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Education Outreach Activities and Enhancement of Chemistry Industry Image

We are surrounded by chemical phenomena.

Everything is chemistry.

The breathing of living organisms and the photosynthesis of plants are great chemical processes designed by nature, and yet they are merely a fraction of gigantic circulation of nature.

Human intelligence was bright enough to discover that nature consists of a small set of elements. Furthermore, it found out the way how these elements are turned into various substances and unveiled some of the rules behind such changes. Current chemistry has been developed by imitating the skills of nature and has grown so powerful that its future brings us more fear than hope.

Physical forces change the external shape while chemical forces change the internal essence. The two forces together transform nature. Chemical energy is converted into electrical energy, and further turned into light or sound energy. Energy transformation also turns lethal substances into essential ones and vice versa. Such energy circulation is the transforming nature.

Burning the fossil fuel, a product of photosynthesis, produces water, carbon dioxide, and small amount of energy. We burn crude oil, an excellent fossil fuel, in order to obtain that small energy. An enormous amount of time spent to produce crude oil from the photosynthesis, but the combustion process takes place in a tiny moment.

In the chemical industry, alcohols are produced by adding water to alkanes from the crude oil, aldehydes and carboxylic acids are generated by oxidizing these alcohols, and fragrant esters are synthesized by reacting carboxylic acids with alcohols. Moreover, ketones are formed by oxidizing secondary alcohols, and the dehydration of alcohols at low and high temperature yield ethers and original alkanes, respectively. Furthermore, numerous other chemicals are produced by polymerizing above products obtained from alkanes. The chemistry gives birth to tens of thousands new chemicals every year, all of which will follow the circulation after circulation and finally go back to nature.

The chemical industry has the power to produce various materials used in our daily lives from

crude oil. This is the power of chemistry. No one denies that the power of chemistry greatly contributed to the convenience and abundance of our life, but it is not the biggest contribution of chemistry to human beings. The real contribution of chemical industry is that it turned the fossil fuel, which would be quickly disappeared when burned, into various necessary materials that will return to nature after being used for a long time. In other words, the chemical industry delayed the time that takes the fossil fuel to return to nature as much as possible.

Nevertheless, the consumption period of fossil fuel is still much shorter than the formation period. Discharging rate of carbon dioxide had been well controlled by nature throughout the history, but is rapidly increasing in modern society. It is concerned that the string of beautifully balanced general circulation of nature may be stretched to its elastic limit and broken apart.

Everything comes from and returns to nature. Human beings should follow the general circulation of nature. Pollutants discharged from the manufacturing products will pass through some circulations and return to nature at the end. What matters is "when", which means that it's a matter of time. We are a part of nature living in the middle of its circulation process, therefore we should follow the flow, not interrupt it. When our lives seem to move too fast than the circulation of nature, how about stepping out and making a new cycle to live within then rejoin the original circulation? The idea of chemical industry should contribute even more in such additional cycles.

What the chemical industry should seek in the future is to design more ecological networks of various sizes to diversify and evolve the general circulation so that the circulation can control its speed and the direction according to the laws of nature.

I think the true meaning of 'outreach' is to teach the essence of chemical industry with the various ideas of recycling, and help our future citizens to find expectations and hopes in the chemistry.

In order to achieve this, we teachers will make more efforts to change the notion of seeing the chemical industry as a 3D (dirty, dangerous, and difficult) industry into a new 3D (diverse, dynamic, and definitive).

Thank you.

The status of chemical regulations in main trading countries related to the Korean chemical industry

Although there can be various views on the definition and scope, the chemical industry based on the Trade Classification of the National Statistical Office is a remarkably wide-ranging industry, including metallic and nonmetallic minerals, and fine chemical materials as primary products, and petrochemical middle materials, synthetic resins, rubber, paints, and dyes as heavy chemical industry. In other words, the chemical industry ranges from materials to chemical products, which serve as the basic key industry of manufacturing complete products such as plastic, textiles, cars, and electrical products.

The chemical industry has been the subject of wide-ranging environmental regulations based on usage and groups of chemical products, as well as its raw materials. It is also expected that additional chemical regulations would be issued or intensified at home and abroad. In particular, the REACH regulation in Europe issued in June 2007 is extremely strong regulations effecting chemical raw materials and complete products. While experiencing pre-registration between June and November 2008 and 1st registration deadline until November 30, 2010 on materials exported to Europe over 1,000 tons, the Korean chemical industry has perceived that timely measures to cope with environmental regulations would be directly connected to stable business of companies. Also, they realized that it is needed to establish business strategies in which environmental regulations are included as one important factor, comparing cost required for response to such regulations with losses when they fail to respond.

It is noticeable that the REACH of the European Union has affected regulations of chemical substances in various nations, and following the REACH, America, China, Japan, Taiwan, and Turkey revised the existing system of chemical substances or tried to establish new relevant regulations. As the "REACH-like regulations", chemical industries of various nations are moving fast to collect information on such trend and to take measures to cope with them. In Korea, the Ministry of Environment officially mentioned establishment of "Act of Registration and Assessment of Chemical Substances(draft)" in the seminar titled "Improvements in Korean Chemical Management and Measures of Industry for Toxic chemical GHS Enforcement", hosted by the Ministry between November 4 and 5, 2010.

In this chapter, I would like to discuss the trends of environmental regulations in Asia, including China, Japan, Taiwan, and Malaysia as the main trading partners of the domestic chemical

industry, and additionally, the systems of reporting and registration of chemical substances in Turkey, a country that is not EU member states but recently organized regulations for chemical substances. Also, I will present how domestic chemical businesses are going to cope with chemical substance regulations at home and abroad, as well as how to improve the domestic chemical management system provided by the Ministry of Environment.

1. Revision of Provision on the Environmental Administration of New Chemical Substances in China

On September 12, 2003, the State of Environmental Protection Administration (SEPA) released the Provision on the Environmental Administration of New Chemical Substances and enforced on October 15, 2003, introducing a registration system for substances that were not included in the existing chemical substance list presented by China's Inventory of Existing Chemical Substances (IECSC). On May 21, 2009, China's Ministry of Environmental Protection (MEP) planned the revised Provision after collecting opinions from departments, which was finally passed by the Chinese Central Government and enforced on October 15, 2010.

As of now, the list of IECSC includes around 45,000 substances, and new substances not included in the list should be planned for the document for registration on physicochemical properties, toxic data, and usage data based on amount for assessment.

Recent overall contents of the revised provisions are not different from the existing ones in the wider context, but main revisions are as follows.

- Registration through Chinese agents

In case of manufacturers other than Chinese ones, i.e. non-Chinese exporters should conduct registration through in-China corporate bodies. Non-Chinese exporters should conduct registration through one agent on the same substance.

- Raw materials or intermediates of medical products, agricultural chemicals, and cosmetics as legal subjects

In the revised provision, it is clear that Raw materials or intermediates of medical products, agricultural chemicals, veterinary products, cosmetics, food, food additives, and feed additives should comply with the regulations on the Environmental Administration of new Chemical Substances.

