Commitment to sustainable
Development of Chemical Industry

For a Green and Clean World, Promise of the Future, Responsible Care

KRCC is an organization established for Responsible Care (RC), by institutions involved in petrochemicals, fine chemicals, fertilizers, and chlor-alkali, as well as the American Chamber of Commerce in Korea, the European Union Chamber of Commerce in Korea, and other chemical institutions.
RC incorporates activities to improve the environment, safety, and health in the chemical industry.

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Responsible Care

Chemical Industry's
Commitment to Sustainable
Development

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Responsible Care® is a voluntary program in the chemical industry that not only continues to promote the environment through health and safety improvement activities but also by pledging commitment and implementing the program in management policy. This is achieved to protect the environment, safety, and human health throughout its entire lifecycle-from the development of chemical products to their manufacture, sale, distribution, use, and disposal.

Responsible Care means international voluntary activities for the chemical industry

promote improvement of the environment and the safety and health of the people

To pass abundance on to humanity creating a better for our next generations, the Korea Responsible Care Council

will bring together forces to strengthen its activities and roles for sustainable development

Serious Accidents Punishment Act, Main contents of the Enforcement Decree And Corporate Response Plans

Focusing on Serious Industrial Accidents

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1. Introduction

The hottest topic of interest regarding safety and health management in companies these days is by far the Serious Accidents Punishment Act. Although there has been much opposition and various complaints from both the management and labor worlds, and South Korea has a strong regulatory-oriented punishment act that is unprecedented in the world, the Serious Accidents Punishment Act will soon take effect, on Jan. 27, 2022 The official name of the Serious Accidents Punishment Act is the "Act on Serious Disaster Punishment, etc." Because the name of the Act is long, it is abbreviated as the "Serious Accidents Punishment Act".

The purpose of this Act was intended for preventing serious accidents. In the event of a serious industrial accident or serious civil accident, if an investigative agency investigates the cause of the accident and finds that it violated its duty to take safety and health measures and finds that there is a causal relationship, it will strongly punish such business owners, managers, public officials, and corporations.

The contents of the Serious Accidents Punishment Act (SAPA) consist of a total of 16 provisions and are divided into four chapters (Chapter 1: General Regulations; Chapter 2: Serious Industrial Accident; Chapter 3: Serious Civil Accidents; and Chapter 4: Supplementary Provisions). On September 28, the Enforcement Decree of the Serious Accidents Punishment Act was also confirmed,

What our company (organization) shall do now is to closely check whether a system to fulfill compliance obligations under this Act exists and to be ready to faithfully implement it. Also, if anything is insufficient, it should be supplemented before this Act enters into force. In order to establish a system in response to the Serious Accidents Punishment Act, the first thing that must be done is to accurately understand the contents of the Serious Accidents Punishment Act and the Enforcement Decree.

- Is our company/organization a subject to the Serious Accidents Punishment Act?
- If so, have the specific evidence provisions and compliance obligations been clearly identified?
- Has it been clearly established who is responsible (administrative manager, etc.) under the Serious Accidents Punishment Act?
- Has a safety and health management system that reflects the obligations required by the Serious Accidents Punishment Act been established, and have the preparations for implementation been completed?
- Have the responsibilities and authorities (R&R) for dedicated organization and responsibility management been clearly established for a safety and health management system?
- Has the company identified the laws and regulations of obligations that must be followed according to the safety and health-related laws and have they been documented?
- Has it been carefully reviewed whether there is anything missing from the identification of the law?
- Is there a procedure to check the implementation status under the Serious Accidents Punishment Act at least once per half year?
- Has a process been established to report the results to the management manager and immediately take supplementary measures for insufficient implementation?
- Who is a subject to punishment in the event of a serious industrial accident?

2. Understanding the Purpose of the Serious Accidents Punishment Act and the Subject of Punishment

Article 1 of the Act states the purpose. The main purpose of the Act is to prevent serious accidents and to protect the lives and bodies of citizens and workers by stipulating punitive measures against business owners, managers, public officials, and corporations that cause human casualties in violation of their obligations to take safety and health measures.

Article 2 of the Act states the definitions of terms. This is perhaps the most important provision that must be understood accurately in order to fully understand the entire Act. Only then can the question asked above be answered clearly.

The key takeaway is that serious accidents include "serious industrial accidents" and "serious civil accidents."

A serious industrial accident refers to an accident that results in any of the following consequences:

A. Death of one person or more.

B. Injuries to at least two persons or more requiring at least six months of recovery

C. At least three (3) persons or more within one year experiencing occupational illness, such as acute addiction, prescribed by the Presidential Decree, due to the same hazard. According to the Presidential Decree, a person with occupational illness refers to someone with an illness prescribed by the Enforcement Decree [Attachment 1]. If a serious accident falling under [Attachment 1] has occurred at a company, those in charge of management, etc., will be punished in accordance with the Serial Accident Punishment Act. Therefore, it is necessary to establish and review a preventive maintenance system to prevent such accidents.

Summary of the Enforcement Decree [Attachment 1]

1. Acute poisoning caused by vinyl chloride, organotin, methyl bromide, or carbon monoxide.
2. Acute poisoning caused by lead or its compounds.
3. Acute poisoning caused by mercury or its compounds.
4. Acute poisoning caused by chromium or its compounds.
5. Acute poisoning caused by exposure to benzene.
6. Acute poisoning caused by organic compounds such as toluene, xylene, and normal nucleic acid.
7. Acute addiction caused by exposure to nitrogen dioxide.
8. Acute poisoning caused by exposure to hydrogen sulfide.
9. Acute poisoning caused by exposure to hydrogen cyanide or its compounds
10. Acute poisoning caused by exposure to hydrogen fluoride and hydrofluoric acid.
11. Acute poisoning caused by exposure to phosphorus (white phosphorus, yellow phosphorus) or its compounds.
12. Acute diseases caused by exposure to cadmium or its compounds.
13. Acute poisoning caused by exposure to the following chemical factors.
    A. 114 chemical factors among harmful factors subject to work environment monitoring.
    B. 109 chemical factors among harmful factors subject to special health examination.
14. Airway hypersensitivity syndrome caused by exposure to chlorine, hydrogen chloride, hydrochloric acid, etc.
15. Stevens Johnson syndrome caused by exposure to trichloroethylene.
16. Toxic hepatitis caused by exposure to trichloroethylene and dimethylformamide.
17. Hepatitis B, C, syphilis, etc. by health care workers.
18. Leptospirosis caused by humid work environment.
19. Anthrax/brussellosis caused by exposure to animal/carcass, beast fur/leather, rags, or garbage.
20. Legionellosis caused by contaminated coolant.
21. Health disorders, diving diseases, etc. caused by exposure to high/low air pressure.
22. Oxygen deficiency syndrome caused by insufficient oxygen concentration.

The term "worker" refers to an employee, a person who provides labor regardless of the type of contract, whether it be subcontracting, service provision, or consignment. "Responsible management personnel etc." refers to a person who represents a business and has the authority and responsibility to oversee the business, or a person in charge of safety and health affairs. There is an important point here that companies should keep in mind.

