Investigation Update

August 2026

This document provides an update on the CSB's investigation of the April 22, 2026, incident at the Ames Goldsmith Corporation's Catalyst Refiners, Inc. ("Catalyst Refiners") facility in Institute, West Virginia.

Incident Summary

- On April 22, 2026, at approximately 9:30 a.m., a release of highly toxic hydrogen sulfide gas resulting from a chemical reaction occurred at the Catalyst Refiners facility in Institute, West Virginia.
- Exposure to the toxic hydrogen sulfide gas fatally injured two Catalyst Refiners employees and seriously injured four other Catalyst Refiners employees. Eighteen personnel were decontaminated and transported to local medical facilities for evaluation, including seven first responders.

Background Information

- Catalyst Refiners is a subsidiary of Ames Goldsmith Corporation ("Ames Goldsmith"), which is headquartered in South Glens Falls, New York. The Catalyst Refiners operation reclaimed silver from spent catalyst [1] and manufactured silver oxide. Ames Goldsmith reclaims silver from spent catalyst at two other facilities in the United States: its Glens Falls, New York facility and Ames Advanced Materials (another subsidiary) in South Plainfield, New Jersey.
- At the direction of Ames Goldsmith, Catalyst Refiners was in the process of decommissioning its facility, which was scheduled to be completed by June 5, 2026. At the time of the incident, the facility had ceased its silver reclamation process, and most of the process equipment had been removed from the site. The facility's effluent wastewater pretreatment process remained operational to remove silver and silver oxide from residual wastewater (see **Figure 1**) produced through the facility's property drain system.[a] Wastewater flowed into a receiving tank (hereafter referred to as the "incident tank," shown in **Figure 2**),[b] which was pumped to a neutralization tank. In the neutralization tank, the pH was controlled using sodium hydroxide, and after the pH was adjusted, the wastewater flowed to a clarifier. The clarifier separated solid silver precipitate, and the remaining water was sent to an off-site wastewater treatment area.

[a] For environmental protection purposes, the Catalyst Refiners site is bermed and equipped with roof drains, allowing all rain or wash water on the site to be collected and routed to the wastewater receiving tank for pretreatment.

[b] The incident tank was an open-top, six-foot-tall, nine-foot-diameter tank with a capacity of 2,227 gallons.

