UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION III
799 ROOSEVELT ROAD
GLEN ELLYN, ILLINOIS 60137

SAFETY EVALUATION REPORT

License Number: SMB-933

Docket Number: 040-07708

Licensee: Union Carbide Corporation, Metals Division

Facility: Plant at Marietta, Ohio

Subject: Proposed Termination of License and Release of Facility for Unrestricted Use.

HISTORY

Union Carbide Corporation, Metals Division, transmitted a letter dated February 25, 1982, expressing their intention to have NRC License No. SMB-933 terminated and to have the plant located at Marietta, Ohio, released for unrestricted use.

This facility was used during the 1960's to process tin slags to recover tantalum and columbium metals with resulting residue containing elevated concentrations of natural thorium and natural uranium. This process was shut down and the plant residues were deposited in a sand lined, diked storage area. License No. SMB-933 was amended in 1972 to permit storage only of process residues at the Marietta site and at Newport News, Virginia. No process work was done at Newport News. It served only as a short term storage location of sealed containers in transit from ship to rail. The licensee subsequently entered into an agreement to sell the Marietta, Ohio, plant. During the early 1980's the residues were packaged and transferred to the licensee's Uravan, Colorado, uranium mill for processing to recover the uranium. The physical plant was decommissioned and decontaminated. Contaminated waste was shipped to a commercial burial site. After excavation, the storage area was backfilled with local clay soils. The licensee hired the services of ARIX Corporation, Grand Junction, Colorado, to perform a radiological survey in support of delicensing and release of the facility for unrestricted use. The letter transmitting the contractor's report, dated March 10, 1983, also served as a formal request by the licensee to have License No. SMB-933 terminated.

DISCUSSION

By letter dated March 10, 1983, Union Carbide Corporation transmitted a "close-out" survey report prepared by ARIX Corporation. During a subsequent inspection, conducted on June 23, 1983, the NRC inspectors concluded that "the facility does not presently meet the NRC Guidelines for unconditional release". The licensee performed additional remedial actions and radiological surveys from September 26, 1983 through December 7, 1983. These actions were described in Addendum No. 1 to the original survey report, dated April, 1984. Oak Ridge Associated Universities (ORAU) performed a detailed contamination survey of the facility during the time periods May 30-June 1, July 9-12, and August 1-2, 1984, at the request of the NRC. This survey encompassed the former process building (designated as Building 77), grounds immediately adjacent to Building 77, the former impoundment area, and connecting roads. During this survey the licensee performed additional cleanup at a few locations identified by the ORAU surveyors. The results of the ORAU survey were included in a report submitted to the NRC in May, 1985. This report gives the best available indicator of current radiological conditions at the Marietta, Ohio, facility.

The ORAU survey indicates that Building 77 meets the NRC criteria contained in "Guidelines for Decontamination of Facilities and Equipment Prior to Release to Unrestricted Use or Termination of License for Byproduct, Source or Special Nuclear Material" (July, 1982). All but one location meet the criteria assuming contamination is due to 100 percent natural thorium. One small location on the fourth floor of the building exceeds, by 10 percent, the criterion for maximum fixed surface contamination of 3000 dpm/100 cm^2 (alpha) assuming natural thorium. Assays of samples of the fixed contamination from this building indicate that the uranium content is appreciable and the applicable averaged limit should be approximately 4000 dpm/100 cm^2 (alpha).

The grounds immediately adjacent to Building 77 and in the former impoundment area meet the Option 1 criteria (no restriction on burial method) contained in the Federal Register Notice, "Disposal or Onsite Storage of Thorium or Uranium Wastes From Past Operations", published October 23, 1981, (volume 26, No. 205, p.52061). In these areas some small locations with somewhat elevated uranium and thorium concentrations in excess of guideline values can be found; however, when considered in aggregate the averaged values meet the guidelines. The option 1 guideline values for natural thorium (Th-232 + Th-228) with daughters present and in equilibrium is 10 pCi/gm. The average concentration of Th-232 +Th-228 in the ground adjacent to Building 77 is 8.8 pCi/gm. In the impoundment area the average concentration is 3.9 pCi/gm. The option 1 guideline value for natural uranium (U-238 + U-234) with daughters present and in equilibrium is 10 pCi/gm (this is equivalent to 5 pCi/gm Ra-226). The average concentration of Ra-226 in the ground adjacent to Building 77 is 2.6 pCi/gm and 1.7pCi/gm in the impoundment area. These averages were calculated from samples taken, prior to some additional cleanup, in 10 meter grid intervals in the area adjacent to Building 77 and in 50 foot grid intervals in the impoundment area. They represent the most restrictive applicable guideline values with no allowance taken for the fact that the common practice of using unlicensed furnace slag as road fill will tend to bias the average upward.

An additional consideration is that any residual material from the former licensed operations is in a stable chemical form that should not pose any problem when considering the possibility of leaching and migration.

CONCLUSION/RECOMMENDATION

The available survey results were reviewed in light of the licensee's request for license termination and release of the facility for unrestricted use. There appears to be no sound reason to deny this request. There should be an insignificant risk to the public health and safety and to the environment arising from any residual material and contamination that might remain from former licensed activities conducted at this facility. Termination of license SMB-933 and release of the facility for unrestricted use is recommended.

Bruce S. Mallett

Bruce S. Mallett, Ph.D., Chief
Materials Licensing Section

Carl J Paperiello

for Martin C. Schumacher, Chief
Independent Measurements and
Environmental Protection Section

RIII
CR
Rozak/cm
07/03/85

RIII
BSM 7/3/85
Mallett

RIII
for Schumacher

RIII
Paperiello
7/3/85