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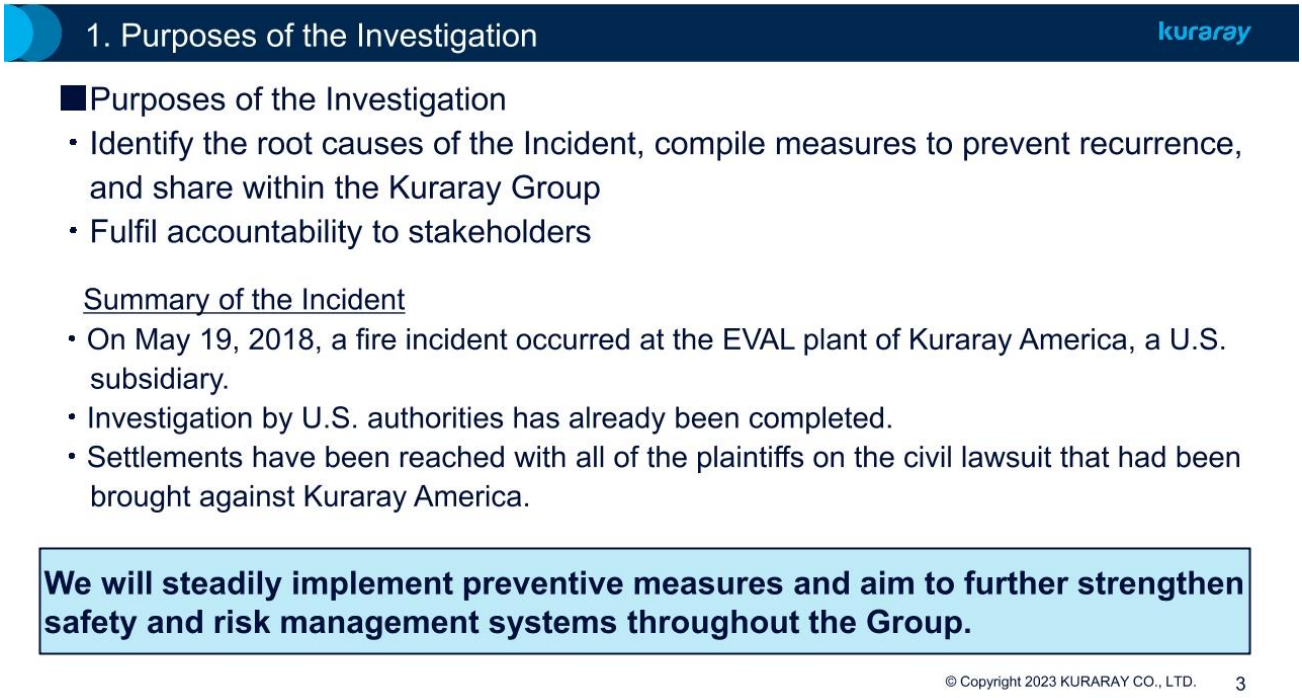
Management Briefing

Session 1. U.S. EVAL Plant Fire Incident Investigation Results

Presenter:

Hitoshi Kawahara President and Representative Director

December 18, 2023



Kawahara: Thank you very much for taking time out of your busy schedules today to attend the KURARAY CO., LTD. management briefing. My name is Hitoshi Kawahara, President of the Company. I will explain the investigation system in the following slides, but today, Director Tanaka is here as a representative of the Incident Investigation Committee, and Managing Executive Officer Omura is here as a representative of the Investigation Team established under the Incident Investigation Committee.

First of all, let me explain the purpose of the investigation. The EVAL Plant Fire Investigation results have already been posted on our website, so please take a look at that as well.

I would like to begin with an overview of the fire incident at the EVAL plant in the United States. This incident occurred on May 19, 2018, at the EVAL Plant of Kuraray America, a US subsidiary of the Kuraray Group. Fortunately, there were no casualties, but many workers of outside contractors were affected by the incident.

Following the incident, an on-site investigation was conducted by the US authorities, OSHA, the Occupational Safety and Health Administration, and the CSB, the Chemical Safety Board. The investigations have been completed, and the results and decisions have been made public.

In addition, civil lawsuits have been filed against Kuraray America in connection with this incident. 164 workers of outside contractors and others had demanded compensation for damages, and in April of this year, a settlement was reached with the last plaintiff, and a settlement has been reached with all plaintiffs, resolving the lawsuits.

With the lawsuits resolved, we are now in a position to verify the incident. In addition to addressing the technical and safety management issues raised by the US authorities' investigation of Kuraray America, Kuraray decided that it was necessary to conduct an in-depth review of Kuraray America's internal controls and governance structure, as well as litigation risks that are particular to the United States.

