

Investigation Update

August 2026

This document provides an update on the CSB's investigation of the May 26, 2026, incident at the Nippon Dynawave Packaging Company, LLC ("NDP") Pulp and Paper Mill in Longview, Washington.

Incident Summary

- On May 26, 2026, a 1.2-million-gallon atmospheric storage tank catastrophically failed at the NDP Pulp and Paper Mill in Longview, Washington, releasing approximately 900,000 gallons of a caustic liquid known as white liquor.
- The chemical release fatally injured 11 NDP employees. Three other NDP employees were seriously injured. Five additional NDP employees and one firefighter sustained injuries that did not require inpatient hospitalization.

Background Information

- Nippon Dynawave Packaging Company, LLC, a subsidiary of Nippon Paper Industries Co., Ltd. [1], is located in Longview, Washington, which is NDP's only location in the United States. [2]. Nippon Paper Industries Co., Ltd., also known as the Nippon Paper Group, is headquartered in Tokyo, Japan [3] and operates paper mills in Asia, Europe, and South America [4].
- The Longview pulp and paper mill ("the mill") was originally built and operated by Weyerhaeuser Company from 1931 to 2016. The mill was sold to NDP in 2016 [1, 5, 6].^a NDP currently employs about 530 workers at the mill, including employees represented by the Association of Western Pulp and Paper Workers union.
- The mill uses the Kraft process to produce pulp from wood chips. In the Kraft process, wood chips are sent to a vessel called a digester, where they are mixed with a caustic liquid referred to as "white liquor," which contains predominantly sodium hydroxide and sodium sulfide. Under high temperatures and pressures in the digester, the white liquor breaks down the structural polymers in wood ("lignin"), that hold another component of wood, called cellulose, together. After the lignin has been removed, the cellulose fibers, or pulp, are further processed into paper products [7, p. 1].
- According to NDP's Safety Data Sheet for white liquor, it is a slightly yellow, liquid mixture of sodium hydroxide (8 to 15 weight percent), sodium sulfide (3 to 10 weight percent), disodium carbonate (3 to 10 weight percent) and water. White liquor is a basic liquid, having a pH of about 13. Both sodium hydroxide and sodium sulfide have a National Fire Protection Association ("NFPA") health rating of 3, meaning that they can cause serious or permanent injury [8, 9]. Specifically, white liquor causes serious burns to the skin, eyes, and

^a The NDP Pulp and Paper Mill in Longview, Washington, is a part of a larger manufacturing complex. Weyerhaeuser Company, North Pacific Paper Company, and Westlake Corporation own and operate a lumber yard, a package board mill, and a specialty chemical plant, respectively, in the same complex.

respiratory system and has an irritating odor. Sodium hydroxide and sodium sulfide are corrosive to metals [8, 9].

- After leaving the digester, the mixture of used white liquor and lignin is separated from the pulp and called “weak black liquor.” The weak black liquor is concentrated in an evaporator to become “strong black liquor.” Strong black liquor is flammable and is used as fuel in a boiler at the NDP facility to create steam needed for other parts of the process and for power generation. While the organic components in black liquor burn as fuel, the inorganic components are collected as “smelt” and are dissolved in “weak wash” to create “green liquor” [7, p. 1].
- Green liquor, which contains unburnt sodium hydroxide and sodium sulfide, reacts with calcium oxide to regenerate white liquor and produce “lime mud” in a series of vessels called recausticizers. The regenerated white liquor is then sent back to the digester to produce more pulp. The lime mud is washed and sent to a lime kiln to be regenerated back into calcium oxide. The liquid that washed the lime mud becomes weak wash and is sent to the boiler to become green liquor [7, p. 1]. The simplified Kraft process is shown in **Figure 1**.

