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United States Government

Department of Energy

Oak Ridge Operations

# memorandum

DATE: April 13, 1990
DOE-878-90

Copy To: Jim Wagoner
Fr. Les P. 4/26

REPLY TO ATTN OF: DP-84:Davis

SUBJECT: **DISPOSITION OF METAL OXIDE RESIDUE FROM FMPC PROCESSING OF PITCHBLENDE ORE**

TO: W. D. Adams, Acting Assistant Manager for Environmental Restoration and Waste Management, EW-90, ORO

The purpose of this memorandum is to inform you of the possibility that several hundred tons of solid raffinate residues were sold or otherwise transferred to the private sector in the early 1960s without adequate notification of the radioactive contents. During the period October 1955 through August 1958, the FMPC processed approximately 2270 tons of pitchblende uranium ore (Q-11) in eight separate campaigns. In accordance with the terms of a contract with African Metals, the Atomic Energy Commission (AEC) agreed to store the solid raffinate residues and to maintain certain analytical records of this material. During the processing of Q-11 ore, two separate raffinate fractions were produced. One of these is the K-65 residue and the other is known as Q-11 Metal Oxide. According to site records, K-65 residue produced at FMPC was transferred to, and is currently stored in K-65 Silo No. 2. The Q-11 Metal Oxide was stored in several 13 ft diameter silos at Plant 1.

Approximately 930 tons of Q-11 Metal Oxide was produced. Among other radionuclides, this material contained about 4.2 curies of Ra-226 (4980 pCi/g). The Q-11 Metal Oxide was considered a valuable resource by African Metals because of its content of cobalt and nickel. The cobalt ranged from four (4) to eight (8) percent by weight, and the range for nickel was six (6) to nine (9) percent. Therefore the Q-11 Metal Oxide contained (on average) about 55.8 tons of cobalt, and about 70 tons of nickel.

In an effort to determine the current status of the Q-11 Metal Oxide, WMCO performed a records search and found that the material had been removed from the Plant 1 silos and most, if not all, was sold or otherwise conveyed to Max Zuckerman & Sons, of Chicago, Illinos in 1961-62. It is not known if this firm processed the material or if it served as a sales agent for another firm. A comparison may be drawn between this material and that produced by an AEC contractor in St. Louis, Missouri. The St. Louis material was known by the code AM-7, and may have been included in the material transferred from the St. Louis Airport Storage Site to a FUSRAP site in Hazelwood, Missouri following the sale in 1966-67 of residues stored at the airport site. What is known

about the Q-11 Metal Oxide generated at the FMPC is expressed in a WMCO internal memo from D. C. Bonfer to S. J. Dechter, March 5, 1990 (copy attached).

It is our recommendation that historical information concerning this transfer be reviewed and that an attempt be made to determine: (1) if it was processed to recover its elemental values, (2) whether use of the material was subject to regulation by the AEC or a state agency, and (3) what was the disposition of radioactive waste.

Gerald W. Westerbeck
FMPC Site Manager

Attachment: As stated

cc w/att.:

W. R. Bibb, DP-80, ORO
P. J. Gross, SE-31, ORO