

FORMERLY UTILIZED SITES  
REMEDIAL ACTION PROGRAM

ELIMINATION REPORT  
FOR  
FORMER WOLVERINE TUBE DIVISION  
1411 CENTRAL AVENUE  
DETROIT, MICHIGAN

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U.S. Department of Energy  
Office of Environmental Restoration

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## INTRODUCTION

The Department of Energy (DOE), Office of Environmental Restoration, has reviewed the past activities of the Manhattan Engineer District (MED) and the Atomic Energy Commission (AEC) at the former Wolverine Tube Division of the Calumet and Hecla Consolidated Copper Company in Detroit, Michigan. In addition, DOE has conducted a preliminary radiological survey of the site (Landis, 1990b) and has determined that the conditions at the site are in compliance with current radiological guidelines and standards (DOE, 1987). Therefore, this site requires no remedial action and is no longer under consideration for inclusion in the Formerly Utilized Sites Remedial Action Program (FUSRAP).

The material in this report consists of information from documents supporting the determination that the radiological conditions at the former Wolverine Tube Division, currently known as the Hermes Automotive Manufacturing Corporation, are in compliance with radiological guidelines and standards determined to apply to this site and that use of this site will not result in any measurable radiological hazard to site occupants or the general public. Analysis of residue samples for nonradioactive beryllium were made and the results indicate that beryllium is present in very low concentrations and poses no significant hazard to occupants.

This elimination report will be placed in archives by DOE through the assistant Secretary for Management and Administration. A copy of this report will be maintained by the Department at the DOE Public Document Room in Washington, D.C., so that it will be accessible to the general public.

## BACKGROUND

### Site Function

During the period from June 1943, through January 1946, Wolverine Tube Division was under subcontract for services and supplies to the University of Chicago, Metallurgical Project, a MED contractor. Wolverine Tube, one of several machining subcontractors used by the University in the greater Chicago area, was awarded two subcontracts having maximum obligations of \$40,000 and \$6,000.

Under the terms of two subcontracts, Wolverine Tube Division furnished personnel and equipment, including its extrusion press and piercing mill, to develop methods and subsequently fabricate metallic tubing and sheaths. The metals worked probably included uranium, thorium, and beryllium. Wolverine

Tube also provided personnel and facilities for the development of methods for spinning and welding the ends of aluminum cans. Some similar work may have been performed for the AEC after 1946.

### Site Description

The Wolverine site was located at 1411 Central Avenue in Detroit, Michigan. This location is on the southwest corner of the intersection of Central Avenue and Pershing Avenue in the west-southwest section of downtown Detroit.

The site is comprised almost entirely by the concrete block building, which covers an area of about 30,000 m<sup>2</sup> (330,000 ft<sup>2</sup>). The interior is mostly a series of bays defined by concrete block walls and steel support beams. There is a second story in the southeast corner of the building, which is otherwise single story. The current building is the one used for MED activities during 1943 to 1946.

At the time the work was performed, Wolverine Tube Division was owned by the Calumet and Hecla Consolidated Copper Company. Later it was sold to Star Tool and, eventually, to the present occupant Hermes Automotive Manufacturing Corporation. The building is presently used as a warehouse.

### Radiological History and Status

Records indicate that the site was used to perform aluminum canning fabrication studies, extrude beryllium and thorium metal, make uranium tubing by hot piercing, and jacket uranium tubing in support of MED and AEC activities.

The available records indicate no potential for significant residual radioactive material to be present. However, DOE was unable to find adequate documentation to determine whether the radiological conditions at the conclusion of the activities would satisfy the current guidelines (DOE, 1987) for release without radiological restriction.

Therefore, in 1989, DOE decided to conduct a preliminary radiological survey of the Wolverine site. The preliminary survey was conducted during the period of October 23 through 26, 1989, by the Oak Ridge Associated Universities at DOE's request (Landis, 1990b). The objective of the survey was to obtain sufficient radiological data upon which to base a decision for inclusion or exclusion of the site in FUSRAP.