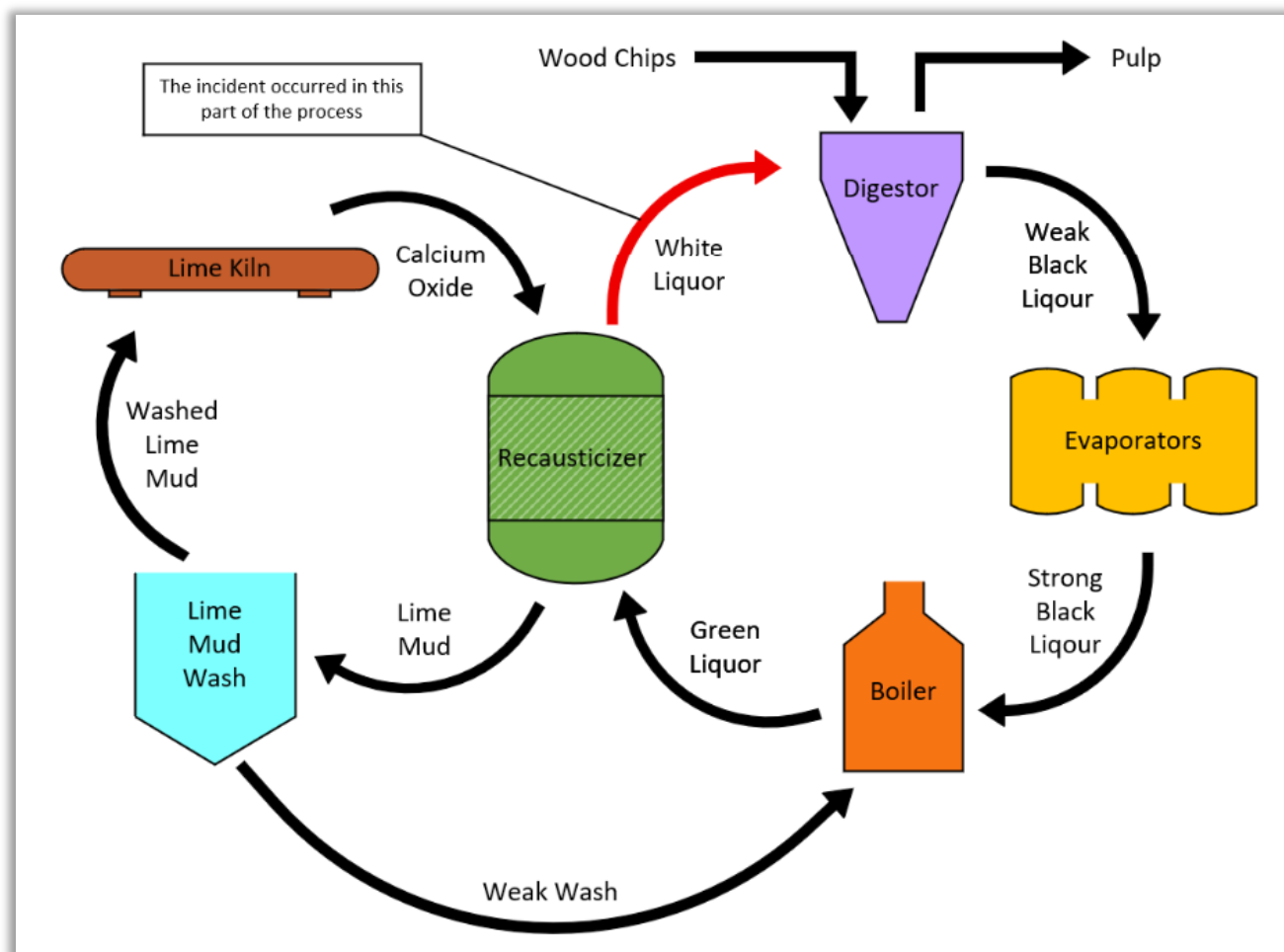


Figure 1. A simplified flow diagram of the Kraft process for producing pulp. (Credit: CSB)

- At NDP, after the white liquor is regenerated in the recausticizer, it is stored in one of two atmospheric storage tanks, known as “G Tank” and “4 Tank,” either of which can supply white liquor to the digester. The white liquor is stored at approximately 200 degrees Fahrenheit.^a
- These tanks are required for storage of white liquor in the event a unit shuts down unexpectedly or during a planned shutdown. Shutting the process down requires the units to be slowed together in a controlled manner.
- G Tank, the tank involved in the incident, had a capacity of approximately 1.2 million gallons and was constructed in 1987 (**Figure 2**). The tank was constructed from 40 carbon steel plates welded together in five rings, or “courses,” that made up the outer walls.^b Each course was made from eight, 26-foot-long plates. The tank was constructed with no secondary containment to capture spills.