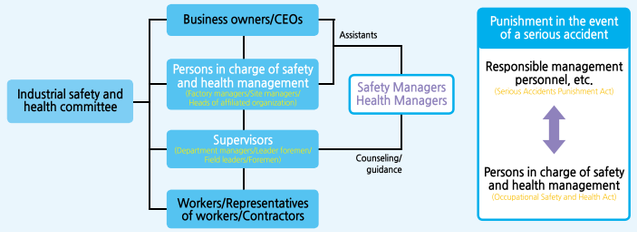
They should have a clear understanding of who is subject to punishment in the event of a serious industrial accident. This is the starting point for establishing a response system. The Serious Accidents Punishment Act defines the person subject to punishment as "responsible management personnel, etc." It is unclear what the "etc." means here.

Suppose there is an executive specifically in charge of safety and health affairs at a company. One might wonder if the CEO (responsible management personnel) might be exempt from punishment in this case. The Ministry of Employment and Labor claims that the answer may vary depending on the specific conditions. It may vary depending on the question of who has the de facto responsibility and authority to oversee manpower, facilities, and organizations to prevent serious industrial accidents. In other words, whether or not a person has the actual authority and responsibility to oversee resources (people, budget, organization, and facilities) necessary to prevent serious industrial accidents is an important criterion for judgment.

There is another point worthy of note. If a company has its headquarters in Seoul and its factory in a different region, or if a construction company has its headquarters in Seoul and its construction sites in a different region, then the factory manager and the site manager are most likely responsible as the heads of safety and health management. If the violation of safety compliance obligations at a factory or construction site causes the death of one or more workers, which law would apply?—the Occupational Safety and Health Act, the Serious Accidents Punishment Act, or both? If both laws are applied, an appropriate safety management system for prevention can be established only when the concept of who will be punished is accurately known.

In summary, both laws are likely to be applied because the targets for punishment stipulated in the Occupational Safety and Health Act and the Serial Accident Punishment Act are different. In conclusion, the person subject to punishment for deaths at factories or construction sites is the manager of the Seoul headquarters, and the person subject to punishment under the Occupational Safety and Health Act is the head of the factory (site director).

About Safety and Health Management Systems and Responsibilities



It would be helpful to know the differences between the Occupational Safety and Health Act and the Serious Accidents Punishment Act, which are as follows:

The Occupational Safety and Health Act and the Serious Accidents Punishment Act

[Occupational Safety and Health Act]		[Serious Accidents Punishment Act]
To maintain and promote the safety and health of workers	Purpose	To protect the lives and bodies of workers (employees, providers of labor, etc.) and citizens (users, etc)
Specific and clear safety and health measures (Regulations on Occupational Safety and Health Standards)	Scope of safety obligations (Strengthened obligations)	Obligations for comprehensive risk prevention
The contractor's place of business, or places provided or designated by the contractor that are effectively controlled and managed by the business owner	Scope of obligations for contracted projects (Broadened scope)	Facilities, equipment, and location where the company has de facto control, operation, and management
Mostly persons in charge of safety and health management	Subject of punishment (Shift of focus)	Responsible management personnel, etc. (Persons representing the business) or persons in charge of safety and health management with the level of authority comparable to the responsible management personnel, etc.
*Accident resulting in death(s) : a fine of up to 1 billion won *Other violations : a fine of up to 50 million won	Penalties (Strengthened punitive measures)	* Accident resulting in death(s) : a fine of up to 5 billion won * Accident resulting in injuries : a fine of up to 1 billion won
None	Punitive Damages (Newly formed)	Liable for up to five times the amount of damage

〈 Notes 〉

It must be emphasized that for chemical companies (factories), prevention of serious civil accidents should be another important management target. This article focuses on serious industrial accidents, but civil accidents caused by chemicals, such as humidifier disinfectants, are also subject to punishment. Therefore, when chemical companies establish a safety and health management system and determine the scope of management measures necessary for fulfilling obligations under relevant safety and health laws, they should include not only serious industrial accidents but also serious civil accidents.

3. Obligations of Responsible Management Personnel for Securing Safety and Health

Article 4 of the Serious Accidents Punishment Act states the following about the obligations of business owners and responsible management personnel:

① Business owners or responsible management personnel, etc., shall take the following measures, taking into account the specific attributes and scale of their business, to prevent hazards or risks to the safety and health of workers in businesses or workplaces that are effectively controlled, operated, or managed by business owners, corporations, or organizations:

1. Measures for establishing and implementing a safety and health management system, such as securing manpower and budget necessary for preventing accidents.
2. Measures for establishing and implementing plans to prevent recurrence in the event of an accident.
3. Measures for implementing improvements or corrective measures ordered by the central administrative agency or local governments in accordance with relevant laws and regulations
4. Management measures necessary for fulfilling obligations under safety and health–related laws and regulations.

② Specific matters concerning measures under paragraphs (1) 1 and 4 shall be prescribed by the Presidential Decree.

According to the Act, important matters in the above obligations are stated in subparagraphs 1 and 4, and further details are prescribed by the Presidential Decree (Enforcement Decree). Thus, it is important to examine the Enforcement Decree, which is as follows:

Specific matters of "measures concerning the establishment and implementation of a safety and health management system" under subparagraph 1 are stipulated in the following nine items as defined in Article 4 of the Enforcement Decree:

❶ Establish safety and health targets and management policies for the business or workplace.

❷ In accordance with the Occupational Safety and Health Act, a total of three or more safety managers, health managers, safety and health managers, or industrial healthcare personnel, etc., shall be appointed. In any of the following cases, an organization specifically dedicated to overseeing and managing safety and health affairs must be established:

A. A business or workplace with 500 or more full-time workers.

B. A construction business operator whose construction capacity ranking is within the top 200 companies.

❸ Prepare business procedures to identify and improve harmful and risk factors, and take necessary measures after checking at least once a half year whether harmful and risk factors are identified and improved according to the procedures.

❹ Allocate a budget necessary for implementing the following items and execute it accordingly:

A. Manpower, facilities, and equipment necessary for accident prevention.

B. Improvement of hazards and risk factors determined in the risk assessment.

C. Budget necessary for establishing a safety and health management system, etc.

❺ The following measures shall be taken so that persons in charge of safety and health management, supervisors, and general managers of safety and health can faithfully perform their duties:

A. Delegate authority and budget necessary for performing relevant tasks.

B. Establish standards for evaluating whether relevant tasks are faithfully performed, and evaluate and manage performance at least once every six months in accordance with those standards.

❻ The number of safety managers, health managers, safety and health managers, and occupational health doctors must be equal to or more than the number prescribed by law.

▶ If a personnel is also responsible for performing other tasks, work hours for performing safety and health tasks must be guaranteed.

❼ Establish a procedure for obtaining workers' opinions on safety and health; if an opinion obtained through such procedure is deemed valid, prepare measures for improvement; monitor the status of implementation at least once every quarter and take necessary measures.

❽ In case of a serious industrial accident or an imminent risk of an accident, prepare a manual on the following measures; check whether the manual is followed, at least once every six months

A. Countermeasures such as work suspension, evacuation of workers, removal of risk factors, etc.

B. Relief measures for persons suffering from a serious industrial accident.

C. Measures for preventing additional harm

❾ In case of subcontracting, service, or entrustment arrangements, the following standards and procedures shall be prepared, and they shall be evaluated at least once every six months to ensure the safety and health of workers.

A. Evaluation criteria for capability and skills of subcontractors, service providers, entrustees, etc. to prevent industrial accidents.