- Tonnage band for registration changed (four tonnage band)

The tonnage band for registration were changed to be four phases (1 to 10, 10 to 100, 100 to 1,000, and over 1,000 tons), which are the same as those of the European REACH. However, it is not different that test items required for registration are more as tons of the relevant substances are more. Also, it is the same that some of ecotoxicity test data should include data in which Chinese test species are used in China in the revised provision. Interestingly in the revised provision, the more the tonnage, the more the test items in China should be.

- New establishment of simple registration of small-quantity substance (1 ton or less)

In the revised provision, simple registration is applied to small-quantity substances (between 100kg and 1 ton), R&D substances, high molecular substances, intermediates less than 1 ton, substances for export, and substances for process improvement (less than 10 tons). In case of simple registration, the provision requires submission of test data on environmental toxicity in which Chinese kinds are used.

- Registration of new substances that are intentionally released in finished article

In accordance with Article 2 of the revised province, when an article is generally used, this system shall be applied as new chemical substances within the article are intentionally released. This statement, simple but clear, can be understood as the same concept of the European REACH indicating intentional released in article, and should be noted because it can be the subject of new registration.

- Improved hazard assessment and chemical substance management

In the revised provision, chemical substances are classified into general, dangerous (hazardous), and concerned chemical substances under assessment of hazard, degree of exposure, risk on environment, and appropriate measures to administer risk. Dangerous substances may include substances classified as hazard substances based on the GHS classification, concerned substances indicate the persistent, bioaccumulated toxic among dangerous substances, substances having persistent, bio-accumulative properties, and hazards on ecological environment and human health. Strict risk management should be applied to the concerned chemical substances based on the assessment result among the ones exported to China. In other words, measures to prevent the relevant substance from being environmentally discharged during manufacturing, using, transporting, or disposing it.

When violated, in addition to imposing a fine between 10,000 and 30,000 Yuan, non-Chinese exporters shall be punished (which is different from the concept of unique agent of the REACH), such as publication of violation, cancellation of registration, or refusal of registration for three years.

2. Revision of The Law Concerning Examination and Regulation of Manufacture of Chemical Substances in Japan

The Law Concerning Examination and Regulation of Manufacture of Chemical Substances (hereafter referred to as the Law), the key law on chemical substance administration in Japan, was established in 1973 for in-advance estimating safety of new substances manufactured in or imported to Japan of at least 1 ton. The existing chemical substance list in Japan includes around 20,000 kinds, and substances not included in this list are the subjects of registration as new substances. The Law was revised in 2003, and the new revised Law was announced on May 20, 2009. The revised Law shall be enforced on April 1, 2010 as the first phase, and on April 1, 2011 as the second phase. Following are the main contents of the revised Law.

- The subjects of assessment in accordance with the Law are expanded to the existing substances.

The key of the revised Law is that the subjects of assessment shall be expanded to be the existing substances. However, in accordance with the revised Law, given that the European REACH in which all the substances of at least one ton are the subjects may place a considerable burden on industry, the government shall conduct a screening assessment after determining the order of priority. In other words, while businesses shall be responsible for submission of all data on assessment and hazard assessment under the REACH, the government shall conduct hazard assessment in the revised Law of Japan.

- Duty of reporting quantity and usage of the existing chemical substances
“Priority Chemical substances” for screening assessment of existing substances shall replace the “second-class monitoring” and “third-class monitoring” chemical substances as of the existing Law in Japan. The list of chemical substances for Priority chemical substances shall be established on the basis of usage, quantity, and toxicity data collected by the government of the relevant substance. Therefore, as basic data for it, those who deal with (manufacture or import) the existing chemical substances should report to

the government on the volume and usage of business of the existing substances that are manufactured and used by at least one ton per year. This clause shall begin to be enforced on April 1, 2011.

■ Introduction of exemption of low-concern polymer

In cases of polymer that are judged to have lower effects on humans or environment due to high molecular weight and difficulty in penetration of biological membrane, such substances may be exempted as low concern polymer. This clause began to be applied at the first phase, or in April 2010.

The Japanese government shall assign priority in which substances requiring more detailed assessment are summarized on the basis of existing hazard data, when data is reported on manufacturing, quantity of import, and usage of such substances by businesses. Risk assessment is classified into first and second assessment. In the first risk assessment, data of discharge quantity, data of environmental monitoring, and the existing data shall be used, and in the second one, businesses shall be instructed to conduct a hazard investigation to submit data. Based on the submitted data, detailed risk assessment shall be conducted and substances shall be classified and administered as the first or the second specific chemical substances on the results of the assessment.

3. System of New Chemical Substances in Taiwan— Nomination of Chemical Substances

As of now Taiwan does not have a national list of existing chemical substances. To introduce a system of new substances in July 2011, it is expected to conduct a procedure of nomination on substances distributed within Taiwan until December 2010 to issue a list of the existing chemical substances within the nation. After completing the list, Taiwan is planning to issue a list of existing chemical substances within the nation by June 30, 2011. Substances that are not included in the list shall be judged to be new substances, and from July 1, 2011, such substances should go through assessment by submitting documents for registration such as toxicity data as new substances, for commercialization. Preparation of the registration documents requires considerable cost and time. Also, exporting such substances is not possible until the assessment is completed. Therefore, domestic businesses exporting chemical

substances to Taiwan should observe the period of nomination.

- Body of nomination: The nomination can be applied to manufacturers and importers within Taiwan or exporters outside Taiwan, but they should have a contact point within Taiwan.
- Subject of nomination: All the substances manufactured in and imported to Taiwan between January 1 of 1993 and December 31 of 2010 (including high molecular substances) should be subjects of the nomination.
- Information protection in process of nomination: Information protection can be applied on the name of the relevant chemical substance in process of the nomination, only when the generic name is also submitted.
- Submission of nomination documents: It is needed to download the Excel form distributed by the Council of Labor Affairs of Taiwan, to fill in the form with required information, and to submit it by email.
- Information required for nomination documents:
Information of applicant (including contact point within Taiwan)
Name of the relevant chemical substance (Traditional Chinese and English name), CAS No.
Quantity of export (with six items of classification on quantity: 10kg/year, 10 to 1,000kg/year, 1 to 10 tons/year, 10 to 100 tons/year, 100 to 1,000 tons/year, and more than 1,000 tons/year)

The main items related to the nomination of chemical substances are as follows.

Based on the law (bill), only legal subjects located in Taiwan can submit reports of new chemical substances. Therefore, domestic chemical companies exporting to Taiwan should conduct the procedure of the nomination by assigning importers or reliable agents within Taiwan.

