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Kuraray's Approach to Safety

For the Kuraray Group's business activities, safety is an absolute necessity, and the cornerstone of everything we do. Building "Trustful workplaces and a safe and accident-free company" is a key theme required for maintaining stable product supply and trustworthiness for society.

With these concepts in mind, the Kuraray Group has established and implemented a safety management system to undertake various activities. A number of initiatives are being promoted to raise the safety awareness of our employees and to have safety behavior and confirmations established as common practice at work.

Each worksite tries to find process safety risks and occupational risks through risk assessment activities, and to prevent the occurrence by promoting inherent safe measures for facilities. In preparation for accidents or disasters, we make efforts to prevent the recurrence of accidents or disasters, in ways such as by holding emergency drills to minimize the damage and sharing information on the accident or lessons learned, or by disseminating information regarding measures across the company.

Guiding Principle on Ensuring Safety

Safety is the Cornerstone of Everything We Do

Action Courses on Ensuring Safety (FY2021)

- 1. Ensuring "Safety First, Production (Construction and R&D) Second"**
- 2. Predict Hazards and Make Sure the Safety before Taking Action, then Confirm the Action Results are What You Expected**
- 3. Each employees Acts Proactively with the Intention of Ensuring "Safety" as Their Own Issue**

Safety Activity Management

In accordance with the Company's Safety Activity Management Regulations, the Kuraray Group develops a safety plan every fiscal year and implements it to ensure occupational safety, process safety, and disaster prevention. To be more specific, at the Safety Promotion Committee attended by the President and executives in charge, we make an overall assessment and have a discussion on safety activity performances of the current fiscal year and establish an activity policy for the coming fiscal year. This policy is reflected in and implemented through specific action plans of each plant and department. A group of safety representatives from headquarters, including executives in charge of safety, visit every plant of the Group in Japan twice a year to examine their activity plans, the management of implementation progress, and the results. In addition, staff members from headquarters visit the Group subsidiaries outside Japan once every three years to confirm their statuses. * We perform an overall assessment on results based on the challenges found through the surveys made at each plant, the safety results for that year, and other factors. We incorporate this assessment into the formulation of company-wide policies for the next year, thereby operating a management system for safe operations.

*In fiscal 2020, the verification of safety activities were conducted via web meeting remotely due to the COVID-19 situation.



Verification of safety activities at Kurashiki Plant



Verification of safety activities at Tsurumi Plant

Targets and Performance in Safety Priority Activities

Evaluation: ○ Accomplished, △ Nearly accomplished, × Not accomplished

	FY2020			Items related to FY2021 safety activities
	Targets	Performances	Evaluation	
	Ensuring hazard prediction to secure the safety of the workplace	“Hazard prediction” and “confirmation” have been taking root through effective activities and have been proving effective in preventing accidents and incidents to a certain extent. At present, however, these efforts are the stage of habituation and improvement of sensitivity to hazards, and continuous efforts are necessary in order for everyone to regard the activities as his/her own affair and to be able to carry them out in all situations.	○	

	FY2020			Items related to FY2021 safety activities
	Targets	Performances	Evaluation	
Process Safety and Disaster Prevention, Occupational Safety	“Recognition” and “realization” in the workplace when something feels wrong, and acting on it	A range of efforts have been made to boost “recognition,” and a certain degree of effect has been demonstrated in safety level improvement together with “hazard prediction.” The status of 3S (<i>Seiri</i> : organizing, <i>Seiton</i> : decluttering, <i>Seiso</i> : cleaning) in the workplace has also been improved by continuous efforts. As a result, it has become easier to “recognize” the changes in the workplace.	○	<ul style="list-style-type: none"> Ensuring “hazard prediction” to secure the safety of the workplace Grasping and improving actual conditions of work in the workplace, and review and use of operation standards Implementation of measures to discover latent risks and to minimize apparent risks with regard to process safety Ensuring safety in construction and maintenance work Understanding and countermeasures of safety risks at overseas chemical plants
	Review and enhancement of “new employee training”	Based on operation standards, we have been promoting thorough education, although the use status of standards differs in new employee training by department. Occupational incidents caused by using methods different from those in the operation standards have still occurred, and continued efforts are needed.	△	
	Implementation of measures to discover latent risks and to minimize apparent risks with regard to process safety	We have expanded the scope of risk identification to include unusual tasks and situations such as plant start-up and shutdown, and have promoted measures to reduce risks that have become apparent. In fiscal 2020, there was an accident involving leakage of hazardous materials due to lack of information sharing and confirmation of safety measures between related departments in construction and maintenance work, and it is necessary to take measures to prevent recurrence.	△	
	Reliable operation of the Global Safety Activity Management System	In order to assess and take measures against process safety and disaster prevention risks at overseas chemical plants, we have implemented audits of overseas bases by the companies in charge. In addition, the companies in charge, the Technology Division, and the Environmental and Industrial Safety Management Center have been working together to share information and consider horizontal deployment of measures.	○	