Figure 2. A pre-incident photo of G Tank. (Credit: NDP)

- G Tank’s first and fourth courses were repaired in 2017 and the tank’s second and third courses were repaired in 2011. Other repairs were made to G tank in 2006, 2002, and 1999.
- G Tank was built in a courtyard surrounded by several buildings that housed boilers, offices, a mechanical maintenance shop, and an electrical maintenance shop (**Figure 3**). A former Weyerhaeuser engineer, who

^a Hot water, and liquids primarily composed of water, can cause immediate third-degree burns within seconds at 150 degrees Fahrenheit [12].

^b The tank was constructed in accordance with the seventh edition (1984) of the American Petroleum Institute’s (API) Standard 650 *Welded Tanks for Oil Storage*.

worked on the tank when it was first installed, told the CSB that Weyerhaeuser placed the tank in the courtyard because “that was the available area.”



Figure 3. A pre-incident satellite image of the courtyard where G tank was built. (Credit: Google Earth, annotated by CSB)

- The ground floors of these buildings contained mechanical and electrical maintenance shops, worker break rooms, and worker locker rooms. NDP maintenance employees typically had a daily meeting in the shops of both buildings shortly after 7:00 a.m.
- In July 2025, 10 months before the incident, NDP had G Tank inspected by performing an external visual inspection and external ultrasonic thickness testing. The results of the inspection showed significant thinning below the minimum safe thickness in the lower regions of the tank,^a as shown in **Figure 4**.

^a The minimum safe thickness for an atmospheric storage tank is the required thickness necessary to contain the head pressure of the stored liquid and support the weight of the tank, amongst other factors. It is a calculation which accounts for the tank dimensions, the material of construction, and the stored substance. The calculation is described in API's Standard 653: *Tank Inspection, Repair, Alteration, and Reconstruction* [11, pp. 4-4 - 4-11].