4. Preparation of registration of new chemical substances in Malaysia

The Ministry of Environment (MOE) in Malaysia will make it mandatory to declare and notify of environmental hazardous substances (EHS) from 2011, which has been voluntary since 2009. Companies exporting chemical substances to Malaysia should login the system for declaring and notifying EHS in the website of MOE, confirm that substances manufactured or imported

are included in the list, and conduct basic notification when necessary. When the relevant substances are not searched to be EHS, they should conduct detailed notification.

The basic notification requires submission of information of chemical substance identity (name of substance, CAS No., etc.), yearly quantity of manufacturing and import, usage, concentration range of substance within product, and information of imported nation (when imported). The detailed notification additionally requires physicochemical properties, data of human health toxicity, data of ecotoxicity, and GHS classification.

The currently voluntary declaration and notification will be compulsory after notice before two months of enforcement in 2011. When introduced in 2011, the system shall be introduced step-by-step based on toxicity and quantity of substances. As for the notice two months before the enforcement, the Malaysian government is in consultation because of opinions that the period of preparation by companies is too short. As of now, there is uncertainty with the system (such as on issues of information protection on declaration and notification), requiring consistent follow-up in the future.

5. Registration of chemical substances in Turkey

The system of chemical substance administration in Turkey—a non-EC nation—was established in 2008 and enforced on December 6, 2009, requiring registration of all chemical substances manufactured in, imported to, and used in Turkey of at least one ton. The system of chemical substance administration in Turkey began to be enforced on December 26, 2009, requiring registration of all chemical substances manufactured in and imported to Turkey of at least one ton to the Ministry of Environment and Forestry of Turkey by March 2011. Foreign exporters can designate agents within Turkey as the subject of registration.

As for substances of 1 to 1,000 tons, name of the substance, EC No., CAS No., tonnage band, classification based on the Turkey CLP, information of usage should be submitted. As for substances by at least 1,000 tons, physicochemical properties, behaviors in environment, environmental toxicity data, and CMR toxicity data should be additionally submitted.

Recently, the Turkish government completed organization of an IT system for notification of a chemical substance list that was expected to be completed in March 2011. Thus, exporters to Turkey can designate agents within Turkey and notify a list of chemical substances by using the IT system. Turkey is expected to complete the list in June 2011 after notification of the chemical substance list in March 2011. Then, it is planning to select priority substances

needing additional hazard assessment such as mass-production chemical substances or CMR substances. For priority substances, the Turkish government shall conduct hazard assessment, and according to the results, may require submission of additional data within a certain period after announcing the list.

6. Domestic administration of chemical substances

The Ministry of Environment recently announced strategies of introduction of a system to activate information creation of chemical substances as administration of chemical substances as follows.

- Administration of new chemical substances shall be expanded to the existing substances.
- IT shall be applied to both procedures of registration and assessment and procedures of registration of businesses, checking of integrity, and assessment.
- As for diversification of subjects, the government shall conduct assessment and restriction in allowance in substances while businesses shall conduct data creation and hazard assessment.
- “The law on registration and assessment of chemical substances” (draft) shall be established.

It is under discussion that such registration is centered on hazard-concerned substances including high volume production substances, high toxic substances (such as carcinogens) and the period of the registration is differentiated on the basis of kinds of substances. Although details have not been determined yet, the overall direction may be similar with that of the REACH: the subjects of assessment may be expanded to the existing substances; and businesses may conduct data creation and hazard assessment. The consistent attention of the chemical industry is needed.

Measures of businesses

Trends of administration of chemical substances in China, Japan, Taiwan, Malaysia, and Turkey and the domestic policy on administration of chemical substances are as mentioned above. Until recently, promotion of international environmental regulations has been focused

on the European REACH, but, considering the main trading countries, the trends of chemical substance administration in Asia and non-European nations are being changed fast and restricted in period, requiring more multilateral responses of companies. For short and long term, it is needed to focus on determination of details on domestic administration of chemical substances.

Most of all, companies should manage internal chemical products and chemical substances within products. The regulations for chemical substances in various countries focus on “substances”. Although the European REACH and the Provision on the Environmental Administration of New Chemical Substances in China included regulations on complete products (articles), there are not many chemical substances intentionally released in article. Therefore, chemical companies should manage information of “substances” within products that are supplied or are manufactured for supply, and such administration requires internal supply chain management. Recently various IT-based solutions for supply chain management have been introduced, but regardless of solutions, management of internal substances is essential.

First, a inventory of products and substances exported should be made, and registration of the substance list of the relevant nation should be confirmed. In particular, as for Taiwan and Turkey that begin to make the inventory, companies should conduct notification or report substances for export within the fixed period. As for Japan, information, quantity, and usage of substances should be submitted to importers until next April, requiring solution of possible problems of information protection. In addition, because the subject of the registration should be a firm within Japan, it is necessary to consider reliability and consistency in selecting agents. With specificity in China requiring tests that should be conducted within China related to data creation, companies should consider selection of period, schedule, and cost for each phase in such test. What is most important is that all the above-mentioned factors should be approached strategically in order not to cause business problems by achieving the purpose of regulatory compliance of legal conditions in ordering and selling products, through consideration from the stage of product development in the bigger business framework.

DuPont’s SHE Second Party Auditing Program

Safety, health and environment are the uncompromising core values of DuPont as a world-class multinational chemical company. Even now, DuPont is consistently exerting companywide efforts for safety, health and environment in hundreds of workplaces around the globe.

DuPont’s SHE Second Party Auditing Program has played a central role in checking and improving activities on safety, health and environment as the company’s core values.

DuPont specified the auditing activities as corporate policies for improving safety, health and environment in the company’s corporate standards. According to the standards, DuPont’s subsidiaries and regional headquarters should conduct independent audits on safety, health and environment in workplaces and products under their responsibility in order to analyze whether DuPont’s workplaces meet the policies, standards and related regulations on safety, health and environment and improve the workplaces.



Picture-1) Chart of DuPont’s Audit Management System

Based on these, DuPont has established and implemented the standards of the SHE Second Party Auditing Program. As the major audit guidelines, firstly, the company should focus on

the management system of safety, health and environment and, secondly, the audit should be conducted by an independent second party and, thirdly, evaluation should be made from the overall perspective as well as on detailed parts. According to the scope of each activity, this auditing program deals with different detailed protocols on safety, occupational health, fire safety, PSM, environment, distributions and product stewardship, based upon the RC Code.

■ General Aspects of Auditing Program

The above mentioned standard on the SHE Second Party Auditing Program detailed items related to auditing activities and DuPont's workplaces across the world which are conducting auditing activities on Safety, Health and Environment. Firstly, the standard clearly specified the responsibility of management and that of the workplaces. Each region should have a manager of the auditing program and should manage the program under his/her leadership so that the SHE program can perform smoothly within a certain area such as arranging the schedule, personnel, follow-up measures and training.

Each workplace has a basic duty to hold or support audits, review the audit reports and conduct follow-up measures. Additionally, it has a duty to provide qualified auditors for second-party audits for the audits of other workplaces.