Numerical Targets and Results

	FY2020			FY2021
	Targets	Criteria for evaluation	Actual results	Targets*1
Process safety and disaster prevention	Zero	process accidents Zero	8 cases	A, B, and C rank accidents* ² : Zero
				D1 and D2 rank accidents* ² : 3 or less
Occupational safety	Zero	A and B rank incidents* ³ : Zero	3 cases	A and B rank incidents* ³ : Zero
		The frequency rate of all occupational incidents* ⁴ : 1.5 or less	1.96	The frequency rate of all occupational incidents* ⁴ : 1.5 or less

*1 Kuraray had set annual target values as evaluation criteria for zero accidents and zero incidents, but from fiscal 2021 it changed this and set annual target values as safety targets to carry out activities with awareness of specific annual targets.

*2 An evaluation ranking of process accidents using Kuraray's proprietary system. Five ranks from the most serious evaluation: A > B > C > D1 > D2.

*3 An evaluation ranking of occupational incidents using Kuraray's proprietary system. Four ranks from the most serious evaluation: A > B > C > D.

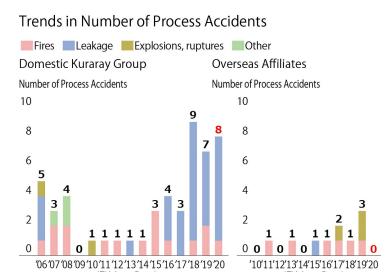
*4 The frequency rate of all occupational incidents: The number of all occupational incidents requiring medical attention per million working hours.

Process Safety and Disaster Prevention

At the Kuraray Group, we consider it our major responsibility to prevent the occurrence of explosions or fires, leakage of hazardous materials and other accidents that could have an immense impact on society, as well as to minimize any damage in the event of such occurrence. For this purpose, we have continuously undertaken activities such as risk assessment related to process safety and disaster prevention, and strive to take earthquake and tsunami countermeasures for buildings and plants, and organize the safety management system for facilities.

After the accidents occurred at another company in the 2010s, we paid particular attention to the risk assessment of unusual tasks and situations such as the starting and ceasing of an operation, a power and water outage and an emergency shut-down. Moreover, we also extract various risks that may arise in the event of a failure of safety equipment or incompliance with standard procedures or rules, and consider countermeasures.

Additionally, we develop ideas and human resources that can promptly respond to an unusual situation before an accident occurs through implementing education to raise



the members' sensitivity to risks and clarify standards to determine an unusual situation, so that they can detect a sign of abnormalities.

Employees are regularly trained through on-site drills on various situations including the night time, holidays, when managerial personnel are absent and situations that occur without notice, in a drill using an external facility or a joint drill with a local fire department.

We are engaging in initiatives for receiving evaluations from an external organization about our safety-related foundations and culture, and we aim to be a safe company that does not suffer any accidents or disasters by operating the PDCA cycle with a thorough understanding of which areas need further reinforcement.

In the event of a significant accident, the Emergency Command Center led by President is ready to be established to promptly respond to the situation and provide on-site support. In fiscal 2020, there was a company-wide drill involving the Emergency Command Center, with the scenario that a toxic gas leak had occurred at a plant, requiring residents nearby to shelter indoors. Media training is also provided to key managerial personnel in charge of public relations to enable them to appropriately provide information to the regional community and media in case of such an accident.

In fiscal 2020, we regret to say that a total of eight cases of process accidents were recorded within the entire Group and we failed to meet our target. No process accidents occurred in the Group outside Japan. Within the Group in Japan, the aforesaid eight process accidents comprised one small fire that was extinguished immediately and seven leakages of hazardous or deleterious substances, which did not lead to any major accident.

