



**PENNSYLVANIA DEPARTMENT OF
ENVIRONMENTAL PROTECTION**
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DOCKETED
USNRC

March 30, 2010 (10:00am)

OFFICE OF SECRETARY
RULEMAKINGS AND
ADJUDICATIONS STAFF

March 29, 2010

9

Secretary
U.S. Nuclear Regulatory Commission
Washington, DC 20555-001

Re: ASTSWMO Tritium Exit Sign Petition
Docket No. PRM-32-6; NRC-2009-0547

Dear Commissioners:

This letter is to reiterate the Commonwealth's position regarding generally licensed tritium exit signs and, to support the related 2007 Conference of Radiation Control Program Directors' (CRCPD) Resolution and recent 2009 Association of State and Territorial Solid Waste Management Officials' (ASTSWMO) Petition for Rulemaking (FR, Vol. 75, No. 7, January 12, 2010) on the same subject.

Enclosed for your reference, please find our January 17, 2006 PA DEP letter to NRC Chairman Diaz on this matter. Also enclosed is the 2007 CRCPD Resolution on the control and disposal of tritium exit signs. You have the ASTSWMO Petition.

The main points of these documents are:

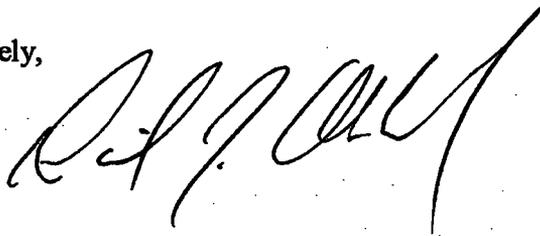
- There are some 4 million tritium exits signs in the United States, with an estimated 50,000 signs in Pennsylvania.
- Many of these signs were put in use 15 to 20 years ago, and may be expired and non-functional.
- An expired exit sign is a significant fire and life safety issue which needs state and national attention.
- Our January 17, 2006 letter prompted NRC to issue RIS 2006-25, reminding and informing tritium exit sign owners of their regulatory obligations.
- Given the NRC and Agreement State's experience with Walmart's recent nationwide inventory, clearly controls are lacking with even large volume sign users.

- Improper disposal of these signs is apparent, with many ending up in RCRA D landfills and causing leachate concentrations up to 350,000 picocuries per liter.
- Tritium exits sign manufacturers' customer sales literature, instructions and actual sign labels are woefully inadequate to inform users they contain radioactive material and require controls.

Given these concerns, the NRC's product safety evaluations and regulations need to be revisited and revised to remedy this situation.

Thank you for your anticipated attention to this matter.

Sincerely,

A handwritten signature in black ink, appearing to read 'D. J. Allard', written in a cursive style.

David J. Allard, CHP
Director

8307
GFA



Pennsylvania Department of Environmental Protection

**Rachel Carson State Office Building
P.O. Box 2063
Harrisburg, PA 17105-2063
January 17, 2006**

Office of Waste, Air and Radiation Management

717-772-2724

**Nils J. Diaz, Ph.D.
Chairman
United States Nuclear Regulatory Commission
Washington, DC 20555-0001**

CHAIRMAN REC'D
06 JAN 23 AM 10:25

Re: Disposal and licensing of tritium exit signs

Dear Chairman Diaz:

The Commonwealth of Pennsylvania's Department of Environmental Protection (Department) would like to bring to your attention our concern regarding the improper disposal of generally licensed tritium exit signs in landfills within our state, as well as the rest of the United States. It is my understanding that on a regular basis, NRC receives official reports related to tritium exit signs being (presumably) inadvertently disposed of in RCRA Subtitle D landfills. For example, on December 23, 2005, the state of Wisconsin reported to the NRC (in Event Report No. 42225) that 56 tritium exit signs were lost, containing up to 1,680 curies (Ci) of tritium. This report concludes "...it appears they were sent to a landfill with the general trash." This is a very large quantity of radioactive material improperly disposed of in a landfill. The Department conducted a query of your event-reporting database (NMED) and found that there were roughly 390 such devices reported either lost, missing, stolen, or improperly disposed of between the years 2000 and 2006. However, considering the hundreds of thousands of these devices in use, we suspect the number of reported lost tritium exit signs grossly underestimates those actually lost and disposed of improperly.

Several years ago we promulgated solid waste regulations that required landfills to monitor incoming solid waste for radioactive material and that they develop site-specific response action plans. This very successful program has prevented many generally licensed and orphan gamma-emitting sources from being improperly disposed of in our 50-plus active landfills. However, given the beta decay emission involved, we knew tritium exit signs would not be detected in such monitoring. We, therefore, provided guidance to these facilities regarding recovery of tritium exit signs, should they be discovered visually. This new active radiation monitoring program at our landfills has also prompted us to perform a landfill leachate survey with subsequent radiological analysis of samples in late 2004. The radiological analysis of the collected leachate samples was comprehensive and included tritium.



