were 20,000 tons, resulting in over 60% reduction compared to FY 2000. The breakdown of the emission quantity was 30% for emissions into the air and 7% for emissions into water areas. No emissions to soil were reported.

  - Note: Changes in the number of substances voluntarily surveyed by JCIA:
    - From FY 2000 to 2009: 120 substances and 1 substance group*
    - From FY 2010 to 2012: 105 substances and 1 substance group*
    - From FY 2013 to the current period: 99 substances and 1 substance group*
    - *Chain Hydrocarbons with up to 4 to 6 numbers of carbon atoms

- **VOC** Emissions
  - Member companies are making tremendous efforts to install equipment and improve processes for controlling emissions of VOCs. The VOC emissions in FY 2014 amounted to 29,700 tons, almost the same as those in FY 2013, a 67% reduction compared with FY 2000 level, continuing a significant downward trend.

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

Environmental Protection (Prevention of Atmospheric Pollution and Water Pollution)

Chemical companies in Japan have significantly reduced their emissions of air and water pollutants. In particular, member companies not only comply 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**
  - The figure in the bars indicates the numbers of companies that submitted data. Emission intensity: Emissions per ¥1 million sales

- **NOx Emissions**
  - The figure in the bars indicates the numbers of companies that submitted data. Emission intensity: Emissions per ¥1 million sales

- **Dust Emissions**
  - The figure in the bars indicates the numbers of companies that submitted data. Emission intensity: Emissions per ¥1 million sales

- **COD Emissions**
  - The figure in the bars indicates the numbers of companies that submitted data. Emission intensity: Emissions per ¥1 million sales

- **Total Nitrogen Emissions**
  - The figure in the bars indicates the numbers of companies that submitted data. Emission intensity: Emissions per ¥1 million sales

- **Total Phosphorous Emissions**
  - The figure in the bars indicates the numbers of companies that submitted data. Emission intensity: Emissions per ¥1 million sales
Environmental Protection (Prevention of Soil and Ground Water Pollution, PCB)

Reasons for Implementing an Investigation (Multiple answers allowed)

- Statutory inspection
- Implementation of voluntary surveys/inspections
- Other

Countermeasures against Contamination

- In situ extraction
- Removal by excavation
- Contaminant interception/water draining
- Treatment
- Separation/degredation
- In-situ degradation
- Other

PCBs

State of Storage and Disposal of PCB Waste

- Existence of PCB waste storage
- Storge of high-concentration PCBs
- Storage of low-concentration PCBs
- Other

- Existence of disposal record in FY 2014
- Partial disposal
- Complete disposal of PCBs
- Partial disposal of PCBs

Reasons for Implementing an Investigation

- Regarding soil pollution, member companies not only conduct surveys based on the Soil Contamination Countermeasures Act but also in many cases implement their own voluntary surveys and adopt necessary countermeasures if pollution is discovered.

Countermeasures against Contamination

- In FY 2014, 41 companies conducted surveys in 94 places, and 13 companies discovered pollution exceeding the standards in 16 places. When cases of pollution discovered before FY 2014 are included, 29 companies have implemented countermeasures against contamination at 46 places.

State of Storage and Disposal of PCB Waste

- The actual results obtained from treatment of the PCB wastes are steadily increasing every year. Under the Act on Special Measures for Promotion of Proper Treatment of PCB Waste, companies were obligated to report on the state of storage and disposal of polychlorinated biphenyl (PCB) to the prefectural governor and to dispose of PCB waste within 15 years of the law’s enforcement on July 15, 2001.

- However, a partial revision of the decree enforcing the law on December 12, 2012, extended the deadline for the disposal of PCB waste to March 31, 2027.

Environmental Protection (Environmental Investment and Biodiversity)

Investment in Environmental Measures

- In FY 2014 investment for the installation and maintenance of environment-friendly equipment, such as energy-saving and CO2-reduction equipment, and for the development of environment-friendly products and technologies and so on amounted to ¥73.6 billion, up 3% over the fiscal 2013 level and equivalent to 0.4% of sales (up 15% over FY 2013).

