

**HARSHAW CHEMICAL COMPANY  
Cleveland, Ohio**

**Map 4-6**

**Map 4-7**

**Photograph 4-6**

**Photograph 4-7**

THE MANHATTAN PROJECT'S Feed Materials Program challenged the chemical industry with the problem of transforming uranium ore into uranium hexafluoride and metal. The Harshaw Chemical Company rose to this challenge and claimed an important role in the early years of nuclear fuel production. Several ore refineries, chemical producers, and research laboratories linked together under wartime pressures to produce uranium with a purity never before attained, minimizing both the required time and cost. In 1942, Mallinckrodt Chemical in St. Louis began to produce and supply brown oxide to the Westinghouse Lamp Division in Bloomfield, New Jersey. Westinghouse, in turn, carried the brown oxide through several more crude chemical processing steps to produce uranium metal, at a total cost of about \$1,000 per pound. When scientists at Iowa State College in Ames developed a newer and faster metal production process using green salt, Harshaw Chemical began converting Mallinckrodt Chemical's brown oxide to the green salt that du Pont's Dye Works, Electromet, Iowa State College, Mallinckrodt Chemical, and Metal Hydrides needed to ultimately produce more than 3,500 tons of uranium metal by the end of World War II. This new process drove the total cost for production of uranium metal down to about \$22 per pound.

From 1942 until the early 1950s, Harshaw Chemical produced bulk amounts (hundreds of pounds each day) of uranium products and other inorganic chemicals that first the MED and later the AEC required for weapons production. Uranium mills in the United States and Canada shipped yellowcake feed to Cleveland, where Harshaw Chemical purified and converted it to several types of uranium compounds, including orange oxide, brown oxide, green salt, and uranium hexafluoride. To support the uranium isotope separation effort, chemists developed new corrosion-resistant coolants and lubricants for the thousands of leak-proof pumps that the gaseous diffusion plant near Clinton, Tennessee needed. The company eventually became the main supplier of uranium hexafluoride to the S-50 and K-25 Plants and of purified hydrofluoric acid to the Hanford Reservation T Plant after World War II. Until the Feed Materials Production Center (FMPC) in Fernald, Ohio came fully on line in 1953, Harshaw Chemical consistently produced high quality uranium products and other inorganic chemicals for the nation's nuclear weapons industry. In May 1953, the main plant went on stand-by, and the government began selling or transferring its equipment at the facility to other operations, particularly the FMPC. All AEC operations at Harshaw Chemical finally ceased in January 1958.

Most of the company's original buildings still exist, both at its former headquarters on 97th Street and at the chemical production plant about 3.5 miles south of downtown Cleveland. Harshaw Chemical's

headquarters building, an imposing black stonework edifice, housed the main administration offices and research laboratories. It is now ivy-covered and partially hidden behind large trees. The numerous vent pipes protruding through the roof in the rear of the building indicate where the laboratory hoods were once located. Offices of the Chester Conference Center of the Cleveland Clinic Foundation now occupy the site.

Most of the original 30 buildings remain at Harshaw Chemical's 14-acre plant site, hugging the western bank of the infamous Cuyahoga River. (The river caught fire in 1969 and became the rallying point for passage of the Clean Water Act less than a year later.) Harvard Avenue cuts through the mostly red brick facility, which appears lonely and isolated from the surrounding industrial sites and railroad yards by more than just its broken windows, 8-foot tall chainlink fence, and empty and overgrown surrounding lots. A security guard keeps trespassers away. The Englehard Corporation currently maintains some of the old buildings in order to lease them for warehouse space. Concrete pads are all that remain of several others. The Refinery Building is a large red brick and steel structure with 1-, 2-, and 3-story sections, and a flat, tar-covered concrete slab roof. Most of the uranium work occurred here, although years after the plant shut down the DOE found 16 additional buildings on both sides of Harvard Avenue significantly contaminated with uranium (as well as traces of yellowcake along the riverbank). Maybe that is why so many of the Harshaw Chemical facilities still remain – the preliminary decontamination phase of their demolition is too expensive.

### **How Do I Get There?**

The company's former administration offices and laboratories are located at 1945 E. 97th Street, between Euclid Avenue (U.S. Route 20) and Chester Avenue (U.S. Route 322), a little more than 2 miles east of downtown Cleveland. Although the neighborhood is mixed commercial and residential, street parking is non-existent within a block or two of the stately old building, and the parking lots of the numerous public buildings are "for customers only." In any case, it is well worth the short walk to view Harshaw Chemical's old headquarters and contemplate its historical role.

Finding the chemical plant at 1000 Harvard Avenue is tricky for the first-time visitor. Look at a city street map before trying to drive there. The three simplest approaches are from I-77 onto Harvard Avenue westbound, or from southbound I-71 onto Jennings Freeway and then immediately off at Denison Avenue, or from northbound I-71 onto southbound 25th Street (to the right) and then east (left) onto Denison Avenue. Visitors can see the old chemical plant from ground level along Harvard Avenue. The best overview of the entire complex is from the Harvard-Denison Viaduct. A sidewalk along the southern side of this overpass enables visitors to inspect the Harshaw Chemical plant at their leisure. Although

Harshaw Chemical is only a few miles from downtown Cleveland, visitors should drive to the facility. A friend will help in navigating through the 3-dimensional maze of streets in this old industrial zone. The best street parking is available north of Denison Avenue at the western end of the Viaduct. Consider bringing a sweater because the Viaduct can be cold and windy.