As to the frequency of audit, it is stated that the audits be conducted once in three years for each competency. If it has passed 3 months from the initially designated date, the workplace in question shall undergo special control, ensuring the audit in progress is on time.

In cases when the 1st party audits are performed properly or when potential risk is low, or when the activities on safety, health, and environment are carried out successfully, the period can be extended. On the contrary, when the needs are officially recognized, a shorter frequency can be applied.

A team leader can conduct his leadership of auditing only when it is officially judged that he is equipped with leadership and extensive auditing experience, knowledge of related regulations and company's standards, work experience, and even technical knowledge. The past audit performance should also be taken into consideration.

Not everyone can be an auditor. To be an auditor, he has to undergo training program and pass the course. Candidates should be equipped with not just general qualifications but also

qualifications requested by each detailed protocol. As to general qualifications, for example, he can be an auditor after undergoing education sessions, on-the-job training, and passing them.

An auditor should undergo refresher training again within 4 years and regional audit program manager should maintain the auditors' list for each competency.

■ Auditing Process

The auditing process goes as follows. Above all, before auditing, the auditor contacts site's management and working level of the site in question. the auditor re-verifies the scope, purpose and schedule of audit and reviews information required in advance.

Then, the auditor visits the site to conduct the audits. The auditor reviews and assesses the SHE management system of the site in question and finds out things to point out and reviews them with the management and working level of the site. After auditing, the auditor drafts the audit report and shares it with the site. After getting the feedbacks from the site, the auditor issues the final report. The site also prepares the plan for follow-up measures and updates the follow-up progress on a semi-annual basis, which ends the auditing process.

Once the audit on the site is finished, the draft is prepared within 15 days. And, once an agreement is finally made by reflecting the feedbacks of the site, the final report is issued within one month. Within two months, the site sets up the plan for follow-up measures and prepares the progress report on the follow-up measures semi-annually. In addition, the site assesses whether the auditor in question audited properly.

■ Audit Report

The format of audit report is as follows. First, it summarizes the auditing and overview of the site. Later, it records the findings and recommendations in detail. Each issue can be about the overall management or it can be found in each detailed area.

The report of each finding is as follows. First, it details the finding and specifies citations together with their sources. The recommendation follows. Lastly, the finding is categorized

according to their significance and character, and is classified as 'new' or 'repeated' according to whether or not they were found before.

■ Key Audit Issues

Even the site with good SHE performance has findings to point out for improvement. However, the findings pointed out by auditors cannot be always right. Therefore, the audit also needs review and findings can be readjusted through discussion with the workplace after audit. The findings can be finalised in the final report only after going through readjustment. SHE activities cannot be perfectly guaranteed only with auditing. In addition to the findings pointed out in the audit, the sites need to find things to improve for themselves and continue to make efforts to improve them.

Having started as a gun powder company in 1802, DuPont has grown to be one of the most innovative companies based on its ability to adjust itself to changes and spirit of ceaseless scientific quest for the past 200 years. The company has upheld the corporate core values of Safety, Health and Environment in the midst of continuous changes and innovations and discoveries. And, as one of the major activities, SHE Second Party Auditing Program is in place. The enhanced capability of Safety, Health and Environment and noticeable outcomes have reassured the confidence in the program

For example, DuPont is conducting a Third Party Review of its audit program in order to find things to improve in the program and make an effort to improve them. For the audit cases sampled randomly, the 3rd party conducts the review and discusses the results with global and regional audit program managers. And, when finding things to improve, the company conducts the follow-up measures on the audit program itself and makes an effort to enhance the quality of the program.

International Council of Chemical Associations (ICCA) Responsible Care's Contribution to Sustainable Development



Our Commitment to Sustainability

Responsible Care is the prevailing ethic which guides the health, safety and environmental performance of the global chemical industry. In place for nearly 25 years, its concepts of working with communities, sharing information along the supply chain and continuously improving performance were in place well before the emergence of "sustainable development" as a prevailing concept for aspirational performance. The global chemical industry therefore continues to build on the Responsible Care ethic to strengthen its commitment to sustainability.

Sustainable development is now widely defined as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (World Commission on Environment and Development) and was recognized as a goal for the international community at the 1992 Rio de Janeiro Conference on Environment and Development (UNCED). Sustainable development requires commitment and contribution by many stakeholders. Responsible Care represents the chemical industry's contribution.

The safe management of chemicals aligned with a positive contribution to society has always been an integral part of sustainable development as reflected in Agenda 21 and more recently in the Johannesburg Program of Action adopted at the World Summit on Sustainable Development in 2002. The Strategic Approach to International Chemicals Management (SAICM) which was adopted in 2006 at the first United Nations International Conference on Chemicals Management (ICCM-1), encompasses a comprehensive approach to the safe management of chemicals.

At the same event, the ICCA launched the Responsible Care Global Charter, which reinforced the connection between Responsible Care and sustainable development. Responsible Care commits companies and chemical trade associations to practice and promote the safe

management of chemicals, while improving quality of life through the benefits of chemical products and positive contributions to the communities in which we operate. Indeed, one of the Charter's nine key elements directly addresses our commitment to sustainable development:

Responsible Care is a uniquely designed initiative that enables the global chemical industry to make a strong contribution to sustainable development. Through improved performance, expanded economic opportunities, and the development of innovative technologies and other solutions to societal problems, the industry will continue taking practical steps to implement initiatives in support of sustainable development. The industry will expand its dialogue with stakeholders to identify additional opportunities to contribute to sustainable development through Responsible Care. The chemical industry recognizes the important contribution that can be made through capacity building of the sound management of chemicals to achieve sustainable development goals. The industry will continue to support national and international initiatives to advance these goals.

Alongside the Global Charter, ICCA launched its Global Product Strategy (GPS), which works within the context of Responsible Care to focus on enhanced product stewardship throughout the value chain. GPS highlights the chemical industry's commitment to defining safe use conditions for chemicals in commerce, applying safe and environmentally sound management practices, and making relevant information publicly available.

Responsible Care is the centerpiece of the global chemical industry's commitment to sustainability. It embodies the spirit of continuous improvement, encompassing expectations in the areas of occupational health and safety, environmental performance, resource efficiency, product stewardship, transportation safety, process safety, community outreach and emergency preparedness and response. Responsible Care companies and associations are also committed to openness in reporting their performance, and in this vein, the ICCA annually compiles a Responsible Care Status Report which provides country-by-country performance data on key environmental, health and safety indicators. While all aspects of sustainable development may not be fully encompassed by Responsible Care in all countries that have adopted the ethic, sustainable development for today's chemistry business is an expansion and natural evolution of the Responsible Care journey.

