

Crisis Management and Crisis Communication

The chemical industry, like any other, is always vulnerable to risk of varying degrees of severity. And since such crises, once they occur, instantly catch the attention of consumers, customers, and government and end up as the focus of media, how to effectively deal with them has become a growing worldwide concern.

While I understand that most chemical companies have efficient systems of risk management in place, I would like to take this opportunity to briefly share my view about crisis management and crisis communications.

1. Definition

The first thing that comes to mind when we hear the word 'crisis' is almost always related to something negative. The word 'crisis' has its root in the Greek word 'Krinein' that means 'to separate or part' in medical usage to describe the position between death and recovery. The Chinese word for crisis, '危機' or 'a critical opportunity' literally means a neutral situation that could turn into something negative. The way we are using the word 'crisis' appears to stress a little more of its negative side than its original definition.

The word 'crisis' does originally describe not so much a practically negative situation as a neutral state that might possibly develop into a negative situation. If dealt with effectively, this is therefore a situation that we can keep in check, or hopefully, turn around. In this respect, I believe it worthwhile to discuss the definition of this word, its efficient management, and communication.

2. Characteristics of crisis situation

Different crises involve numerous kinds of factors and causes. However, all crises have something in common.

Surprise

All crises, without exception, involve surprise. They occur suddenly and unexpectedly.

Increased noise

Crises of any sort, once they occur, get the immediate attention of the people who have an interest, be it direct or indirect. The instant surge in attention snowballs into rumor and speculation, thereby creating what we can best call 'noise'.

Lack of information

The main reason for the 'noise' is lack of information that accompanies the sudden outbreak of a crisis. If relevant information is being shared among the interested parties, situations, regardless of their

severity, need not end up as crises. Simply put, no crisis is insurmountable if and when the lack of information issue is resolved.

In other words, we can manage the crisis that has 'suddenly' broken out and is causing a lot of 'noise', if we solve the question of 'lack of information'. Why is it that 'crisis management' has become a key word for industry and advertising agencies for the past few decades, if managing a crisis is as simple as that? Obviously because there is more to it.

Escalating flow of events

Additional situations occur in sequence on top of the crisis, and most are generated from outside. The flow of events adds to the existing burden the crisis has caused.

Loss of control

In coping up with one sequential situation after another, before we know it, the crisis situation finds itself well beyond our control. Losing control means the crisis is no longer 'my' problem, but is in the hands of those outside my company who directly or indirectly have something to do with my company, and it eventually becomes 'our' problem.

Intense scrutiny from outside

Once a situation gets beyond the internally controllable point, it is impossible to keep it out of the public eye. This is where the outside influence works as a critical variant. This particular quality is the driving force that contributes to complicating crisis management, and for this reason people equate 'crisis' with a state of panic.

3. How to manage a crisis

Crisis management is generally perceived as the task of managing a crisis that has already happened. However, the most efficient and positive way to manage crises would be to arrange an institutional system that allows us to locate and prevent them before they occur. The best crisis management should start with looking into, dealing with, and rooting out potential crisis factors.

It is for this reason that chemical companies install crisis management staff, draw up crisis manuals, conduct crisis management drills, and utilize safety control systems to safeguard against possible exposure to toxic or dangerous chemical substances.

Different crises require application of different crisis management approaches, but there are certain principles in common.

Defining the problem

Clarifying the situation is the starting point in effective crisis management. The most important step is to distinguish the bigger central problem from smaller marginal issues and effects, and identify the fundamental solution.

Assume a 'worst case'

Another important step is to always prepare for the worst situation. In dealing with or managing a crisis, a positive, complacent, or generous attitude should be done away with at all costs.

Recognize the value of short-term sacrifice

Achieving the fundamental objective of crisis management can entail short-term loss or sacrifice, such as product recall, but efforts to accept the consequences of a crisis can be just as conducive to preventing future recurrence or to turning the situation around.

Centralize / control the information flow

Effective management of 'Information Flow' is the key to crisis management. It is therefore crucial to centralize the flow of outside information into the company, and the channel of communicating inside information out to the public.

4. The role of Communication in a crisis situation

When faced with a crisis, people tend to be careful with their language and remain silent rather than taking a positive communicative stance, for the following reasons:

- Need to identify information/facts;
- Desire to get away from the situation;
- Absence of public relations representative;
- Need to have a legal review of the situation;
- Desire to protect company's corporate image; and
- Fear of possible leakage of unrelated information

These are justifiable fears and therefore deserve careful attention. However, in a crisis situation, public interest tends to grow like wildfire, as mentioned above, and unless there is an effective channel for official communication, the public need for information may be met by rumors or groundless speculation. Given this, communicating with the public and sharing accurate information is very crucial to cut off the vicious circle that a lack of information can create.

To get the communication system going, proper guidance for its use is necessary. Communication is an action that has an objective, which is carried out by conveying a certain message—'what'—to somebody—'who'—in a certain form—'how'. Communication in a crisis should be based on a careful review of the objectives and strategies. Media coverage requires a much higher level of precaution.

5. Characteristics of chemical industry and crisis management

Given its distinctiveness, it is difficult to come up with a common system of crisis management that works really well in the chemical industry. Factors that should be considered are as follows:

A Legacy of negative reputation

The perception of the general public about the chemical industry is not positive, despite its contribution to the development of science and technology. The perception that the chemical industry is the cause of environmental contamination has cast a larger-than-life negative image. The chemical accidents that have occurred have worsened this image.

Lack of understanding, or lack of such effort

The chemical industry has a relatively low direct exposure to the general consumer, who naturally understands less, or might show less interest in understanding the industry. Nevertheless, consumer concern about industrial accidents, particularly those taking place in chemical plants, is disproportionately negative.

Difficulty in describing technology

It is relatively difficult to explain the production process and product features to consumers or the general public. It is challenging for those in media and government who lack a technical background to understand the complexity of a situation that might be happening in a chemical plant.

A petrochemical conference sponsored by the Financial Times a few years back did a survey on the ranking of risk factors that involve the chemical industry. The survey, was conducted with two target groups – laymen and, professionals from the Environmental Protection Agency – and shows an interesting result with regard to public perceptions. The layman group picked 10 major risk factors in the following order (see table 1).