We believe that it is essential to investigate the root causes of the incident and steadily implement measures to prevent recurrence based on the results of this investigation to ensure that the same

type of incident is not repeated. Furthermore, by horizontally disseminating the investigation results of this incident within the Kuraray Group, we aim to strengthen the safety and risk management systems not only of Kuraray America but also for the entire Kuraray Group.

2. Investigation Committee and Method of Investigation

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■Incident Investigation Committee (established May 2023)

- Comprised of five members, primarily of outside officers (independent officers)

Chair	Outside Director	Satoshi Tanaka
Member	Outside Director	Jun Hamano
Member	Full-time Member of Audit & Supervisory Board	Kazuhiro Nakayama
Member	Outside Member of Audit & Supervisory Board	Tomomi Yatsu
Member	Outside Member of Audit & Supervisory Board	Kenji Komatsu

■Investigation Team

- Established under the Incident Investigation Committee
- Comprised of in-house members who are well-versed in the company's affairs and have expertise in their respective fields
- Investigated from the perspectives of technology, governance, and dealing with litigation



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Next, I would like to explain our incident investigation committee and the method of investigation. In order to conduct an objective investigation of the incident, we established an Incident Investigation Committee in May of 2023, consisting of the five members listed on this slide, led by an outside director.

In addition, to collect data to be used for the investigation and conduct practical work, an Investigation Team was established under the Committee, consisting of internal members who have expertise in the relevant fields and are familiar with the Company's internal situation. The investigation team conducted its work from the perspectives of technology, governance, and dealing with litigation and reported its progress and results to the Incident Investigation Committee. The committee received the report, discussed its contents from an objective standpoint, and subsequently reported to the Board of Directors.

In the material disclosed on our website last Friday, we presented the contents of the report from the committee based on the deliberations, specifically, the background of the incident, the results of the investigation, preventive measures, the status of their implementation, and future efforts to further strengthen the safety management and risk management systems of the entire Kuraray Group.

3-1. Events of the Incident

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Summary of Fire Incident

Time and Date: 10:28am on May 19, 2018

Place: Polymerization process area of the second production line of Kuraray America's EVAL Plant

Progress:

1) As pressure rose in the polymerization reactor due to ethylene, the ethylene condensed due to refrigerant flow.
2) Temperature inside the reactor abnormally dropped due to ethylene condensation.
3) Operators began to heat the polymerization reactor jacket in response to the drop in temperature.
4) Heating of the polymerization reactor jacket caused the ethylene liquid to vaporize, and pressure in the reactor began to rise.
5) Operators released the pressure control valve (PCV), but the ethylene release limit guide alerted, and they hesitated to release PCV further.
6) Before activating the emergency open valve to reduce pressure in the reactor, pressure within the reactor reached the setting value for the pressure safety valve (PSV), and ethylene was then discharged into the atmosphere from the PSV discharge port.

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Next, I will provide an overview of the fire incident.

As mentioned earlier, this incident occurred on May 19, 2018, at 10:28 local time. The location was near what is known as the polymerization process of the second line of Kuraray America's EVAL plant. The 23 victims who were transported to the emergency center were subcontracted workers. There were a large number of subcontract workers on site because the plant was in the middle of a shutdown maintenance.

The actual events leading up to the fire are described on the slide, but the subcontracted workers who were working in the vicinity were affected by the fire when ethylene was released into the atmosphere from the pressure control valve ignited.

3-2. Technology-related Investigation Results and Recurrence Prevention Measures

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Investigation Results	Recurrence Prevention Measures
Abnormal rise in pressure in the polymerization reactor due to erroneous manual operation	• Switched to safety apparatus designed not to rely on human actions • Established standards for operational tasks. Implemented measures to address unclear work instructions • Implemented measures to compensate for insufficient understanding among operators (visualizing condition inside the polymerization reactor on a control computer) • Bolster involvement of Corporate HSE (Health, Safety, Environment) at Kuraray America in safety activities at plants and engage in activities to improve communication with each plant
Insufficient risk assessment for the positioning of the discharge port in the safety valve	• Changed the position of the discharge port to a safer one that is unlikely to cause human harm
Lax enforcement of restrictions on work-related permissions including for fire-using operations and access by unrelated personnel during high-risk startup operations	• Strengthened the organization by putting personnel with seasoned knowledge of production technology into the roles of president and business heads at Kuraray America • Establish and enact the rules such as restrictions on access by personnel other than those related to startup operations, and standards for evacuation warnings when problems occur at the plant

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Earlier, I mentioned the 3 perspectives of technology, governance, and dealing with litigation, but let me first discuss the technical aspect of the case.