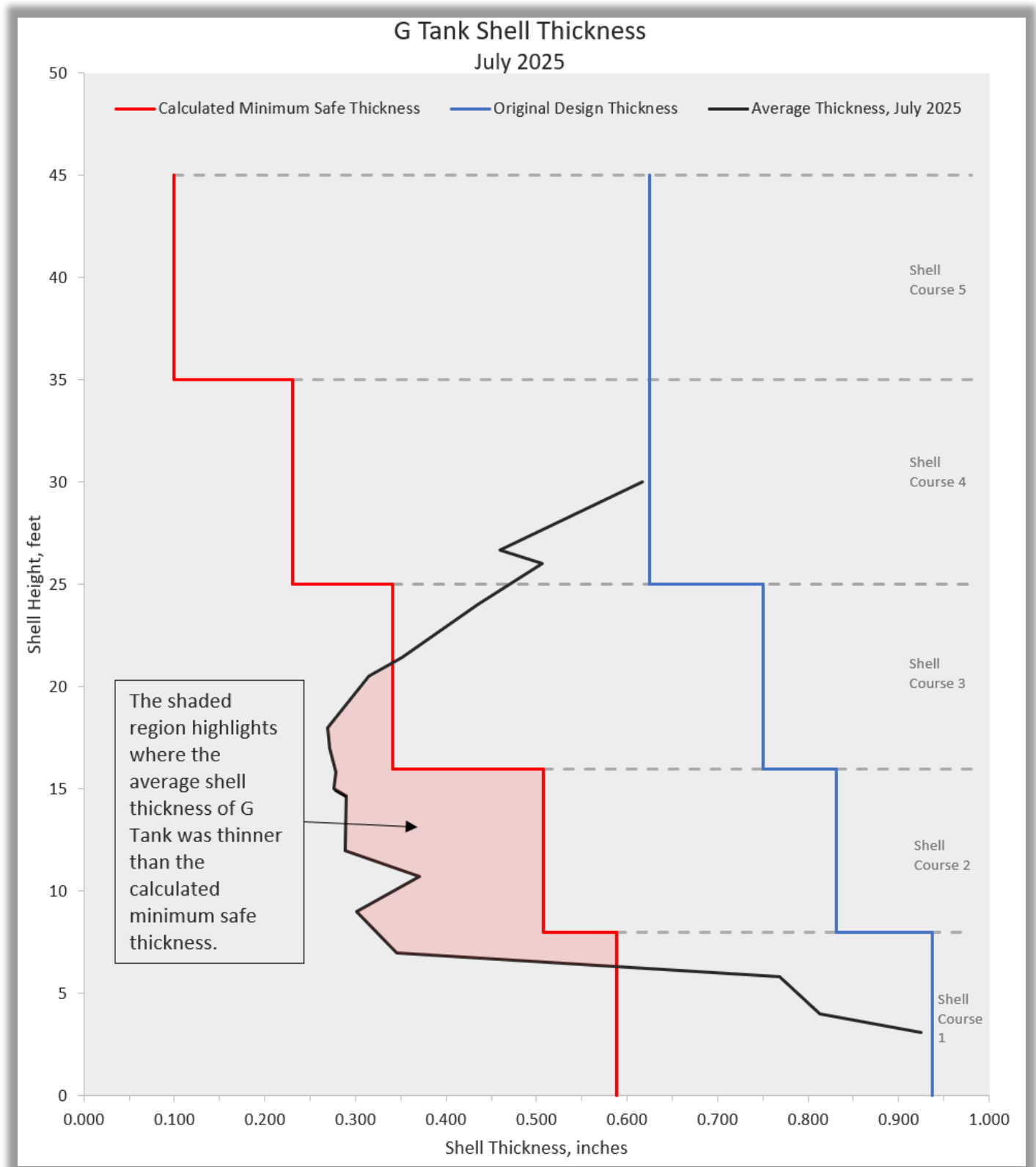


Figure 4. A graphical representation of the G Tank shell thickness as measured in July 2025. (Credit: CSB)

- Consequently, NDP's inspection contractor^a recommended that NDP internally inspect and repair shell courses 1, 2, and 3. The inspection report also stated that G Tank was "[n]ot fit for continued service" unless it was repaired and that there was a "[h]igh likelihood/consequence of failure" (Figure 5).

Priority 1: Not fit for continued service unless corrected → High likelihood/consequence of failure (or) Critical code/standard deficiency Priority 2: Owner should plan/schedule for correction → Med likelihood/consequence of failure (or) Additional info needed for evaluation Priority 3: Considered best practice or prev. maintenance → Low likelihood/consequence of failure (or) Non-critical code/standard deficiency		
Shell course 2 average thickness was measured to be below the calculated minimum thickness.	Owner should plan to have an internal inspection performed in order to determine the extent of the required repairs. It's likely that the entire shell course should be replaced. Perform repairs in accordance with API-653; utilizing a qualified repair organization experienced with tank repair.	1
Multiple isolated readings taken in shell courses 1 and 3 were below the calculated minimum thickness.	Owner should plan to have an internal inspection performed in order to determine the extent of the required repairs. Perform repairs in accordance with API-653; utilizing a qualified repair organization experienced with tank repair.	1
Minimal design information is known, specifically, the material of construction and the joint efficiency of the shell welds.	Owner should obtain design documentation (manufacturer's specification, design drawings, nameplate information, etc.) in order to perform more accurate minimum thickness calculations.	1

Figure 5. Excerpt from the July 2025 inspection report provided to NDP by its inspection contractor. The right column indicates the priority of the recommendation (Credit: NDP, modified by CSB)

- NDP scheduled additional inspections while continuing to operate G Tank normally. NDP had the same inspection contractor inspect the tank two more times, in October 2025 and February 2026. Both inspections were external thickness inspections and both identified that large portions of the tank remained thinner than the calculated minimum safe wall thickness.
- NDP did not internally inspect G Tank or make any repairs to the tank's shell between the July 2025 inspection and the May 2026 incident. The company also did not remove the tank from operation or derate^b the tank for reduced service.

Incident Description

- On Tuesday, May 26, 2026, at around 1:55 a.m., a process upset occurred in NDP's digester unit. The upset required that the digester be removed from service until repairs could be made. As a result, white liquor flow to the digester was slowed down, and at about 4:08 a.m., white liquor flow from G Tank to the digester was stopped completely.