Meeting Future Challenges

Responsible Care has engendered a worldwide program of continuous performance improvement in the chemical industry's operations and business practices. While historically

these improvements have been sought in the areas of environmental protection, occupational safety and community outreach, it is clear that today's expectations and challenges are related to sustainable patterns of consumption and production, focusing on building sustainable supply chains, cradle-to-cradle lifecycles, biodiversity, and developing technologies that will enhance the environment and the quality of life green technologies. The global chemical industry will play a major role in developing innovative solutions, and believes that Responsible Care provides a robust foundation from which to embrace these sustainable development challenges as they develop and change over time, while enhancing our industry's value proposition and competitiveness.

Contributing to sustainable development for the chemistry business is an expansion and natural evolution of the Responsible Care journey. Chemistry companies have been implementing elements of sustainable development for many years through Responsible Care and self-directed company initiatives. And in recent years, many national Responsible Care initiatives have evolved to directly address key sustainability issues, such as engagement on worker safety, carbon management, development of sustainable products and processes, and safer and more efficient use of chemical products.

While each local Responsible Care initiative will adapt to meet the sustainability needs of its region, the journey is already well-underway within many countries and companies. Provided here are examples of the Responsible Care initiative leading to sustainable outcomes.

Development of Products and Technologies to Solve Sustainability Challenges

- Energy saving solutions such as light weight plastics in vehicles, insulation, and silicones in weather proofing.
- Materials to support the development of solar, wind and biodiesel energy technologies.
- Alleviating world hunger through chemical industry advances in seeds and crop protection, leading to better application, higher crop yields, lower prices and more abundant food sources. Chemistry represents 30% of the value of materials used in agriculture production.
- Creating clean water solutions and technologies to conserve water resources in commercial and domestic applications. ICCA began tracking Responsible Care company global water consumption in 2000 as a key industry performance indicator.
- Enhancing public access to information. Chemistry contributes to 10% of the value of a computer; 15% of the value of consumer electronics; 33% of the value of semiconductors; and 34% of photographic equipment.

- Developing new processes which use renewable raw material sources to produce recyclable products that absorb and fix CO₂ and the development of products that break down easily in the environment at the end of their useful life.

Sustainable Production and Consumption

- Responsible Care and the GPS require companies to continuously assess the impacts of their products and operations, and implement programs to reduce their footprints and maximize their contributions.
- An ICCA life-cycle analysis study released in 2009 shows that GHG emission savings enabled by the chemical industry outweigh the industry's emissions more than two-fold.
- ICCA tracks carbon dioxide intensity of Responsible Care companies. Data show a more than 40% reduction in carbon intensity for Responsible Care companies between 2000 and 2008.
- Supply chain accountability is an important Responsible Care and GPS commitment. As such, chemical companies are undertaking initiatives to significantly reduce the number of transit miles of hazardous chemicals.

Contributing to the Community and Society

- Responsible Care companies are committed to working with their employees, communities, customers and suppliers, to understand their expectations and respond to their needs.
- Responsible Care companies actively promote the expansion of the initiative and its ethics to new geographies.
- Responsible Care companies and associations actively share knowledge and pool resources to extend the practices of Responsible Care and further safe chemicals management with chemical processors, distributor and end users.
- Worldwide, about 7 million people work in the chemical industry, and taking into account indirect employment, more than 20 million people around the globe have a job connected to the industry.

Protecting Wildlife and Habitat

- Many Responsible Care companies participate in programs to restore and enhance wildlife habitat, creating artificial wetlands and reforested habitat sites, and building farms to restore indigenous endangered fish, often in cooperation with universities, youth groups and local government.

Recommendations to improve the use of the Responsible Care brand

Acknowledgement

With the Global Product Strategy, ICCA has started a unique voluntary effort to promote the safe management of chemicals worldwide and to be UNEP's key partner in leading the SAICM process to a success. It goes without saying that this commitment – along with ICCA's activities on Climate Change – is of highest value vis-à-vis stakeholders and society as such.

Since the inception of Responsible Care 25 years ago, public recognition of the Responsible Care brand has grown tremendously. Today the chemical industry is the only business sector with a well established logo to brand its voluntary action. The Responsible Care brand unites chemical companies and associations around the world. With its tradition, global outreach and clear deliverables, Responsible Care is a unique opportunity to give a concrete identity to advanced HSE management in the chemical industry as well as to its overall contribution to sustainability.

However, over the years Responsible Care has been increasingly perceived within the chemical industry as something to be taken for granted. At the same time, the use of Responsible Care to brand voluntary action in messaging and through logo use has decreased, partly due to the launch of new initiatives in the past years which have not been clearly branded as Responsible Care; this has resulted in a decrease of the public awareness of Responsible Care.¹

ICCA is committed to protect and increase the brand value of Responsible Care. To increase the appeal of the initiative within the chemical industry and to visually underpin the renewed commitment set out in the Responsible Care Global Charter, the ICCA in 2009 endorsed a new tagline to accompany the Responsible Care logo: "Our commitment to Sustainability". The brand value of Responsible Care is still very high. RCLG & CWG recommend enhancing the use of the

¹ Cefic's Pan European Survey 2010 shows a 3.6% decrease in public awareness of Responsible Care: While in 2008 15.2% of Europeans knew what Responsible Care was, only 11.6% of the responses were positive in 2010.

Responsible Care brand in the messaging of the chemical industry as well as increasing the use of the logo especially by the ICCA itself, by associations and by companies (notably signatories to the Responsible Care Global Charter).

Recommendations for ICCA

The ICCA represents the chemical industry worldwide and licenses Responsible Care to national associations and their member companies. As the ultimate owner of Responsible Care, it is up to ICCA to pioneer the use of the RC brand worldwide.

- All ICCA bodies should brand their voluntary actions unmistakably as Responsible Care. This includes alignment of messages with Responsible Care as well as the use of the logo on a document. Establishing new separate brands should be avoided, especially in the public and vis-à-vis stakeholders. The internal differentiation of responsibilities between Leadership Groups must not result in a different use of the Responsible Care brand. Especially issues and actions of high concern and public impact should be branded as Responsible Care regardless the fact that the respective issue is not within the remit of the RCLG.
- The ICCA extended secretariat and the ICCA CWG should ensure the consistent use of the Responsible Care brand across the ICCA and cooperate in increasing the visibility of the Responsible Care logo on the ICCA website, in ICCA brochures and in any other form of public communication.
- The RCLG should provide an information package with examples of good logo use for associations & companies; RCLG should consider producing further promotion materials ready for use by associations

Recommendations for associations

An association is the voice of the chemical industry in its country/region and licenses Responsible Care to its member companies. As owner of Responsible Care at national/regional level, it is the association's responsibility to pioneer the use of the Responsible Care brand in its country/region. An association should therefore maintain an exemplary use of the Responsible Care brand based on the high value it ascribes to Responsible Care. This is indispensable to enhance the use of the Responsible Care brand by member companies.