Enclosed for your reference is a copy of a report our support contractor provided to us in October 2005. This report is also available on our Department's Bureau of Radiation Protection web site at <http://www.depweb.state.pa.us>, Keyword: "Radiation," go to the Radiation Control Division, and the sub-page on "Monitoring of Radioactive Materials in Solid Waste." A review of the data in this report indicates that radioactive materials normally occurring in the environment (i.e., natural and residual fallout) will account for all the gross radioactivity results except for tritium. As you will note from the first graphic in Attachment A of the report, tritium concentrations ranged from background to nearly 100,000 picocuries per liter (pCi/L). In the fall of 2004, over 90% of the landfill leachate samples had detectable tritium, with over 50% having levels above the U.S. Environmental Protection Agency's (EPA) community water systems Maximum Contaminant Level (MCL) of 20,000 pCi/L (40 CFR Chapter 1 Part 141.66). Another round of landfill leachate sampling and analysis was performed in late 2005 for tritium only, with similar preliminary results and one landfill above 180,000 pCi/L.

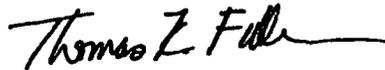
In view of the amount of tritium that is being detected by our Pennsylvania landfill leachate monitoring program, it is apparent to us that many licensees possessing tritium exit signs are not returning the devices to the manufacturer or otherwise providing for proper disposal. This conclusion is based on the fact that there is no other source of tritium in the private sector that could be causing such levels of tritium in leachate. That is, each exit sign can contain up to 20 Ci of tritium, or 20,000,000,000,000 pCi, thus, one improperly disposed of exit sign can easily cause the tritium in leachate concentrations we're observing. Further, it is our understanding that other states and countries outside the U.S. have seen similar tritium levels in landfill leachate. In fact, the EPA recently high lighted tritium exit signs as a disposal problem in its October 2004 training CD-ROM "Identifying Radioactive Sources at the Demolition Site."

In light of the fact that there are alternative methods available for emergency lighting, we feel that the NRC should re-evaluate the conditions of use for tritium exit signs as a generally licensed source. Specifically, an immediate evaluation of the safety criteria presented by manufacturers of these tritium exit signs would be prudent, as we believe the data in our report indicates the condition in 10 CFR32.23(a) may not be met, and the related dose limit in the organ dose table in 10 CFR32.24 (Column I) could be exceeded under reasonable leachate discharge exposure scenarios. It is also our opinion that the labeling requirements for these devices are inadequate to alert the licensee's personnel that it contains radioactive tritium, and the device requires proper disposal. The Department believes it would be reasonable for the NRC to issue a condition by order to all generally licensed users of tritium exit signs, indicating that they inventory and report to the NRC, on an annual basis, the number and location of tritium exit signs in their possession. It is apparent from the results of our landfill leachate survey report that the NRC's current regulatory program for these tritium exit signs is not adequate to prevent the improper disposal of these devices. Thus, with all due respect, we recommend the NRC promptly re-evaluate the regulatory and licensing aspects of these tritium exit signs.

January 17, 2006

Should you or your staff have any questions about our landfill leachate study, or other radiation protection matters in the Commonwealth, please contact me by e-mail at tfidler@state.pa.us or at the telephone number above, or contact Mr. David Allard, Director of the Bureau of Radiation Protection, by e-mail at djallard@state.pa.us or by telephone at 717-787-2480. Thank you for your consideration of our recommendations.

Sincerely,



Thomas K. Fidler
Deputy Secretary

Enclosure

cc: (with no enclosure)
Secretary McGinty
David J. Allard, BRP
Samuel J. Collins, NRC, Region I
George Pangburn, NRC, Region I
Robert Bores, NRC, Region I
Janet M. Schleuter, NRC, STP
Stephen L. Johnson, EPA Administrator
Donald Welsh, EPA, Region 3



CONFERENCE OF RADIATION CONTROL PROGRAM DIRECTORS, INC.

RESOLUTION

Relating to: Control and Disposal of Tritium EXIT Signs

WHEREAS: Tritium (H-3) is a radioactive isotope of hydrogen (H), emits a low energy beta particle, decays with an approximate 12 year half-life, is often used in the gaseous form, but once released to the environment, readily oxidizes to form tritiated water,

WHEREAS: The background levels of tritium in the environment from natural atmospheric cosmic ray production, past above-ground nuclear weapons testing, and routine nuclear power plant emissions are approximately 50 to 150 picocuries per liter (pCi/L) in surface waters,

WHEREAS: Tritium is not an external hazard, but may cause radiation dose to humans when ingested or absorbed through the skin, and based on the 4 mrem/yr dose limit in 40 CFR 141, the EPA has set a tritium maximum contaminate level (MCL) of 20,000 pCi/L for public drinking water supplies,

