

Washington Paper Mill Tank Rupture Highlights Critical Need for Equipment Integrity and Process Safety Management



The catastrophic rupture of a chemical storage tank at the Nippon Dynawave Packaging paper mill in Longview, Washington has become one of the deadliest workplace incidents in the United States in recent decades. The disaster claimed the lives of 11 workers and injured eight others, underscoring the potentially devastating consequences of equipment failures involving hazardous industrial processes.

According to authorities, the incident occurred when a large chemical tank used in paper manufacturing ruptured, releasing more than 500,000 gallons (1.9 million litres) of a highly corrosive chemical mixture. The force of the failure caused widespread destruction within the facility and triggered a complex emergency response. Recovery efforts were slowed by the continued presence of hazardous chemicals, requiring emergency personnel to proceed cautiously to protect both responders and workers.

While the investigation into the cause of the tank failure remains ongoing, the incident serves as a powerful reminder of the importance of comprehensive equipment inspection programs, preventive maintenance strategies, and rigorous compliance with occupational health and safety regulations.

A Tragic Reminder of Process Safety Risks

Industrial facilities that handle hazardous chemicals face unique operational risks. Storage tanks, pressure vessels, pipelines, and processing equipment are subject to corrosion, material degradation, fatigue, mechanical stress, and operational wear over time. Without effective inspection and maintenance programs, these hazards can develop unnoticed until a catastrophic failure occurs.

The Longview incident demonstrates how a single equipment failure can quickly escalate into a fatal event. In facilities where hazardous chemicals are stored or processed, even minor deficiencies in equipment integrity can have severe consequences for workers, contractors, emergency responders, and surrounding communities.

For safety professionals, the event reinforces a fundamental principle of occupational health and safety management: preventing catastrophic incidents requires identifying and addressing equipment vulnerabilities before they result in failure.

The Role of Equipment Inspections

Regular inspections remain one of the most effective tools for preventing industrial accidents. Inspection programs should include both visual examinations and advanced testing methods designed to identify signs of deterioration, corrosion, cracking, deformation, leaks, and other indicators of potential failure.

Facilities that store hazardous substances should ensure that inspection schedules align with manufacturer recommendations, engineering standards, regulatory requirements, and site-specific risk assessments. Particular attention should be paid

to aging infrastructure and equipment operating under demanding environmental or process conditions.

Safety leaders should also verify that inspection findings are documented, reviewed, and acted upon promptly. Discovering a defect provides little protection if corrective actions are delayed or inadequately implemented.

Preventive Maintenance as a Safety Control

Preventive maintenance is a critical component of asset integrity management. Effective maintenance programs help organizations identify equipment issues before they compromise worker safety or operational reliability.

Maintenance schedules should be risk-based and supported by accurate asset inventories, equipment histories, and condition monitoring data. Facilities should regularly assess the effectiveness of their maintenance strategies and ensure sufficient resources are available to address identified deficiencies.

When maintenance activities are deferred due to production pressures, staffing shortages, or budget constraints, organizations can unintentionally increase the likelihood of serious incidents. Safety professionals should advocate for maintenance programs that prioritize risk reduction rather than short-term operational considerations.

Regulatory Compliance and Process Safety Management

The Longview tragedy also highlights the importance of regulatory compliance and process safety management (PSM) principles. Although regulatory requirements vary across North

America, employers handling hazardous chemicals are generally expected to implement robust hazard identification, risk assessment, emergency planning, and equipment integrity programs.

Key elements of an effective process safety program include:

- Mechanical integrity inspections and testing
- Hazard and operability (HAZOP) studies
- Management of change procedures
- Employee training and competency verification
- Emergency response planning and drills
- Incident investigation and corrective action processes
- Contractor safety management

Compliance should never be viewed as a minimum standard. Organizations that adopt a proactive safety culture often exceed regulatory requirements to address emerging risks and continuously improve safety performance.

Lessons for Safety Leaders

As investigators continue to determine the exact cause of the Washington tank rupture, safety directors, inspectors, and OHS managers can already draw several important lessons from the event.

First, equipment integrity must remain a strategic safety priority. Second, inspection and maintenance programs require ongoing investment and management attention. Third, facilities handling hazardous substances should regularly evaluate emergency preparedness capabilities and verify that workers understand potential process hazards.

Most importantly, organizations should recognize that catastrophic events are rarely caused by a single failure. They often result from multiple breakdowns in equipment management, hazard identification, risk assessment,

maintenance, and oversight. Preventing future tragedies requires a systems-based approach that addresses each of these areas comprehensively.

The loss of 11 workers at the Longview paper mill serves as a sobering reminder that process safety failures can have life-altering consequences. For employers across North America, the incident reinforces the need for vigilant inspection practices, disciplined maintenance programs, and unwavering commitment to occupational health and safety excellence.