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**FACTSHEET: K-65 SILOS**

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FACTSHEET**

# FACTSHEET

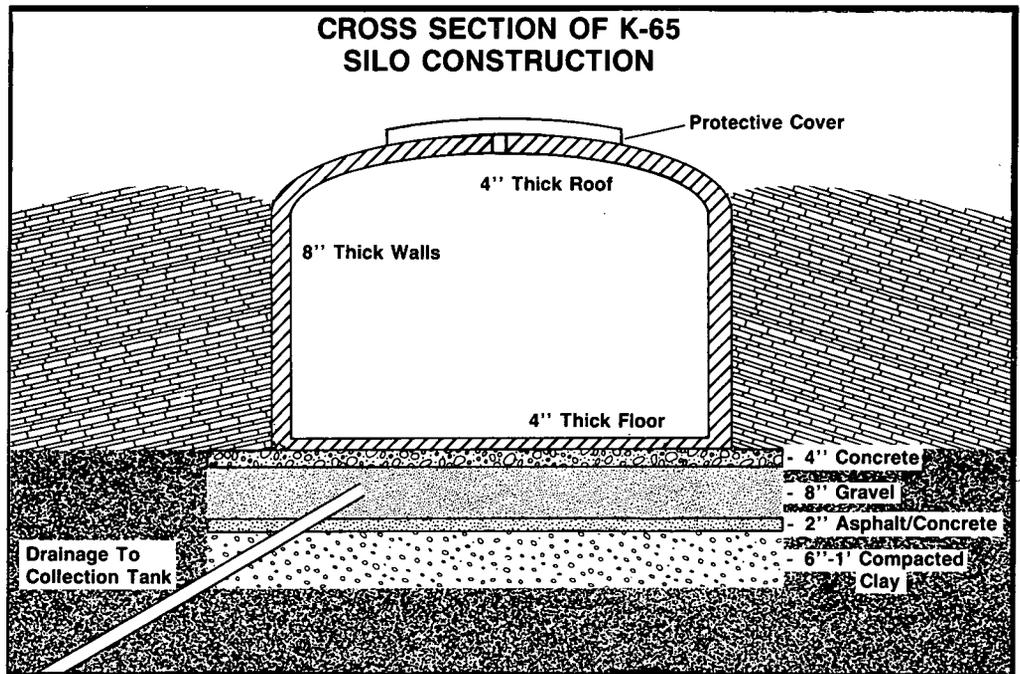
# K-65 Silos

## FMPC WASTE STORAGE SILOS

As part of an ongoing environmental protection program, the Feed Materials Production Center (FMPC) is renovating its waste storage facilities. Improving the management of wastes in two concrete silos, the K-65 silos, is a part of this renovation. The K-65 silos contain radioactive wastes that would present a radiation hazard if not properly contained. The facility contractor, Westinghouse Materials Company of Ohio (WMCO), has taken steps to ensure that the silos are structurally sound and that the waste is isolated from the environment.

### Construction Details

The K-65 silos are 36 feet tall and 80 feet in diameter. Their walls are 8 inches thick and made of steel-reinforced concrete. The domed roofs are also made of reinforced concrete. The silos were constructed with floors of 4-inch-thick concrete bases, which were placed on an 8-inch layer of gravel containing a drainage system that leads to a collection tank. Beneath the layer of gravel are layers of asphalt and clay.



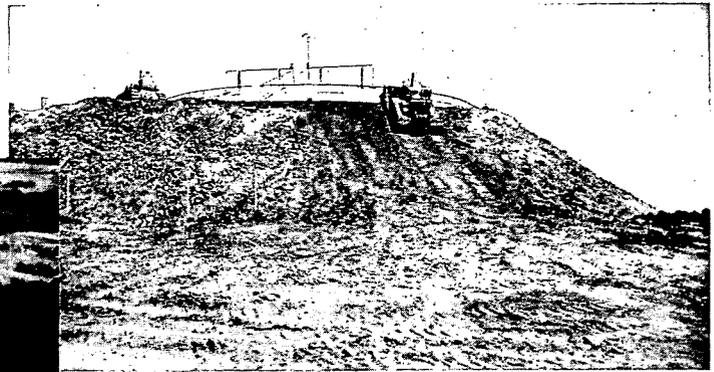
*Radioactive waste is stored at FMPC in steel-reinforced concrete silos.*

### Contents of the Silos

The K-65 silos contain waste from the Manhattan Project, the World War II program that produced the first atomic bombs. For this work, a uranium-rich ore called pitchblende was imported from the Belgian Congo. Pitchblende was treated with nitric acid to dissolve the uranium away from the ore. The remaining residues were mixed with water and pumped into the silos, where the solids settled. The liquids at the surface were pumped back out of the silos into a treatment facility. What remains in the silos now is about 9,700 tons of residual solids.