B. Criteria for management expenditures necessary for the safety and health of subcontractors, service providers, entrustees, etc.

C. In case of construction or shipbuilding industries, criteria for the construction period.

In addition, the specific details of "management measures necessary for the fulfillment of obligations under safety and health-related laws" stated in subparagraph 4 are stipulated in four items as follows under Article 5 of the Enforcement Decree:

❶ Confirm whether the obligations under safety and health laws have been fulfilled and receive a report on the results, at least once every six months.

❷ If the results obtained as stipulated in subparagraph 1 show that any of the obligations has not been fulfilled, take necessary measures such as deploying manpower or securing additional budget.

❸ Verify whether safety and health education on harmful and dangerous tasks has been conducted pursuant to relevant safety and health laws and receive a report on the results, at least once every six months

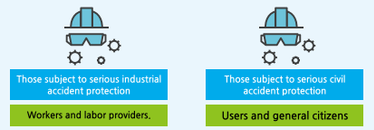
❹ If the inspection under subparagraph 3 shows that education has not been conducted, take necessary measures such as securing additional budget.

Article 5 of the Act states the obligations for securing safety and health in relation to subcontracting, service, and consignment. It states that, when a business owner, corporation, or organization subcontracts, services, or entrusts work to a third party, measures under Article 4 shall be taken to prevent serious industrial accidents from occurring to third party workers.

Therefore, even if a company has contracted, serviced, or entrusted work to a third party, it must take active preventive measures if it exercises de facto control, operation, and management rights over the facility, equipment, or place.

4. Potential responses and key takeaways for corporations

Therefore, the optimal response for companies (workplaces) would be to conduct their own inspections in the following order and to establish and faithfully implement a safety and health management system to prevent serious industrial accidents.



〈 Preparations concerning the definitions of serious industrial accidents under Article 2 of the Act 〉

First, predict where, and during what work process, death or injury for more than six months might occur.

☞ This should be closely identified by examining the results of on-site inspections, operating conditions, risk characteristics, and risk assessment of processes, machinery, and facilities.

Second, check whether there is anything in the handling, working environment, or work of chemicals that may cause occupational illnesses such as acute addiction; see

the conditions prescribed in the Enforcement Decree [Attachment 1].

☞ List information such as names, uses, characteristics of work, and working periods about chemical substances that are used in each department or workplace. This is to clearly identify the risk factors and tasks related to occupational illnesses that need to be managed.

Third, chemical companies should evaluate whether there is a possibility of defect in design, manufacture, installation, or management related to the manufacture of raw materials or products of specific chemicals.

〈Check the details regarding "Obligations of business owners and responsible management personnel to secure safety and health" stipulated in Articles 4 and 5 and establish a safety management system.〉

The details related to this provision are specifically stipulated in Articles 4 and 5 of the Enforcement Decree. Most petrochemical plants are certified as ISO 45001 or KOSHA-MS for the purpose of systematic safety and health management. In addition, a safety and health management system called Process Safety Management (PSM) is in place for the purpose of preventing serious industrial accidents.

Most of the conditions stipulated as "safety and health obligations of business owners and responsible management personnel" in Articles 4 and 5 of the Enforcement Decree of the Serious Accidents Punishment Act are already included in the safety and health management system or the PSM system. However, the standards and legal expressions for evaluating compliance with applicable laws, etc., are different.

Specific steps for preparations or confirmation are presented as follows:

First, conduct self-inspection of the compliance status of your factory (workplace) for each of the nine obligations stipulated in Article 4 of the Enforcement Decree.

☞ An inspection survey must be filled out for each of the nine items.

<Example of an Inspection Survey Table>

Obligations Stated in the Enforcement Decree	Current operational status and related procedures/regulations	A plan to improve insufficiencies

Second, for the four items stipulated in Article 5 of the Enforcement Decree, a survey table can be prepared in the same way as the first.

Third, confirm whether "the establishment and implementation of measures to prevent recurrence in the event of an accident" stipulated in Article 4-2 of the Act is being implemented.

☞ It is necessary to check whether all accidents, including near-miss accidents, have been reported. It is also important to analyze the underlying causes to implement and manage improvement measures. If such measures are deemed insufficient, changes should be made so that they can be managed systematically.

Fourth, manage the "corrective measures or improvements ordered by the central administrative agency and local governments" stipulated in Article 4, No. 3 of the Act.

☞ There is nothing particularly problematic about this provision. If the Ministry of Employment and Labor, the Ministry of Land, Infrastructure and Transport, and the City Hall order corrective measures in accordance with relevant laws, it is unlikely that any company will refuse to follow them.

Fifth, when working on identifying specific details under the above enforcement decree, it will be very helpful to obtain and refer to the "Serious Accidents Punishment Act Commentary" recently distributed by the Ministry of Employment and Labor.

Sixth, there are many laws and regulations that must be observed in factories (workplaces), and there are also many documented procedures/regulations. The key is to integrate, supplement, revise, and systematize similar standard clauses/regulations within the currently established document system rather than creating new documents.

5. Conclusion

The purpose of the Serious Accidents Punishment Act is to achieve preventive effects by applying strong punitive measures to the responsible management personnel in the event of a serious accident.

Admittedly, there are difficulties in complying with the Act because it is not clear, comprehensive, or specific. At the present time, it seems best for each company to establish a safety management system suitable for its own situation and implement it faithfully.

In conclusion, the key is to strengthen safety management to prevent serious industrial accidents, and to create and maintain evidence that the obligations for securing safety and health have been faithfully fulfilled. The Commentary on the Serous Accidents Punishment Act published by the Ministry of Employment and Labor also emphasizes the leadership and responsibilities of the responsible management personnel.

A summary of the preparation steps presented above is as follows:

First, establish and faithfully implement a safety and health management system that suits your company's organizational (workplace) system.

▶ Determine who will be the responsible management personnel of your company (organization) under the Serious Accidents Punishment Act and establish a responsibility management system based on this.

▶ Minimize the number of documents by revising and integrating similar documents.

Second, establish a compliance system to ensure that legal obligations related to safety and health are observed. Identify applicable items from the Serious Accidents Punishment Act, the Occupational Safety and Health Act, the Chemical Substance Management Act, the Process Safety Management (PSM), and the Safety and Health Management System. Also identify possible linkages between the regulations so they are managed efficiently.

Third, in case of subcontracting, servicing, or consignment, etc., of work such as maintenance of chemical plants, such work should also be included in the scope of management and be maintained thoroughly. I will end my presentation here by saying that I hope you will never have to face a situation where the Serious Accidents Punishment Act is applied to your company. Thank you.

〈 References 〉

* Serious Accidents Punishment Act / Enforcement Decree (draft)
* Law Firm Yulchon: presentation materials from "An Analysis of the Serious Accidents Punishment Act," "Industrial Safety Compliance Plan," "Discussion on Issues."
* Data distributed by K&C Webinary : Main features of the Serious Accidents Punishment and Response Plans
* Commentary on the Serious Accidents Punishment Act_ Co-authored by Park Young-sa/Song In-taek, etc.
* Safety and Health Management System_ Gyomunsa/Jeong Jinwoo.
* The Korea Occupational Health Association's "February 2021 issue of the Occupational Health Journal"
* Data related to media companies such as JoongAng Ilbo and Kyunghyang Shinmun, etc.