The number in parenthesis represents the professional group ranking:

〈Table 1: Risk Ranking〉

Risk Factors	Rank(layman)	Rank(Professional)
Chemical dump	1	17
Water pollution	2	11
Accident in the chemical plant	3	21
Air pollution	4	1
Oil spill	5	22
Toxic contamination of the workers	6	31
Pesticide residue in food	7	25
Pesticide harm	8	27
Drinking water	9	15
Room air contamination	10	5

The survey revealed a wide gap between the layman and the professional, except for air pollution – 4 vs 1. This is a good instance of the bias and misconception the general public has about the industry. Such a lack of understanding makes crisis management all the more challenging.

6. Conclusion

Industry, government, and professional and civic organizations are showing an increasing concern about the significance of crisis management and communications. KRCC member companies have been facing difficulties in managing crises in an effective manner due to the lack of public understanding. What is needed most is to recognize these disadvantages and come up with a pre-emptive crisis management system.

Though refineries and chemical companies make products that are useful in most areas of our daily life, their public relations tend to be inconsistent or non-existent. People seldom pay attention to the chemical industry except when it suffers a crisis, which will eventually add to the industry's already negative image.

Honestly, it is nearly impossible to explain risk management, especially chemical industry's risk management in few pages. However, I hope that this paper has provided an opportunity to at least briefly think about risk management.



Outreach is one of KRCC's major activities for the purpose of helping the chemical industry to enhance its image. KRCC has since last June sponsored programs, Education for youth Outreach and programs for small-medium chemical companies. By providing non-member companies and the general public with the important information and relevant assistance, Outreach aims not only to share with them the accomplishment that has been made with respect to Environment, Health and Safety, but also to win back public trust. Arranged individually or jointly by member companies, these programs are expected to be instrumental to identifying public perception on Responsible Care, which will prove to be useful in reexamining and improving the existing RC management practices and implementation. That has thus far been made.

Education Outreach

KRCC held Education Outreach on July 14, 2003 at Satbyol elementary school in Geochang where about 240 students from 4th to 6th grade were present. The program offered three segments; "What good is chemistry?", "Fun with chemical safety", and "Interesting world of chemistry".

In the first segment, "What good is chemistry?", a video presentation titled 'If not for Chemical', was made, and children and teachers were introduced to the different fields of chemistry and their importance.

The second segment, "Fun with chemical safety", covered introduction to Responsible Care, Environment Health and Safety activities of chemical companies, to raise awareness about the importance of chemical industry and of safety consciousness.

The third segment, "Interesting world of chemistry", was conducted with the assistance of people from the Youth Science/Technology Promotion Center of Hanyang University, who had appeared on TV and are well known to youngsters. In this segment, various demonstrations using chemical reaction were performed, and hands-on experiments were also done. During the experiments, experimenters were fully equipped with the safety gears, while teaching how to use fire extinguisher, so that children could learn the importance of safety management and familiarize themselves with the cautions that should be taken during the experiment.

Children representing individual grades had a chance to do chemical experiment by themselves in the latter part of the segment that was titled "Hands-on experiment". These children were provided with the required safety gears for this hands-on experience, and by witnessing with their own hands and eyes the process of the chemical reaction and its result, they were able to expand their knowledge.

Children were presented with gifts that were provided by LG chem, Bayer Korea, Dongbu Hannong Chemical, Samnam Petrochemical, and Korea Petrochemical Industry Association.

The Education Outreach program is a first of its kind provided under KRCC sponsorship, and is worthwhile in the sense that it creates an image to the general public that chemical industry is interested in enhancing public good. KRCC will sponsor more of these events in the future, as part of KRCC's ongoing efforts toward achieving the Responsible Care basic principle, 'enhancing chemical industry's image.'



KRCC sponsored the recent Education Outreach for Sat-byol elementary school in Geochang at the request of Han-gil Lee who teaches at this school, and with the assistance of Hanyang University. This turned out to have set a good example of industry and academia working together to respond to public need. Mr. Lee wrote about his impression of the Outreach program.

The Impact of Outreach Program on children

I would like to thank KRCC for arranging the recent Outreach Program. The program was a memorable event for our school because it provided an eye-opening opportunity for the children and has taught them to look at science in a new way and as an interesting subject. It was an eye-opening opportunity for me, too, as a teacher, in a different way. I had the chance to think seriously about 'what is important' and 'what I need to do'.

Never before had the children shown such an enthusiasm and curiosity as they did during the three long hours of the presentation on Responsible Care and lab experiments. To testimony their excitement and impression, let me quote two journals.

Monday, July 14, 2003 Topic: Chemical experiment

The 4th period was chemical experiment. The most impressive experiment was the one on dry ice. Because dry ice is so cold, it can freeze things almost instantly. When dry ice was put in colored water, its color changed. A very surprising thing happened when something was dropped into the coloring matter. Some strange thing that looked like a balloon shot into the air. What was happening was so much fun. Before I forget, we had at the lab a college student to help us do the experiment, and he was so much fun. I think I owe him a big thank you. (Soo-jung Lee, 5th grade)

Monday, July 14, 2003 Topic: Chemical experiment

Today is for chemical experiment. We can get things from chemistry that are necessary for our living. Therefore, chemistry is very important to us. What if there is no chemical technology? We cannot make cars, houses, or computers. This I learned from a video. I did chemical experiment, too. First when we put powder in the water, it got bigger. Then smoke came out from the green water, and it turned into yellow water. It almost knocked me out when I saw something in a large container go off with a 'pop'. (Yong-tae Kwon, 5th grade)

To the children who had thought science as something dull and hard, that it was an eventful day for them to get to know the fun side of science.

The program was a great learning experience for me as teacher about 'practices to keep the environment' in our everyday life, and about 'what to teach about safety awareness'. It is just 10 minute's drive for children living in Geochang city to get to a deep valley and enjoy clean water there. This is why they go on field-trips so often. During these open-air classes, some children



can draw flowers that grow in the field, or write essays under a big rock or tree, while other playful children are running here and there. These playful kids are enjoying the nature and growing in it just as much as the drawing or writing kids are. To these kids, the environment is very significant. As a teacher, I should make sure that they learn what it takes to take a good care of the environment in order to keep it the way it is now.