- Associations should demonstrate their commitment to Responsible Care at the top of their organization and refer to their members' commitment to Responsible Care as underpinning their advocacy positions

- Associations should ensure a consistent branding of any voluntary action as Responsible Care; this includes alignment of messages with Responsible Care as well as the use of the logo on a document
- Associations should increase the visibility of the Responsible Care logo on their websites, in brochures and in any public communication including events, conferences etc (RCLG shall provide an information package with examples of good logo use)
- Associations should consider establishing an Responsible Care Award to honour outstanding performance and contributions to Responsible Care / Sustainability

Recommendations for companies

Responsible Care is coordinated by associations but implemented by companies. The real voluntary action to enhance continuous improvement is implemented by companies themselves. The integrity of Responsible Care therefore depends on a consistent appearance of Responsible Care also at company level. In a competitive business environment corporate branding may have priority over the use of the Responsible Care brand (e.g. in advertisements and commercials). But corporate identity can also be enhanced by the unique way in which a company contributes to Responsible Care. Companies (especially Global Charter signatories) should define their Corporate Social Responsibility as their unique way to adhere to Responsible Care which can well go beyond the bottom line of Responsible Care as defined in the Global Charter.

- Companies should demonstrate their commitment to Responsible Care at the top of their organization and refer to their commitment to Responsible Care as underpinning their advocacy positions, where appropriate
- Companies should, where appropriate, link voluntary action and Corporate Social Responsibility with Responsible Care in their external and internal communication
- Companies should increase the visibility of the Responsible Care logo on their websites, in brochures and in any public appearance including events, exhibitions and fairs (RCLG shall provide an information package with examples of good logo use)
- Companies should participate in national (and regional) Responsible Care Award competitions

Implementation of Responsible Care through SME participation

(Targeting SME participation)

Europe's prisme² project

Face-to-face engagement through free, targeted workshops helped get companies properly engaged.



Greater involvement in Responsible Care by small and medium-sized enterprises (SMEs) is a priority in Europe. In 2010 Cefic and a number of partner organizations successfully concluded a project dedicated to "Promoting Responsibility in SMEs", known as prisme².

Co-sponsored by the EU, the project involved the European Mine, Chemical and Energy Workers' Federation, Tomorrow's Company, a UK-based think tank, and notably national associations of the chemical industries in the Czech and Slovak Republics, in Germany, Greece, Spain and the UK in a dedicated working group.

The chemical associations of the countries involved were responsible for implementing the project at national level and mostly adapted the broad prisme² template according to the specific needs and circumstances of local SMEs. At the same time, they were able to draw on an extensive partner network (see panel) to provide them with insight and expertise for national and regional capacity building workshops. The bridge provided by the national associations to SMEs proved essential in terms of getting companies engaged in the project.

There are many thousands of small chemical companies in Europe, and Cefic itself has around 450 SME members.

But just a handful replied when contacted about prisme² in its early stages.

Says Bernhard Thier, Cefic Responsible Care Manager: "Buy-in from the national associations was crucial, so as to reach the SMEs via their own local associations. In most of our pilot countries, face-to-face engagement through free, targeted workshops helped get companies

properly engaged.”

One future objective is to keep the momentum going as the rollout of prisme² takes place in all European countries in which national associations have a key role to play. Thier says this will be an ongoing effort with details being hammered out by key partners and Cefic’s Responsible Care Strategy Implementation Group that will “broaden the project base and strengthen the groundwork to provide a living capacity building framework.”

Thier says it is also important to continue to outreach to more SMEs in the countries involved in the pilot campaign, noting: “Greece has already confirmed that it plans to continue its series of workshops, as has the Slovak association. Their members have found the capacity building activities exceptionally useful.”

Responsible Care tools for SMEs

Outreach will be an important element in the way forward. As part of the wider rollout, the prisme² approach will be regularly communicated to all Cefic member and associate national federations engaged in Responsible Care, as well as to member business associations and sector groups.

In June 2010 Cefic launched its ‘Responsible Care toolbox for SMEs’, which brings together for the first time validated guidelines and other instruments making them freely available for SMEs. These tools can help SMEs to manage issues related to occupational health, process safety, transport safety as well as energy efficiency, chemicals management and other areas.

Hubert Mandery, Director General of Cefic, says: “Responsible Care is the path to sustainable business success. SMEs are not less responsible than large companies, but they do appreciate help and guidance on these issues.”

The toolbox will be regularly revised and extended. At the time of publication of this report nearly 50 tools have been included. Special introductions to the toolbox and the learnings from prisme² have been given at workshops and conferences both within the EU and beyond. More outreach activities on the prisme² approach are planned for the future ensuring that the learnings can be shared even more extensively with chemical sector SMEs.

Measuring effectiveness

An evaluation scheme based on a survey among prisme² participants was conducted by

consortium partner Tomorrow's Company to measure the effectiveness of workshops; assess the value gained by participating SMEs; and evaluate ways in which to make the workshops more functional and relevant. Some of the benefits identified by participants include:

- Opportunity to learn from other companies, particularly those with global operations.
- Gain knowledge of best practice and develop contacts with other specialists companies.
- Helpful overview on legislative requirements on chemical safety.
- Useful range of topics.

The evaluation helps facilitate the design of both future workshops and tools. Already additional topics are being integrated into workshop programmes to bridge knowledge gaps identified from the feedback. While some topics were covered in some of the pilot workshops, those which participants thought relevant for future workshops included environmental regulations and REACH; the Globally Harmonised System for Classification and Labeling of Chemicals; the Global Product Strategy; practical examples on improving safety; and hazard prevention.

Positive reception

Greece can be considered one of the prisme² success stories, partly as a result of timing as the project dovetailed with a major effort on the part of the national association, HACI, to relaunch and revive Responsible Care with their mainly SME membership. HACI says the series of three workshops was very positively received by participants, who praised the quality of presentations and availability of electronic materials provided for the events.

Apostolides Apostolos, mechanical engineer at Hatziloucas A.E., Greece, commented: "The workshop I have attended was excellent and the tools very useful... All materials will be used... for the improvement of Responsible Care in our company."

Flexibility in time of recession

Flexibility turned out to be an essential ingredient of prisme² whose launch coincided with the global recession, which started at the end of 2008 and forced companies and associations to re-evaluate their business activities.

SMEs – some struggling for survival – were questioning the value of engagement in the project; and also large chemical companies – planned to serve as 'mentors' – turned their focus inwards. In response, the prisme² working group extended the initiation phase and launched a partner campaign to involve a broader scope of organizations with expertise.

The Slovak (ZCHFP) and Czech (SCHP) industry associations joined forces for the prisme² pilot backed up by Duslo A.S., PENTA and Unipetrol, and additional expert support from Cefic, the solvents sector group ESIG and the European Agency for Health and Safety at Work, EU-OSHA. A wide range of topics including regulation – particularly REACH issues – were presented in this pilot, which attracted a broader audience than just smaller chemical companies.

