

Process Safety and Disaster Prevention

GRI 403-1

We implement process safety and disaster prevention activities with the aim of ensuring the safety of employees and the maintenance of safe, stable operations, stipulating matters relating to prevention of accidents, emergency response and strengthened security.

Through these activities, we aim to have zero accidents.

Social issues

As we have several large-scale chemical plants, their process safety and disaster prevention needs are increasingly heightened in the context of the recent increase in the number and severity of accidents at chemical plants and natural disasters.

As such, we will undertake to enhance our safety capabilities, and strengthen our disaster prevention measures on a daily basis.

Strategy

Risks and opportunities

Risks

We regard outages of stable operations from major accidents impacting regions in the vicinities of plants, natural disasters or other factors, and the accompanying loss of societal trust in the company from these things as risks.

Opportunities

On the other hand, we think that implementing thorough process safety and disaster prevention initiatives ensures the safety of communities and employees, which leads to trust in the company and enhancement of its brand image, and regard this as an opportunity.

Strategy

We promote activities related to process safety and disaster prevention as part of Responsible Care (RC) activities and plan and implement them according to Kao Group RC targets.

 Responsible Care Activities
https://www.kao.com/content/dam/sites/kao/www-kao-com/global/en/sustainability/pdf/our_foudations2025-e-02.pdf

Social impact

Kao, as a company with large-scale chemical plants, will provide local communities in which local residents can live in peace of mind and employees at worksites can operate in safety without fear of accidents.

Ensuring the stable provision of products with sound implementation of business activities from safe operations at all worksites.

Business impact


Mitigation of unnecessary expenses and reductions in overall costs, minimizing lost opportunities and leading to higher revenues through sound implementation of business activities from safe operations at all worksites.

Governance

Framework

Our daily activities for process safety and disaster prevention are conducted as part of the RC promotion system. In particular, we have built a framework to keep track of accidents or disasters when they occur, through our global emergency reporting network. The organizational framework used in an emergency situation is separate from the Board of Directors, etc.; an emergency organization is established, headed by the President & CEO, and takes action under the direct supervision of the President. In addition, when an accident or disaster occurs that we anticipate will have a major impact on our business activities, we will establish an Emergency Response Team Organization headed by the President & CEO. Together as a group, our initial response places top priority on safeguarding human life as we implement measures that include our Business Continuity Plans (BCP)*1.

*1 Business Continuity Plan A plan for continuing key corporate activities through procedures to decide in advance which operations and functions should be continued, and which methods should be applied to continue activities, assuming various situations that cause the interruption and/or shutdown of business activities due to various events and the factors behind their occurrence.

 • Our ESG Vision and Strategy > Governance
<https://www.kao.com/content/dam/sites/kao/www-kao-com/global/en/sustainability/pdf/sustainability2025-e-11.pdf>
• Our ESG Vision and Strategy > Risk and Opportunity Management
<https://www.kao.com/content/dam/sites/kao/www-kao-com/global/en/sustainability/pdf/sustainability2025-e-12.pdf>

Education and promotion

Through education planning using past cases, the latest technologies and knowledge, as well as response drills on process safety and disaster prevention, we are able to communicate skills and strengthen security. Along with this, we strive to raise employees' disaster prevention awareness by planning and conducting drills for natural disasters and fires.

Collaboration with stakeholders

By conducting events related to safety and disaster prevention in cooperation with partner companies, we aim to further raise disaster prevention awareness and become a safer, more secure company.

In addition, by conducting information exchange meetings on a regular basis with everyone in the regions that surround our plants, we are deepening communication with local communities.


Risk management

Policies

Activities to ensure process safety and disaster prevention are clearly stipulated in the Kao Group Responsible Care (RC) Policy, which states that Kao will “strive to prevent accidents by improving on-site safety competency” and that furthermore, “Top management will exercise leadership to continuously improve our safety culture and safety infrastructure by putting safety first. We will also maintain safe and stable operations by systematically implementing equipment-related and administrative measures. We shall strive to prevent fires, explosions and chemical spills, place maximum priority on safeguarding human life when responding to natural disasters, and prepare for emergencies by conducting periodical training that takes into consideration the need to strengthen security related to facilities, processes and technology. “We are endeavoring to prevent accidents and disasters in accordance with this policy.

 Kao Group Responsible Care Policy
<https://www.kao.com/global/en/sustainability/klp/policy/responsible-care-policy/>

We promote activities related to process safety and disaster prevention as part of Responsible Care (RC) activities, and manage and assess risks according to Kao Group RC targets.

-  • Our ESG Vision and Strategy > Risk and Opportunity Management
<https://www.kao.com/content/dam/sites/kao/www-kao-com/global/en/sustainability/pdf/sustainability2025-e-12.pdf>
- Responsible Care Activities
https://www.kao.com/content/dam/sites/kao/www-kao-com/global/en/sustainability/pdf/our_foudations2025-e-02.pdf

Metrics and targets

Mid- to long-term targets and 2024 results

Mid- to long-term targets

We actively strive to realize our goal of completely eliminating on-site fires, explosions, leakages and logistics-related leakage*2 accidents.