The 'safety' segment of the lecture inspired me to think about what comes first in the conduct of the class. A few days earlier, my class did an experiment on 'substances that resolve in water and acetone'. Supplied with some simple lab kit, solution, sugar, and salt to resolve these in water and acetone, children were seriously doing the experiment. While I was among the children helping out and making comments, a child was caught in an 'accident', about which I just had had a vague idea. After the experiment, I was about to begin the next class, when a student came to me saying, "Yong-tae swallowed some strange stuff." Panicked, I rushed to Yong-tae and asked, "Are you ok?" Fortunately, however, it turned out to be nothing serious and no harm done. Listening to the lecturer's explanation on Responsible Care safety awareness, I could not help looking back on what had happened at the lab, and the way I let the children do the experiment that very day. My children and I saw with our own eyes that during the exhibition experiment, every single person, even those who were not themselves conducting experiment, was wearing lab outfit, goggle, special gloves, and masks. The Outreach program taught me that there is more to 'safety' than to just say 'don't'. It enlightened me that we should show and let the children do it with their own hands to teach them to raise their safety awareness and practice it.

Children believe what their senses tell them. Therefore, in order to teach them about the things that cannot be seen to their eyes, we should try to let them feel, touch, and sometimes play with these things. This has been and will continue to be a challenge for me in teaching these kids, who have yet much to learn before they become grown-ups. The Outreach program helped me find the right answer to the question, 'how and what to teach the children about environment and safety?' The lecturer Brian Bum Kim, Director of Bayer Korea took time to visit Geochang and see for himself its nature before preparing the presentation material to help the children easily relate to the point that the lecture was focusing on Environment. By performing the demo experiment where the experimenters were completely equipped with necessary outfits and accessories, and during the hands-on experience segment whereby children could have the opportunity to actually wear the lab gears and perform the experiment, children were able to get the safety awareness stuck in their mind. For these children, safety has become a second nature.

I hope Responsible Care's Outreach Program will set itself as a new cultural trend. Parents are always keen on locating an environment that is good for raising their children, like in an old saying, 'Maeng-mo-sam-chon-ji-gyo' (Maeng's mother moved three times before she finally found the best place for raising her son). On the other hand, the Responsible Care Outreach Program will continue to move around across the country to help people enjoy a better life in a better environment.



Environment, Health and Safety Academy for SMEs

Korea Responsible Care Council has now 71 member companies and 8 associate-members. The Responsible Care activity has until now been involved mainly by the large companies, and the word 'Responsible Care' is still a new word to most of the small-medium sized companies. We recognize that for an effective implementation of environment, health and safety tasks and for its promotion, involvement of small-medium sized companies is essential. The world chemical industry, too, recognizes it as an important part of Responsible Care activity. Small-medium companies, since they are mostly understaffed and underfunded, need outside encouragement before they commit themselves to Responsible Care implementation.

Beginning June 27, 2003, KRCC is holding 'Environment, Health AND Safety Academy for Small and Medium Enterprises' with Korea Chemicals Management Association under the sponsorship of the Ministry of Environment, Dow Chemical. The main objective of this program is, by spreading the environment, safety and health measures among small-medium companies and thus by encouraging their voluntary involvement, to promote industrial growth as an environment-friendly industry, and to upgrade the competitiveness of the local chemical companies.

So far 6 out of planned 10 events have been performed, in which audience learn about the international and policy trend about chemical substances, importance of Responsible Care, implementation cases, and evaluation. Manager program discusses manager's role in Responsible Care implementation, and Working level program offers the recent domestic/world Responsible Care activity, and suggestions for small-medium companies on how to carry out Responsible Care.

Dow Chemical Korea is sponsoring this program as part of their activity to support social contribution. Dow Chemical's sponsorship will set a precedent for renewing the recognition that Responsible Care activities can and should be done not just by the large companies, but by small-medium companies also. By utilizing the implementation cases and related information that are made available through Responsible Care peer review, small-medium companies will soon be able to get into Responsible Care activity.

Schedule of EH&S Academy for SMEs

1 st	June 27, 2003	Seoul	Manager program
2 nd	July 11, 2003	InChon	Manager program
3 rd	September 5, 2003	Busan	Manager program
4 th	September 25, 2003	Ulsan	Manager program
5 th	October 10, 2003	Daegu	Manager program
6 th	October 24, 2003	Inchon	Working level program
7 th	November 3, 2003	Seoul	Working level program
8 th	November 21, 2003	Busan	Working level program
9 th	December 5, 2003	Ulsan	Working level program
10 th	December 19, 2003	Daegu	Working level program

APRCC—Its Significance and Task

The 8th Asia Pacific Responsible Care Conference is held by Korea Responsible Care Council between November 4–7, 2003 at COEX Intercontinental in Seoul. Mr. Young-Chan Kim, Secretary General of KRCC wrote on the significance and task of this year's APRCC.

The world chemical companies, in an aim to recover trust and enhance the industrial image, have been involved in Responsible Care®, a voluntary activity to improve environment, health and safety. Responsible Care is a comprehensive and sustaining voluntary activity to protect and care about the environment, safety, and worker's health throughout the entire lifecycle of a product – production, distribution, and waste discharge and to make it a management guideline to ensure its implementation.

Responsible Care Leadership Group¹⁾ of International Council of Chemical Associations, a cooperative body that supports international activities, is holding its annual meeting where Responsible Care organizations from across the world discuss Responsible Care's future direction. Meetings for participants from North America and Europe, and for the Asia Pacific region are also being held for the promotion of industrial environment/safety, and of exchange of Responsible Care information among the participants.

As a regional meeting, this year's 8th APRCC is held in Seoul between November 4–7. The previous APRCCs were successfully held in various places in the region, and proved to be instrumental to the expansion of Responsible Care. The first APRCC was held in May 1995 in Hong Kong under the sponsorship of Association of International Chemical Manufacturers. The following meetings were held in Beijing, Tokyo, Taipei, Shanghai, Singapore, and Bali.

