



ENCLOSURE 2

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

January 15, 1992

New Jersey Department of Environmental
Protection and Energy, CN 402
ATTN: Dr. Robert Stern, Chief
Bureau of Environmental Radiation
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Gentlemen:

As indicated in our conference call of December 23, 1991, and by my letter to you dated December 24, 1991, I am writing to clarify for you the position of the Nuclear Regulatory Commission (NRC) as it relates to jurisdiction over materials such as the ferrovanadium slag at the Shieldalloy Metallurgical Corporation's (SMC's) Newfield, New Jersey, site.

NRC Position

By authority provided in the Atomic Energy Act (AEA) of 1954, as amended, the NRC has jurisdiction over and regulates its licensees' possession and use of licensable radioactive material (source, byproduct, and special nuclear material) with regard to radiological protection of the workers on licensed sites and of the public and the environment. This NRC jurisdiction is exercised for the protection of the workers on site even though some of the radiation exposure so regulated involves radiation from unlicensed materials or devices. Thus, the ferrovanadium slag on SMC's Newfield site comes under NRC jurisdiction to the extent that the slag represents a source of radiation exposure to be considered in the protection of the workers while the slag is on the site.

The NRC's authority at a licensed site such as SMC's Newfield site also extends to facilities, materials and equipment contaminated with the licensed material, and that authority is exercised to the extent necessary for adequate protection of the workers, the public and the environment. The State of New Jersey has made a conscious decision to not become an Agreement State under §274b of the AEA, and therefore the jurisdiction of the NRC over licensed sites and activities in New Jersey preempts the authority of the State with regard to radiological protection as delineated above.

Except to the extent of the exercise of NRC's authority to accomplish radiological protection within the envelope of licensed activities and licensed uses of licensed radioactive materials, NRC's authority does not extend to naturally occurring or accelerator-produced radiation and radioactive materials.

Thus, for example, if some radium-contaminated soil were brought to SMC's Newfield property, the interest of the NRC in that soil would only be as described above. If the soil did not become appreciably contaminated with licensed material, the NRC would have no interest in it, other than radiological protection while it was onsite. The NRC would have no interest in its transport to the site nor in its transport from the site nor in its destination. If the State of New Jersey would be interested in exercising authority for radiological protection purposes over the material when it is outside the envelope of NRC's authority (e.g., in this example, while it is being transported), that would be the choice of the State. Of course, other agencies may have relevant authorities, also.

The NRC regards the uranium and thorium and their decay products (and all other naturally-occurring radioactivity) in the ferrovanadium slag as the same for purposes of jurisdiction for radiological protection as the hypothetical radium-contaminated soil used in the above example. If the concentrations of uranium and thorium in the ferrovanadium slag do not together exceed 0.05 percent by weight, and if the monitoring of the ferrovanadium slag by SMC shows that it is not appreciably contaminated with either the ferrocolumbium slag or the baghouse dust, then SMC may ship the ferrovanadium slag without cognizance of the NRC, as long as the radiological protection requirements imposed by SMC's NRC license are observed.

Background

At its Newfield site, SMC processes ferrocolumbium ore by smelting it along with certain other additives, in order to extract columbium. The incoming ferrocolumbium ore is expected to contain thorium and uranium concentrations above 0.05 percent by weight and is thus classified as source material. Therefore, the ore, its processing activity and all process products which have become appreciably contaminated with uranium and thorium from the ferrocolumbium process are licensed by the NRC. The process end products are the relatively pure ferrocolumbium which is readily marketable and shipped off site to various clients, and the slag which contains most of the remaining process additive and ore ingredients, including source material. The slag is stored in piles on site in the Source Material Storage Yard (SMSY), which is a designated controlled area. A fair amount of dust is also generated in the smelting process. This dust is vacuumed from the process building into a baghouse; from there it is transferred to be stored in a pile in the SMSY.

Before 1987, in addition to the processing of ferrocolumbium ore described above, SMC processed ferrovanadium ore, in order to extract vanadium. Trace amounts (levels slightly higher than what naturally occurs in most types of soil and rock) of thorium and uranium are expected to be contained in such ore and therefore, it is incorrect to generally assume that the ore is "non-radioactive." However, this particular ore was not classified as source material by the NRC since its thorium and uranium concentrations were not expected to be higher than 0.05 weight percent. Records maintained by SMC show that based on thorium-232 (Th-232) analyses of three ore samples,

concentrations of 19, 11, and 0.2 picocuries per gram (pCi/g) were measured. These concentrations in weight percent of Th-232 correspond to 0.017, 0.010 and 0.00018, respectively. For uranium-238 (U-238), concentrations of less than 1.5, 4.0, and 4.0 pCi/g were obtained, which in weight percent of U-238 corresponds to less than 0.0004, 0.001, and 0.001, respectively. Even though the concentration of source material in ferrovanadium slag is expected to be slightly higher than that in feed material, measurements indicate that the 0.05 weight percent limit is not expected to be exceeded for uranium plus thorium. Based on isotopic analyses performed by SMC, three samples of crushed ferrovanadium slag indicated that the Th-232 and U-238 concentrations were below 10 pCi/g.

According to SMC, the ferrovanadium ore was processed in the same building as that which was used to process ferrocolumbium ore. However, a different furnace was used, and the resulting slag was poured in ladles that had not been used previously in the processing of ferrocolumbium ore. The ferrovanadium slag (about 100,000 metric tons) has since been stored in the SMSY in a pile adjacent to, but not mixed with the ferrocolumbium slag and baghouse dust piles.

We consider it unsupportable to presume that the U and Th in the ferrovanadium slag is due to contamination with licensed material. The information above, which SMC supplied, is entirely consistent with our experience with such materials, that the U and Th in the ferrovanadium slag came with the raw materials for the ferrovanadium process. It is likely that there are many substances in commerce which (like the ferrovanadium slag) contain concentrations of radionuclides which are small but greater than the average natural concentrations in soils.

Further, even though the ferrovanadium process was in the same building as the ferrocolumbium process, and the ferrovanadium slag has been stored adjacent to the baghouse dust and the ferrocolumbium slag, we find no reason to conclude that the materials have been appreciably comingled. Clearly, trace amounts of dust may have been blown from one pile to another, but it is most likely that the quantities of dust transferred are negligible compared to the 100,000 tons of ferrovanadium slag.

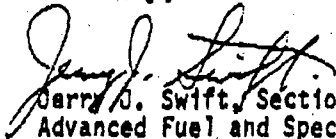
Considering the characteristics of the three materials, we find it quite feasible for SMC to monitor the ferrovanadium slag to assure that as SMC removes the ferrovanadium slag from the SMSY, no appreciable contamination with either the baghouse dust or the ferrocolumbium slag will be loaded and shipped with the ferrovanadium slag. Apart from such monitoring further regulatory action by NRC is not considered necessary.

Dr. Robert Stern

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If further clarifications of a technical nature are needed, you may contact Dr. Jerry Swift on (301) 504-2609. Legal questions may be directed to Mr. Robert Fonner on (301) 504-1643.

Sincerely,



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