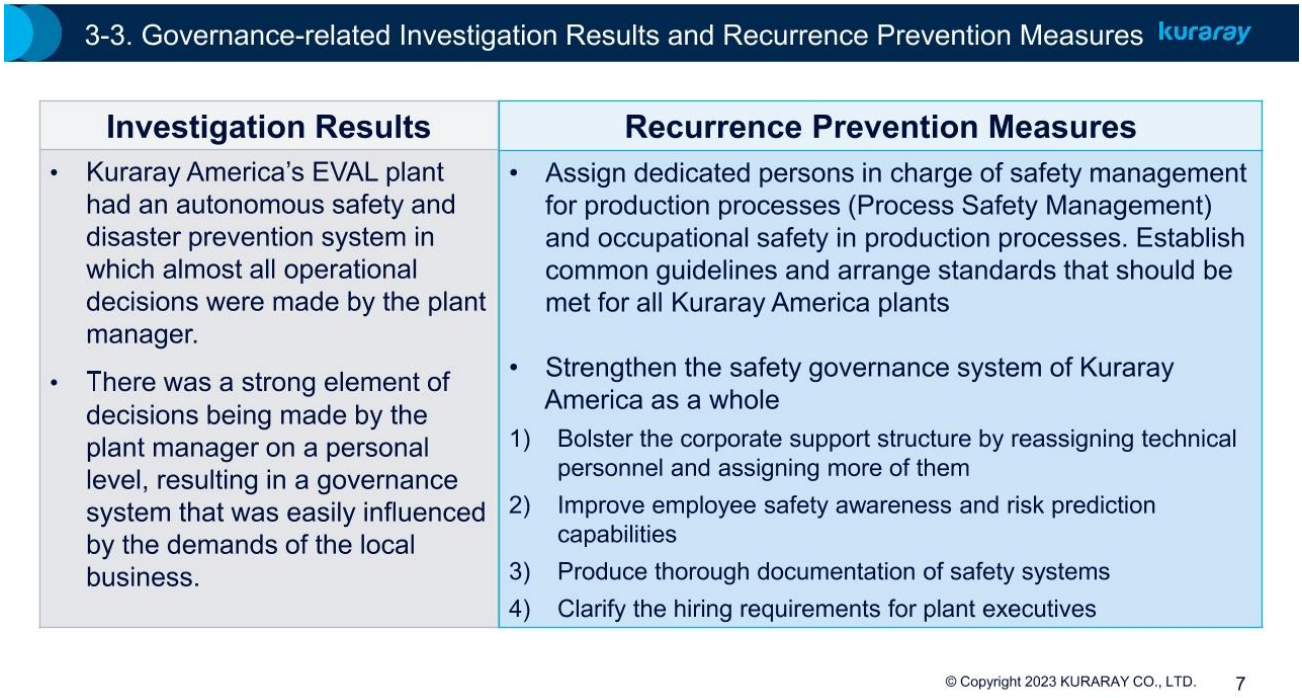
Based on the results of interviews with the employees involved in the incident and the evidence collected and analyzed, we focused on the 3 items listed on the left side of the slide as the main causes of the incident conducted various analyses on them, and extracted the issues behind them.

First, an erroneous operating procedure caused an abnormal pressure to increase in the polymerization tank, and appropriate measures were not taken afterward. Measures to prevent recurrence include design changes to safety devices that do not rely on human operators to solve this incident, maintenance of operation work standards, countermeasures against unclear work instructions, and measures to compensate for the lack of operator understanding. These measures include visualization of the condition inside the polymerization tank on the control computer, which has been completed. In addition, in order to avoid the safety management system from becoming a mere formality, Kuraray America's corporate HSE, which is an organization that oversees occupational safety at Kuraray America, Inc. HSE stands for Health, Safety, and Environment, respectively, is strengthening its involvement in safety activities at each Kuraray America plant and working to improve communication with each plant.

Second, there was insufficient risk assessment and measures to prevent ignition risk after the safety valve was activated due to a lack of risk extraction for the release method of the safety valve discharged to the atmosphere. As a measure to prevent recurrence, after this incident, we changed the release port to a safer position that is less likely to affect employees.