The earlier APRCC meetings offered programs with a main focus on making official statement on the objective of the meeting, and from the 4th meeting (Taipei) on, Responsible Care project representatives meet together after finishing the official schedule and discuss mutual interest. These meetings, at which the representatives share their experience and discuss the possibilities of building a network, have played a role as a regional Responsible Care coordinating forum. The open discussion and assessment of the APRCC among the representatives have contributed to making future APRCC geared to meet the need and expectation of the participants. The recent APRCCs cover topics that are more relevant, and the sponsoring countries always try to review past meetings and make necessary additions or modifications not just to the organizing aspect but also to the program content.

1) RCLG(Responsible Care Leadership Group) currently has 47 member countries. Korea joined as its 46th member on September 20, 2000

Expectation is high for this year's Seoul Conference. The representatives who were present at the 2001 meeting selected Seoul as the venue for the 8th APRCC, with the anticipation for an extensive participation from media, NGO, and other interested parties as well, and for a significant development and change in APRCC. To meet the expectation, KRCC and APRCC Organizing Committee(Co-chaired by Brian Bum Kim and John Jongkoo Jeong) set this year's topic as "Responsible Care and the Community – Toward a Perfect Partnership" and are working on the details to ensure a successful result of the event.

Main features and significance of the Seoul APRCC are as follows:

First, programs offer smaller segments to allow a more detailed discussion on the specific subjects that meet the needs of the participants. 6 Responsible Care codes Employee Health and Safety; Process Safety; Pollution Prevention; Community Awareness & Emergency Response; Distribution; and Product Stewardship – will be arranged for discussion in both Workshop and Forum. Workshop discussion covers presentation of cases to allow information sharing among the participants. Forum will be conducted in a panel discussion format to facilitate a more in-depth elaboration on the topic issues.

Second, the Seoul APRCC is an event not just for the major chemical industry, but also for a wide variety of participants from the government, academy, consumer, small-medium company, NGO, to media, as recommended at the 2001 Bali APRCC. Chemical companies, to win back public trust and enhance image, have been voluntarily involved in Responsible Care activities, producing a successful result in the improvement of environment, safety and health. This year's event will offer every single participant the opportunities to take part in the discussion either as presenter or panelist, look back upon their activities, and to find out what is the assessment of the interested parties.

Thirdly, this year's APRCC will be joined by Responsible Care experts from North America and Europe, too. A more extensive and in-depth exchange of information will be possible.

Fourthly, APRO²⁾ will be launched. APRO's main assignment is to communicate with the APRCC holding country to help efficient APRCC operation, to arrange information exchange among APRCC's 12 member countries, to collect other region's Responsible Care information, to assist in arranging APRCC speaker and topic development, to arrange for a close relationship between regional Responsible Care organization and association, and to encourage a positive cooperation between ICCA and the Asia Pacific region. APRO will play a role as a collective entity for accommodating and broadening of Responsible Care among all the interested people.

KRCC and APRCC preparation committee sincerely hope that this year's APRCC will witness Responsible Care take off to a new start in which all the participants will be able to share information on the current trend and on Responsible Care implementation, and develop a more cooperative relationship with each other. (Webpage: www.aprcc.com)

2) Asia Pacific Responsible Care Organization. The pronunciation of APRO means 'forward' in Korean.

The 8th APRCC in Seoul

November 4~7, 2003, COEX Intercontinental Seoul

"Responsible Care and the Community – Toward a Perfect Partnership"

DAY 1 TUESDAY, 4 NOVEMBER 2003

09:00 ~ 19:00	Registration
14:00 ~ 15:00	APRO Meeting
15:30 ~ 17:00	Chairmen and Speakers briefing session
19:00 ~	Cocktail Reception

DAY 2 WEDNESDAY, 5 NOVEMBER 2003

■ Venue : Harmony Ballroom

09:00 ~ 10:30	Opening Ceremony Opening Remarks (Co-chairmen : Brian Bum Kim, John Jongkoo Jeong) Welcome (Ki-Ho No, Chairman of KRCC) Congratulatory speech(Myeong Sook Han, Minister of Environment, Korea) Our Global Challenge(RCLG Chairman)
11:00 ~ 12:00	Plenary Session I Keynote Speeches 1~3 (Bayer, Dow Chemical, LG Chem)
13:30 ~ 15:00	Plenary Session II Keynote Speeches 4~6 (Rohm and Haas, BASF, DuPont)
15:30 ~ 16:30	Inauguration of APRO and APRCC Awards
19:00 ~	Gala Dinner

DAY 3 THURSDAY, 6 NOVEMBER 2003

■ Venue : Harmony Ballroom

Workshop 1: Emergency Response(ER) (08:30 ~ 10:00)

Session Chair	Sang-Tae Chung, Inje University, Chemical Emergency Information Center, Korea
Presentation 1	New advances in Taiwan's ER effort (Te-Hui Yeh, ERIC-ITRI, Taiwan)
Presentation 2	ER Information Services – the N. America experience (Michel Cloutier, CANUTEC, transport Canada, Canada)
Presentation 3	ER in Chemical Distribution – BP CM/ER System structure (Hari Anan, BP, Malaysia)

Workshop 2: Distribution (10:30 ~ 12:00)

Session Chair	Tim Kemp, DuPont, Singapore
Presentation 1	Distribution Risk Review(DRR) Process (Je-Euk Chung, Dow Chemical, Korea)
Presentation 2	Managing Transportation Safety (Woo Bin Im, Rohm and Haas, Korea)
Presentation 3	Government expectations and approaches to Distribution (Liliek N. Sankrib, KNRCI, Indonesia)

Workshop 3: Pollution Prevention(PP) (13:30 ~ 15:00)

Session Chair	Hoeseog Cheong, Ministry of Environment, Korea
Presentation 1	Practical approaches to Pollution Prevention (Ayako Kosone, Tosoh, Japan)
Presentation 2	Pollutant reducing activity for the Pollution Prevention (Chang Hee Lim, LG Chem, Korea)
Presentation 3	NGOs and the Chemical Industry – How NGOs and Industry can work together (Joo Won Seo, Korean Federation For Environmental Movement, Korea)