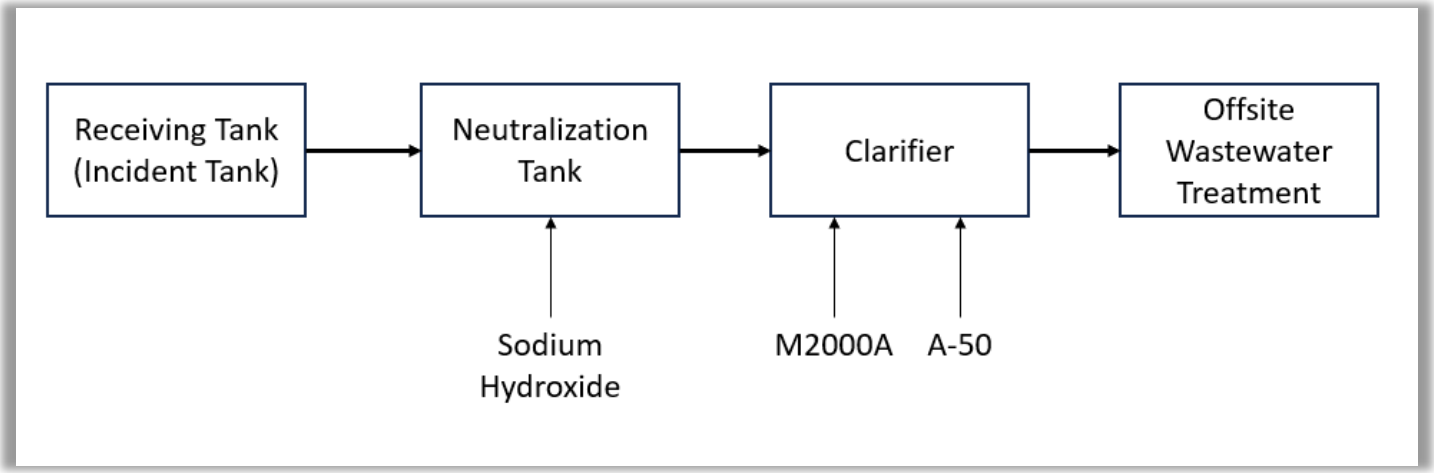

Figure 1. Simplified block flow diagram of the operational effluent wastewater pretreatment system at the Catalyst Refiners facility at the time of the incident. (Credit: CSB)

Figure 2. Incident tank, side view (left) and elevated view (right). (Credit: CSB)

- Catalyst Refiners uses two chemicals to recover silver from its wastewater: M-2000A and A-50 (see **Figure 3**). M-2000A is a proprietary sodium trithiocarbonate[a] solution used as a metal precipitant, and A-50 is a proprietary calcium chloride solution used as a coagulant.[b] Chemical precipitation[c] is a widely used technology for removing metals such as silver from wastewater [2]. Both M-2000A and A-50 were normally

[a] Sodium trithiocarbonate (CNa_2S_3) is the active ingredient in M-2000A. The Safety Data Sheet (SDS) for M-2000A describes the proprietary solution as a red liquid with a pungent odor and incompatible with strong acids.

[b] Coagulants are chemicals added to wastewater to hasten the settling of suspended matter by causing lightweight suspended solids to cluster together and form particles heavy enough to effectively settle out of the water [9, pp. 192-193].

[c] Chemical precipitation involves the addition of chemical agents to water to cause soluble metal ions dissolved in solution to form insoluble metal complexes such as oxides or hydroxides that can then be effectively removed from the water [10, p. 398].

added to the clarifier. Nitric acid,[a] which had been used in Catalyst Refiners' reclamation process, was kept in a storage tank at the facility. **Figure 3** shows the nitric acid storage tank used by Catalyst Refiners. At the time of the incident, Catalyst Refiners was disposing of the remaining nitric acid by pumping it into the effluent wastewater pretreatment process.

Figure 3. Nitric acid storage tank (left), A-50 drum (middle), and M-2000A tote (right). (Credit: CSB)

- Hydrogen sulfide (H_2S) is a colorless, highly toxic gas that can cause damage to the eyes and the respiratory system [3, 4]. Exposure to concentrations as low as 100 parts per million (ppm) is considered immediately dangerous to life or health (IDLH) [3].[b] Concentrations over 1,000 ppm can cause nearly instant death [4]. Hydrogen sulfide is heavier than air and tends to travel near the ground during a release [3].

Incident Description

- During the process of decommissioning the facility, Catalyst Refiners used the incident tank and its effluent wastewater pretreatment equipment for the disposal of A-50, M-2000A, and nitric acid.[c]

- About a week prior to the incident, employees used water to dilute the 67-weight percent nitric acid that was in the nitric acid storage tank outside the facility. According to Catalyst Refiners personnel, the nitric acid storage tank level showed 11 percent full before the employees added water. At the relief shift supervisor's instruction, the employees added the water until the level in the nitric acid storage tank reached 22 percent full.

[a] Nitric acid (HNO_3), 65 to 70 weight percent, is a clear and colorless strong acid that is incompatible with many substances [7, 8], including M-2000A.

[b] The Occupational Safety and Health Administration (OSHA) defines IDLH as, "any condition […] that poses a threat to life or that would cause irreversible adverse health effects." *See* 29 C.F.R. § 1926.1202 - Definitions.

[c] Catalyst Refiners still needed some A-50 and M-2000A for its effluent wastewater pretreatment process.