- Thank you for the great materials. -

Social Distancing Guidelines for Recovery of Daily Life by Stages (For Businesses)

The Central Disaster and Safety Countermeasure Headquarters published updated guidelines for social distancing (for workplaces) as part of its roadmap for phased return to normal life. The move is aimed at gradually returning to normal life by adjusting the level of social distancing based on the principles of autonomy and responsibility, taking into account the strengthened medical capabilities and vaccination situations. The guidelines for workplaces to prevent the spread of COVID-19 are summarized here. If a workplace is located in a region where the local government has an administrative order stricter than these guidelines, the local government's administrative order should be followed.

❶ Prepare a prevention system suitable for the workplace'

General Guidelines

○ Each workplace (with one or more employees) should designate a responsible organization or person (quarantine manager).

○ Quarantine guidelines should be prepared in consideration of the density, ventilation conditions, and work processes. All workers* should be notified of the guidelines through manuals, education, etc.

- Publish announcements and guidelines so that workers can see them at all times.

* Including subcontractors, dispatched/service workers, special type workers, and foreign workers.

○ Establish an emergency contact system with public health centers and medical institutions (selected clinics, nearby hospitals, etc.) so as to be able to respond immediately when a suspected case is found.

❷ Establish flexible work hours and vacations

General Guidelines

○ Utilize flexible commuting hours to prevent the spread of COVID-19 resulting from intensive use of public transportation during rush hours.

○ Practice social distancing by actively utilizing vacations (annual leave, sick leave, family care leave, etc.).

○ Create an environment where flexible work hours and vacations can be used freely, and take measures to ensure that there are no disadvantages resulting from this.

Measures to be Taken

* In particular, workers vulnerable to infection, such as pregnant women, should be able to actively utilize remote work and vacations.

Phase 1	Phase 2	Phase 3
• Workplaces with 300 or more employees (excluding those in manufacturing) • Flexible commuting hours, flexible lunch hours, and remote work for 10% (recommended) of employees	• Details are to be updated in the future.	

※ These do not apply to institutions (persons) that perform duties in the field of security, national defense, diplomacy, firefighting, mail, quarantine, broadcasting, industrial safety, and support related to COVID-19, or institutions (persons) that handle security matters such as protection of personal information.

※ Public institutions can establish and implement their own quarantine guidelines according to the discretion of the relevant ministries and local governments.

- Closed and dense workplaces in industries where remote work is difficult* must comply with quarantine rules**

* Call centers, distribution and logistics centers, etc.

** Regular disinfection, distancing between workers, installation of partitions, etc.

❸ Meetings, Education, Meetings, Company Dinners, Business Trips, etc.

General Guidelines

○ When an outsider visits the office, he/she should use a conference room to respond outside the office according to the circumstances of the workplace.

○ Those who have completed vaccination* are excluded from the calculation of the number of people who have gathered, gathered, and events.

* A person who has completed vaccination means a person who has passed 14 days after the second vaccination of a vaccine that requires two vaccinations or a person who can prove the completion of vaccination 14 days after the first vaccination.

Meetings, workshops, training, etc.

○ If possible, they should be conducted online or via video call*, but if they are inevitably conducted face-to-face, they must comply with the quarantine rules** and must be conducted on a small scale.

* If there is no video conference system during a meeting, video calls should be used.

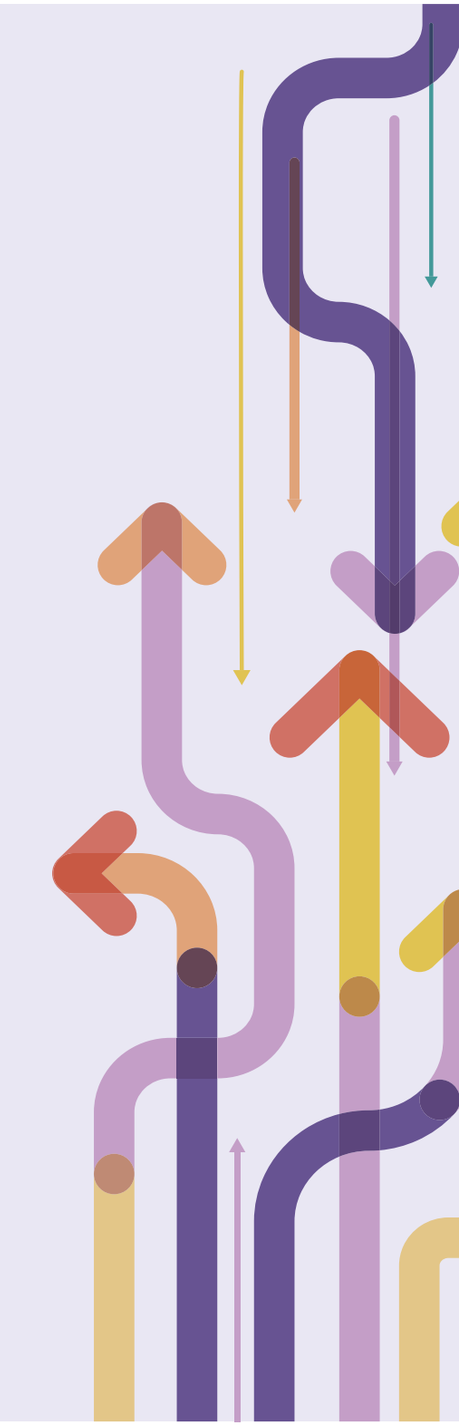
** Check fever (37.5℃ or higher), wear a mask, place a hand sanitizer, maintain sufficient distance between participants, and prohibit those with symptoms from attending.

Phase 1	Phase 2	Phase 3
• Small-scale events and assemblies (with less than 100 people) can be attended by both vaccinated and unvaccinated people. • Large-scale events and assemblies (with 100 to 499 people) can only be attended by those who have completed vaccination*. • Assemblies with more than 500 people are prohibited.	• When composed of only those who have completed vaccination, events can be held without personnel restrictions (the same rules apply regardless of place and purpose) • Eating and drinking restrictions will be lifted only for those who have been vaccinated.	• The restriction on the maximum gathering size will be lifted, or the limit will be lifted gradually based on review
※ Various quarantine restrictions such as seat distancing and limit on gathering size are lifted.		

* Exceptions: (1) People with negative PCR test results, (2) Those who are 18 years of age or younger, (3) people who cannot get vaccinated, etc.

○ For gatherings consisting only of those who have been vaccinated*, quarantine restrictions such as seat distancing and limit on gather size do not apply, and only basic quarantine rules such as wearing masks need to be followed.

* The host of the gathering (the one who registered the gathering), or the manager/operator, is responsible for checking whether the participants have completed



vaccinations.

- However, except for inevitable cases, small gatherings*, in-house social club activities, hobby groups, company dinners (including lunch), etc. must be refrained, and a culture of returning home early after work should be encouraged.

* Presentations, public hearings, conferences, various commemorations, retreats, rallies, festivals, etc.

- In phase two, there are no limits on the size of the gathering for "a company's essential management activities and public service-related events,*" given that all participants have completed vaccinations.

* Regular shareholders' meetings, meetings of the National Assembly for budget and legislation, broadcasting production and transmission, etc.