WHEREAS: Studies of active landfills in various states and countries show leachate with tritium considerably above background, many above the EPA's drinking water MCL of 20,000 pCi/L, and several landfills with tritium concentrations in the 100,000 to 200,000 pCi/L range, which indicates inappropriate disposal of tritium EXIT signs,

WHEREAS: States routinely document lost or stolen tritium EXIT signs and report these events to NRC through the NMED reporting system,

WHEREAS: A tritium EXIT sign distributed as a generally licensed (GL) device may contain up to 25 curies (or 25,000,000,000,000 pCi) of tritium sealed in small glass tubes, but will have a finite useful life due to decay, that will decrease in luminosity and eventually fail to meet fire safety criteria,

WHEREAS: The NRC issued a regulatory information summary in late 2006 (RIS 2006-25) to the distributors and general licensees possessing tritium EXIT signs, to remind the regulated community of their responsibilities for proper control, reporting, transfer and disposal,

WHEREAS: An expired tritium EXIT sign has life safety implications in the event of a facility fire or loss of power, and numerous tritium EXIT signs have been found that exceeded their manufacturer-stated expiration date indicating a problem of national scope,

WHEREAS: The general licensee who receives a self-luminous tritium EXIT sign must appoint a 'responsible individual' who is knowledgeable with the regulations and requirements for reporting events, transfer and disposal of the device per NRC regulations in 10 CFR 31.5(c)(12) or equivalent Agreement State regulations,

WHEREAS: There are a few million tritium EXIT signs in the United States, many with inadequate regulatory accountability,

WHEREAS: A general licensee who is in possession of a tritium EXIT sign may only legally transfer it back to the manufacturer or an entity for licensed disposal as low-level radioactive waste (LLRW),

WHEREAS: The Pennsylvania Senate Environmental Resources and Energy Committee convened a hearing in June 2006 to review the extent and implications of tritium in landfill leachate, because such concentrations have the potential to contaminate ground water, and to render a down-stream drinking water supply vulnerable to tritium,

WHEREAS: The EPA has developed a training CD for the building industry, alerting contractors to search and remove GL devices, such as tritium EXIT signs, prior to building demolition or renovation, and the EPA is developing additional web-based user training information including disposal options,

WHEREAS: By passage of this resolution, the CRCPD membership hereby express their growing concern with the ineffective regulatory control, inadequate labeling and improper disposal of tritium EXIT signs;

NOW, BE IT RESOLVED:

The NRC and states should begin a national effort to actively alert tritium EXIT sign licensees as to their regulatory obligations for control and disposal, and to inventory and check sign expiration dates, and

BE IT FURTHER RESOLVED:

That CRCPD members and NRC should continue to actively alert solid waste facilities, and the fire safety and building construction industries, as to the concerns related to tritium EXIT signs, and

BE IT FURTHER RESOLVED:

That NRC should perform formal evaluations of GL tritium EXIT signs with respect to onsite and offsite tritium exposure scenarios for all possible disposal scenarios in solid waste transfer facilities, landfills, and incinerators, and

BE IT FURTHER RESOLVED:

That CRCPD members strongly recommend NRC evaluate and amend its regulations pertaining to generally licensed tritium EXIT signs, with respect to the size of labels alerting a user to the replacement date and their transfer or disposal obligations, and, evaluate the need for a modified source management system for generally licensed tritium EXIT signs.

Approved by the CRCPD Membership November 14, 2007.



Debbie Gilley
CRCPD Chairperson

Rulemaking Comments

From: Allard, David [djallard@state.pa.us]
Sent: Monday, March 29, 2010 4:28 PM
To: Rulemaking Comments
Cc: Allard, David
Subject: PA comments on ASTSWMO petition [Docket No. PRM-32-6; NRC-2009-0547]
Attachments: Allard-ltr-to-NRC_re-H3-exit-signs_3-29-2010.pdf; DEP-ltr-to-NRC_re-H3-exit-signs_1-17-06.pdf; Tritium_CRCPD-Resolution_Nov2007.pdf

FYI, PA comments on ASTSWMO petition [Docket No. PRM-32-6; NRC-2009-0547].

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16:28:15 -0400

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From: "Allard, David" <djallard@state.pa.us>

To: "'Rulemaking.Comments@nrc.gov'" <Rulemaking.Comments@nrc.gov>

CC: "Allard, David" <djallard@state.pa.us>

Date: Mon, 29 Mar 2010 16:28:07 -0400

Subject: PA comments on ASTSWMO petition [Docket No. PRM-32-6; NRC-2009-0547]

Thread-Topic: PA comments on ASTSWMO petition [Docket No. PRM-32-6;
NRC-2009-0547]

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