The Kuraray Group has thus far managed accidents by the number of occurrences, regardless of their severity. In fiscal 2020, the Group introduced an evaluation ranking of process accidents using Kuraray's proprietary system that rates the seriousness of process accidents (based on the scale of the accident and the cause of its occurrence). We will strive to achieve the goal of zero major process accidents (comprising A, B, and C rank accidents) and promote risk assessment and countermeasures at workplaces to reduce the occurrence of minor accidents (comprising D1 and D2 rank accidents, which include small fires that are extinguished immediately, slight leakages of hazardous substances, etc.).

Safety audits of our overseas chemical plants, which began in fiscal 2019, are still ongoing to prevent the recurrence of fire accidents at overseas chemical plants. We have been working to ensure progress with initiatives for issues identified through audits and improve our safety management level.

Occupational Safety

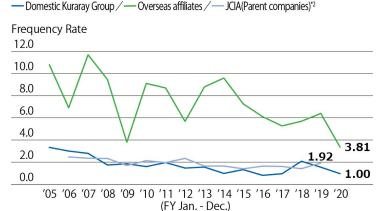
Realizing that the safety and health of its employees are the basis of business activities, the Kuraray Group aims to create safe and incident free workplaces by striving to enhance the safety level of each of its employees and organizations. It does this through appropriately implementing its safety activity management system. Through the Company-wide policies and activity items including Guiding Principles and Action Courses on Ensuring Safety, policies and plans are thoughtfully developed and put into practice according to each plant's and division's situations and their unique ideas. Safety activities and their challenges are discussed among workers and employers at the Safety and Health Committee held by each of the domestic plants and factories every month, aiming to realize "trustful workplaces, and a safe and accident-free company."

Through risk assessment activities and inherent safety measures of equipment, activities to reduce equipment-caused incidents have successfully decreased serious occupational incidents. However, many occupational incidents caused by an individual's lack of preparations or unconscious behavior still have occurred. Therefore, education to raise the sensitivity of each employee to risks has been promoted to eliminate these types of occupational incidents.

In fiscal 2020, the frequency rate for all occupational incidents within the entire Group was 1.96 (1.00 in the Group in Japan and 3.81 in the Group outside Japan), which failed to meet the target (which was 1.50 or less in the entire Group). However, the number of occupational incidents decreased both in Japan and overseas, and the Group as a whole achieved its best frequency rate since fiscal 2006. Kuraray has introduced an evaluation system to rank the seriousness of occupational incidents on a scale of one to four, from A to D, with goals (of zero A and B rank incidents) set regarding the number of incidents rated A or B, which indicates serious incidents. In fiscal 2020, the total number of A and B rank incidents in the entire Group was three. This comprised one A rank incident and one B rank incident in the Group in Japan, as well as one B rank incident in the Group outside Japan, and our target was not achieved. Two of the three cases were involved hand injuries caused by rotating machines, and one was attributed to a collision caused by a heavy object that fell during transportation. We will improve our facilities and strengthen management to eliminate such serious incidents.

In addition, similar to the previous fiscal year, there were

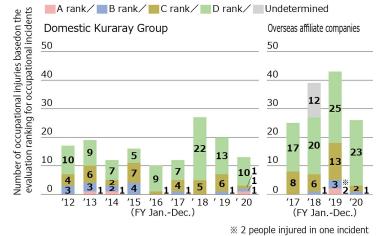
Trends in the Frequency Rate of all Occupational Incidents¹



¹ Number of all occupational incidents per million work hours required medical treatments

² Japan Chemical Industry Association (JCA) Data. Source: Occupational Safety Fact-finding Survey

Trends in the Number of Occupational Incidents Based on the Evaluation Ranking for Occupational Incidents



² 2 people injured in one incident

Number of Fatal Occupational Incidents

Boundary

Japan: Kuraray Co., Ltd. and subsidiaries in Japan

Overseas: Plants of overseas subsidiaries

	2015	2016	2017	2018	2019	2020
Japan	0	0	0	0	0	0
Overseas	0	0	0	0	0	0

- No fatal incidents have occurred in the Kuraray Group in Japan since the one in December 2005.

- No fatal incidents have occurred overseas since fiscal 2002, the earliest year for which data is available.

Number of workers killed by occupational incidents (at subcontractors)

Boundary

Japan: Workers of subcontractors that engage in maintenance and construction works at the Company's plants, etc.

Overseas: Same as above

	2016	2017	2018	2019	2020
Japan	0	0	0	0	0
Overseas	0	0	0	0	0

- No fatal incidents have occurred at subcontractors in Japan since the one in March 1992.