○ If compulsory education (safety and health education) under the Occupational Safety and Health Act is conducted face-to-face (through group or field training), it should be conducted in compliance with the restrictions on the size of gathering*.

* ▲Less than 100 people: possible regardless of vaccination status, ▲100 to 499 people: possible if all participants are fully vaccinated, ▲500 or more people: prohibited.

- However, safety and health education should be conducted in compliance with the mandate of leaving one seat empty in between participants or maintaining one person per $4m^2$.

Private Gatherings

○ Gathering is limited to 10 people in the Seoul capital area and 12 people in non-capital areas.

- Meet non-face-to-face with colleagues and acquaintances except for family members who are living together

* In phase 3, restrictions on gathering sizes will be lifted.

Phase 1	Phase 2	Phase 3
• 10 people in Seoul capital area, 12 people in non-capital areas (Regardless of inoculation or non-vaccination, the number of people can be divided) • Restaurants and cafes can accommodate up to 4 unvaccinated people.		• Restrictions on gathering sizes are lifted.

* Exceptions: ❶ Family living together, those that need to be taken care of (children, the elderly, the disabled, etc.) ❷ Those on deathbeds, etc.

Business Trips

○ Business trips should be replaced by virtual conferences if possible. They should be postponed or canceled except in urgent or necessary cases.

- Masks must be worn when traveling by public transportation.

* For overseas business trips, the travel warning guidelines issued by the Ministry of Foreign Affairs should be followed. Those who have entered the country for business purposes within the last 14 days must refrain from contacting others or engaging in outdoor activities until the 14th day after entering the country (use vacations, remote work, temporary suspension of business, etc. instead).

4 Monitor suspicious symptoms and take action when a suspected case is found

General Guidelines

○ If there are more than two to three patients with symptoms in the same department or the same place within a period of three to four days, the symptomatic persons shall be guided to undergo a COVID-19 test, and if additional cases occur, report the possibility of mass infection to the public health center.

○ Workers who experience symptoms or fever while working should leave the office immediately.

○ Entry logs must be maintained, and they must be signed by external visitors (via QR code, safe call, etc.)

Measures to be Taken

○ Using a contactless thermometer or thermal imaging camera, check for fever (37.5℃ or higher) and check for respiratory symptoms (cough, etc.).

※ Thermal imaging cameras are to be used for screening, and the exact body temperature should be measured with thermometers certified as medical devices*.

〈 Frequency for checking body temperature and respiratory symptoms for each phase 〉

Phase 1	Phase 2	Phase 3
• Twice daily	• To be updated in the future	
	※ Rules for wearing or removing masks outdoors will be adjusted.	

○ Workers with fever or respiratory symptoms should be directed to leave work and instead utilize remote work, sick leave, annual leave, suspension of work, etc.

* Sick leaves should be given if there are sick leave regulations in the company's collective agreements or private regulations (employment rules, etc.). Annual leave can be used if a worker requests or agrees. If there are no requests, work suspension, etc. may also be used.

5 Management of office spaces, cafeteria, and restrooms.

Measures to be Taken

○ Minimize density by efficiently utilizing spaces. For example, arrange fixed work positions for each individual, utilize idle spaces in the office, or improve the office environment.

○ Maintain sufficient distance of 2m (at least 1m) or more in between desks and workers.
- If it is difficult to adjust the spacing, adjust the location and direction of the monitors, computers, desks, workstations, or utilize idle space.

○ In workplaces (call centers, etc.) where workers are concentrated in a small space, installation of transparent partitions or shields between workers is recommended.

Measures to be Taken

○ In the cafeteria, install transparent screens or arrange tables in rows or zigzag formation if possible. Make sure that there is sufficient distancing between individuals and that hand sanitizers or plastic gloves are used before and after using common tongs, dishes, spoons, etc.
- During lunch, flexible lunch hours (so that workers are divided into more than two groups) are strongly encouraged.
- Avoid crowded restaurants, use packaging and delivery, and use personal plates.

○ Multi-use spaces such as indoor lounges, changing rooms, smoking rooms, and multifunctional activity spaces should not be used by multiple people, and masks should be worn when using them.

* Smoking areas should be marked so that smokers can keep a distance of more than 1m inside. In lounges, workers should keep a distance of 1m and refrain from talking to other workers.

6 Disinfection, Hygiene, and Sanitation.

General Guidelines

○ Disinfect offices, workplaces, and multi-functional activity spaces once per day, and ventilate at least three times per day.

○ Personal cleaning and disinfection supplies must be provided or installed. Companies must give out or place masks and sanitary supplies around the workplace depending on the environment, or offer support for purchasing masks and sanitary supplies.

○ Practice personal hygiene by disinfecting or cleaning office equipment and supplies, washing or disinfecting hands, and following cough etiquette. Use personal cups, tableware, and teaspoons.

Measures to be Taken

○ Wear a mask at all times when in indoors or a high-density outdoors environment.

○ Refrain from physical contact (shaking hands, hugging, etc.) and any activities that involve spraying saliva (shouting slogans, etc.).

○ Company shuttles must be disinfected and ventilated after driving. They must comply with quarantine rules, such as restrictions on the number of passengers.
- Maintain records of passengers and prohibit food consumption.

〈 Phased Guidelines for Operating Commute Shuttles 〉

Phase 1	Phase 2	Phase 3
• Disinfect the vehicle every day, and ventilate before and after driving. • All passengers must wear masks • No food intake (water or non-alcohol drinks are allowed) • Maintain records of passengers (The number of passengers must not exceed the limit)	•To be updated in the future	

7 Management of dormitories

General Guidelines

○ Posting quarantine rules (also in languages spoken by foreign workers), prohibit outsiders from entering, ventilate at least twice a day, and disinfect the space at least once per day.

○ Keep record of incoming and outgoing persons using a log, QR code, or safety calls.
- In principle, access should be restricted for outside visitors, but if unavoidable, arrange separate entry and exit paths.

○ Practice thorough personal hygiene by washing or disinfecting hands, wearing masks in public spaces, and refraining from food intake.

Measures to be Taken

○ Assign one person per room if possible. Comply with quarantine rules by prohibiting cooking or eating outside the cafeteria, disinfecting public facilities (such as shower rooms and toilets), etc.
- Direct new residents to submit PCR results or rapid antigen test results conducted within two days of admission.