Workshop 4: Product Stewardship and the Relationship to Sustainable Development (15:30 ~ 17:00)

- Session Chair Judy Castledine, Dow Chemical, Hong Kong China
- Presentation 1 Product Stewardship, the role for partners and downstream users : Chemical Management by using Information Technology in Mitsubishi Chemical (Tadao Iguchi, Mitsubishi Chemical, Japan)
- Presentation 2 Product Stewardship, a key part of our drive for Sustainable Development (Christina Sobieralski, BASF, Australia)
- Presentation 3 Response of Industry to consumers' desire (Kwang-Mo Cheong, Consumers union of Korea, Korea)

Forum 1: Community Awareness – Community Advisory Panels(CAPs) (08:30 ~ 12:00)

- Session Chair Richard Robson, RCLG/CEFIC
- Presentation 1 CAPs – working towards the 'Perfect Partnership' (Gerry Kennedy, Methanex, New Zealand) (Jong-Cheon Ryou, BASF, Korea)
- Presentation 2 Responsible Care and Public in harmony– media's perspectives (Sung Whan Choi, Chosun Ilbo, Korea)
- Presentation 3 A stakeholder's view on what is expected for Chemical Industries (Gie-Yang Han, Korean Federation for Environmental Movement, Ulsan, Korea)
- Panel Jae-Bum Kim, UNEP committee for Korea, Korea
- Panel Kwang Ryun Kim, Saehan silichem, Korea

Forum 2: Process Safety (13:30 ~ 15:00)

- Session Chair Chris van Lint, Bayer Asia Pacific, Hong Kong China
- Presentation 1 Minimization of accidents through precautions close to the field (Geum-Ryung Park, LG Petrochemical, Korea)
- Presentation 2 Prevention of major industrial accidents and policy formulation(Shin-Jae Yi, Ministry of Labor, Korea)
- Presentation 3 Process Safety – A global approach(Dave Buckland, Akzo Nobel, Netherlands)
- Panel En-Sup Yoon, Seoul National University, Korea

Forum 3: Employee Health and Safety (15:30~17:00)

- Session Chair Neville Hunter, Rohm and Haas, Australia
- Presentation 1 Identifying and preventing occupational health hazards (Yasunori Yoshioka, Nippon Paint, Japan)
- Presentation 2 Health and Safety as part of an integrated management system (Barry S.Dyer, NZCIC, New Zealand)
- Presentation 3 Responsible Care and Labor Union (Katsutoshi Kato, Federation of Energy and Chemistry Workers Union, Japan)
- Panel Jae-Hee Cheong, Seoul National University of Technology, Korea

DAY 4 FRIDAY, 7 NOVEMBER 2003**■ Venue : Harmony Ballroom**

- Closing Session Presentation on the conclusions emerging from Conference Workshops and Fora
Seoul Declaration shall be announced by the Chairman of KRCC.
- Plant Tour Visits to Daesan Petrochemical Complex(Optional)

● The KRCC 2003 2nd Board of Directors Meeting

The KRCC 2003 2nd Board of Directors Meeting was held on October 7, 2003 at Seoul Lotte Hotel (Astor suit). Attended by 14, including Chairman Ki-Ho No, the meeting decided to have KRCC



positively support in matters related to launching APRO(Asia Pacific Responsible Care Organization) as a Responsible Care Network for the region. Discussion was made on the issue of privatizing Chemical Emergency Information Center which has been operated under the guidance of the Ministry of Environment. Report was made on the status of APRCC preparation.

● New KRCC membership

The KRCC 2003 1st Board meeting (held on July 15 as paper meeting) approved application of Dongwoo Fine-Chem, Merk, and PolyMirae Company for KRCC's membership. The three new members were notified.

● The 1st KRCC Academy

KRCC opened an academy on "Environmental Law and Crisis Management Communication" on June 18, 2003 at FKI building. The academy was attended by 50 working level representatives, at which KRCC chairman Ki-Ho No conveyed his expectation for this academy to mature as an active program, saying, "if participants at the academy share their views as working level people or professionals with expertise knowledge, and deal with the fast changing business environment,



public trust and image will be more effectively improved." Tai-Heung Rho, Director of Kim & Chang Law Offices spoke about the general content of the environment related laws and approaches to deal with them. Yoon-Young Jung, Representative Director of Merit/Burson-Marsteller, discussed the importance and method of communication in an emergency situation.

Business Implications of the European Union's New Chemicals Regulation

1. Introduction

The European Union's new draft chemicals regulation appears on the agenda of many governments and businesses. It should not surprise that this proposal has attracted much attention. The so-called REACH (which stands for "Registration, Evaluation and Authorisation of Chemicals") regime would expand the scope of the EU's chemical legislation into territory that has yet to be explored by any legislature in the world. Indeed, REACH is unique in its scope and impact.¹⁾ In addition to bulk chemicals, it covers products containing "substances." Since virtually any naturally occurring or synthetic chemicals are substances, virtually all products would be subject to this regime. Obligations would be imposed not only on chemical manufacturers, but also on downstream users of chemicals and importers of products ranging from textile and electronics to furniture and toys, and everything else. The EU wants to make this regime the new "international standard." Needless to say, the implications for Korean business will be vast.

To eliminate or at least reduce the risks arising from chemicals during their entire life cycle, the draft regulation would create an unprecedented level of government control over the manufacture and use of chemicals as substances, in preparations, or in so-called "articles," i.e. all products that are not substances or preparations. The REACH regime is intended to close an alleged "knowledge gap" with regard to existing chemicals, i.e. those that were on the market as of 1981 and are listed in the EINECS (European Inventory of Existing Chemical Substances), and to control environmental and health risks arising from chemicals in products, ranging from carcinogens to endocrine disruption caused by phthalates used as softeners in PVC plastics. In designing the new system, the responsible Commissioners have been guided by the precautionary and substitution principles, which creates a potential for serious mischief.