^a The inspection was performed by Applied Technical Services, LLC. (See [Applied Technical Services](#))

^b Derating an atmospheric storage tank means applying administrative, engineering, or other controls to continue operating a tank but at a limited or reduced level, capacity, or other process variable. API 653 contains guidelines for reducing the allowable liquid level and establishing a new liquid level limit when a tank is thinner than the minimum acceptable thickness [11, pp. 4-3].

- Although the flow of white liquor from G tank to the digester was stopped, white liquor from the recausticizers continued to flow to G tank at a reduced rate. As a result, G Tank's level began to increase. By about 6:22 a.m., G Tank was approximately 90 percent full.
- Around 7:00 a.m., employees began arriving at work for their upcoming shift. These employees went to the electrical and mechanical maintenance shops and were waiting for their morning meetings to start.
- At approximately 7:09 a.m., G Tank catastrophically failed, releasing approximately 900,000 gallons of white liquor (**Figure 6**).



Figure 6. Post-incident photos of the failed G Tank at NDP in Longview, WA. (Credit Left: Seattle Times; Credit Right: CSB)

- At the time of the tank failure, 17 employees were present on the ground level. Seven maintenance employees and one foreman were in the mechanical maintenance shop, eight maintenance employees were in the electrical maintenance shop, and one operator was in the courtyard (**Figure 7**).