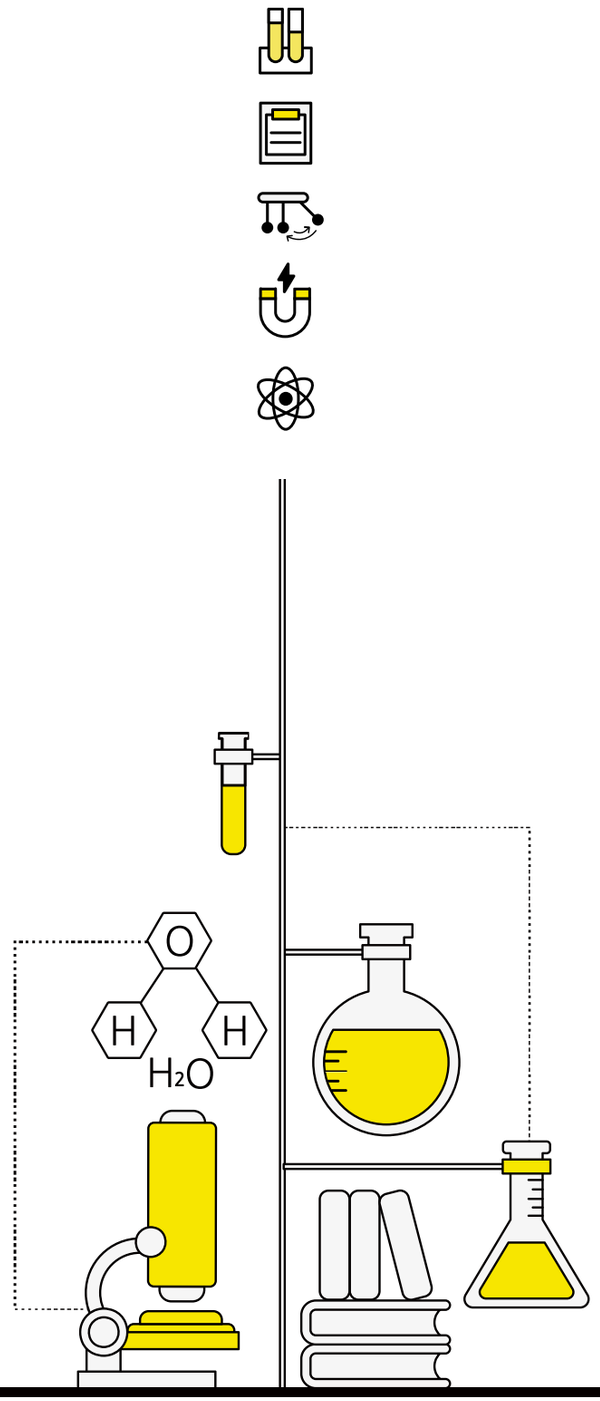
〈Rules for Dormitory Management〉

Phase 1	Phase 2	Phase 3
• One person per 8m²	• To be updated in the future	

[Key Points]
① In principle, all residents are prohibited from going out, and if unavoidable, persons returning from outside must follow the same procedure for admission.
- (Before admission) Preventive quarantine for 10 days. Submit PCR results or rapid antigen test results taken within two days of admission.
- (After admission) One week of preventive management period (recommended). Manage density levels in the dormitory (single rooms), prohibit eating in spaces other than the cafeteria, encourage people to wear masks, ventilate, refrain from moving between floors, strengthen disinfection in public spaces (shower rooms, toilets, etc.).
- After the preventive management period, follow general quarantine rules.

② Arrange separate entry and exit paths. Monitor symptoms and check for fever.
- Workers who do not have to go outside: Submit PCR results or rapid antigen test results within two days of admission.
- Workers who have to go outside: Submit PCR tests or rapid antigen test results once within 10 days.

③ Visitors : In principle, visitors are prohibited from accessing dorm facilities, and if inevitable, arrange separate entry and exit paths for visitors.



Results of the 2021 online event of

“Come! Fun World of Chemistry”

The “Come! Fun World of Chemistry (hereinafter referred to as chem world)” is a program that provides various opportunities for elementary school students (3rd to 6th graders) to learn the principles of chemistry in easy and fun ways. From 2003 to 2019, about 21,000 elementary school students participated, and volunteers from local teacher organizations and member companies taught students about the principles of chemistry applied in daily life. The event became a venue for interaction with the local community.

Starting this year, the event has been reorganized into an online event, reflecting the COVID-19 situation. This provided an opportunity for students to participate regardless of where they live. The use of the online platform also promoted students’ interest in chemistry and gave them an opportunity to explore their dreams about chemistry.

About 300 children were selected as chemistry news reporters. An online platform was established so that these children could write and discuss chemical articles, publish their own contents (articles, cartoons), and take lectures on chemistry. (www.chemworld.kr)

From June 1 to September 8, five children who participated most actively as chemistry news reporters and accumulated the most points during the 100 days were selected to receive various awards. LG Chem and Kolon Industries also provided online internship opportunities for these children.

Summary of the activities of the kid reporters over a period of 100 days

1) Learning about chemistry through online lectures

< Online Chemistry Lesson 1 >

- Chemistry that saved the world
  - The chemistry of paper
  - Kwanwoo Shin, Professor of Chemistry at Sogang University
- Live broadcasting of Dong-A Science YouTube channel
  - 7-8pm on May 13, 2021 (Thursday)
  - Up to 212 concurrent viewers and 2,017 total views.

< Online Chemistry Lesson 2 >

- Silly and fun chemistry experiments
  - A battle of chemistry experiments between Dr. Sorrow and a science reporter
  - Instructions on how to use the chemical kit delivered to the kid reporters
- Live broadcasting of Dong-A Science YouTube Channel
  - 7-8pm on June 17, 2021 (Thursday)
  - Up to 301 concurrent views, 2,734 total views

< Online Chemistry Lesson 3 >

- Chemistry that saved the world
  - The endless values of carbon dioxide
  - Can greenhouse gases be used as energy?
  - Lee Gyu Min, researcher at Seoul National University’s Biomolecular Engineering Laboratory
- Live broadcasting of Dong-A Science YouTube Channel
  - 7-8pm on August 31, 2021 (Tuesday)
  - Up to 182 concurrent views, 1m703 total views

2) Learning Chemistry through Dong-A Science for Children

< Learning Chemistry through comics >

- Dr. Chuck’s Comic Chemistry Adventures
  - Learning chemistry through the comic book “Come! Fun World of Chemistry.”
  - 6th cartoon series of Dong-A Science for Children (April to September, 4p)
  - The cartoon was also released on the website.

< Reviewing online lectures through a news article >

- “Dong-A Science for Children” magazine, June 1, No. 12, pages 72~75(4p)
  - Article on the lecture “Chemistry that Save the World (Part 1)”

3) Taking part in chemistry experiments

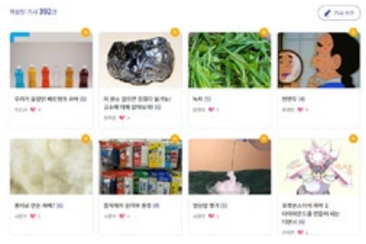
< Chemistry Experiment Kits >

- Chemical experiment kits sent to 300 chemistry news reporters (June 30)
- Instructions on the experiment kits and safety guidelines were given through an online broadcasting of the Silly and Lively Chemistry Experiment Show (June 17).
- Experiment Kit Components:
  ① Rescue Dr. Chuck. (A candle pump experiment)
  ② Help Chemimi find her voice (An electrolyte experiment)
  ③ Help Ddol-l escape (A chemical Bubble Experiment)

< Imitating Chemical Experiments >

- Make a safe experimental video that you can follow safely at home. (A total of six videos released on the 1st and 15th of every month)
  ① Exploding experiment
  ② Boiling carrots
  ③ Sweet Dalgona
  ④ Can I wash my eyes with my hair conditioner?
  ⑤ Can I make my coke transparent?
  ⑥ How to wipe dirty coins thoroughly
- Total accumulated number of views: 4,782.