Finally, the third point is the lax enforcement of restrictions on work-related permissions, including for fire-using operations and access by unrelated personnel during high-risk startup operations. At the time, the EVAL plant was undergoing shutdown maintenance, and there was inadequate inter-departmental schedule management and risk management for shutdown maintenance. As a result, a large number of subcontracted workers continued to perform construction, repairs, and other work that had been planned for shutdown maintenance during the startup process.

As a measure to prevent a recurrence, we believe that the lack of career opportunities for the plant manager and other managers was one of the factors. After the incident, we enhanced the system by appointing personnel with expertise in production technology as the president and business manager of Kuraray America. As a countermeasure, relevant regulations were formulated and put into operation after the incident. In addition, there were no clearly documented standards regarding restrictions on entry by persons other than those involved in startup work and evacuation warnings in the event of plant malfunctions. After the incident, we have established internal rules and standards and started operation.



Next, I would like to discuss the investigation from the aspect of governance.

Each production site in Japan had previously established an objective system of supervision and support from outside the production department, including the head office and site managers. On the other hand, at the time of the incident, Kuraray America's EVAL plant was being operated under an autonomous safety and disaster prevention system in which almost all operational decisions were made under the direction of the plant manager. Thus, there was a strong element of personal judgment on the part of the plant manager, and the governance system was easily influenced by the demands of local business.

As a measure to prevent recurrence, we have been working to strengthen the safety governance system based on the reflection of this incident since its occurrence.

Originally, Kuraray America was established in 2008 through the merger of a New York-based trading company, an EVAL manufacturing and sales company and SEPTON, an elastomer manufacturing and sales company both in Houston, Texas. The corporate HSE was created and expanded as part of the indirect functions. Still, its activities had focused primarily on responsible care certification and compliance with laws and regulations.

Since the incident, Kuraray America has been working on the safety management of production processes at each of its plants and occupational safety by appointing a dedicated safety manager at Corporate HSE. It is gradually preparing common guidelines for all Kuraray America plants and setting standards to be met at each plant. In addition, Kuraray America is strengthening its overall safety governance system regarding the four points listed at the bottom of this slide.

3-4. Investigation Results and Recurrence Prevention Measures related to Dealing with Litigation

■Lawsuit

- 34 lawsuits from 164 plaintiffs brought against Kuraray America
- Sought to make the court proceedings more efficient and quicker through a court procedure before the trial by a jury, but some of the lawsuits took around five years to settle. The amount needed to pay off the settlements was approx. ¥80 billion (of which approx. ¥10 billion was covered by insurance).

Investigation Results

Plaintiffs had little incentive to reach a quick settlement.

- Not being able to individually verify the details of the harm suffered by the plaintiffs when the Incident occurred
- Verdicts in Texas injury cases were climbing into high dollar amounts
- Court procedures were suspended due to the COVID-19 pandemic, etc.

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Next, the investigation from the aspect of dealing with litigation.

In relation to this incident, 34 lawsuits have been filed against Kuraray America by 164 plaintiffs. In view of the fact that the lawsuits were related to the same case, we aimed to streamline and expedite the trial process by consolidating the trial procedures prior to the trial by jury. Still, it took approximately five years to resolve the series of lawsuits, and the settlement amount required for the resolution was approximately JPY80 billion. Out of settlement amount, approximately JPY10 billion was covered by insurance.

The lawsuits not only required an enormous amount of time and resources for the disclosure of evidence, recording of depositions, and evaluation and analysis of documentary evidence for 164 plaintiffs but also, as noted on the slide, plaintiffs had little incentive to accept early settlements. These factors made the litigation more difficult to handle, prolonged the time required to resolve the case, and resulted in a higher settlement cost.

Recurrence Prevention Measures

Take the following measures to mitigate the risk of future litigation and damages from the perspectives of insurance strategy, comprehending the damage when an incident occurs, and dealing with litigation risk particular to the U.S.

1) Increase the maximum limit of the comprehensive general liability insurance commonly applicable throughout the Group and have Kuraray America introduce an owner-controlled insurance program (OCIP)
2) Install additional surveillance cameras around the perimeter of plants and at entrances at Kuraray America, introduce a strict access control system, and implement processes to get testimony from related personnel at the sites
3) Education about litigation risks particular to the US (particularly information management and communication designed on the assumption of the discovery process)

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This slide includes measures to prevent a recurrence of litigation aspect of the case.

As shown in the investigation results, many unavoidable external factors contributed to the extended duration of time in dealing with the Lawsuit and the high settlement fee. However, based on this discussion, we are implementing the measures described on the slide regarding insurance policies, understanding the damage caused by the incident, and dealing with litigation risks specific to the US as part of our efforts to reduce future litigation and indemnity risks.

