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EM-421

Public Access to FUSRAP Elimination Reports

D.B. Diggin, HR-83

I am attaching reports for the evaluation and elimination of a number of sites from the Department's Formerly Utilized Sites Remedial Action Program (FUSRAP). Please enter this material into the Public Reading Room at the Forrestal Building. This process completes FUSRAP activities at these facilities. Our protocol requires that these records be available in the Public Reading Room for at least 3 years; however, if possible, they should be retained for five years.

This package contains information supporting the elimination of the following facilities:

ALCOA Sites
New Kensington, Pennsylvania

former New Jersey Zinc Storage Site
Palmerton, Pennsylvania

former McKinney Tool & Manufacturing Co.
Cleveland, Ohio

If you have any questions concerning this material, please contact Dr. W. Alexander Williams of my staff at 903-8149.

Albert S. Johnson
Acting Director
Division of Off-Site Programs
Office of Eastern Area Programs
Office of Environmental Restoration

Attachments

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FORMERLY UTILIZED SITES
REMEDIAL ACTION PROGRAM

ELIMINATION REPORT
FOR
FORMER NEW JERSEY ZINC, INC. STORAGE SITE
PALMERTON, PENNSYLVANIA

January 1994

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 New Jersey Zinc, Inc. storage site in Palmerton, Pennsylvania. The DOE has completed a comprehensive radiological survey of the site (ORNL, 1989) and has performed a dose assessment on the storage site using the radiological data from the survey. Based on the results of the draft radiological survey and the dose assessment, DOE has determined that the conditions at the New Jersey Zinc, Inc. storage site are in compliance with current DOE radiological guidelines. 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 New Jersey Zinc, Inc. storage site are in compliance with DOE radiological guidelines (DOE, 1987) that are applicable to this site. This information 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

During the 1950's, the AEC Division of Raw Materials was implementing a program to identify potential sources of domestic uranium and to encourage commercial mining of uranium ore. Between 1953 and 1954 the AEC Division of Raw Materials established a uranium ore stockpile on the property of the New Jersey Zinc Company at their smelter and research center in Palmerton, Pennsylvania in order to support the development of eastern uranium mines and to meet the AEC's goals for procurement and stockpiling of uranium ore. The uranium ore came from a deposit in Mauch Chunk (Jim Thorpe) Pennsylvania, and while some samples from the deposit contained uranium oxides as high as 3%, the ore generally contained less than 1% uranium oxide and most ore from the deposit was assayed at less than 0.1% uranium oxide.

The AEC stored approximately 360 tons of ore from Lehigh Coal and Navigation at the site. The ore averaged about 0.21% uranium oxide and was stored at the New Jersey Zinc Company site until 1973.

Elimination Report
Former New Jersey Zinc, Inc. Storage Site

Site Description

New Jersey Zinc, Inc. had plants in the eastern and western parts of Palmerton, Pennsylvania. The AEC storage site was located near the zinc smelter and research center at the East Plant of New Jersey Zinc, Inc. in Palmerton. The current owner of the site is Zinc Corporation of America.

Radiological History and Status

The uranium ore stockpile at New Jersey Zinc, Inc. was removed by the AEC in 1973 when, as an indirect result of the Grand Junction mill tailings legislation, the AEC initiated a program to evaluate and clean up its ore storage and stockpile locations.

The AEC cleanup plan for the Palmerton site called for the removal of the ore and the first 15 cm (6 in.) of soil. The ore and soil were transported to the AEC Feed Materials Center in Fernald, Ohio, for disposal in the plant's raffinate pits. During removal operations, some chunks of ore were inadvertently buried, necessitating additional soil excavation. The area at the east end of the stockpile was excavated an additional 61 to 76 cm (2 to 2.5 ft.) to ensure removal of all the ore, and this material was disposed of in the New Jersey Zinc slag dump. The AEC set the maximum acceptable residual radioactivity level at 40 μR/hr, which was twice the background level of 20 μR/hr. The post-removal survey completed in July 1973 found all areas of the site within the specified background levels. One air sample showed an excessive radon concentration, but additional samples taken in September of 1973 showed radon levels to be lower than background samples. Based on the second set of measurements, and because all gamma measurements were within applicable guidelines, the site was considered acceptable and was released to the owner.

