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NUCLEAR ENERGY
PRODUCTS DIVISION

WILMINGTON MANUFACTURING
DEPARTMENT

June 20, 1979

U.S. NUCLEAR REG. COMMISSION
MAIL SECTION

Director
Office of Nuclear Material Safety & Safeguards
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

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JUL 5 1979
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MAIL SECTION
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Attention: Mr. W. T. Crow, Section Leader
Uranium Fuel Fabrication Section
Fuel Processing & Fabrication Branch
Division of Fuel Cycle & Material Safety

Dear Sir:

References: (1) NRC License SNM-1097, Docket #70-1113
(2) Letter, A. L. Kaplan to W. T. Crow, 5/24/79
(3) Letter, A. L. Kaplan to W. T. Crow, 5/25/79

With reference to my letters of May 24 and 25, the following is the additional information which you requested concerning our intended transfer of liquid hydrogen fluoride solution to Conservation Chemical Company.

Brush Wellman Inc., Conservation Chemical Company's customer for our hydrogen fluoride solution, has sent to us a letter describing where the very small quantity of low-enriched uranium (less than 3-ppm) from our liquid hydrogen fluoride (HF) solution is expected to go as a result of their use of our HF in beryllium pebble production. A copy of this letter is attached for your information.

As stated in their letter:

- There are no liquid discharges from the manufacturing process leaving their plant site; thus, any uranium from our HF which might end up in their liquid waste or tailings will remain impounded with these materials.

- There is no airborne uranium as a gas or dust expected to be generated by their manufacturing process, either in the in-plant atmosphere or to surrounding areas.

Relative to the first point, the maximum amount of uranium which would be contained by the HF sent by us to Brush Wellman each year would be about 1300 grams of uranium including about 52 grams of U-235. Only a small portion of this uranium follows the waste materials. That is, most of the uranium remains in the manufactured product since, as Brush Wellman has stated in their letter, the process for making beryllium pebbles is nearly identical to that for metallic uranium. Thus, controls on the use of beryllium, itself a very toxic material (relatively much more so than uranium), should guarantee that no public hazard could result from the traces of uranium from our HF which remains with the beryllium pebbles. Even if all the uranium were to deposit in the impounded tailings pond, at a maximum rate of 1300 grams of

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uranium and 52 grams U-235 per year, the matrix in which this uranium exists is such that no criticality safety problem exists. Also, because of the chemical nature of the materials in this impounded pond, protection of the public from potential hazards of these materials should guarantee public protection from the extremely small amount of uranium therein.

Relative to the second point, because of the extremely hazardous nature of airborne beryllium, relatively much greater than that from airborne uranium, control of the beryllium to protect workers and the public from the potential hazards of the airborne beryllium should guarantee no hazard from the extremely small amount of uranium involved.

Thus, there should be no hazard to the public safety resulting from the transfer of our HF, containing a maximum of 3-ppm (low-enriched) uranium at a maximum enrichment of 4%, to Brush Wellman Inc., via Conservation Chemical Company, for their use in manufacturing beryllium pebbles.

General Electric personnel would be pleased to discuss this matter further with you and your staff as you may deem necessary.

Very truly yours,

GENERAL ELECTRIC COMPANY

Arthur L. Kaplan, Manager
Licensing & Compliance Audits
M/C J26

ALK:bmw

Attachment

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BRUSH WELLMAN
ENGINEERED MATERIALS

Brush Wellman Inc.
Elmore, Ohio 43416
Phone 419/862-2745

June 13, 1979

Mr. A. L. Kaplan, J-26
General Electric Company
P.O. Box 780
Wilmington, NC 28402

Dear Mr. Kaplan:

Confirming our conversation of June 5th, the hydrofluoric acid with the small amounts of enriched uranium procured from General Electric will be used exclusively in beryllium pebble production. Brush consumes about 7 pounds fluorine per pound of beryllium pebbles produced. Aqueous and solid wastes from the pebble production plant are impounded in a tailings pond from which there are no discharges leaving the plantsite. Therefore, the trace levels of uranium in the hydrofluoric acid are diluted by magnesium fluoride and aqueous fluoride-containing solutions in the tailings pond. The aqueous portion of the pond is maintained at pH >8, so nearly all of any uranium reaching the pond should be precipitated sodium diuranate.

During the production of beryllium pebbles, there are no processes in which volatile uranium compounds might be produced. The process for making beryllium pebbles is nearly identical to that for metallic uranium; as a result, any UF_4 contaminant in the BeF_2 intermediate is reduced to the metal by magnesium. No transfer of uranium to the in-plant atmosphere or to the surrounding areas as dust or gaseous species is believed to occur.

Very truly yours,

K. A. Walsh

Dr. K. A. Walsh
Associate Director of
Technology