- Member companies are implementing planned investment in environmental measures and steadily linking that investment to sustained improvements in their environmental performance.

State of Efforts to Preserve Biodiversity

- Regarding biodiversity, 42% of member companies said they were "already implementing" measures and 18% said they were "planning or considering" measures.

- Furthermore, about half of the member companies already implementing measures said that they took biodiversity into consideration in the procurement of materials.

Content of Efforts

- Member companies are also aggressively promoting specific activities and activities in collaboration with external organizations, including tree planting and the conservation of forest resources, the conservation of river and ocean resources, the restoration of lost ecosystem parts in the vicinity or elsewhere, the installation of biotopes using green zones at plants, the preservation of water resources, and the protection of endangered species.

Reference Guidelines

- In conjunction with the 10th Meeting of the Conference of the Parties to the Convention on Biological Diversity (COP 10) held in Nagoya in October 2010, Nippon Keidanren and others established the Japan’s Biodiversity Initiatives based on Private Sector Engagement to promote the preservation of biodiversity by companies and launched the Japan Business and Biodiversity Partnership. About half of member companies addressing the issue of biodiversity take part in this partnership. Member companies that are working to address biodiversity issues use this Partnership’s Guidelines and other guidelines as their standards.
2-1 Process Safety and Disaster Prevention
(Efforts to Prevent Facility Accidents)

Accident Occurrences
The total number of accidents at facilities in FY 2014 was 90, which was lower than in FY 2013, and the number of accidents at facilities per company (1.08) slightly decreased from FY 2013.

Efforts to Prevent Facility Accidents
In response to the frequent outbreak of incidents at facilities in recent years, many member companies are reviewing and strengthening their facility countermeasures, work management countermeasures, and worker education and training.

Specific Review Examples
Identification of potentially dangerous places, strengthening of inspections, and implementation of countermeasures; review of work standards and management standards; preparation of educational materials based on examples of accidents; strengthening of worker education; etc.

Countermeasures Implemented
Work management, materials based on examples of accidents; strengthening of worker education; etc.

Reasons for Conducting Prior Facility Evaluations
Many member companies are reviewing and strengthening their facility countermeasures, work management countermeasures, and worker education and training.

Revolving of Safety and Disaster-Preventive Investment Amount
Measures to deal with aging of facilities 49% Measures to improve safety and work environment 17% Measures to deal with external accidents 45% Remedying 43% Excising 12% Other 7% Earthquake and other natural disaster countermeasures 12% Seismic Diagnosis on Facilities and Reinforcement Work 6% Considering external crises 2%

Investment in Safety, Security, and Disaster-Preventive Measures
The investment in safety, security, and disaster prevention in FY 2014 was 882.3 billion yen (up 8% from FY 2013) and the investment-to-sales ratio was 0.48% (up 8% from FY 2013). Member companies are implementing safety and disaster-prevention investment in a planned and sustained manner.

2-2 Process Safety and Disaster Prevention
(Response to Possible Large-Scale Earthquake)

Self-Evaluation on Emergency Measures
Following the Great East Japan Earthquake, many member companies have undertaken reviews of their earthquake and tsunami countermeasures. Changes in review items surveyed in a questionnaire conducted immediately after the earthquake during the last four years are shown below, indicating that the state of preparedness for a large-scale earthquake has been steadily improving.