1) The Commission tries to "sell" REACH as follows: "This proposal establishes the REACH system and creates a European Chemicals Agency. In a nutshell, REACH consists of:

- Registration requires industry to obtain relevant information on their substances and to use that data to manage them safely.
- Evaluation provides confidence that industry is meeting its obligations and prevents unnecessary testing
- Risks associated with uses of substances with properties of very high concern will be reviewed and, if they are adequately controlled, or if the socio-economic benefits outweigh the risks and there are no suitable alternative substitute substances or technologies, then the uses will be granted an Authorisation.

The Restrictions procedure provides a safety net to manage risks that have not been adequately addressed by another part of the REACH system."

This paper is structured as follows. In Part 2, the history and background of the REACH proposal are briefly described. Part 3 discusses REACH's objectives, and Part 4 its scope. In Part 5, the focus is on the obligations regarding testing, data gathering, and reporting. Part 7 reviews the proposed rules regarding evaluation, Part 8 those in respect of authorization. Part 9 discusses the provisions regarding manufacturing and use restrictions. In Part 10, the requirements applying to products incorporating chemicals are analysed. Part 11 covers the duty of care, while part 12 focuses on chemical safety assessment. The final part sets forth some conclusions.

2. History and Background

In 2001, the Commission issued a White paper on the Strategy for a future Chemicals policy, which laid out the building blocks of REACH. In May 2003, it published a draft of the REACH regulation. Both the White paper and draft regulation have drawn much criticism. In response to an internet consultation this Summer, the Commission received more than 6,000 submissions. Late September, a revised draft of the REACH regulation surfaced in Brussels. The revised draft reflects some of the comments received by the Commission. The draft Regulation, which would replace some 40 existing directives and regulations, would implement the proposals set out in the Commission's White Paper, and involve a major overhaul and expansion of the EU's chemical legislation. The draft Regulation is a response to demands by European environmental NGO's and green political parties, and based on a Commission review of the EU's current chemicals legislation, which identified deficiencies and gaps. They have argued that existing chemicals, which would constitute more than 90% of the total volume of chemicals used in Europe, create unknown risks to human health and the environment. Commissioner Wallstrom has called this "an unacceptable knowledge gap," and lamented that "we are unwittingly testing chemicals on both living humans and animals." The Commissioner also faults the present "new" chemicals regulatory system because government assessments have been slow and because it does not encourage innovation. The proposed answer is the REACH regime, as presented in the draft Regulation.

Based on its review of the existing EC chemical legislation, the Commission concluded that the current EC chemical legislation does not provide "a high level of protection," as the Treaty requires. Existing substances, which include all chemicals listed in EINECS and are reported to amount to some 90% or more of the total volume of all substances on the market, are not subject to testing as to their properties. In the Commission's opinion, the exemption of existing substances is a problem in light of the fact that of all new substances, which are subject to testing, about 70% have been found dangerous. In addition, REACH would be necessary because the risk assessment process applicable to some existing substances to evaluate their properties, which is conducted by the member state governments,²⁾ is slow, ineffective, and inefficient. Accordingly, the EU justifies the proposed regulation, which will depend heavily on member state agencies, with reference to the member state agencies' failure to be effective. Thus, paradoxically, government failure is invoked to justify more government.

At first impression, REACH would appear to be an over-reaction to a limited problem. To the extent that lack of knowledge on risks associated with existing chemical substances is an issue, improving the current risk assessment regime would appear to be the preferred solution. The responsible Commissioners, however, want to do much more than solve the problem of existing substances. They use the "knowledge gap" as a pretext for creating the most comprehensive and bureaucratic system of government chemical control that exists anywhere in the world.³⁾ And because chemicals are used in virtually all production processes and products, the system would give government agencies a level of control over our whole economy they could hitherto only dream of.

2) Approximately 140 existing substances have been identified as priority substances and are subject to comprehensive risk assessment carried out by Member State authorities.

3) The US TSCA regime and the Japanese legislation, even after the recent amendments, are not nearly as intrusive as REACH.

3. Objectives

The stated objectives of the new regime, as spelled out in the White Paper and draft Regulation, would be (1) protection of human health and the environment, (2) maintenance and enhancement of the competitiveness of the EU chemical industry, (3) prevention of fragmentation of the internal market, (4) increased transparency, (5) integration with international efforts, (6) promotion of non-animal testing, and (7) conformity with EU international obligations under the WTO. The Commission hopes that the "new REACH system should put Europe well in advance of most other countries in terms of the health and safety guarantees provided by manufacturers and importers of chemicals." However, the Commission provides little or no explanation on how the new regime will help to achieve these objectives. Its analysis of the problem and the solution reflects an idealistic concept of the effects of legislative and regulatory interventions and how government agencies in fact operate. For instance, how will REACH help to resolve issues such as endocrine disruption, if that truly is an issue? The testing and information required under REACH would not seem to be suitable for detecting such risks.

Not surprisingly, the proposed regime would be aimed at promoting sustainable development. To achieve sustainable development objectives, the Commission explained, "care has been taken to design the requirements in such a way [that] the required balance between the three pillars of sustainable development will be assured." The European chemical industry has expressed almost unanimous disagreement with this statement. Specifically, the new regime would deliver significant improvements to health and the environment "by bringing within the scope of the authorization system all substances of high concern, by ensuring that non-confidential data is made available to the public and to downstream users, and by encouraging the development of safer chemicals." As a related matter, it would also "encourage research and innovation." The Commission's theory of "innovation" is basically that government-imposed chemical bans and restrictions will force industry to (i) develop other chemicals, and (ii) those substitute chemicals will be safer and more environment-friendly. Both assumptions, however, are highly questionable. The net result of the REACH system may well be that we will have less chemicals than we would otherwise have, and the substitute chemicals may well have more, rather than less, health and environmental impact. The REACH regime may create disincentives for innovation by reducing the base of chemicals available for research and development, increasing the cost of developing new chemicals, and increasing the threat of regulatory restrictions once chemicals are ready to go to market. The second assumption, i.e., that substitute chemicals will be safer and more environment-friendly, likewise reflects wishful thinking, rather than analysis. REACH's emphasis on hazard and risk reduction without much regard for exposure and its undervaluation of benefits associated with chemicals, may well result in too much information on relatively insignificant risks and not enough information on relatively significant risks. This would translate into insufficient measures to reduce significant risks and, thus, into increased net risk. More generally, by shifting resources away from useful and beneficial activities, including targeted testing of chemicals of concern, to excessive informational and other requirements, REACH will likely make our society less safe.

