

**US Department of Energy
Fernald Environmental Management Project**

VECLOADER HEPA VAC

In August 1996, a demonstration was successfully completed to verify the capability of the VecLoader High Efficiency Particulate Air (HEPA) Vacuum to increase productivity, minimize airborne contamination, and avoid direct handling of mineral wool and reduce the need for personal protective equipment during the removal of insulation as part of the ongoing building dismantling effort at Fernald.

The insulating material between the interior and exterior transite walls of Plant 1 – and other buildings at Fernald – is made of mineral wool. The common removal technique is labor intensive and generates a considerable amount of airborne contamination – workers physically grab the insulation and stuff it into plastic bags for disposal. This practice generates a considerable amount of airborne contamination.



Figure 3. VecLoader HEPA Vac, Vecloader Technologies, Ltd.

The Technology

The VecLoader HEPA VAC is a self-contained, trailer-mounted vacuum unit that typically is used commercially to evacuate asbestos insulation. The VecLoader HEPA VAC transports the insulation through a flexible suction hose up to distances of 1,000 feet. The asbestos insulation and fibers are "vacuumed up" and captured in a fully-enclosed, negative pressure system and sent into a cyclone separator, then bagged. The VecLoader HEPA VAC can pull insulation right off the wall and send it directly into appropriate disposal containers. It is an extremely high-powered system equipped with automatic shut-off safety valves.

The Demonstration

The VecLoader (HEPA) Vacuum technology was demonstrated under actual work conditions in Plant 1. The VecLoader was compared to the current hands-on removal approach. Workers used the VecLoader suction hose to remove the insulation directly off the wall in a one-step process.

Results

Airborne contamination was significantly reduced as the VecLoader HEPA VAC successfully operated in a fully-enclosed negative pressure system. From the removal to the bagging, the entire process was contained. The separator moistened the insulation and discharged the insulation material directly into a disposal bag. This method can eliminate the need for workers to manually handle mineral wool and transport the bags outside the plant. The VecLoader removed about 1,500 square feet of insulation while 1,200 square feet was removed by hand during the same time frame. The VecLoader demonstrated added benefits by effectively reducing airborne contamination, improving handling capabilities, reducing waste volume and enhancing the safety of workers by isolating them from the fibrous materials.

This demonstration is significant because it can expedite and improve the process of removing insulation from buildings being dismantled, reduce airborne contamination and enhance worker safety during building dismantling activities.