Reporting back on the third prisme² workshop, Silvia Surova, head of Responsible Care with the national chemical association ZCHFP, commented that it “was well received by the nearly 50 participants representing Slovak SMEs, but also larger companies, the Slovak Ministry of Economy, the Slovak Environmental Agency as well as the Slovak trade unions.”

Product of prisme²

One of the first concrete results of prisme² is a toolkit, launched by Cefic in June 2010. The toolkit brings together a number of validated tools in the following categories:

- Chemicals safety (regulations)
- Chemicals safety (voluntary measures)
- Corporate social responsibility
- Energy efficiency
- Environmental management
- Integrated management Responsible Care
- Occupational health & safety
- Plant & process safety
- Supply chain management
- Transport safety

The instruments have been developed by various organisations within, as well as outside, the chemical industry. The toolbox will be regularly revised and extended to keep it relevant and useful to users.



Strong partnerships

In Germany, the workshop program began relatively slowly, but national coordinator Hans Daniel, Responsible Care manager at VCI, notes that more active and targeted promotion encouraged much better attendance for the follow-up event. “Our second pilot workshop was organised in cooperation with VCI Baden-Württemberg with around 42 participants, mostly operations managers.” Held on site at Rhein Chemie Rheinau GmbH, the workshop involved a

guided tour through the production plant while coverage of topics such as energy management for SMEs, active environment protection and risk management “resulted in some lively discussion”, said Daniel.

The prisme² project has a strong platform to build on in Germany thanks to existing partnerships with trade unions and the employers group, and the VCI’s committee of SME businesses. Daniel notes that workshop participants stressed the need “to reach out to younger managers in the chemical industry who have not experienced the times of the Seveso and Bhopal disasters which created Responsible Care,” adding that one of their conclusions was that Responsible Care “should be better integrated in the training of professionals.”

A working partnership

Prisme² stands for Promoting Responsibility in SMEs, where the squared symbol implies redoubled effort through the involvement of employers and workforce. The project is led by Cefic and falls under European Commission objectives to promote and fund corporate social responsibility (CSR) programmes for SMEs in specific industry sectors.

In total, around 30 partners were involved in the pilot scheme. Founding consortium members included the European Chemical Employers’ Group (ECEG); the European Mine, Chemical and Energy Workers’ Federation (EMCEF); Tomorrow’s Company, a UK-based think tank that focuses on SMEs and the issue of sustainability; and consultancy IFOK, which helped Cefic manage the programme. Joining from the producer side were leading companies plus the national chemical associations of the six countries that piloted the scheme: the Czech Republic, Slovakia, Germany, Greece, Spain and the UK. Additional partners include EU-OSHA, and several national institutes as well as the European Solvents Industry Group (ESIG).

In the UK, the Chemical Industries Association continued to organize its traditional Responsible Care “Cell Meetings” involving large and small companies as well as local authorities—the well established format of the cells serving as a model for workshops in the prisme² approach. CIA provided several instruments to the prisme² toolbox; and through their Responsible Care partnership, CIA is also cooperating on prisme² with the UK chemical distributors association, CBA which represents many smaller businesses.

In Spain, meanwhile, a major focus of Feique’s pilot was the safe management of chemicals through the value chain.

The association decided to implement prisme² in a two-pronged approach including on-site visits to SME production sites as well as a central workshop. These activities focused on

introducing the Safety and Quality Assessment System for distributors, ESAD (European Single Assessment Document) to SMEs in the chemical distribution sector. Feique also built on its work with Spanish corporate social responsibility (CSR) organisation Forética, with which it has developed a CSR Guideline and Indicators for the chemical sector in Spain.

Opportunities for SMEs

With Responsible Care as the umbrella, the prisme² pilot project has been able to introduce a range of important issues that fit well within the European Commission's objectives to promote and fund CSR programmes for smaller companies in specific industry sectors. An objective of prisme² is to clearly demonstrate to companies that the concrete actions encouraged under industry's Responsible Care programme are a valid contribution to CSR.

Indeed, some 80% of participants at the second workshop in Greece said they would use their participation in their external CSR communication activities.

Says European Commission Vice-President Antonio Tajani, in charge of Industry and Entrepreneurship: "Corporate social responsibility has never been more important than in the context of economic crisis.

We welcome the efforts of the chemical industry and its stakeholders to support CSR amongst smaller businesses. CSR helps gain customer confidence and hence opens up opportunities for SMEs to grow and create news jobs."

● Public Activities Committee of KRCC Held

- The third Public Activities committee in 2010

The KRCC held the third public activities committee of 2010 in a meeting room of Dow Chemical at 11:00. on July 16 (Fri.) 2010, with eight members including Lee Chang Soo, the chairperson and director of Rohm and Hass Korea Co., Ltd. In this meeting the members discussed storytelling, schedule of production, and future plans of the animation to promote the chemical industry.



- The fourth Public Activities committee in 2010

The KRCC held the fourth public activities committee of 2010 in a meeting room of the KRCC at 14:00 on September 16 (Thurs.) in 2010, with six members including Park In et al. In this meeting the members discussed a demonstration of storyboards, examination of characters, schedule of production, and future plans of the animation to promote the chemical industry. The animation is being made to develop characters and a story that can become close to children to promote the chemical industry, expected to be completed in late December.

● Implementation Committee of KRCC Held

- Workshop of the implementation committee

The KRCC held a workshop of its implementation committee in the Harvard Hall of Mauna Ocean Resort on July 21 and 22, 2010, with 22 members including Kim Kyung Ok, the chairperson of the committee and director of BASF Korea. In this workshop, the members discussed preparation for RC code improvement and measures to enhance enforcement level, case presentation of the 2nd Party inspection program of safe health environment by DuPont, and measures to promote a domestic system of evaluation by external consultative body.

- The second Implementation committee in 2010

The KRCC held the second implementation committee in the Amethyst Room of Jeju

Grand Hotel at 14:00 on November 25, 2010, with 13 members including Kim Kyung Ok, the chairperson of the committee and director of BASF Korea. In this meeting the members discussed “how the KRCC is progressed”, improvement in RC code and enhancement of enforcement of the code, and preparation for a system of evaluation by an external consultative body.



● “Come! Fun World of Chemistry” in 2010

The KRCC held “Come! Fun World of Chemistry” in 2010 in order to present opportunities in which the fifth graders of elementary schools experienced chemical activities and enjoyed play programs, and to construct networks between local communities and the chemistry industry.



The “Come! Fun World of Chemistry” in 2010 was successfully held with much interest and great responses by the participation of 1,600 children in 200 elementary schools located in Yeosu, Ulsan, Seosan, and Pusan. The event presented significant opportunities in which the children became interested in chemistry in daily life through experience



activities including chemistry experiments, scientific plays, and videos on the chemical industry and are ready to be the key of the future chemical industry. Educating children as future customers and resources for the future is an important assignment of the chemical industry. The KRCC will make consistent efforts to develop the chemical industry by the Responsible Care Program.