The draft regime, as noted, reflects the precautionary and substitution principles. As the Commission puts it, "the precautionary principle will continue to guide the approach in implementation of necessary measures." Consequently, chemical restrictions or bans may be imposed even where scientific studies are ambiguous and producers and importers will have to establish the safety of their products. Substitution of chemical products is contemplated in the authorization process where "greener" or "safer" alternatives exist. Although the draft Regulation cryptically adds

that their existence is not a sufficient ground for refusing authorization, it provides also that "companies will be encouraged to present substitution plans that will influence the authorization decisions."

4. REACH's Scope

The main feature of the proposed REACH regime would be the creation of a single, comprehensive, over-arching, unified system of bureaucratic oversight over all existing and new substances during all stages of their entire life cycle, including design and production, industrial and consumer use, and disposal. Under the REACH regime, the requirements, including the testing requirements, applying to a specific substance would depend chiefly on volumes of chemicals produced or imported, but, the Commission adds, "may be tailored based on intrinsic properties and conditions of use." The exemptions are limited and often partial, which will result in many substances (pharmaceuticals, food additives, cosmetics, etc.) being subject to the new chemical regime and product-specific legislation.

Some polymers and, in some instances, intermediates would be exempt; all polymers, however, would still be subject to authorization and restriction. When sound scientific criteria have been developed for defining which polymers should be registered, this system will be revised.

Substances subject to registration may be manufactured or imported, either on their own or in a preparation or article, only after a waiting period of 60 days after registration, unless the authorities indicate otherwise or a specific restriction applies, irrespective of whether they pose any risk.

The REACH-system would apply not only to substances marketed as substances or in preparations, which are covered by current EC chemical legislation, but also to substances in any finished article, i.e. any product, if they are released. Consequently, the new regime raises major issues, including trade barrier issues, with respect to goods that are imported into the EC; the Commission does not address these issues but boldly asserts that the REACH system puts "EU and non-EU producers of chemicals on an equal footing" and the new requirements "are the minimum necessary to ensure that health and safety objectives established can be achieved, every effort having been made to reduce the costs and burdens of the system." The Commission has not met the burden of persuasion that an open-ended requirement that substances that may be released from an article and cause adverse effects during use or disposal (sic!) be registered and assessed for their specific use, indeed reflect an effort to reduce costs and burdens. These provisions obviously raise issues under international trade law and may well spark a trade war.

5. Testing, Data Gathering, and Reporting

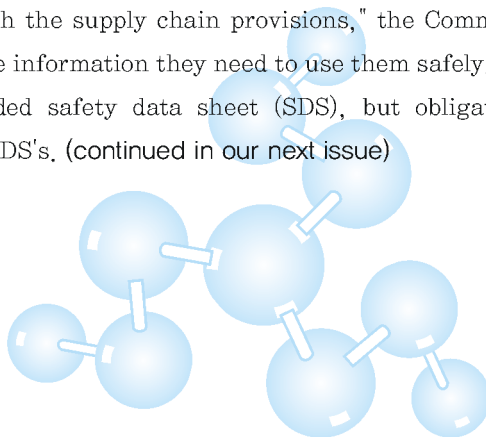
The REACH system would involve three elements: registration, evaluation, and authorization. The current EC chemical regime requires pre-market notification of new chemicals, but does not impose pre-marketing authorization. The proposed system would require registration of all substances, both new and existing, manufactured or imported in annual volumes of 1 ton or more, subject to limited exceptions.⁴⁾ Registration files would have to include (i) data on physico-chemical, toxicological, and

4) According to the Commission, registration of basic information would be required for approximately 30,000 substances, including all existing and new substances exceeding a production or import volume in the EC of 1 ton per year per manufacturer. The Commission estimates that 80% of the substances, i.e. all low volume chemicals (less than 100 tons per year), would require only registration.

eco-toxicological properties, (ii) a description of "identified uses" and related exposure scenarios, (iii) for substances exceeding 10 tons annually, a so-called "chemical safety report," which must identify all risks arising during a substance's life cycle, (iv) proposed risk reduction measures, and (v) a proposal for further testing, where required. If data are not otherwise available, testing would have to be conducted. All of this information would be fed into a central database run by the European Chemicals Agency to be established under the regulation. The registration would be valid only for the applications of the substance identified by the registrant; any unidentified use would be subject to notification by the downstream user. These requirements are overly broad in a number of respects. Most importantly, they apply to all substances, irrespective of any hazard, risk, or exposure. There would appear to be no justification for imposing this regime on substances that are generally recognized as safe or where there is no plausible exposure scenario.

The proposed regime would apply four volume thresholds for purposes of testing and registration; 1 ton, 10 tons, 100 tons, and 1,000 tons, all per year and per manufacturer. At each volume threshold, additional test data would be required, as detailed in the draft annexes attached to the regulation, which sets forth also complicated derogation rules. Below the 1 ton threshold, no registration would be required. At the tonnage levels above 1 ton, additional data on issues such as long-term and chronic effects would be required. Testing is not necessarily required with respect to each registration. To minimize animal testing, registrants can use other information available to them, including possibly "studies from other countries, previous animal testing, in vitro data, epidemiological studies, etc." In addition, to minimize duplicate testing, the draft regulation provides for "data sharing" arrangements. Furthermore, the authorities may allow derogations from the standard testing regime where "testing does not appear to be scientifically necessary," "is not technically possible," or it is not necessary "based on the exposure scenarios." A transitional period of 11 years would be allowed to phase in the program for the large number of existing substances. Again, these requirements are purely volume-based, and not related to any hazard, risk, or exposure. The discretionary derogations do not give much comfort in this regard.