The residues in the silos emit radiation. The radioactivity levels of the residues are higher than ordinary tailings from uranium mining and milling. Like other uranium ore tailings, these residues produce radon gas, although in considerably larger quantities. FMPC has taken major steps to control radon emission from the K-65 silos.

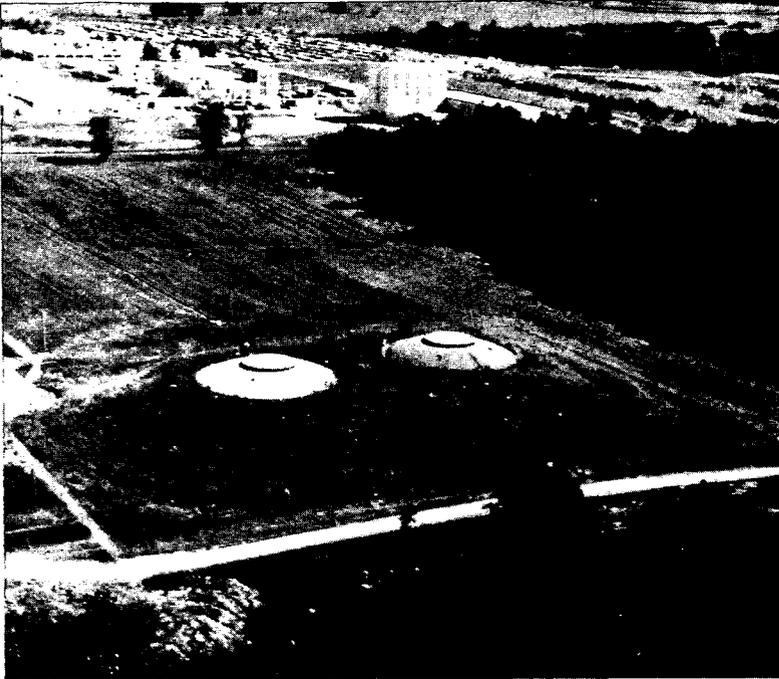
The stored residues present a potential hazard and require careful storage techniques to ensure safety and isolation from the environment.



*An embankment was built around the silos in 1964 to help protect them from the weather and provide structural support.*

### **Past Improvements**

In 1964, 12 years after the silos were constructed, internal corrosion and natural deterioration made repairs to the walls necessary. At that time, the walls of the silos were covered with asphalt, and an earthen embankment was placed around the silos to protect them from additional weathering. Vents in the silos were sealed in 1979, and the embankment was enlarged in 1983 to reduce erosion.



*Installation of protective membranes over the domes of the silos began in April 1986.*

### **Recent Improvements**

A major testing program and structural analysis of the K-65 silos took place in the summer and fall of 1985. The investigation included a reassessment of the original silo design, computer analysis of the containment structure, and field work that tested the soil under and around the silos. The resulting data was computer analyzed and then interpreted by a team of experts. Their findings concluded that, although the silos showed evidence of cracks, the walls and base concrete slabs were stable and would remain so for the next 5 to 10 years.

The tops of the silos were determined to need remedial actions. In January 1986, self-supporting, protective covers for the domes of the silos were constructed and put in place. The installation of waterproof protective membranes over the tops of the silos began in April 1986. In late 1987, a foam coating was applied to the domes to further reduce weathering, temperature changes inside, and radon gas emissions. A recent study by the Ohio Department of Health confirmed that radon from the silos is not a health problem off the plant site. A radon treatment system was developed to remove radon from the silos before work was performed. In 1988, studies to better understand the condition and contents of the silos used television cameras and sampling techniques. Meanwhile, radiation levels around the silos, at the facility boundaries, and off the plant site have been regularly monitored and found to be below the health and safety limits set by the U.S. Department of Energy and the Environmental Protection Agency (EPA).

### **Ongoing Improvements**

Planning for improved management of the contents of the silos is under way. FMPC is working with EPA to develop the next phase of stabilization plans, including steps to further reduce radon gas levels. This effort is part of the site-wide program to improve environmental performance under a DOE Federal Facilities Compliance Agreement.

The waste in the K-65 silos is a concern for FMPC management. Measures to ensure its isolation from the environment have been taken, and remedial actions are ongoing.