The first is an increase in the maximum amount of insurance coverage under the Group’s common corporate general liability policy and the introduction of an owner-controlled insurance program at Kuraray America.

Second, Kuraray America installed additional surveillance cameras around the plant’s perimeter and at entrances and exits, implemented a strict access control system, and introduced a process for obtaining testimony from on-site personnel.

Third, addressing litigation risks that are particular to the United States, we are providing education on information management and communication, particularly in the context of the discovery process.

These are the results of the investigation from the three perspectives of technology, governance, and dealing with litigation, as well as measures to prevent recurrence.



Next, I will explain the Kuraray Group as a whole.

Based on the investigation results and recurrence prevention measures at Kuraray America, we are further strengthening the safety and risk management systems of the entire Kuraray Group. As part of our technology-related initiatives, we have formulated countermeasures from the standpoint of the three M's: Man, which is man-related measures; Machine, which is machine-related measures; and Management, which is management-related measures, and we are implementing them horizontally within the Kuraray Group.

First, for man-related measures, we provide education and training to improve the ability to identify causes and extract risks. We are also working to bolster the safety management system at our overseas plants by involving an organization that oversees occupational safety independent of the production departments.

The slide shows our overseas chemical plant safety risk response team, which consists of departments involved in production at the plant and supporting departments. The team strengthens cross-organizational and global collaboration by exchanging and sharing information on safety activities, risk assessment methods, facility countermeasures, and maintenance. Through these initiatives, we aim to prevent accidents before they occur and, in the unlikely event that they do occur, to minimize the damage.

In addition, in FY2022, we have newly established a Global PSM Audit Team for chemical plants and activated carbon plants; PSM stands for Process Safety Management and has begun its activities. This team includes not only Japanese but also overseas HSE members. Through the cross-organizational activities of this team, which is well-versed in safety and disaster prevention, we will identify and grasp issues from multiple perspectives and strengthen information sharing and horizontal deployment of knowledge for improvement. Going forward, we will expand the number of members who are familiar with production sites and implement a more in-depth safety audit system.

4. Further Strengthening the Safety and Risk Management Systems of the Group Overall 2

■Technology-related Initiatives（standpoint of “three M’s”）

2) Machine-related Measures

- Check and adjust the position and direction of the discharge ports in safety valves at other plants
- Establish plant access management and standards for evacuation warnings when problems occur
- Automate and improve the reliability of highly important emergency operations and safety apparatus

3) Management-related Measures

- Make organizational and HR-related improvements for proper operation at overseas plants
- Improve employee engagement
- Introduce KPIs to track safety circumstances
- Review appropriate number of employees at overseas plants

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Next, in terms of machine-related measures, we have confirmed and reviewed the position and direction of safety valve release openings at other production plants. We manage plant admission and develop evacuation alarm standards in case of abnormalities. We will automate emergency operations and safety devices of high importance and improve their reliability.

Thirdly, the management-related measure is strengthening the organization and human resources for proper operations at overseas plants, improving employee engagement that leads to safety awareness in the workplace, introducing KPIs that track safety conditions, and reviewing the appropriate number of employees to reflect the unique employment patterns of overseas plants.



The slide shows our initiatives in terms of governance and litigation initiatives.

In terms of governance, we are in the process of establishing a safety audit system led by our Environment and Industrial Safety Management Center to monitor the status of safety governance from an objective perspective.

Through this verification, we have reaffirmed the importance of listening to the voices of employees, especially those on site, in order to improve their sense of participation and engagement, and we are considering further strengthening our safety audit system by involving employees with rich experience and strong communication skills within our group. In addition, we will horizontally deploy the lessons learned through a series of investigations to strengthen the entire Group's safety governance and build a safety system for the new EVAL plant in Asia, which is under consideration.

Regarding the initiative for dealing with lawsuits, we are considering horizontal deployment of the initiatives at Kuraray America in the future, and we are working to build a flexible system by securing appropriate law firms, especially in each region where the plants of our US subsidiaries are located, so that prompt and appropriate measures can be taken in the event of an emergency.



This last slide shows the Kuraray Group's Principles of Conduct for Safety. "Safety is the Cornerstone of Everything We Do", which is the basis for all of our actions in the Kuraray Group. As president, I encourage all employees to sharpen their sensitivity to safety through safety promotion meetings, safety activities, and on-site inspections, as shown on the right.

Including the investigation of the fire incident at the Eval plant in the US, which I have explained to you, and the measures taken to prevent it, we will once again strengthen our safety initiatives and strive to become a company where incidents do not occur.

This concludes my explanation. Thank you all very much.