Implementation of Emergency Earthquake Drills
Preparation/Revision of Earthquake Disaster Prevention Guidelines
Implementation of Emergency Drills in the Event of a Tsunami
Backup of Computer Systems and Data
Securing Internal and External Means of Communication
Fulfillment of Responsibility as a Supplier
Protection of Facilities against Tsunamis
Seismic Diagnosis on Facilities and Reinforcement Work

Note: From FY 2009, the number of facility accidents is divided into leakage accidents and explosion/fire accidents.
Industrial Health and Safety

Occurrence of Occupational Accidents

Frequency Rate* Trends

<table>
<thead>
<tr>
<th>Year</th>
<th>Manufacturing Industry (MIC)</th>
<th>Chemical Industry (MIC)</th>
<th>Cooperative companies</th>
<th>Member companies</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>0.70</td>
<td>0.32</td>
<td>0.43</td>
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<tr>
<td>2008</td>
<td>0.62</td>
<td>0.75</td>
<td>0.36</td>
<td>0.36</td>
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<tr>
<td>2009</td>
<td>0.54</td>
<td>0.65</td>
<td>0.43</td>
<td>0.43</td>
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<tr>
<td>2010</td>
<td>0.54</td>
<td>0.75</td>
<td>0.43</td>
<td>0.43</td>
</tr>
<tr>
<td>2011</td>
<td>0.62</td>
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<tr>
<td>2012</td>
<td>0.70</td>
<td>0.75</td>
<td>0.43</td>
<td>0.43</td>
</tr>
<tr>
<td>2013</td>
<td>0.70</td>
<td>0.75</td>
<td>0.43</td>
<td>0.43</td>
</tr>
<tr>
<td>2014</td>
<td>0.70</td>
<td>0.75</td>
<td>0.43</td>
<td>0.43</td>
</tr>
</tbody>
</table>

Frequency Rate Trends

Severity Rate = Lost days
Frequency Rate = Number of accident victims requiring absence from work

Severity Rate Trends

<table>
<thead>
<tr>
<th>Year</th>
<th>Manufacturing Industry (MIC)</th>
<th>Chemical Industry (MIC)</th>
<th>Cooperative companies</th>
<th>Member companies</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>0.00</td>
<td>0.10</td>
<td>0.20</td>
<td>0.20</td>
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<td>2008</td>
<td>0.00</td>
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<td>2009</td>
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<td>0.00</td>
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<tr>
<td>2011</td>
<td>0.00</td>
<td>0.10</td>
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<td>2012</td>
<td>0.00</td>
<td>0.10</td>
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<td>2013</td>
<td>0.00</td>
<td>0.10</td>
<td>0.20</td>
<td>0.20</td>
</tr>
<tr>
<td>2014</td>
<td>0.00</td>
<td>0.10</td>
<td>0.20</td>
<td>0.20</td>
</tr>
</tbody>
</table>

Overall Severity Rates

Number of Fatalities from Occupational Accidents

<table>
<thead>
<tr>
<th>Year</th>
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<th>Chemical Industry (MIC)</th>
<th>Cooperative companies</th>
<th>Member companies</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>10</td>
<td>5</td>
<td>2</td>
<td>5</td>
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<tr>
<td>2008</td>
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<td>2</td>
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<td>2</td>
<td>2</td>
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<td>2011</td>
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<td>1</td>
<td>2</td>
<td>2</td>
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<td>2012</td>
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<tr>
<td>2014</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

State of Preparedness for the “Mandatory Risk Assessment of Chemicals” Required by the Revised Industrial Safety and Health Act

Specific Review Examples
Promotion of risk assessment; strengthening of danger prediction; strengthening of measures for dangers inherent in the workplace, such as rotating objects; review and compilation of standards; implementation of safety-awareness education; etc.

Efforts to Prevent Occupational Accidents

Frequency Rate Trends
In 2014 the frequency rate for member companies and their cooperative companies was lower than in the manufacturing industry as a whole and in the chemical industry as a whole, although the figure is hovering around the same level.

Severity Rate Trends
The severity rate of the member companies and their cooperative companies in 2014 worsened compared to 2013. Further efforts to improve are needed.

Number of Fatalities from Occupational Accidents
The number of fatalities at member companies and their cooperative companies was the worst in the last few years.

