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MAY 18 1967

William P. Ellis, Radiation Specialist
Region II, Division of Compliance, Atlanta

Original Signed W. P. Ellis

COMPLIANCE INQUIRY MEMORANDUM - THE CARBORUNDUM COMPANY, THE CARBORUNDUM METALS COMPANY DIVISION, P. O. BOX 32, AKRON, N. Y. (WASHINGTON, W. VIRGINIA PLANT) LICENSE NO. STB-440 (DOCKET NO. 40-5001) - MISCELLANEOUS

CO:II:WPE

On May 1, 1967, CO:Hqs notified CO:II by telephone that the Division of Material Licensing received a letter from the subject licensee dated April 20, 1967, requesting some guidance in disposing of waste thorium residue from a hafnium-zirconium refining process. J. T. Sutherland telephoned W. P. Ellis who was making routine inspections in that area and on May 2, 1967, Ellis visited R. W. Ritchey, the Plant Manager, at Washington, West Virginia, to make an inquiry concerning the disposal problem.

The thorium residue waste resulted from the processing of Nigerian ore, a silicate, but the use of this ore as a source of hafnium and zirconium was discontinued in January 1964 in favor of an Australian ore which contained no thorium. In 1959-1960 the licensee purchased 1,707,660 pounds of Nigerian zircon sand which contained 4-6% thorium and no thorium transfers have been made because there was no market for this material.

Records show that the licensee now has the following inventory:

<u>Weight in Pounds</u>	<u>Natural</u>	<u>% Thorium</u>
1.54×10^6	Nigerian ore (not processed)	4 - 6
4.4×10^5	Old mix residue from Carbide furnace (15 to 20% carbon)	4 - 5
5.37×10^4	Carbide chlorinated residue	7
1.63×10^5	Scrubber acid oxide residue	36 - 58
1.05×10^5	Chloride salt residue	1.5 - 2.5
5.98×10^4	Carbide belt pickings (same as ore)	4 - 6
2.51×10^5	Nigerian carbide (same as ore)	4 - 6

These materials were stored in 55-gallon metal drums, each containing about 700 pounds of material or about 1750 drums. The chloride salt residue storage is just south of the main plant area and is enclosed with two

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strands of wire. The plant manager stated that the material is under surveillance of plant personnel 24 hours per day. These drums are exposed to the weather and about 20-25% have deteriorated and material tailings have sifted out onto the ground from the deteriorated drums. All other materials are stored inside the plant area which is surrounded by a chain link fence. The carbide residues are stored inside a building and the drums are in good condition. All other materials are in drums which are covered with polyethylene sheets but a few of these drums have lost their integrity and material has spilled out onto the ground. The licensee has 100 acres of land at this site and control of the thorium materials is maintained.

Ritchey, the plant manager, made inquiry about what could be done with these materials. First, the AEC representative stated that the loose materials could be returned to good drums or the licensee could provide a concrete pit or other means for storage if the licensee has plans to continue to store the materials for a future market. Secondly, it was pointed out that the licensee could ship the materials to a commercial burial. Ritchey stated that the licensee did not want the continued expense either of storage facilities nor that of commercial burial. He then suggested that NPS had received a license to operate their own burial ground and he was considering an application to bury the thorium waste on the ~~licensee's~~ ^{licensee's} property.

The AEC representative stated that the licensee could request a burial license and suggested that his application include:

- (1) Location of burial site
- (2) Depth and method of burial
- (3) Volume and amount of material to be buried
- (4) Chemical form and solubility of materials to be buried
- (5) Information of hydrographical and topographic studies
- (6) Strata formations and results of local core drillings
- (7) Plans for retaining containers, neutralizers, etc., if any

It was pointed out that the carbide chlorinated residue is at least slightly soluble and the chloride salt residue may be very soluble in water. Ritchey stated that they were considering a pit lined with limestone as a neutralizing agent.

We do feel that the licensee should make some arrangements to permanently store or dispose of this material before it spreads over a larger area. We have not made a study of the problem which may result from thorium burial at this location but this would be the most economical solution to the problem if burial at the plant site is feasible.

cc: L. Dubinski, CO:Hqs
R. Handler, CO:Hqs