- No fatal incidents have been reported at overseas subcontractors in the past.

many occupational incidents caused by an individual's lack of preparation or unconscious behavior, such as tumbles, and we are continuing our efforts to reduce such "behavioral incidents." We will review and enhance the new employee training as there occurred many occupational incidents involving inexperienced workers. We will continue to firmly proceed with our efforts to address these issues, and going forward, we will strive to fulfill the objective of achieving a safe workplace where disasters do not occur.

Risk assessment of new business, capital investment, etc.

The Kuraray Group has in place and operates a system that carries out prior surveys and risk assessment regarding process safety and occupational safety and health of new projects and capital investments in and outside Japan through the functions of the Technical Evaluation Committee, the Technology Review Meeting and the Safety and Environment Examination to verify that safety measures and environment measures are sufficiently considered before moving to the next step. In addition, changes in raw materials, facilities, operating conditions and the organization as well as personnel transfer in line with the organizational change (supervisors, administrators, persons in charge, etc.) are implemented after taking measures required upon assessing risks as part of the change control process. The Kuraray Group ensures safety in introducing new business and facilities by steadily implementing these initiatives.

Safety Audits for Chemical Plants outside Japan

In response to a series of fire accidents involving explosions at chemical plants of the Group's subsidiaries outside Japan in recent years, we initiated safety audits for chemical plants outside Japan in fiscal 2019 and we have reviewed and strengthened safety measures to ensure the safety and stable operation of the Group outside Japan. In fiscal 2020, we conducted on-site audits at two plants in Europe and remote audits at two plants in the United States due to the spread of the COVID-19 pandemic. In the safety audits, we checked the status of responses to issues identified in the previous year, such as change management, strengthening operation of permission/approval system for specific works, and the identification of risk sources during off-normal operations (start-up and suspension of operations), and we identified new issues including education and training on high-risk items and management of undocumented works. In fiscal 2021, we will continue to audit unaudited plants outside Japan, and conduct follow-up audits at the plants that have already completed audits. Looking ahead, for identification of issues and countermeasures at chemical plants outside Japan, we will work to develop and enhance safety management systems that are suitable for their respective plans while stepping up support from the Group in Japan.

Kuraray's Proprietary Evaluation Method for Process Accidents

Up to now, the Kuraray Group set targets for process accidents by evaluating safety performance based on the number of accidents, regardless of their severity. However, this method was insufficient for setting the appropriate targets according to risk. Accordingly, we tried to classify process accidents according to their size and include them in the evaluation rank. However, most of the process accidents that occurred within the Kuraray Group were classified as the lowest rank according to the generally used classification method (the CCPS method, etc.), which did not meet our objectives. In 2020, therefore, we developed a proprietary evaluation method. This evaluation method classifies the scale of an accident by the type of accident (fire, explosion, leakage, etc.), and determines the rank by taking into account the presence or absence of human damage and factors that led to the occurrence of the accident and so on. The method also enables further sorting and classification of accidents with the lowest rank in the CCPS classification. In this way, we aim to eliminate major accidents that fall into the A, B, or C rank as "accidents that should never occur." For minor accidents classified as D1 or D2 rank (slight leakage of hazardous materials, a small fire that is extinguished immediately, etc.), we set targets for each type of "accident that requires a reduction in the frequency of occurrence of risk," and use these targets to carry out appropriate safety risk reduction activities in accordance with risk.

Evaluation and Classification of Occupational Incidents

Generally, categories based on the severity of actual incidents, including fatal incidents, lost time incidents and non-lost time incidents, are used as an indicator for occupational incidents. In particular, the frequency rate of lost time incidents is often used to assess the level of or establish a target for organizational safety.

However, actual safety levels may deviate from the results of this assessment method for the following reasons:

- (1) The severity of injuries is unpredictable in many cases.
- (2) The occurrence factors of an incident are not taken into consideration.
- (3) (When it is applied to global management) criteria of determining the degree of injuries depends on the country.

We therefore have established a proprietary evaluation and classification of occupational incidents by subtracting unpredictable factors and adding an assessment of occurrence factors. This quantifies not the actual severity of injuries but the potential severity of injuries that could have been caused by an occupational incident. Moreover, faults that caused such incidents are divided into human, equipment and managerial, rated numerically, and added to the potential severity of injury to determine the ranking from A, B, C to D.

As a result, the number of severe occupational incidents ranked A and B serves as an indicator for evaluating the level of organizational safety.

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