

From: Ronald Zelac — NMSS/IMNS
To: Anthony Huffert; Frank Cardile — NMSS/IMNS
Date: 12/19/01 2:24PM
Subject: RI TAR (duPont) Draft Response

Please review the attached draft response. It is being sent to you for coordination, per the directive in D. Cool's 7/21/01 memo (referenced in the TAR), prior to seeking John Hickey's concurrence (Fred Brown reviewed and commented on an earlier version). For reference, the TAR is also attached.

The IMNS ticketed due date for response is 1/2/02. With the holidays, we are trying to get the response out tomorrow, if possible. Accordingly, fast turnaround would be much appreciated. If review will take longer, please let me know, soon.

Thanks.

CC: Frederick Brown; John Hickey

condition the license so it only goes to incineration?
SRP screening values for H-3: $1.1 \times 10^{-2} \frac{pCi}{g}$; C-14: $1.1 \times 10^{-1} \frac{pCi}{g}$; U-238 + C: $0.5 \frac{pCi}{g}$ → $25 \frac{pCi}{g}$
See if fraction would apply.

B/48

REZ
12/19/01

DRAFT

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 below, for uninterrupted continuation of licensee operations and limitation of regulatory burden, and for some measure of Agency consistency, I conditionally support the RI-suggested disposition for this application. This approach would permit the continued limited release of licensed H-3 and 14-C in plant and soil material as normal waste without granting an exemption. The condition for supporting this approach is that the Region affirms that for such releases, the requirements of §20.2005¹² have been adequately addressed by the licensee.

I would, however, recommend 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, since clearance is still under consideration.

Further, for reasons stated below, I 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 §20.2005.

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

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§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.

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 (2×10^{-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, 2×10^{-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, 2×10^{-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, 1×10^{-5} uCi/g, in available guidance (FC 83-23).

$$\rightarrow \frac{0.5 \mu\text{Ci}}{\text{g}} = 5 \times 10^{-7} \frac{\mu\text{Ci}}{\text{g}} \text{ (SRP) } \text{ U } 0.25 \frac{\mu\text{Ci}}{\text{g}}$$

$$\rightarrow \frac{1.1 \mu\text{Ci}}{\text{g}} = 1.1 \times 10^{-6} \frac{\mu\text{Ci}}{\text{g}} \text{ (SRP) } \text{ Th } "$$

$$\frac{12 \mu\text{Ci}}{\text{g}} = 1.2 \times 10^{-5} \frac{\mu\text{Ci}}{\text{g}} \text{ C-14 } "$$

$$\frac{110 \mu\text{Ci}}{\text{g}} = 1.1 \times 10^{-4} \frac{\mu\text{Ci}}{\text{g}} \text{ H-3 } "$$

REGION I TECHNICAL ASSISTANCE REQUEST					
Date:	October 31, 2001	Package Accession No.	ML012750456		
ADAMS Send to:	Donald A. Cool, Director Division of Industrial and Medical Nuclear Safety, NMSS (Copy to Charlotte L Estep)				
From:	George Pangburn, Director Division of Nuclear Materials Safety				
<i>Original signed by: /RA by Francis Costello Acting For/</i>					
Licensee:	E. I. duPont de Nemours and Co., Inc.				
License No.	07-13441-02	Docket No.	03020681	Control No.	130368
Letter Dated:	September 26, 2001	ADAMS Accession No.	ML012780182		
Enforcement Action being held in abeyance:		Yes	X	No	
<p>Problem or Issue:</p> <p>Reference: Item No. 11.5.2 on page 40 of the licensee's renewal application dated September 26, 2001 (ML012780182). The licensee requests continued authorization to dispose of small amounts of licensed material as normal waste in accordance with a procedure first approved as part of the license in 1996. The licensee also identifies a "sister" licensee (07-00455-02) that is currently authorized for this procedure.</p> <p>The licensee is requesting this disposal for byproduct and source material in any form. However, thus far they have only disposed of small quantities of H-3 and C-14 in soil and plant matter from field studies primarily sent to incineration as normal waste. In addition, according to the license, this type of disposal is done infrequently. Note that 10 CFR 20.2005 permits disposal of C-14 and H-3 in certain forms, including animal tissue, provided the concentration does not exceed 0.05 uCi/gm. The licensee's request for disposal of quantities less than 4400 dpm/gram is equivalent to 0.002 uCi/gm which is significantly less than the regulatory limit of 0.05 uCi/gm. The licensee also requests to dispose of material that is less than the source material concentration definition (0.05%) and one tenth of the exempt limit for natural uranium or thorium (10 uCi).</p>					
Action Requested:					

<p>Determine how to proceed:</p> <ol style="list-style-type: none"> 1. Until there is a Clearance Rule, allow these licensees 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 0.05 uCi/gm averaged over the weight of the plant and soil material. Do not permit them to dispose of other small quantities of <u>licensed</u> material as normal waste. <p style="margin-left: 20px;">OR</p> <ol style="list-style-type: none"> 2. Request the licensees to submit a request for exemption from 10 CFR 20.2001(a) and provide justification to enable a T.A.R. to be submitted for review. 		
<p>Recommended Action and Alternatives <input checked="" type="checkbox"/> Accept <input type="checkbox"/> Reject</p> <p style="margin-left: 40px;">Permit 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 0.05 uCi/gm averaged over the weight of the plant and soil material. Do not permit disposal of other small quantities of <u>licensed</u> material as normal waste.</p>		
<p>TARs addressing similar issues (subject, date and location):</p> <p style="margin-left: 20px;">Memos:</p> <ol style="list-style-type: none"> 1. August 7, 2000 memorandum from William F. Kane. Subject: Case-Specific Licensing Decisions on Release of Solid Materials from Licensed Facilities. 2. July 27, 2001 memorandum from Donald A. Cool. Subject: Update of the August 7, 2000 Memo from William Kane, NMSS and Samuel Collins, NRR - Case-Specific Licensing Decisions on Release of Soils from Licensed Facilities. 		
<p>Background Documents (Include date and ADAMS Accession Number):</p> <p style="margin-left: 40px;">E. I. duPont de Nemours and Co., Inc license application dated 9/26/01. ML012780182</p>		
<p>Remarks:</p>		
Reviewer: P. Henderson	(610) 337- 6952	Reviewer Code: K7
<p>Needed By (date): December 31, 2001</p>		

Region I Technical Assistance Request
Licensee: E. I. duPont de Nemours and Co., Inc.

Control No. 130368

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DATE	10/31/01		11/01/01	11/01/01		