

FORMERLY UTILIZED SITES  
REMEDIAL ACTION PROGRAM

ELIMINATION REPORT  
FOR  
FORMER QUALITY HARDWARE AND MACHINE COMPANY;  
5823/5849 NORTH RAVENSWOOD AVENUE;  
CHICAGO, ILLINOIS

JULY 1990

U.S. Department of Energy  
Office of Environmental Restoration

Elimination Report  
Former Quality Hardware and Machine Company

CONTENTS

	<u>Page</u>
INTRODUCTION . . . . .	1
BACKGROUND . . . . .	1
Site Function . . . . .	1
Site Description. . . . .	1
Radiological History and Status . . . . .	2
ELIMINATION ANALYSIS . . . . .	3
REFERENCES . . . . .	4

Elimination Report  
Former Quality Hardware and Machine Company

## 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 Quality Hardware and Machine Company; Chicago, Illinois, and has completed a preliminary radiological survey of the site. DOE has determined that the conditions at this site are in compliance with current DOE radiological guidelines (DOE 1987). Furthermore, the survey did not identify residual radioactive material on the site associated with MED or DOE predecessor activities and confirmed that radiological exposures at the site are undistinguishable from those associated with natural background. Therefore, this site requires no remedial action and is no longer under consideration for inclusion in the Formerly Utilized Sites Remedial Action Program.

The material in this docket consists of information from documents supporting the determination that the radiological conditions at the former Quality Hardware and Machine Company site are in compliance with DOE radiological guidelines determined to apply to this site (DOE, 1987) and provides assurance that use of this site will not result in any measurable radiological hazard to site occupants or the general public.

Through the Office of Administration and Human Resource Management, this elimination report is being placed in DOE's Freedom of Information (FOI) Public Reading Room in Washington, D.C., so that it will be accessible to the general public.

## BACKGROUND

### Site Function

Between 1942 and 1952, the University of Chicago conducted research and developed activities under contract to the Manhattan Engineer District (MED) and the Atomic Energy Commission (AEC), predecessor of DOE. Some of the work, involving machining of uranium and canning uranium slugs, was subcontracted to various companies in the Chicago area, one of these was the Quality Hardware and Machine Company; Chicago, Illinois. During the period extending from February 1944 to June 1945, Quality Hardware entered into a subcontract with the University of Chicago to furnish the necessary personnel, facilities and equipment required to produce special tools, dies, fixtures, etc., from materials furnished by the University.

### Site Description

The facility is located at the intersection of North Ravenswood Avenue and West Thorndale Avenue, approximately 13 kilometers (8.1 miles) north-northwest of the Chicago Loop area. It is of brick veneer over concrete block construction, situated on a concrete slab. The total facility floor area (ground level) is about 3000 m<sup>2</sup> (32,600 ft<sup>2</sup>). Additional building areas, located to the south of the facility, are of similar construction and are in

use by the same occupant. Records did not indicate MED/AEC use of that portion of the building. Major internal walls are also of concrete block construction; however, smaller rooms are of wood frame. With only a few exceptions the floor is bare concrete. There is a second story to an office area at the extreme northwest corner of the facility; otherwise, the portion of the building surveyed is single story. Present use of the facility is for light manufacturing by the current tenant, Marden Manufacturing Company. The current owner is the Ravenswood Venture.

### Radiological History and Status

On May 24, 1989, Oak Ridge Associated Universities (ORAU) performed a preliminary survey of the facility and property at 5823/5849 North Ravenswood Avenue; Chicago, Illinois (Landis, 1989). The objective of this survey was to obtain sufficient radiological data, upon which to base a decision for inclusion or exclusion from the Formerly Utilized Sites Remedial Action Program. Survey activities included gamma and beta-gamma scans, and measurements of exposure rates, total and removable surface activity levels, and radionuclide concentrations in soil and roofing material samples. No residual radioactivity associated with DOE predecessor activities was identified. Furthermore, all areas surveyed complied with DOE guidelines (DOE, 1987). Levels were within the range of natural background radiation in the area (Myrick, et al., 1981).

Total activity levels ranged from <38 to 780 dpm/100 cm<sup>2</sup> for alpha and <510 to 1,700 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 16 dpm/100 cm<sup>2</sup> for beta-gamma. For comparison purposes, the DOE surface contamination guideline levels for uranium are:

5,000 dpm/100 cm<sup>2</sup>, averaged over 1 m<sup>2</sup>  
15,000 dpm/100 cm<sup>2</sup>, maximum in 100 cm<sup>2</sup>  
1,000 dpm/100 cm<sup>2</sup>, removable

All measurements were well below these guideline levels.

Exposure rates measured at 11 locations throughout the facility ranged from 6.3 to 10.2 uR/h typical of background for this area and, therefore, below the DOE external gamma radiation guideline of 20 uR/h above background.

Radionuclide concentration ranges in soil and roofing material samples were: U-238, 0.8 to 2.1 pCi/g; Ra-226, 0.4 to 1.4 pCi/g; and Th-232, 0.3 to 1.0 pCi/g. The U-238 concentrations are in the range of natural background, and the Ra-226 and Th-232 concentrations are below the DOE guideline concentrations of 5 pCi/g, averaged over the first 15 cm and 15 pCi/g, averaged over 15-cm-thick layers of soil more than 15 cm below the surface.

### ELIMINATION ANALYSIS

Although a large quantity of uranium metal was handled, the nature of the operation was such that the propensity for contamination of the facilities and equipment was considered much less than metal fabrication operations involving machining and grinding. The primary potential sources of contamination and hazards associated with the canning operations were the handling and cleaning of the uranium slugs through mechanical and chemical processes. The results of the radiological survey performed by ORAU indicated that no contamination above DOE guidelines was located. Direct radiation levels were typical of natural background in the area. Environmental samples were also comparable to background.

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 Quality Hardware and Machine Company facility in Chicago, Illinois, from the Formerly Utilized Sites Remedial Action Program.

REFERENCES

1. U.S. Department of Energy, 1987: Guidelines for Residual Radioactivity at Formerly Utilized Sites Remedial Action Program and Remote Surplus Facilities Management Program Sites. Revision 2, March.
2. Landis, M. R., 1989: Radiological Survey at 5823/5849 North Ravenwood Avenue, Chicago, Illinois. Oak Ridge Associated Universities. ORAU 89/G-75, October.
3. Myrick, T. E., B. A. Berven, and F. F. Haywood, 1981: State Background Radiation Levels: Results of measurements taken during 1975 - 1979. Oak Ridge National Laboratory, Oak Ridge, Tennessee, November.