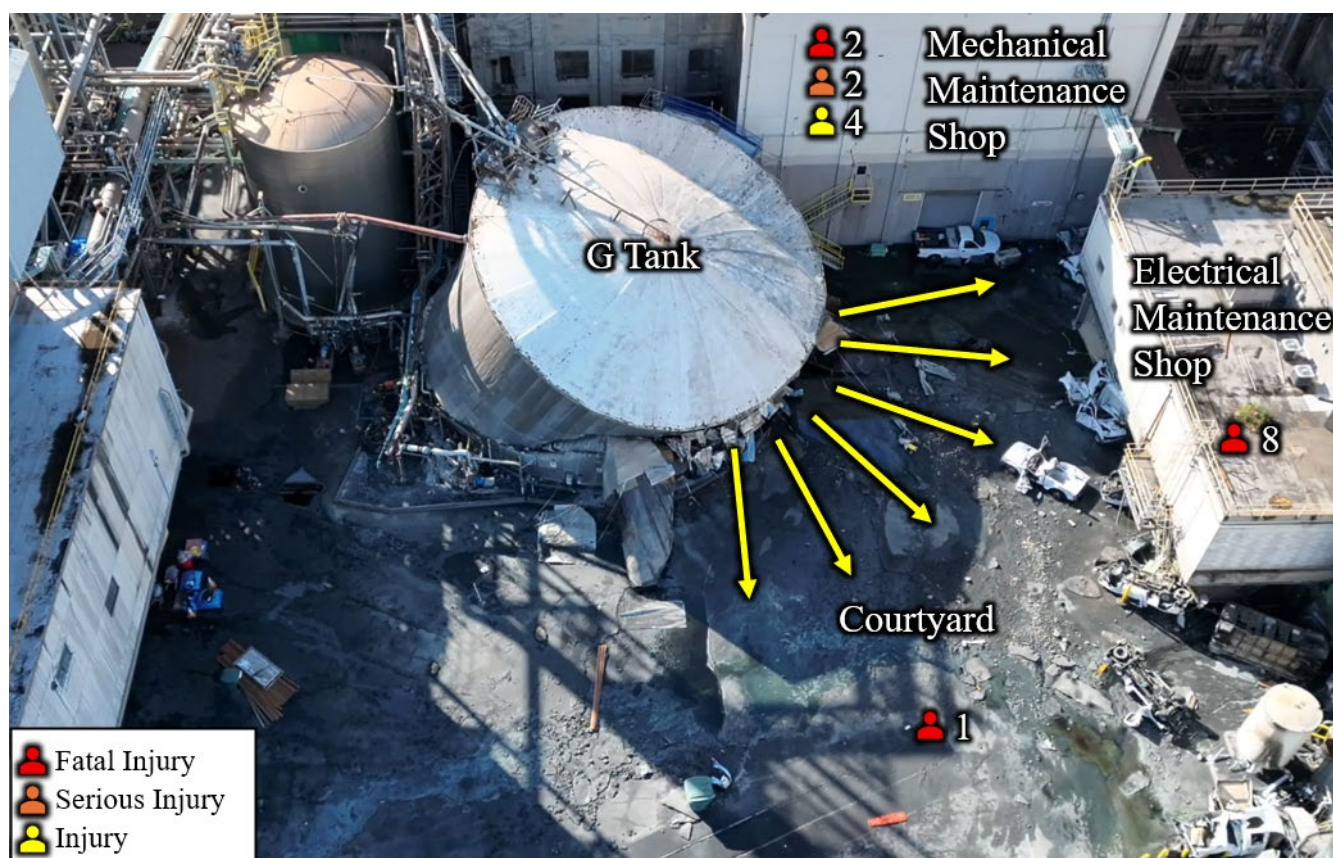


Figure 7. An image of the courtyard where G tank failed. This shows the locations of the buildings and the tank and the direction in which the white liquor flowed. All of the workers depicted in the figure were on the ground floors (Credit: Cowlitz County, annotated by CSB)

- Most of the tank’s contents were released when it failed, creating a massive “wave” of white liquor that rapidly flooded into the courtyard and towards the buildings. As the white liquor deluged the courtyard, the force of the moving liquid crushed vehicles and destroyed one of the surrounding buildings’ roll-up doors and one of its walls, shown in **Figure 8**. The white liquor entered the lower floors of the buildings through door seals and the destroyed roll-up doors, where the morning meetings were occurring.



Figure 8. Damages from the G Tank failure. The images show the courtyard after the event, the crushed vehicles and damaged roll-up door, the destroyed wall, and a nearby flooded parking lot. (Credit Cowlitz County Sheriff, modified by CSB)

- After the tank failed, the eight employees in the mechanical maintenance shop tried to evacuate. Five of the maintenance employees and the foreman escaped, but the other two employees were fatally injured from exposure to the white liquor. Additionally, all eight employees in the electrical maintenance shop and the worker in the courtyard were fatally injured due to exposure to the white liquor. Of the six workers who escaped from the mechanical maintenance shop, two were seriously injured due to chemical burns.
- NDP sent out a radio call for its medical emergency response (MER) team to assist with the initial response to the incident;^a however, the radio call did not specify that white liquor had been released. Subsequently, one of the MER members attempted to rescue an NDP employee from a pool of white liquor in the courtyard. The responder waded into the liquid, believing that it was water, and was seriously injured due to chemical burns.
- The Cowlitz County Fire Department and Sheriff's Office also responded to the incident. During the emergency response, three additional NDP employees and one Cowlitz County firefighter sustained injuries that did not require hospitalization.
- At the same time as the emergency response, most of the workers who were in the control room above the electrical maintenance shop were evacuated by NDP management. Three operators remained in the control room to shut down the mill. They were not injured.

^a As a part of NDP's emergency response program, the company maintains a group of volunteer responders called the medical emergency responders, or MERs, who are trained to perform first aid.

- After the initial response was completed, recovery efforts began at NDP. However, due to concerns about the remaining volume of the highly corrosive white liquor both in the structurally compromised tank and in the flooded courtyard, the last fatally injured person could not be recovered until four days after the incident [10].

Path Forward

- The CSB is continuing to gather facts and analyze several key areas, including:
 - Inspecting G Tank and determining the failure mode and cause(s) of the tank failure;
 - NDP's mechanical integrity policies and practices;
 - NDP's actions to inspect, repair, and/or replace G Tank and other atmospheric storage tanks;
 - NDP's policies and practices to manage change;
 - NDP's capital project management policies and practices;
 - NDP's emergency response policies and procedures;
 - NDP's hazard evaluation policies and procedures; and
 - Regulatory requirements and industry guidance for paper mills.
- The investigation is ongoing. Complete findings, analyses, and recommendations, if appropriate, will be detailed in the CSB's final investigation report.

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