Efforts to Prevent Occupational Accidents
In recent years many member companies have been reviewing and strengthening their worker education and training, work management countermeasures, and facility countermeasures. Furthermore, member companies have been actively investing in safety and disaster-prevention measures. (See section 2-1 Process Safety, Investment in Safety, Security, and Disaster-Prevention Measures.)
Response to Distribution Accidents

Emergency Contact Arrangements for Distribution Accidents

- In preparation for unexpected accidents, member companies implement emergency-response training for distributors. Almost all member companies have emergency-response manuals and have established 24-hour emergency-response contact networks.

Mutual Support in Accidents and Emergencies

- Also, about 90% of member companies have established mutual support systems for emergencies involving combustible solids, liquids, gases, high-pressure gases, corrosive substances, and acutely toxic substances.

Emergency Drills with Mutual Support Partners

- Furthermore, about 90% of member companies implement emergency-response drills with mutual support partners.

Possession of the Yellow Card and Availability of the Container Yellow Card

- As a means of providing information to parties responding to emergencies, member companies have prepared and promote the carrying of Yellow Cards.

Possession of the Yellow Card

- All member companies implement prior safety assessment to specify the safety of chemical substances and evaluate their impact on the health and safety of people handling them and the environment.

Factors Covered by Prior Safety Assessment

- Prior safety assessment covers such factors as the health and safety of handlers, explosiveness and inflammability, and the environmental impact of emissions.

Reasons for Implementing Prior Safety Assessment

- Almost all member companies implement prior safety assessment every year not only for the development, manufacture, and sale of new substances but also when existing substances are newly introduced or when methods of manufacturing, transportation, use, and disposal are changed.

State of Introduction of Risk Assessment for Chemical Substance Evaluation

- A new initiative is the management of chemical substances on the basis of risk assessment. 83% of member companies have already incorporated risk assessment in their management of chemical substances, and 14% are scheduled to do so.

Targets of Risk Assessment

- Risk assessment covers the entire lifecycle of chemical substances, from R&D and manufacturing to disposal.
5-2 Chemicals and Product Safety (Information Supply)

Provision of Information on Products

GHS Compliance of SDSs in Member Companies
- No GHS-compliant labels available because substances/products for which there are legal requirements are not manufactured or imported: 1%
- GHS GS (Globally Harmonized System of Classification and Labelling of Chemicals): A system to communicate hazard information on labels and Safety Data Sheets. The information provided is classified according to the type and severity of hazards of chemicals according to globally standardized rules.

GHS Compliance of Labeling in Member Companies
- Relates to mandatory substances/products in the PRTR Act and Industrial Safety and Health Act and products stipulated in Article 57 of the Industrial Safety and Health Act: 3%
- Respond only to obligations in the PRTR Act and Industrial Safety and Health Act: 68%
- No GHS-compliant labels available because substances/products for which there are legal requirements are not manufactured or imported: 1%
- Respond to all obligations to make efforts to comply with GHS: 21%
- Certificated at production sites: 79%

Understanding of Purpose and Use of Supplied Products (%)

<table>
<thead>
<tr>
<th>Customers' intended use</th>
<th>Intended use of final products (in terms of safety)</th>
<th>Usage of final products (in terms of safety)</th>
</tr>
</thead>
<tbody>
<tr>
<td>80% or over</td>
<td>85</td>
<td>53</td>
</tr>
<tr>
<td>70% or over</td>
<td>81</td>
<td>56</td>
</tr>
<tr>
<td>60% or over</td>
<td>71</td>
<td>58</td>
</tr>
<tr>
<td>Under 50%</td>
<td>3</td>
<td>11</td>
</tr>
<tr>
<td>Don't understand</td>
<td>1</td>
<td>10</td>
</tr>
</tbody>
</table>

GHS' Compliance of SDSs in Member Companies
- White substances for which it is obligatory to provide Safety Data Sheets (SDSs) are stipulated by the PRTR Act, Industrial Safety and Health Act, and Poisonous and Deleterious Substances Control Act, almost all member companies also voluntarily issue SDSs for substances/products for which there are no legal requirements.
- In their compilation of SDSs, most member companies endeavor to fulfill the obligation to make efforts to comply with GHS.

