

**HEALTH AND SAFETY RESEARCH DIVISION**

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**RADIOLOGICAL SURVEY  
OF THE  
FORMER AEROPROJECTS, FACILITY,  
WEST CHESTER, PENNSYLVANIA**

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## ABSTRACT

The former Aeroprojects, Incorporated, Facility is located at 200-T East Rosedale Avenue, West Chester, Pennsylvania. The facility was under contract to the Atomic Energy Commission (AEC) beginning in 1951 to investigate the use of ultrasonic energy in a variety of manufacturing procedures. An unknown quantity of alloys and compounds of aluminum, beryllium, mercury, thorium, and uranium were used on the site. In the mid-1960s, work for the AEC tapered off and Aeroprojects began doing R&D under other government contracts.

It is the policy of the U. S. Department of Energy (DOE) to verify that radiological conditions at such sites or facilities comply with current DOE guidelines. Therefore, at the request of DOE, a radiological survey of this site was conducted in May 1988. The survey included a gamma scan of the interior of the building that had been used during the contract work and the area outdoors immediately adjacent to the building.

The survey results show that all gamma exposure rates approximated typical background levels found in the southeastern Pennsylvania area and, furthermore, were well within the DOE guideline. However, recently discovered information suggests that small amounts of radioactive residuals may have been buried on site. The areas where these suspected burials would have occurred are included in areas planned to be remediated by the current owners.

# **RADIOLOGICAL SURVEY OF THE FORMER AEROPROJECTS FACILITY, WEST CHESTER, PENNSYLVANIA\***

## **INTRODUCTION**

The former Aeroprojects, Incorporated, Facility is located at 200-T East Rosedale Avenue, West Chester, Pennsylvania. The facility was under contract to the Atomic Energy Commission (AEC) beginning in 1951 to investigate the use of ultrasonic energy in the areas of instrumentation, welding, filling of tubes with powders, extrusion, solidification and cleaning. An unknown quantity of alloys and compounds of aluminum, beryllium, mercury, thorium, and uranium were used on the site. In the mid-1960s, work for the AEC tapered off and Aeroprojects began doing R&D under other government contracts.<sup>1</sup>

There was no evidence to indicate that activities conducted at this site resulted in the potential for significant radiological contamination. However, it is the policy of the U. S. Department of Energy (DOE) to verify that radiological conditions at such sites or facilities comply with current DOE guidelines. If they are found to exceed those guidelines, remedial action may be implemented (where DOE has the authority to do so) to correct the unacceptable condition. Furthermore, guidelines for release and use of such sites have become more stringent as research has provided more information since previous cleanups.

Therefore, at the request of DOE, Oak Ridge National Laboratory (ORNL) conducted a gamma scan survey to determine if this site should be included for further assessment in the Formerly Utilized Sites Remedial Action Program (FUSRAP). The radiological survey discussed in this report was conducted by ORNL in May 1988.

At the time of the survey, no official documentation could be found that described the type of precautions taken during and after completion of the AEC work, or during clean-up procedures. Subsequent to the survey, new information was brought to our attention indicating that wastes containing small amounts of uranium may have been buried on the site. According to Philadelphia Ventures, the following three burials may have occurred at the Sonobond Ultrasonics facility in West Chester, PA: (1) in 1966, air filters, used during the cutting of uranium, placed in concrete containers; (2) in 1975, three "C" battery-sized pieces of depleted uranium; and (3) in 1976, some uranium chips and other metal debris placed in a drinking glass-sized jar.<sup>2</sup>

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\*The survey was performed by members of the Measurement Applications and Development Group of the Health and Safety Research Division of Oak Ridge National Laboratory under DOE contract DE-AC05-84OR21400.

The building (Fig. 1) used for the activities conducted under the auspices of AEC has been extensively remodeled. It is a one-story, masonry structure owned by the Bishop Tube Company, and held and managed by Philadelphia Ventures of Frazer, Pennsylvania. The current tenant, Sonobond Ultrasonics, is a subsidiary of Inductotherm Industries of Rancocas, New Jersey. At the time of the survey, Sonobond was producing assembly equipment engineered for production applications.

### SURVEY METHODS

Using a portable gamma scintillation (NaI) survey meter, floor and wall surfaces inside the building were scanned to determine ranges of exposure rates. Since the exposed wall surfaces and overhead structures had been replaced during remodeling, direct alpha and beta-gamma measurements were not made on these surfaces. A walkover gamma scan was performed over the outdoor area immediately adjacent to the building. A comprehensive description of the survey methods and instrumentation has been presented in another report.<sup>3</sup> All direct measurements presented in this report are gross readings; background radiation levels have not been subtracted.

### RESULTS

Gamma exposure rates measured by scanning surfaces within the building revealed a range of 5 to 9  $\mu\text{R/h}$  as depicted on Fig. 1. Exposure rates near the ground surface outside the building ranged from 6 to 9  $\mu\text{R/h}$ . These values compare favorably with radiation background levels in the eastern Pennsylvania area that typically range from 2.5 to 8.1  $\mu\text{R/h}$  and average 6  $\mu\text{R/h}$ .<sup>4</sup> No areas of elevated gamma levels were detected. All values were well below the DOE guideline of 20  $\mu\text{R/h}$  above background for indoor gamma exposure rates.<sup>5</sup>

### SIGNIFICANCE OF FINDINGS

Results of the May 1988 survey indicate that no radioactive residuals from former AEC operations remain inside or next to the building at the former Aeroprojects Facility in which contract activities had been conducted. All gamma exposure rates approximated typical background levels found in the southeastern Pennsylvania area and, furthermore, were well within the DOE FUSRAP guideline. However, it should be noted that pursuant to Philadelphia Ventures' July 12, 1990, letter, small amounts of radioactive residuals may have been buried on site.<sup>2</sup> The locations of these suspected burials are included in the areas planned to be

remediated by the current owner.<sup>2</sup> The guideline with which these results were compared is derived to ensure that unrestricted use of the property will not result in any measurable hazard to the site occupants or the general public.