● 2010 Annual RC Workshop

The Korea Responsible Care Council held the 2010 Annual RC Workshop on November 25 and 26, 2010, at Jeju Grand Hotel, with 50 members present, including Han Joo Hee. This workshop has been held yearly in order to plan common development of the chemical industry and to enhance information exchanges and networks between the member companies, the executives and staff members, and the RC coordinators. In the workshop this year, there were presentations on measures by the chemical industry to cope with climate change, administration of chemical materials, future of energy industry, and stress management, as well as lectures by CEO.





회원사 (List of Member Companies)

일반회원/ Full Members

- ◆ ㈜공리양행 Connell Bros. Company, Ltd.
- ◆ 금호미쓰이화학㈜ Kumho Mitsui Chemicals, Inc.
- ◆ 금호석유화학㈜ Korea Kumho Petrochemical Co., Ltd.
- ◆ 금호폴리켐㈜ Kumho Polychem Co., Ltd.
- ◆ 금호피앤비화학㈜ Kumho P&B Chemicals, Inc.
- ◆ 남해화학㈜ Namhae Chemical Corp.
- ◆ 대림산업㈜ Daelim Industrial Co., Ltd.
- ◆ 대성산업가스㈜ Daesung Industrial Gases Co., Ltd.
- ◆ 대한유화공업㈜ Korea Petrochemical Industry Co., Ltd.
- ◆ ㈜덕양에너지 Deokyang Energen Corporation
- ◆ 도레이도넨기능막코리아 유한회사
Toray Tonen Specialty Separator Korea Ltd.
- ◆ 동서석유화학㈜ Tongsoh Petrochemical Corp., Ltd.
- ◆ 동우화인켐㈜ Dongwoo Fine-Chem Co., Ltd.
- ◆ 유한회사 듀폰 Dupont(Korea) Inc.
- ◆ 랑세스코리아(유) LANXESS KOREA Co., Ltd.
- ◆ ㈜로엔드하스코리아 Rohm and Haas Korea Co., Ltd.
- ◆ 머크㈜ Merk Limited-Korea
- ◆ 바이엘코리아㈜ Bayer Korea Ltd.
- ◆ ㈜바커케미칼코리아 Wacker Chemicals Korea, Inc.
- ◆ 삼남석유화학㈜ Samnam Petrochemical Co., Ltd.
- ◆ 삼성비피화학㈜ Samsung-BP Chemicals Co., Ltd.
- ◆ 삼성석유화학㈜ Samsung Petrochemical Co., Ltd.
- ◆ 삼성정밀화학㈜ Samsung Fine Chemicals Co., Ltd.
- ◆ 삼성토탈㈜ Samsung Total Petrochemicals Co., Ltd.
- ◆ 선도화학㈜ Sundo Chemical. Co., Ltd.
- ◆ 쉵커코리아㈜ Schenker Korea Ltd.
- ◆ 스타이론코리아 유한회사 Styron Korea Ltd.
- ◆ ㈜아케마 ARKEMA
- ◆ 악소노벨아마이드㈜ Akzo Nobel Ltd.
- ◆ 애경유화㈜ Aekyung Petrochemical Co., Ltd.
- ◆ 앵슈랜드코리아화학㈜ Ashland Korea Foundry Products
- ◆ ㈜에보닉데구사코리아 Evonik Degussa Korea Ltd.
- ◆ 에보닉카본블랙코리아㈜ Evonik Carbon Black Co., Ltd.
- ◆ 에보닉헤드워터스코리아 Evonik Headwaters Korea Co., Ltd.
- ◆ ㈜SH에너지화학 SH Energy & Chemical. Co., Ltd.
- ◆ SK에너지㈜ SK Energy Co., Ltd.
- ◆ SK유화㈜ SK Petrochemical Co., Ltd.
- ◆ SKC㈜ SKC Co., Ltd.
- ◆ SPG케미칼㈜ SPG Chemical Co., Ltd.
- ◆ 에어프로덕트에이씨티코리아(유) Airproduct ACT Korea Ltd.
- ◆ LG DOW 폴리카보네이트㈜ LG DOW Polycarbonate Ltd.
- ◆ LG MMA㈜ LG MMA Corp.

- ◆ ㈜LG화학 LG Chem Ltd.
- ◆ 여천NCC㈜ Yeochun NCC Co., Ltd.
- ◆ OCI㈜ OCI Company Ltd.
- ◆ 용산화학㈜ Yongsan Chemicals, Inc.
- ◆ 이네오스코리아 INEOS Korea Ltd.
- ◆ 이수화학㈜ Isu Chemical Co., Ltd.
- ◆ 이스트만화이버코리아 Eastman Fibers Korea Ltd.
- ◆ 제일모직㈜ Cheil Industries Inc.
- ◆ GS칼텍스 GS Caltex Corp.
- ◆ 창신화학㈜ Chang Shin Chemical Co., Ltd.
- ◆ ㈜카프로 CAPRO Corp.
- ◆ 케이알코폴리머㈜ KR Copolymer Co., Ltd.
- ◆ ㈜케이피케미칼 KP Chemical Corp
- ◆ KPX케미칼㈜ KPX Chemical Co., Ltd.
- ◆ KPX화인케미칼㈜ KPX Fine Chemical Co., Ltd.
- ◆ 코오롱인더스트리㈜ Kolon Industries, Inc.
- ◆ 태경화학㈜ Taekyung Chemical. Co. Ltd.
- ◆ 폴리미래㈜ PolyMirae Company Ltd.
- ◆ 한국다우케미칼㈜ Dow Chemical Korea Ltd.
- ◆ 한국다우코닝㈜ Dow Corning Korea Ltd.
- ◆ 한국바스프㈜ BASF Company Ltd.
- ◆ 한국알콜산업㈜ Korea Alcohol Industrial Co., Ltd.
- ◆ 한국에카화학㈜ Eka Chemicals Korea Co., Ltd.
- ◆ 한국허클레스화학㈜ Hercules Korea Chemical Co., Ltd.
- ◆ ㈜한수 Hansu Ltd.
- ◆ ㈜한주 Hanju Corp.
- ◆ 한화케미칼㈜ Hanwha Chemical Corp.
- ◆ 호남석유화학㈜ Honam Petrochemical Corp.
- ◆ ㈜효성 Hyosung Corp.

준회원/ Associate Members

- ◆ 대한석유협회 Korea Petroleum Association
- ◆ 수도권공정안전협의회 Metropolitan Process Safety Institute
- ◆ 한국비료공업협회 Korea Fertilizer Industry Association
- ◆ 한국석유화학공업협회
Korea Petrochemical Industry Association
- ◆ 한국정밀화학산업진흥회
Korea Specialty Chemical Industry Association
- ◆ 한국클로르알카리공업협회
Korea Chlor-Alkali Industry Association
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Korea Chemicals Management Association
- ◆ 한국화학융합시험연구원
Korea Testing&Research Institute for Chemical Industry