Although the final Palmerton site report indicated that the site met radiological criteria defined at the time of cleanup, DOE determined that supporting radiological data were not sufficient to demonstrate that contemporary standards were met everywhere on the site. Subsequent radiological criteria and guidelines have become more stringent for the release of such sites for unrestricted use. A preliminary radiological scoping of the Palmerton site was conducted at the request of DOE by Oak Ridge National Laboratory (ORNL) in May of 1988. The results of this survey indicated the possibility of residual contamination. In order to determine the extent of contamination, a comprehensive radiological survey was performed by ORNL in July and August of 1988.

Results of the comprehensive radiological survey performed by ORNL indicated small, isolated areas of residual radioactive material (ORNL, 1987). Data from the comprehensive

survey indicated it was highly unlikely that an individual living or working on the site could receive an exposure approaching the 100-mrem annual exposure limit. However, at the request of the Environmental Protection Agency, a dose assessment was performed for the site by Argonne National Laboratory (ANL) using the RESRAD computer code, which implements the methodology described in DOE's manual for establishing residual radioactive material guidelines (ANL, 1991).

Four scenarios were examined in the ANL dose assessment: Industrial Use/"Hot Spot" Contamination; Industrial Use/Homogeneous Contamination; Residential Use/Homogeneous Contamination; Residential Use/"Hot Spot" Contamination. Of the four scenarios examined only one exceeded a dose rate of 100-mrem/yr, while the other scenarios showed very small radiation doses. The dose assessment for residential use of the site with "hot spot" contamination showed a maximum dose rate of 360 mrem/yr resulting from external exposure, inhalation, and ingestion of plant foods. It was determined, however, that the residential use with "hot spot" contamination was a highly implausible scenario (Williams, 1991). This is primarily because current clean-up efforts, along with any future attempts to convert the site to residential use, are likely to homogenize any "hot spot" contamination and drastically reduce the maximum dose rate to well below 100-mrem/yr. Consequently, it was determined that further DOE action at the site was not necessary (Williams, 1991).

ELIMINATION ANALYSIS

The comprehensive radiological survey performed by ORNL indicated the possibility of small, isolated areas of residual radioactive material. A preliminary dose assessment performed by ANL using RESRAD estimates very small radiation doses, except in the case of a resident who builds a home and garden near a "hot spot.". This potential land use represents a worst case analysis. There are two reasons why such use for this site is not plausible. First, in its present condition, the site cannot be used for residential or garden use because of a thick crust over the site; the removal of the crust would be necessary for garden or residential use and this removal would probably homogenize the "hot spot." Second, the on-going cleanup efforts by the property owner and EPA may homogenize any "hot spot." Thus, the likelihood of residential and garden use of the site in its present condition is implausible. Because of this implausibility, DOE has determined that there is no potential for radiological exposure beyond that associated with natural background radiation and, therefore, no remedial action is necessary at the site. The former New Jersey Zinc, Inc. storage site is consequently eliminated from the list of considered sites under the Formerly Utilized Sites Remedial Action Program.

REFERENCES

1. Oak Ridge National Laboratory, 1989: Draft Results of the Radiological Survey at the Former Ore Storage Site, Palmerton, Pennsylvania (PP001), ORNL/TM-11218, 1989.

2. Argonne National Laboratory, 1991: Preliminary Dose Assessment for the Palmerton Ore Storage Site, Palmerton, Pennsylvania, ANL/EAIS/TM-42, February, 1991.

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

4. W. Alexander Williams, U.S. DOE: Letter to Tony Koller, U.S. Environmental Protection Agency, Region III, Philadelphia, Pennsylvania concerning the results of the preliminary dose assessment for the storage site, June 11, 1991.