4) Writing Chemistry News Reports



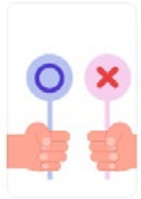
< Writing Chemistry News Reports >

- An incumbent reporter provided feedback on the articles written by kid reporters
- There were a total of 1,212 articles written and 764 articles published online.
  (350 articles pending for feedback or withheld due to insufficient contents)

< Selection of Best Reports >

- No.1-Do we really need artificial food?
- No.2-Can lightsabers exist in the real world?
- No.3-What is radioactivity?
- No.4-Meet an eco-friendly electric car
- No.5-Making fancy ice balls.
- No.6-How much do you know about semiconductors?
- No.7-Tips for relieving itchiness from mosquito bites
- No.8-Is jelly liquid or solid?
- No.9-The most accurate clocks in the world! Atomic clocks
- No.10-The science of PET bottles that we never knew
- No.11-Oxygen gathering experiment
- No.12-Guinness Book of Records on Elements
- No.13-Plastic Zero Challenge!

5) Discussions on chemistry



What do you think about the use of plastics?
(July 27~August 11)

< Discussions on chemistry >

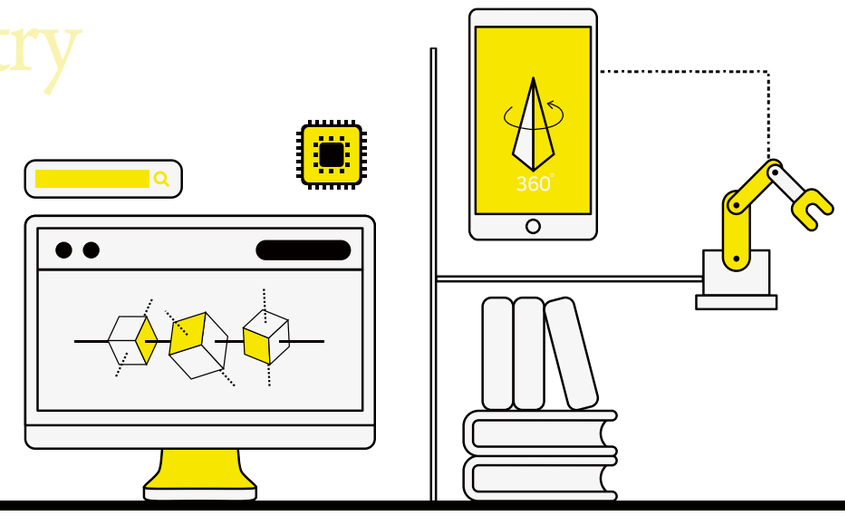
- A forum for expressing various opinions on chemical issues.
- Six suggested discussion topics (Every Thursday, from June through September)
  ① Using artificial chemicals. [For 60% vs. Against 40%]
  ② Ingredients labeling system [69% For, 31% Against]
  ③ Carbon tax [56% for, 44% against]
  ④ Use of plastics [71% for, 29% against]
  ⑤ Use of fossil fuels [24% for, 76% against]
  ⑥ The need for chemical development [83% for, 17% against]

6) Posting on chemistry forums

< Forum for Kid Chemistry Reporters >

- About 3,300 postings were published by children's reporters on the online forum
  - Recommending chemical books
  - Sharing Chemical-related information
  - Sharing behind-the-scenes stories on "Imitating Experiments"
  - Writing novels about Chemistry
  - Drawing characters using chemical elements

Chemistry



RC NEWSROOM

2021 Seminar on Safety

On December 2, 2021, the Korea RC Council held an offline seminar at the Seoul Station Samgyeong Education Center for executives and employees of member companies on the improvement of the safety culture of the chemical industry. In the seminar, the law firm Kim & Chang delivered a presentation on “Corporate Responses for the Enforcement of the Serious Accidents Punishment Act” and held a Q&A session.

Participation in the 2021 RCLG Meeting for the second half of the year

The International Council of Chemical Associations (ICCA) RC Leadership Group Meeting for the Second Half of the Year was held as a virtual conference from September 16 (Thursday) to 17 (Friday). With 65 people from more than 30 member countries attending, discussions were held on the development of RC self-evaluation tools, establishment of ICCA mentoring and expert network, and implementation status of RC by country.

The First Executive Committee Meeting in 2021

The Korea RC Council held the first Executive Committee meeting in 2021 online on December 7, 2021. Two main topics discussed were: (1) Review of the checklist security codes and (2) results of the 2021 RCLG meeting.

The First Steering Committee Meeting in 2021

The Korea RC Council is scheduled to hold the "First Steering Committee Meeting in 2021" online on December 21, 2021. Three main items that will be discussed are: (1) 2021 Project and Settlement Report, (2) 2022 Project Plan and Balance Budget (Proposal), and (3) executive improvement.

2021 Come! Fun World of Chemistry World

In the 2021 Come! Fun World of Chemistry, about 300 children were selected as kid reporters for chemistry news. An online platform (www.chemworld.kr) was established to provide various media contents (articles, cartoons, chemistry lectures, etc.). Children were also able to post articles on chemistry and participate in discussions. For 100 days from June 1 to September 8, five outstanding students who were the most active as kid reporters and accumulated the most points were selected and awarded. LG Chem and Kolon Industries also provided online internship opportunities for these students. The students reported that it was rewarding to be able to learn about chemistry, discover the role of chemical companies, and explore their dreams.

Aekyung Chemical

"To 4 trillion won in sales by 2030" Mid- to Long-Term Goal Setting

Aekyung Chemical (provisional name), which will be newly launched in November by Aekyung Group's chemistry-related affiliates, set its mid- to long-term goal of achieving 4 trillion won in sales by 2030. Aekyung Petrochemical, the group's flagship chemical company, will absorb AK Chemtech and Aekyung Chemical. Aekyung Petrochemical, the surviving corporation, will be launched as Aekyung Chemical as of November 1. The merged corporation will aim for annual sales of about 1.7 trillion won. "We plan to secure future growth engines through mid- to long-term business plans while enhancing corporate value and shareholder value through improved performance," a company representative said.

DL Chemical

Localization of core materials using 800 patents secured through M&A.

DL Group (formerly Daelim Group) has carried out the largest merger and acquisition (M&A) since its foundation. DL Chemical, an affiliate that is transitioning into a global petrochemical company as it launches its new businesses, is gearing toward a "quantum leap" by buying a leading U.S. company with No. 1 technology in the world. With this M&A, DL Chemical will quickly rise above traditional petrochemical companies to become the No. 1 manufacturer and bio-chemical company in the USA and Europe. DL Chemical focused on Kraton's unique technology, as the company holds more than 800 patents. The SBC produced by Kraton has high added value among synthetic rubbers. DL Chemical is planning to localize key materials by utilizing patents secured through this acquisition. It also plans to expand its business to the Asian market.

Kumho Petrochemical

Investment of 256 billion won to expand its NB latex plant in Ulsan.

Kumho Petrochemical will invest 256 billion won in Ulsan Petrochemical Corporation to expand its 240,000-ton NB latex facility. When the expansion is completed at the end of 2023, NB latex production capacity will be expanded from 710,000 tons to 950,000 tons. Additional expansion will also be considered depending on the demand situation. Kumho Petrochemical and Ulsan City plan to cooperate to ensure successful expansion of the NB latex plant. Ulsan City promised administrative support such as authorization and permission related to the investment. Kumho Petrochemical's strategy is to strengthen its competitive advantage in the NB latex market in the future. Demand for medical gloves is on the rise as hygiene awareness is being promoted worldwide. In line with such trend, Kumho Petrochemical will also strengthen its research and development capabilities to secure production capacity and ensure superior quality compared to competitors.