GHS Compliance of Labeling in Member Companies
- Regarding labeling as well, most member companies endeavor to fulfill the obligation to make efforts to comply with GHS.

Understanding of Purpose and Use of Supplied Products
- Furthermore, from the perspective of Responsible Care, it is important to understand how your company’s chemical products are being used and processed by customers and what products are finally made from them and delivered to consumers. Most member companies therefore make efforts to find out about usage by customers and so on.

6-1 Management System

Status of Environmental Management Systems (EMSs) Certification

<table>
<thead>
<tr>
<th></th>
<th>Certified at all production sites</th>
<th>Certified at some production sites</th>
<th>Planning stage</th>
<th>No plans</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY 2007</td>
<td>17</td>
<td>5</td>
<td>7</td>
<td>20</td>
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<tr>
<td>FY 2008</td>
<td>10</td>
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<tr>
<td>FY 2012</td>
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Trend in Adoption of Occupational Safety and Health Management Systems (OSHMSs)

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Verification of System’s Establishment (Multiple answers allowed)

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Global Reporting Initiative
- GRI (Global Reporting Initiative) is a non-profit organization whose mission is to develop globally applicable guidelines for global sustainability reporting. Companies have started to adopt sustainability reporting, including not only environmental but also social and economic dimensions, according to the indicators developed by the GRI.
Publication of Responsible Care Reports
The ratio of member companies issuing Responsible Care Reports in FY 2014 was about 90%, almost the same as in previous years. If group publications are included, the ratio rises to about 95%.

Publication of Site Reports
More than 32% of the member companies issued local site reports. This trend has remained the same for the last few years.

Contents of Responsible Care Reports
Most of the reports carried the result of activities in the six main areas of Responsible Care, namely, environmental protection, process safety and disaster prevention, occupational health and safety, chemicals and product safety, and social dialogue. In particular, at a time when global environmental problems are attracting attention of society, all of the reports carried the results of activities in the category of environmental protection.

Implementation of Regional Dialogue Meetings
Responsibility Care Committees hold dialogue meetings with local communities once every two years in areas where there is a concentration of member company sites, especially chemical complexes.

Other Community Activities
Besides these meetings, member companies endeavor to promote communication with the local community by participating in and supporting community events and volunteer activities, hosting plant visits for local residents and elementary and junior high school students, and giving lectures at schools and civic groups. In FY 2014, 79% of member companies created opportunities for exchange with local residents, and dialogues were conducted on a total of 768 occasions in 148 areas.

Agenda Items in Discussion Forums
The discussions often involved matters closely related to the local community, such as safety (accident- and disaster-prevention measures, etc.), pollution, chemical substances, and plant management (the construction of new facilities, site changes, etc.).
Members’ Self-Assessment

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

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<thead>
<tr>
<th>Code</th>
<th>MS</th>
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<th>OSH</th>
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Change in Comprehensive Assessment

Management System

Regarding trends over the last three years, in the category of management system, the ratio of member companies replying “very satisfactory” or “just about satisfactory” has maintained a high level of over 90%.

Environmental Protection

In the category of environmental protection, the ratio of member companies replying “very satisfactory” or “just about satisfactory” has remained above 90%, and the ratio of those replying “very satisfactory” is increasing too.

Process Safety and Disaster Prevention

In the category of process safety and disaster prevention, the ratio of member companies replying “very satisfactory” or “just about satisfactory” is above 90% and on an upward trend.

Occupational Health and Safety

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Distribution Safety

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Chemicals and Product Safety

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Social Dialogue

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Responsible Care Verification

Companies Undergoing a Responsible Care (RC) Verification

Verification of actions of companies undergoing verification

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