- On the morning of April 22, 2026, the day of the incident, the relief shift supervisor instructed two employees to use a 1.5-inch double diaphragm pump ("the pump") to move the diluted nitric acid from the nitric acid storage tank into two empty 275-gallon totes on the site. The employees placed a hose in the top of the nitric acid storage tank and used the pump to fill the two totes with the diluted nitric acid. After the totes were full, a third employee used a forklift to move the totes and the pump into the production building, where the diluted nitric acid was to be transferred into the incident tank.

- To dispose of some other chemicals that remained on site, the relief shift supervisor instructed two employees to use the pump to transfer the chemicals into the incident tank. The relief shift supervisor told the employees the order in which to pump the chemicals into the incident tank.[a] First, the two employees emptied one and a half 55-gallon drums of A-50 coagulant into the incident tank, and then they moved the suction hose and transferred almost a full 275-gallon tote of M-2000A into the incident tank. After completing the transfer of the M-2000A, the employees moved the suction hose for the pump into the tote of diluted nitric acid. **Figure 4** shows the equipment configuration at the time of the incident.

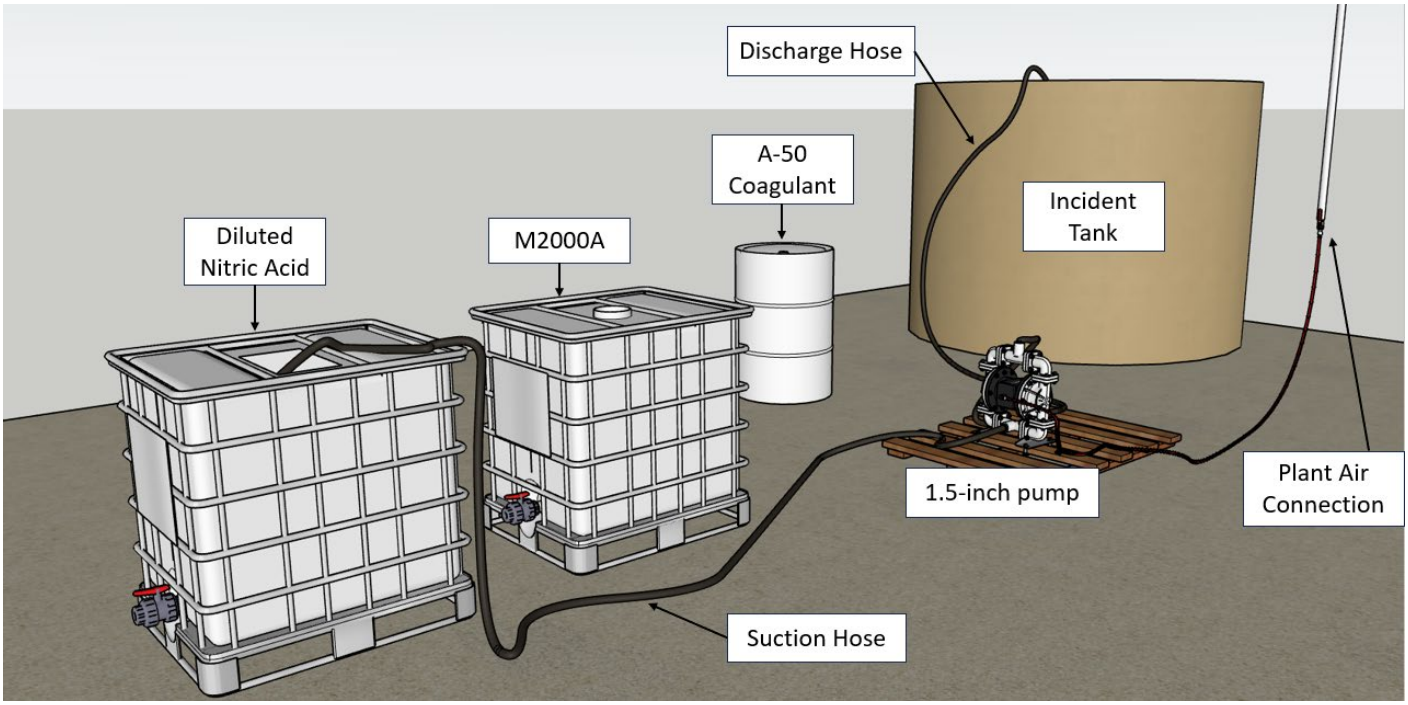

Figure 4. Layout of remaining chemicals for disposal, the incident tank, and the pump used to transfer the chemicals into the tank in the position found by the CSB following the incident. (Credit: CSB)

