

**From:** Frederick Brown  
**To:** John Kinneman  
**Date:** 12/21/01 3:56PM  
**Subject:** Response to DuPont TAR

John:

We have reviewed the Dupont TAR dealing with their request to maintain a license condition for release of samples after analysis (TAR dated 10/31/01).

After consultation with DWM, the clearance team, and John Hickey, we have concluded that the following course of action is acceptable:

- allow the licensee to continue to dispose of H-3 and C-14 in plant and soil material as if it were not radioactive, if it contains less than 0.002 uCi/gm averaged over the weight of the plant and soil material, and the per disposal quantity does not exceed 100 uCi for H-3 and 10 uCi for C-14.
- do not permit them to dispose of other small quantities of licensed material as normal waste unless the licensee submits a more complete request under 10 CFR 20.2002.

A more thorough response is attached. If you have questions about the response, please contact Dr. Ron Zelac or myself.

thanks,  
Fred

**Deani, this closes IMNS 8182**

**CC:** alt; Cxc5; Dab; Deani Riffle; Frank Costello; George Pangburn; mas3; Rez; rks; William Ruland

REZ  
12/21/01

Response to Technical Assistance Request (TAR) Dated October 31, 2001 re: Licensee Request to Dispose of Small Amounts of Licensed Material as Normal Waste\*

Recommendations

For the reasons stated in the following Assessment, for uninterrupted continuation of licensee operations and limitation of regulatory burden, and for some measure of Agency consistency, we conditionally support the approach in the RI-suggested disposition for this application, but with a change and with an addition. This approach would permit the continued limited release of licensed H-3 and 14-C in plant and soil material as normal waste, but not permit any other such releases.

The change (for supporting this approach) is that the approval be based on the licensee-proposed concentration limit, 4400dpm/g (0.002 uCi/g), not on the RI-suggested §20.2005 limit of 0.05 uCi/g.

The addition (for supporting this approach) is that the licensee-proposed quantity limits per disposal, corresponding to 100 uCi for 3-H and 10 uCi for 14-C, also be included as a condition for release of H-3 and 14-C in plant and soil material as normal waste.

Further, for reasons stated in the following Assessment, we support the Region 1 intent to not authorize the release of any other licensed material as normal waste without the licensee providing additional supporting information, to address the requirements of §20.2002.

Background

The disposal option request in the current license renewal application is identical to an authorization granted to the same licensee in 1996 (License no. 07-13441-02, E. I. duPont de Nemours & Co. Stine Haskell Research Center, Newark, DE). To date, only small quantities of 3-H and 14-C in soil and plant matter have been disposed of as normal waste, primarily sent to incineration.

RI-Suggested Disposition

The Region I-suggested disposition for this application is to permit continued release of licensed H-3 and 14-C in plant and soil material as normal waste, but not to permit release of any other licensed material as normal waste. The suggested condition for release of H-3 and 14-C in plant and soil material as normal waste was an average concentration not exceeding 0.05 uCi/g, consistent with §20.2005.

Assessment

The criteria proposed by the licensee for release of licensed byproduct material as normal waste include both quantity and concentration limits. The per-disposal quantity limits are 1/10 the §30.18 values for exempt quantities, that appear in §30.71 (Schedule B). The concurrent concentration limit is 4400 dpm/g, the U.S. DOT minimum concentration to consider a material as radioactive, for hazardous material transportation requirements to apply.

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\*See attached copy.

The criteria proposed by the licensee for release of licensed source material as normal waste also includes both quantity and concentration limits. The per-disposal quantity limits are 10 uCi for U and for Th. This value is stated to represent an NRC exempt quantity for natural uranium or thorium. The concurrent concentration limit is 4400 dpm/g, as for byproduct material.

These criteria for release do not match those in existing guidance for controlling the release of solid materials. (Reference guidance listed in 8/7/2000 memo from W. Kane and S. Collins re: case-specific licensing decisions on release of solid materials from licensed facilities.)

Further, while an argument could be made for accepting the proposed quantity limit for release of byproduct material (1/10 the NRC exempt quantity), based on the expected disposition of the material (incineration), the proposed concentration limit is not generally applicable. Some exempt concentrations in §30.70 for materials listed on the duPont license are less than 4400 dpm/g ( $2 \times 10^{-3}$  uCi/g). It should be noted that for those materials that have been released as non-radioactive under the existing authorization, limited to 3-H and 14-C, the §30.70 exempt concentrations exceed the duPont limiting concentration,  $2 \times 10^{-3}$  uCi/g, so released materials should have had NRC-exempt average concentrations.

Also, there is no basis in NRC regulation for the proposed 10 uCi quantity limit for release of source material, i.e., there is no stated exempt quantity for natural uranium or thorium. Moreover, 10 uCi corresponds to greater than the generally licensed small quantity of source material listed in §40.22 (15 pounds) for both U and for Th. Additionally, the proposed concentration limit for release of source material,  $2 \times 10^{-3}$  uCi/g, exceeds the exempt radioactivity concentrations for both U and Th corresponding to the NRC exempt concentration limit in §40.13 for source material (0.05%, by weight). Finally, the proposed concentration limit for release of source material significantly exceeds the acceptable in situ soil contamination levels for U and Th,  $1 \times 10^{-5}$  uCi/g, in available guidance (FC 83-23).

Under some scenarios, e.g. application to growing crops, unrestricted release of 3-H and 14-C in plant and soil material at the RI-proposed concentration limit, 0.05 uCi/g, could result in doses to members of the critical group that would exceed "a few mrem." (Reference the 7/27/01 memo from D. Cool.) If disposition were limited to incineration, pursuant to §20.2002, the guidance in Policy and Guidance Directive P 8-10, "Disposal of Incineration Ash as Ordinary Waste," would apply.