#### REFERENCES

1. K. Wills, Weston (Roy F.), Inc., Germantown, Maryland, letter to W. D. Cottrell, Oak Ridge Natl. Lab., June 1990.
2. D. Craig Fuller, Philadelphia Ventures, Frazer, Pennsylvania, letter to W. Alexander Williams, U.S. Department of Energy, Washington, D.C., July 1990.
3. T. E. Myrick, B. A. Berven, W. D. Cottrell, W. A. Goldsmith, and F. F. Haywood, *Procedures Manual for the ORNL Radiological Survey Activities (RASA) Program*, Oak Ridge National Laboratory, Oak Ridge, Tennessee, ORNL/TM-8600 (April 1987).
4. T. E. Myrick and B. A. Berven, *State Background Radiation Levels: Results of Measurements Taken During 1975-1979*, Oak Ridge National Laboratory, ORNL/TM-7343 (November 1981).
5. U.S. Department of Energy, *Guidelines for Residual Radioactivity at Formerly Utilized Sites Remedial Action Program and Remote Surplus Facilities Management Program Sites* (April 1987).

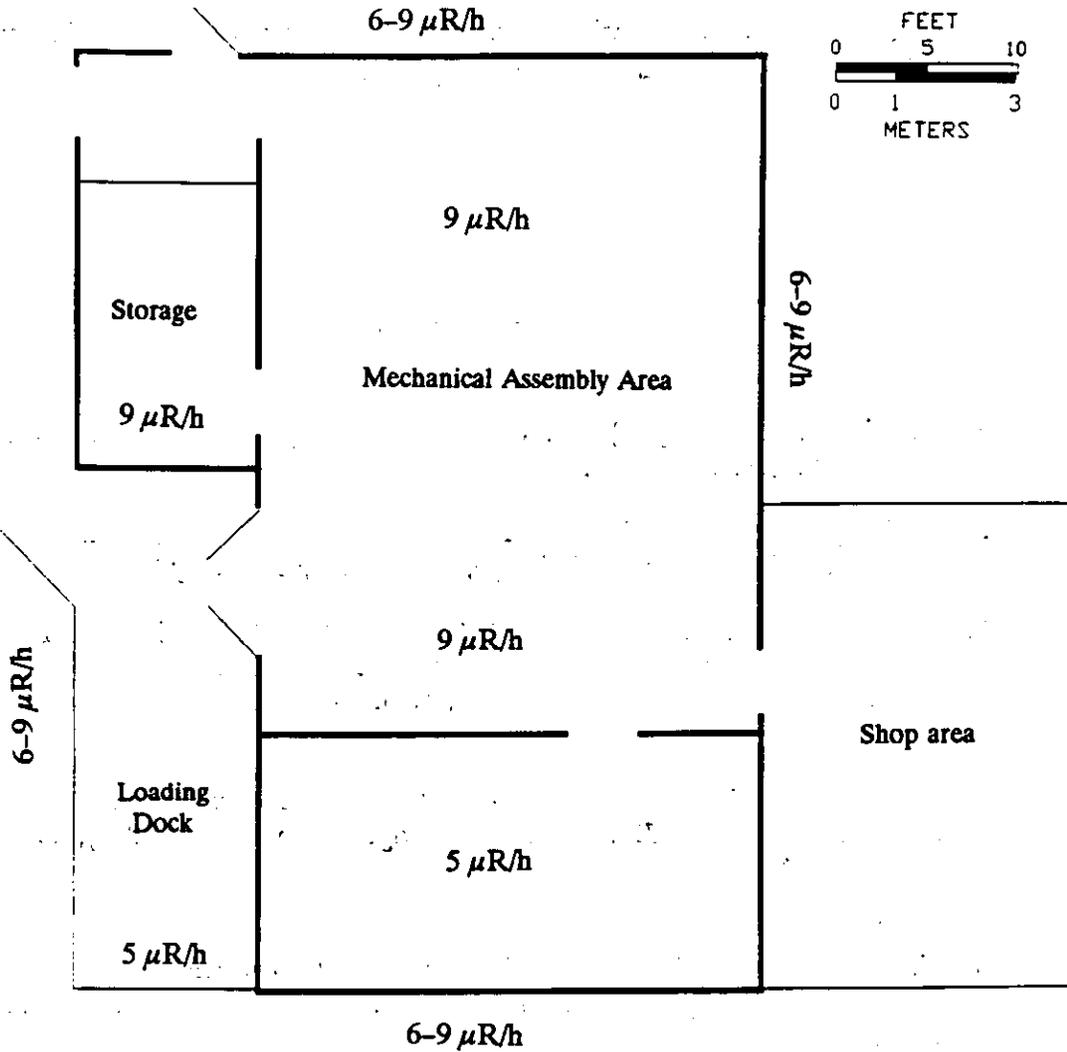
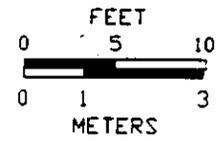
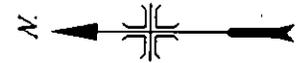


Fig. 1. Diagram showing gamma exposure rates measured in and around the former Aeroprojects Facility, West Chester, Pennsylvania (May, 1988).

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