Under REACH, companies would also be required to pass information up and down supply chain and between all actors. "The information through the supply chain provisions," the Commission states, "ensures that all users of substances have the information they need to use them safely." The primary tool for information transfer is an expanded safety data sheet (SDS), but obligations in some instances go beyond the mere passing on of SDS's. (continued in our next issue)



Hanwha Chemical Corporation Ulsan Plant

– Working hand in hand for the service of community –

1. Community service

550 employees at HCC Ulsan plant, headed by Dae-sik Kim, have been actively involved in community services. Working together with the community organizations, including NGOs, and as an active RC program participant, HCC Ulsan plant has made significant accomplishments in social services and environmental protection, in hopes to establish itself as a sustainable industrial model that lives and grows together with the society whereby the industry goes beyond its role as an economic contributor and reaches out to the social and cultural services of the community it belongs to.

2. Commitment to community service embedded in HCC and Ulsan plant policy

Founded on "HCC recognizes sustainable growth and social responsibility as a corporate mission, and therefore regards Environment, Safety, and Health as an essential corporate value" stated in HCC corporate policy, and "HCC Ulsan plant will keep the employees and any interested party informed of the plant policy, objective, and activity program and their results, seek a sustainable improvement by rigorously observing the law and regulations, and achieve significant business results and public trust" in Ulsan plant policy, HCC and the Ulsan plant declare its social responsibility and commitment to gaining community trust. The responsibility and commitment have been carried out through different activity programs.

3. Social contribution activity program

1) Summary of Programs

	Activity programs	Area	Authority	Civic Group	Period
Environment/ health	1. 1 company-1 river cleaning 1) Mugeo stream cleaning 2) Mugeo stream flower planting	Mugeo stream	Ulsan metropolitan office	Green environment preservation	Twice a month
	2. Environment Indicator tree planting	Neighborhood of Ulsan Plant	Ulsan metropolitan office	–	Annually
Social contributionv	1. Free Meal service	Nam-gu social welfare center	Ulsan metropolitan office	Ulsan YMCA	Twice a month
	2. Housing Improvement service	All over Ulsan city	Ulsan metropolitan office	Good Neighbors	Once a month
	3. Youth Education support	All over Ulsan city	Ulsan metropolitan office	Good Neighbors	Twice a year
	4. programs for War Veterans	All over ULSan city	Ulsan metropolitan office	Veterance Organization	Annually

2) Details of programs

① 1 company – 1 river cleaning

As part of the Ulsan city's major environment project, "Taehwa river cleaning", HCC was assigned Mugeo stream for its 1 company – 1 river cleaning activity. The cleaning activity is performed twice a month. To create "Mugeo stream flower walk" that is being performed in coordination with NGO – Green Environment Preservation (Director: Byong-gil Song) – garden flowers were planted. Water plants were also planted to help the stream to have cleaner water quality.

The Mugeo stream cleaning program that has been conducted for the past two years was presented to a presentation as an excellent model for industry-NGO joint activity.

② Environment indicator tree planting

This is part of another major environment project item of Ulsan city – "Air quality improvement campaign" – and Ulsan plant selected rose as this flower is sensitive to hydrogen chloride which is HCC's major chemical. 780 roses, 6 million Won in amount, were planted along 260 meters of space outside the plant compound, and we believe this represents HCC's commitment to the Responsible Care management practice – Pollution Prevention.

③ Free Meal service

HCC Ulsan plant employees and their family members volunteer twice a month at Nam-gu social welfare center to provide free meals to the elderly and youth. The welfare center is operated by



<Free Meal Service>



<Volunteers>

YMCA and the entire cost of this volunteer service is procured by the "Make a brighter world", a fund that was established and is operated with the money donated by all the Ulsan plant employees.

Since this activity is carried out by the physical participation of the entire plant employees and family members – meal preparation, meal serving, and so on –, unlike other activities that do not go beyond monetary donations, it wins favorable reception from the public, let alone the betterment of labor relations.

Between April 2002 and April 2003, 260 employees and 150 family members took part in this program over 26 events in providing meals to 6,500 people (appr. 250/day), for which 9.5million Won was donated.

④ Housing improvement program

In coordination with Nam-gu office, Good Neighbors Ulsan chapter, YMCA, and YWCA, repair and improvement works were done on the houses and facilities of people on welfare, youth-headed family, single mother family, the handicapped, and other such underprivileged people. With the expert services in mechanical, electrical, and civil engineering from Ulsan plant personnel, this was a program which made greater result compared to the amount of money input for this. Between June 2002 and April 2003, 120 people volunteered in 8 events for repair/improvement of 6 houses and 2 facilities, for which 29 million Won was funded.

⑤ Youth awareness program

Supports were provided for educating 36 youngsters who took part in a program (Summer vacation program) that was held in July 2002 under a joint sponsorship with Good Neighbors Ulsan chapter. In August 2002, Identity growth camp – "We grow" – was held where 40 students were present, also under a joint sponsorship with Good Neighbors Ulsan chapter. In the same month, HCC paid for 3 participants in the North-South Peace camp. In March 2003, HCC paid for the cost of 12 participants in a symphony orchestra festival that was sponsored by Good Neighbors Ulsan chapter.

⑥ Event for War Veterans

On the occasion of the Month of Veterans, HCC Ulsan plant invited the 6.25 Korean War veterans who reside in Ulsan to a program to remember their valuable sacrifice and express thanks for their contribution.

4. Other activities and future plan

In June 2003 on Environment Day HCC Ulsan plant was presented with Ulsan major award for the 1 company – 1 river cleaning activity, and was recognized as the excellent plant of HCC in the field of the social services performance. Presentation was made at the Ulsan city 1 company – 1 river cleaning campaign promotion meeting and a HCC social services workshop that was held in May 2003 to promote and expand this kind of social services activities.

HCC is widely and deeply involved in the environment preservation and social contribution activities not just in Ulsan but also in Yeosu and Seoul headquarters. HCC, as a company who has been and will be involved in RC program, is committed to keeping up with the community environment preservation and to improving social contribution activities for a sustainable development in such efforts. 🧑‍🔬