- The employees turned the pump on, and after approximately five inches of the nitric acid in the tote was added to the incident tank, the employees noticed that the materials inside the incident tank were reacting and creating a fog over the tank. After noticing this reaction, one of the employees, who was operating the pump, unplugged the air hose to stop pumping diluted nitric acid into the incident tank. This employee then went

[a] Catalyst Refiners had no written procedure for disposing of the A-50, M-2000A, and nitric acid using its wastewater pretreatment system.

outside to get some fresh air, passed out, and, when he regained consciousness, notified the production supervisor of the reaction and that the resulting vapors caused him to lose consciousness.

- The production supervisor notified the relief shift supervisor, who oversaw the disposal of the chemicals, that there were issues regarding the mixing of the chemicals. The relief shift supervisor then entered the production floor at 9:23 a.m. and walked toward the area of the incident tank.[a] Shortly thereafter, the relief shift supervisor lost consciousness.
- According to surveillance video of the facility, two other employees (Employee A and Employee B) proceeded toward the area of the incident tank. At 9:28 a.m., once in the area, Employee A was observed waving their arms and then collapsed. Employee B was seen on video pulling the unconscious relief shift supervisor away from the incident tank area when they also were overcome by the released vapors and collapsed. Although the relief shift supervisor survived, Employees A and B, who were not involved in the job of disposing of the chemicals, eventually succumbed to their injuries and died.
- Other employees working on the production floor saw Employees A and B collapse and notified a large group of employees that three men, including the relief shift supervisor, had collapsed on the production floor. One of these employees pulled the plant fire alarm at 9:30 a.m., while other employees worked together to pull the three collapsed employees out of the facility and to the front gate, where emergency responders met them.
- A total of two employees (Employees A and B) were fatally injured, and four other employees were seriously injured as a result of this incident.
- A shelter in place was issued for one mile surrounding the facility at 10:04 a.m., and it was lifted at 2:23 p.m.
- At 10:07 a.m., three responders from the Kanawha County Emergency Ambulance Authority transported the injured relief shift supervisor to a local medical facility.
- At 1:40 p.m., responders from both the Charleston Fire Department and the South Charleston Fire Department detected the presence of hydrogen sulfide at the site.
- Following the incident, 22 personnel were decontaminated at the site, including four responders, and eighteen of those were transported to local medical facilities for further evaluation.

Additional Information

- During a post-incident site visit, the CSB found four full-face respirators (see **Figure 5**) in various locations throughout the facility, at least three of which were equipped with 3M™ 2091 particulate filters (P100 rating) [5], which do not provide protection against hazardous gases, including hydrogen sulfide [6]. Workers told the CSB that once the facility transitioned from normal production to decommissioning, they were not required to

[a] Following the incident, one diluted nitric acid tote was completely empty, and the pump had been reconnected to the plant air supply as depicted in **Figure 3**.

wear respirators in the facility. Catalyst Refiners also did not provide, nor did they require the use of, personal gas monitors by employees or contractors.

Figure 5. Respirators found by the CSB post-incident. (Credit: CSB)

Path Forward

- The CSB is continuing to gather facts and analyze several key areas, including:
  - Analysis of onsite chemicals
  - Decommissioning hazard analysis
  - Use of personal protective equipment
  - Corporate governance and oversight
- The investigation is ongoing. Complete findings, analyses, and recommendations, if appropriate, will be detailed in the CSB's final investigation report.

References

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