2024 results

In 2024, to maintain safe and stable operations, we continued as in 2023 to conduct and periodically review safety assessments at our chemical facilities in order to eliminate safety-related accidents. This included enacting policies to prevent runaway reactions such as abnormal thermal reactions during polymerization or other reactions, and implementing policies to respond to natural disasters such as earthquakes and flood damage, which have become increasingly frequent in recent years. In addition, we have proactively adopted AI and IoT technologies to reduce the labor required for facilities and improve process reliability, while operating a system that analyzes big data and applies it to the system for detecting signs of process errors.

In addition, detailed implementation specs and plans were drafted for respective divisions with the targets of enriching emergency drills and enhancing security. Furthermore, to boost levels of safety and disaster prevention, we conducted annual disaster prevention audits at our plants outside Japan. In 2024, these audits were carried out at Pilipinas Kao, Kao Indonesia Chemicals, Kao Indonesia, Kao Specialties Americas and Quimi-Kao.

Moreover, last year we formulated the Kao Grand Design for Process Safety to be achieved by 2030, and shared the design's 13 action plans, which aim to reinforce our safety culture and fundamentals and enhance safety, with related divisions and plants, and we are promoting activities by incorporating the action plans into each workplace. Small-scale fires and leakages occurred in 2024, but there were no accidents involving explosions or logistics-related leakages. For every safety accident, we conduct an accident cause analysis using the 4M5E method*3 and implement measures to prevent similar accidents in the future. In 2025, we will continue activities directed toward our targets of completely eliminating on-site fires and accidents related to explosion, leakage and logistics-related leakage accidents.

*2 Logistics-related leakages Leaks during the transport of products, etc.
*3 4M5E method A method for conducting causal analysis from the standpoint of four M-factors: Man (people), Machine (machine and facility), Media (material and information) and Management (management and education), followed by response policies from the standpoint of five E-factors: Education (education and training), Engineering (technology and engineering), Enforcement (strengthening and strict adherence), Example (model and example) and Environment (environment, background)

Overview of accidents (2024)

Type of accident	Small-scale fires: 7 Leakages: 1
Overview of accident	<ul style="list-style-type: none">• A fire originating from a trash bin in a women’s restroom• A fire caused by equipment brought in by an external contractor• Fire originating from manufacturing machinery• Minor leakage from a flange, which soaked into insulation material and ignited spontaneously• Fire due to overheated material during a grinding machine malfunction• Fire originating from undergrowth near a designated smoking area for contractors• Fire caused by combustible materials igniting after welding work• Leakage of refrigerant from a turbo chiller
Countermeasures being taken	<ul style="list-style-type: none">• Performance of analysis using the 4M5E method to determine the causes of the accidents, and thorough implementation of countermeasures• Promotion of equipment replacement, and strengthening of monitoring device provision

Targets and performance

Item	Scope	Indicator	2023	2024		2025
			Results	Target	Results	Target
Accidents	Kao Group	Fires, explosions, leakages, etc. (no. of accidents)	4	0	8	0
		Logistics-related leakage (no. of accidents)	0	0	0	0

Reviews of 2024 results

We strived to completely eliminate safety accidents such as on-site fires, explosions and leakages but did not meet this goal.

For every safety accident, we conduct an accident cause analysis using the 4M5E method and implement measures to prevent similar accidents in the future.

Initiatives

Emergency response drills to prepare for large-scale disasters

Besides implementing fire response training and evacuation drills at the level of individual worksites, we also conduct training on a company-wide basis to prepare for large-scale disasters.

Training in the use of the system for reporting the safety of Kao employees

To prepare for natural disasters, the Kao Group in Japan has adopted a web-based Employee Safety Confirmation System. Twice yearly, in March and September, all employees undertake personal input drills. In March 2024, following the Noto Peninsula Earthquake that occurred on New Year’s Day, we conducted a drill based on a scenario where a Nankai Trough earthquake (magnitude 7 or greater) occurs during a major holiday period. In September, in response to the emergency information issued in August regarding the Nankai Trough earthquake, we conducted another drill simulating a magnitude 7 Nankai Trough earthquake. Employees were required to input their safety status and respond to a company-issued survey. We will continue to hold drills on the premise of actual disasters as they occur.

Emergency response training assuming an earthquake

We are consolidating organizational units for disaster response in Eastern Japan and Western Japan premised on damage to the Kao Head Office from an earthquake in the Greater Tokyo Metropolitan area. In October 2024, we conducted a drill simulating a partial-rupture earthquake along the Nankai Trough, triggering an emergency advisory for the Nankai Trough earthquake.