S-Oil

Takes part in the Clean Hydrogen Project… Domestic supply of blue ammonia in collaboration with Aramco

S-Oil participates in a large-scale clean hydrogen project to create a hydrogen ecosystem, leading the revitalization of the hydrogen economy. In cooperation with Saudi Aramco, a major shareholder, it will import competitive blue ammonia produced in Saudi Arabia into Korea. It plans to build infrastructure in order to secure, import, and extract hydrogen from clean ammonia sources overseas. S-Oil announced on the 12th that it will participate in a consortium of clean hydrogen projects in the government's recent announcement of the "Hydrogen Leading National Vision." Samsung C&T and Southern Power will also participate in the consortium. S-Oil is expected to secure large-scale hydrogen demand through this project. It plans to convert existing factory fuels into hydrogen fuels and inject clean hydrogen into production processes such as heavy oil decomposition and desulfurization.

LG Chem

Targeting the solar panel frame market with new EP materials.

5

LG Chem is planning to target markets by developing plastic materials that can replace the metal of solar panel frames for the first time in Korea. On October 19, LG Chem announced that it has developed, using its own technology and manufacturing methods, “LUPOY EU5201,” a PC/ASA flame-retardant material that can maintain the shape of the original material even with temperature changes due to low thermal expansion levels. LUPOY EU5201 developed by LG Chem is a highly functional engineering plastic material that complements the mechanical properties of ordinary plastics by adding glass fiber to a polycarbonate compound. LG Chem plans to accelerate carbon-neutral growth through renewable energy conversion, while contributing to the development of renewable energy industries such as solar power based on the development of LUPOY EU5201 products.

SK Geo Centric

Extracting oil from plastic waste after boiling it for 4 hours at 400 degrees C

6

SK Innovation entered in waste plastic pyrolysis oil made by “urban oil field” on a trial basis last month for the first time in the domestic oil refining and petrochemical industry. It succeeded in mixing oil from waste vinyl with crude oil and returning it to petroleum products. Starting with the scale of 200 tons by the end of this year, the company plans to gradually increase its input. Overseas, global chemical companies BASF and Exxon Mobile have invested a small amount into their processes.

SK Geocentric recently changed its name to mean “eco-friendly innovation centered on the Earth,” and announced that it will invest 5 trillion won over the next five years to build a waste plastic pyrolysis oil production complex in Ulsan. It plans to achieve 900,000 tons of plastic recycling annually by 2025. This is equivalent to all plastics produced annually by SK Geocentric in Korea.

Lotte Chemical

To invest 140 billion won in a "Global Hydrogen Fund"

7

Lotte Chemical will invest 100 million euros (about 135 trillion won) in related funds (Clean H2 Infrastructure Fund) to secure technology and build infrastructure in preparation for the development of the global hydrogen industry. The fund is a hydrogen investment fund jointly led by Air Liquid, a co-chairman of the Hydrogen Council, which is a global hydrogen economy-related consultative body launched by the Davos Forum in 2017.

It plans to make a strategic investment of 2 trillion won (1.5 billion euros) in hydrogen production projects that link hydrogen storage-distribution-infrastructure and hydrogen vehicles around the world with renewable energy. Lotte Chemical is the only Asian chemical company out of the eight companies that are participating from the beginning of the investment.

OCI

Operating profit increased 10 times in the third quarter due to rising polysilicon prices.

8

OCI's operating profit increased ten-fold from the same period last year thanks to rising polysilicon prices and the company’s sale of its solar power plant project in the third quarter. OCI announced on the 27th that it recorded an operating profit of 194.6 billion won in the third quarter of this year, up 976.9% from 18.1 billion won a year earlier. Sales in the third quarter increased 89.9% year-on-year to 888.7 billion won, while net profit rose 2829.7% to 177.6 billion won. “Despite rising raw material prices, delays in shipments, and increased fares due to maritime logistics issues, our operating profit increased due to rising polysilicon prices, sale of urban development (DCRE) projects, and sale of a solar power plant in the U.S.,” the company explained. About its business of anode pitches with a high softening point, the company said, “Commercial production is likely to start around the end of 2023. It is expected that actual sales will occur in 2024 because we have to run tests with battery companies for a considerable period of time even after production.”

Regular Members

Aekyung Petrochemical Co., Ltd.
Air Liquid Korea Co., Ltd.
Akema Co., Ltd.
BASF Korea Co., Ltd.
Daehan Oil & Chemical Co., Ltd.
DIG Airgas Co., Ltd.
DL Chemical.
Dongseo Petrochemical Co., Ltd.
Dongwoo Fine Chem Co., Ltd.
DuPont Korea Co., Ltd.
Eastman Fiber Korea Co., Ltd.
Evonic Korea Co., Ltd.
Exolta Coating Systems Korea (U)
GS Caltex Co., Ltd.
Hansoo Co., Ltd.
Hanwha Solution Co., Ltd.
Hanwha Total Co., Ltd.
Hyosung Chemical Co., Ltd.
Infinium Korea.
Isu Chemical Co., Ltd.
KOBESTRO KOREA Co., Ltd.
Kolon Industries Co., Ltd.
Korea Alcohol Industry Co., Ltd.
Korea ASK Chemicals Co., Ltd.
Korea Dow Chemical Co., Ltd.
Korea Neos Styrolusion Co., Ltd.
Korea Tringio (You.
KPX Chemical Co., Ltd.
Kumho P&B Chemical Co., Ltd.
Kumho Petrochemical Co., Ltd.
Lances Korea (U.
LG Chem Co., Ltd.
Lotte Chemical Co., Ltd.
Lotte EOS Chemical Co., Ltd.
Lotte MC Co., Ltd.
Lotte Precision Chemical Co., Ltd.
LXMMA
Merck Co., Ltd.
OCI Co., Ltd.
PolyMirae Co., Ltd.
Samnam Petrochemical Co., Ltd.
SH Energy Chemical Co., Ltd.
SK Chemicals Co., Ltd.
SK Materials Co., Ltd.
SKC Co., Ltd.
Taekwang Industrial Co., Ltd.
Yeocheon NCC Co., Ltd.
Yong-oxidation Co., Ltd.

Associate Members

Korea Chemicals Management Association
Korea Chloride Alkali Industry Association
Korea Fertilizer Industry
Korea Petrochemical Industry Association
Korea Petroleum Association
Korea Specialty Chemical Industry Association
Korea Testing & Research Institute

How to join to KRCC Membership

Please scan the QR code to see the application process for membership of the Korea Responsible Care Council.

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2022

KRCC's Major Events of the First Half

KRCC's major events of 2022

2022 1st Board of Directors and 23rd Regular General Meeting (Draft)
Date February 2022
Location N/A

2022 First Half RCLG (RC Leadership Group) Conference
Date (Draft) March 2022
Location (Draft) Call Conference Type

2022 Come! Fun World of Chemistry
Purpose To promote chemistry industry
Subject 4th grade ~ 6th grade nationwide
Contents Operate children's chemical journalist produce and media contents (webtoons, news, lecture)

RESERVATION