Surveys of the outdoors included the area immediately surrounding the building and the roof. The interior surveys included the floors, lower walls, and overhead structures. Scans were made for direct radiation--alpha, beta, and gamma. Two hundred and fifty-four measurements for total surface activity and removable activity were made. Exposure rates inside and outside of the building ranged from 7 to 13 uR/h, which is typical of background (10 uR/h on average) for the area. Paint samples exhibited activity levels of 5 to 22 dpm/100 cm<sup>2</sup> for total uranium and 11 to 71 dpm/100 cm<sup>2</sup> for total thorium,

which are well below DOE guidelines. Residue samples had concentrations of 1.0 to 1.9 pCi/g for total uranium and 1.4 to 2.6 pCi/g for total thorium, which are levels typical of background concentration of natural uranium in soil and masonry construction materials.

Total surface activity levels were found to be within DOE surface activity guidelines. Activity levels ranged from <19 to 50 dpm/100 cm<sup>2</sup> for alpha and <320 to 1100 dpm/100 cm<sup>2</sup> for beta-gamma. Removable activity levels ranged from <3 to 7 dpm/100 cm<sup>2</sup> for alpha and <6 to 12 dpm/100 cm<sup>2</sup> for beta.

In conclusion, the survey indicated that all measurements were within DOE guideline levels for release of the site without radiological restrictions.

### Beryllium History and Status

As previously stated, beryllium metal was probably extruded at the Wolverine site. Chemical analysis for beryllium was made for six of the residue samples (Landis, 1990a) collected during the October 1989 survey. These represented dust, grime and paint. Low levels of beryllium were found ranging from 1.00 to 2.10 ppm. Although beryllium is listed by the Environmental Protection Agency as a hazardous substance (40 CFR Part 302), there are no guidelines for residual amounts of beryllium--from a chemical perspective. Therefore, the OSHA indoor air short-term exposure limit of 0.025 mg/m<sup>3</sup>, or 0.068 ppm, (Sax, 1979) was used to evaluate the significance of the levels found in the residues.

A worst case scenario was postulated that somehow all the available dust becomes airborne within the building. Available dust with a concentration of 2 ppm was assumed to cover an area equal to the floor space of the building and 1 mm thick. The resulting concentration of beryllium in air in the building was 0.0007 ppm-- with no credit for ventilation losses. This conservative estimate is well below the current 30-minute exposure limit of 0.068 ppm, as well as a more conservative OSHA-proposed value of 0.005 ppm. This result confirms that the beryllium levels in the building are very low and pose no hazard to the building occupants.

### ELIMINATION ANALYSIS

The preliminary radiological survey performed by Oak Ridge Associated Universities confirmed that negligible levels of residual uranium and thorium are present at the Wolverine site where MED and possible AEC work was performed. Conditions at the site are in compliance with the current DOE guidelines and standards for release without radiological restrictions. The survey data provided assurance that use of this site will not result in any measurable radiological hazard to site occupants or the general public.

Some of the residue samples obtained during the preliminary radiological survey were analyzed for nonradioactive beryllium, because this hazardous substance was probably used previously during MED and possible AEC work. The measured values of beryllium were very low, such that the OSHA standards for airborne beryllium dust inside the building are unlikely to be exceeded. Thus, the beryllium poses no hazard to the site occupants or the general public.

Based on the information summarized in this report, DOE has determined that no remedial action is necessary at this site and has eliminated the former Wolverine Tube Division (Calumet and Hecla Consolidated Copper Company) as a considered site under FUSRAP.

## REFERENCES

Code of Federal Regulations, Title 40, Part 302: Designations, Reportable Quantities, Notifications. Environmental Protection Agency, Table 302-4, July 1988.

Department of Energy, 1987: U. S. Department of Energy Guidelines for Residual Radioactivity at Formerly Utilized Sites Remedial Action Program and Remote Surplus Facilities Management Program Sites. Revision 2, March.

Landis, M. R., 1990a: Letter from Oak Ridge Associated Universities to J. Wagoner, Decontamination and Decommissioning Division, Department of Energy. January 5.

Landis, M. R., 1990b: Radiological Survey at 1411 Central Avenue, Detroit, Michigan. Final report. Oak Ridge Associated Universities, Oak Ridge Tennessee, ORAU 90/A-16, February.

Sax, N. Irving, 1979: Dangerous Properties of Industrial Materials. Fifth Edition, Van Nostrand Reinhold Company, New York.