During these drills, statuses were confirmed by IP radio within major disaster response organizational units, and promptly transmitted to Emergency Countermeasure Headquarters through our online internal disaster system and information management portal system. Necessary response drills were carried out by the organizational units responsible for disaster response based on the relevant data. Furthermore, in the October drill, the President & CEO, as the head of the Emergency Countermeasure Headquarters, participated in the exercise. The training included decision-making and issuing directives in response to the evolving disaster situation.

The content of drills is being reviewed on an ongoing basis in light of the lessons learned from past training drills.



The President & CEO and top management joined the drill.

Evacuation drills based on the scenario that a plant tour is taking place when the disaster occurs

The nine Kao plants in Japan that provide plant tours have prepared protective hoods for use by plant visitors in the event that an earthquake occurs while a plant tour is underway. These plants also implement evacuation drills, with employees taking on the role of plant visitors, to ensure that, in the event of emergency, visitors can be taken swiftly to a safe place. In the future, we will continue to incorporate drills based on a variety of different scenarios during a plant tour into our annual training plan.



Implementing an evacuation drill with employees taking on the role of plant visitors



Strengthening process safety and disaster prevention

The SCM Division is actively introducing DX technologies including AI and IoT, and continues to strengthen risk management at chemical facilities through hidden hazard, earthquake and natural disaster response readiness.

In 2024, we had almost completed the quantitative risk assessment for fire and explosion hazards caused by runaway reactions in chemical equipment, a project initiated in 2020. Following this, we conducted periodic reviews based on risk levels.

We also strive to minimize damage due to earthquakes. In addition to promoting ongoing diagnosis and reinforcing equipment racks in our facilities as earthquake countermeasures, we plan to consider measures that may be necessary to prevent structural damage due to earthquakes in sites outside Japan.

Our activities to minimize damage include incorporating flood risk countermeasures into our basic policy. Given the increasing frequency of floods and windstorms, we are also evaluating measures for non-structural components such as roofs and exterior walls to further mitigate potential damage.

Additionally, to maintain and improve global safety standards, we audited safety, maintenance, and other technologies across our international facilities. In 2024, these audits were carried out at Pilipinas Kao, Kao Indonesia Chemicals, Kao Indonesia, Kao Specialties Americas, and Quimi-Kao.



Fire-extinguishing and leakage response training at Kao Penang



Nighttime emergency drill at Kao Indonesia

High-pressure gas safety

High-pressure gas safety inspection, auditing and verification

The Wakayama Plant has been designated as an Accredited Safety Inspection Executor*1 pursuant to the High Pressure Gas Safety Act. In 2024, a safety audit was implemented by Safety Management in October, and a safety inspection under the direction of the President & CEO, who also serves as head of Safety Management, was implemented in November. We were able to confirm that there were no problems with regard to process safety activities.

The high-pressure gas equipment at other Kao worksites also has safety inspections performed by prefectural and external inspection bodies. Safety audits and safety verifications for these facilities are also carried out in-house, and a serious effort is being made to ensure safe equipment operation.

*1 Accredited Safety Inspection Executor It is a company or organization authorized by the Minister of Economy, Trade and Industry to perform self-inspection, either while equipment is in operation or while it is out of operation, to verify whether the safety of specified items of equipment conforms to the relevant technical standards pursuant to the High Pressure Gas Safety Act.



High-pressure gas safety inspection at the Wakayama Plant

Going forward, we will use e-learning actively to carry out process safety and disaster prevention Kao Group Disaster Prevention Manual education.

Process safety and disaster prevention educational programs

We create various educational programs for process safety and disaster prevention. For example, the Monozukuri Training Center of the SCM Division is endeavoring to pass on the necessary knowledge and skills to younger technicians, who will be responsible for production sites, by exposing them to simulated technical glitches and hazardous situations.

Promising leaders of the next generation within and outside Japan receive eight months of training to learn about process engineering and the spirit of YokiMonozukuri at Kao's Global Techno School in the Wakayama Plant. Every year on Disaster Prevention and Volunteers Day, a disaster prevention message is posted to all employees in Japan to enhance their disaster awareness. In addition, days when accidents occurred are designated as Safety Days, to help ensure that the efficacy of past drills is not weakened by the passage of time. Moreover, the Kao Group Disaster Prevention Manual is distributed annually to all employees in Japan.

As lecture-style education is offered to all affiliated company employees in Japan, we have enhanced our e-learning programs to be accessible from anywhere in response to the increasingly flexible work arrangements.

For education related to disaster prevention education in 2024, we created a video that explains the roles and actions undertaken by staff in charge of disaster prevention so that each site can establish a disaster prevention system for when not all employees come to work. The relevant materials were also shared on the intranet, and training on the Nankai Trough earthquake was conducted for all employees in Japan.

As in 2023, process safety education in 2024 covered dangerous substances as defined by the Fire Service Act, which is a necessary area of knowledge for employees of companies that handle chemical products and a fundamental element of regulation for companies. We trained participants on handling actual dangerous substances as defined by the Act.



Kao Group Disaster Prevention Manual