Association of State and Territorial
ASTSWMO
Solid Waste Management Officials

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November 6, 2009

Chairman Gregory B. Jaczko
U.S. Nuclear Regulatory Commission
Mail Stop O-16G4
Washington, DC 20555-0001

Dear Chairman Jaczko,

The Association of State and Territorial Solid Waste Management Officials (ASTSWMO) is an organization representing the managers of solid waste, hazardous waste, remediation, and underground storage tank programs of the states and territories. The ASTSWMO Radiation Focus Group is tasked with identifying national level radiation issues of concern and promoting partnerships between states and federal agencies to address these issues.

On behalf of ASTSWMO's Board of Directors and the Radiation Focus Group, I am writing to formally express our concern about the fate of self-luminescent tritium-containing exit signs, and to formally petition for revisions to your regulations. After an evaluation of the case history (see enclosure), ASTSWMO has found that the majority of unaccounted for tritium exit signs are disposed in solid waste landfills where they become potential sources of groundwater and surface water contamination. A minority of tritium exit signs are returned to the manufacturer for recycling, or disposed of as low-level radioactive waste (LLRW). As solid waste management officials, we request that the U.S. Nuclear Regulatory Commission (NRC) revise regulations and/or guidance to improve the labeling and accountability of tritium exit signs. Ideally, we would desire that tritium exit sign technology be immediately replaced by alternative technologies.

From the standpoint of the existing market, specific changes to new tritium exit signs will improve recognition and thus accountability. Most importantly, the labeling should be in several locations on the sign, with larger font, and an expiration date should be distinctly legible to a fire or building inspector without taking the sign down. Furthermore, manufacturers do not always demonstrate accountability in dispensing exit signs to the proper recipients, and recipients are not informed of proper ownership and regulatory requirements provided in NUREG-1556, Vol. 16, Appendix L, and 10 Code of Federal Regulations, Part 31.5. Online vendors do not always highlight that tritium is radioactive and that it has special "general licensing" requirements. The radiation trefoil should be displayed on the front and back of advertisements. Given the recent Walmart experience with these signs, clearly general licensing is successful only when the user understands these devises are radioactive and subject to controls. In light of the current general lack of controls, specific licensee manufacturers should be responsible for informing customers of the proper disposal of expired and used tritium exit signs. Again, from the standpoint of solid waste management officials, the NRC should exercise their full regulatory authority to prevent the disposal of tritium exit signs in landfills.

Though not in NRC's purview, advances in photo-luminescent technology over the past decade have demonstrated effective alternate technology for places without electricity. Efficient Light Emitting Diodes (LEDs) with backup batteries are being used where electricity is available. These technologies together replace the need for tritium self-luminescent exit signs. Also, we recommend a national collection effort with distinct milestones and goals should be done to consolidate all expired and disused tritium exit signs. Solid waste management officials simply want to stop tritium exit sign disposal in landfills.

The ASTSWMO Radiation Focus Group has been working with the U.S. Environmental Protection Agency since 2002 to improve public information about existing tritium exit signs. We also welcome the opportunity to work with NRC and other stakeholders, and provide input from State solid waste management officials concerning tritium-containing exit signs and how to keep them out of solid waste landfills. We further request that NRC organize a meeting with ASTSWMO and all interested stakeholders to set a new path forward on this important issue.

We would like to thank you for your attention to this matter. If you would like to discuss this issue further, please contact Dale Rector, TN, ASTSWMO Radiation Focus Group Chair, at (865) 481-0995 or Dale.Rector@tn.gov.

Sincerely,

Gary Baughman, CO
ASTSWMO President

Enclosure

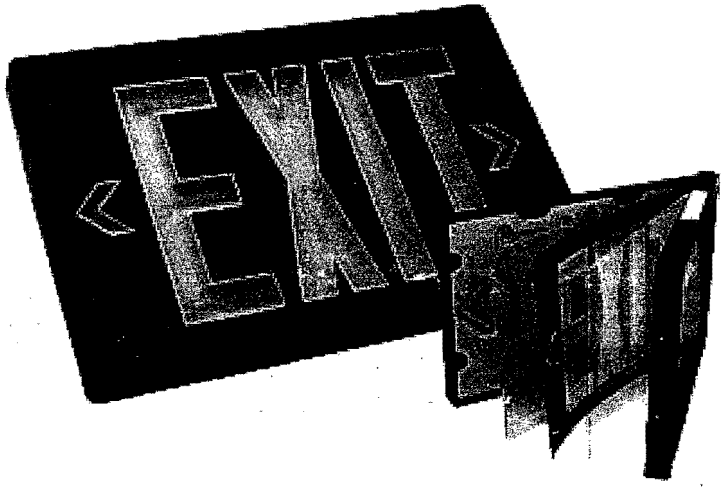
CC: ASTSWMO Radiation Focus Group
Helen Burnett, U.S. Environmental Protection Agency
Christian Einberg, U.S. Nuclear Regulatory Commission

Association of State and Territorial

ASTSWMO

Solid Waste Management Officials

Lack of Tritium Exit Signs Control and Contamination of Landfill Leachate



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ASTSWMO Radiation Focus Group
Federal Facilities Research Center

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The Association of State and Territorial Solid Waste Management Officials (ASTSWMO) is an organization supporting the environmental agencies of the States and Territories (States).

