PROJECT:
Brandon Power Facility Lime Dust Remediation

CASE STUDY

A Silo Rupture and an Urgent Threat to Safety and Operations

In January of 2023, Miller Environmental conducted a site visit at a natural gas-fired power plant located in Brandon, Manitoba, where one of the facility's lime silos ruptured after an extended and undetected leak resulted in the uncontrolled release of lime powder. The material spread extensively throughout the plant, contaminating four of the five floors. Areas affected included walls, structural supports, stairwells, mechanical hoists, and interior piping systems.

The presence of dry lime presented serious hazards. When exposed to water, lime becomes highly exothermic, creating the potential for chemical burns and fire. This was particularly concerning given the proximity of the spring melt. Inhalation of airborne lime dust posed a substantial risk to worker health, particularly the respiratory system. The contamination also rendered large sections of the building and infrastructure temporarily unusable.

With safety, environmental integrity, and operational continuity at stake, the client required a swift and technically sound solution to ensure the facility could be remediated safely. A further goal was to avoid disruption to the unaffected areas of the plant, which were still in active use.

Choosing A Path Forward

The client recognized that addressing the contamination would require a multifaceted approach. In addition to physical remediation, the project would need to meet strict occupational safety protocols, contain dust within the affected structure, and obtain the necessary regulatory approvals.

To carry out this work, the client engaged Miller Environmental, an experienced environmental services provider with recognized expertise in hazardous material containment, site remediation, health and safety planning, and stakeholder coordination.

Miller was tasked with developing a site-specific plan to ensure worker safety, protect surrounding operations, and implement negative pressure measures to keep airborne particles confined throughout the cleanup process. Project work began in March of 2023.

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Miller's Approach

Plan Development and Execution

In consultation with the client's internal Health, Safety, and Environment team, Miller Environmental prepared a comprehensive remediation plan. The strategy focused on safe and effective cleanup while protecting facility operations. Key elements of the plan included the use of industrial-grade dry vacuum systems equipped with HEPA filters to extract lime dust without generating airborne spread.

The affected areas were placed under controlled negative pressure to prevent cross-contamination with operational zones of the facility. Collected lime material was sealed in IBC containers for secure transport and disposal.

The plan was carefully sequenced to avoid impacting adjacent systems and structures. Throughout the project, attention to detail and adherence to safety protocols remained a priority.

Oversight and Collaborative Execution

To provide independent validation of air safety and containment effectiveness, the client retained the services of Pinchin Ltd. Pinchin's role included air quality testing, verification of negative pressure conditions, and routine inspection of site procedures.

The presence of an independent third-party hygienist ensured transparency, safety assurance, and regulatory confidence at every phase of the project.

Miller Environmental proceeded in stages, completing cleanup activities floor by floor in close coordination with the client's engineers, operations teams, and health and safety staff. The collaborative approach helped maintain operational continuity and ensured all remediation activities aligned with the standards set by internal and external stakeholders.

Outcomes and Project Closeout

Miller Environmental completed the remediation phase with no safety incidents and with full regulatory compliance. Negative pressure protocols were maintained throughout the project, and all contaminated material was removed according to approved procedures.

The Results

Benefit	Outcome
Prompt Response	Ability to urgently address an environmental hazard with high risk to human health and infrastructure
Custom Plan	Development of a customized remediation plan in coordination with client health and safety team
Continuous Oversight	Collaboration with third-party hygienists ensuring negative pressure and air quality standards
Hazard Containment	Airborne lime dust was fully contained with no migration to operational zones
Full Site Re-Activation	Progressive reactivation of the facility with third-party clearance and complete regulatory satisfaction