This document was prepared by the ASTSWMO Federal Facilities Research Center's Radiation Focus Group. The mission of the Radiation Focus Group is to identify national level radiation issues, coordinate State input, encourage improved partnership between State and Federal Agencies; and produce issue papers and other products as necessary to promote State interests on national radiation issues involving site cleanup and health and safety at federal facilities and other sites. The group acts as a resource to States in researching issues regarding radiation, providing information to States, and assisting in building State radiation program capacities, as requested by members.

ASTSWMO thanks the following members for their participation in development of this report:

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Lack of Tritium Exit Signs Control and Contamination of Landfill Leachate

Introduction

The Radiation Focus Group of ASTSWMO's Federal Facilities Research Center began researching tritium issues in 2003. At the same time, the U.S. Environmental Protection Agency (EPA) began conducting product stewardship activities concerning tritium containing devices; specifically self-luminescent tritium exit signs.

In 2003, the California Water Board evaluated 50 landfills for the presence of radioactive materials in landfill leachate. Above-background levels of tritium were found in leachate at 10 of these facilities.[1] In 2004, the Commonwealth of Pennsylvania began conducting a comprehensive two-year evaluation of 54 landfills that tested for the presence of radioactive materials in landfill leachate.[2] The study was conducted as a follow up to Pennsylvania's new requirements for radiation monitoring at solid waste management facilities and to confirm findings of the 2003 California study. In the Pennsylvania evaluation, above-background levels of tritium were noted in leachate at most facilities. Pennsylvania has done quarterly sampling for the past two years with similar findings. Studies in New York and New Jersey also have shown similar results.[3] The source of higher-than-background levels of tritium found in landfill leachate samples is presumed to originate from the improper disposal of self-luminescent tritium exit signs found in construction and demolition (C&D) waste and other solid waste streams, as there are no other known sources of tritium in industrial or consumer products that would cause elevated levels of tritium in landfill leachate.

This paper is intended to serve as a source of information to assist State and Territorial program managers tasked with assessing tritium and solid waste disposal. Additional information on tritium can be located at the following:

- **Pennsylvania Department of Environmental Protection – Bureau of Radiation Protection**
  http://www.dep.state.pa.us/brp/Radiation_Control_Division/Tritium.htm

- **Product Stewardship Institute (PSI)**
  http://www.productstewardship.us/displaycommon.cfm?an=1&subarticlenbr=191

- **U.S. EPA – RadTown USA – Discarded Tritium Exit Signs**
  http://www.epa.gov/radtown/exit-signs.html

- **U.S. Nuclear Regulatory Commission (NRC)**
  http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/tritium-radiation-fs.html

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[1] http://www1.ciwmb.ca.gov/LEAMemo/2003/RadSurvey/WaterSample.pdf.

[2] http://www.dep.state.pa.us/brp/Radiation_Control_Division/SolidWasteMonitoring/SolidWasteRadMonitoringReports.htm

[3] http://www.hydroqual.com/publications/rdm_07_01_a.htm

information summary (RIS 2006-25) in 2006 reiterating their requirements in 10 CFR 31 and 10 CFR 32 related to distribution, disposal, and appointment of a responsible individual. The NRC has also issued a request for information (RIF) from those organizations with over 500 tritium exit signs.[12]

As noted above, only a few States have documented landfill leachate with similar tritium concentrations. From 2005 to 2007, in a related aspect to tritium in landfill leachate, the NRC and the nuclear power industry expended thousands of manhours and millions of dollars evaluating similar tritium concentrations in groundwater around nuclear power plants.

In 2007, the Conference of Radiation Control Program Directors (CRCPD) expressed their growing concern with the ineffective regulatory control, inadequate labeling and improper disposal of tritium exit signs. Through discussion at their annual meeting and via an official Resolution, the CRCPD members commended the EPA for their efforts to mitigate the improper disposal of tritium exit signs and the NRC for issuing RIS 2006-25. However, CRCPD recommended that NRC and all States begin a national effort to actively alert general licensees with tritium exit signs of their regulatory obligations for control and disposal and to check expiration dates. Similarly, according to the CRCPD Resolution, States 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.[13]

While there is a growing concern in States over the regulation and disposal of tritium exit signs, several groups have developed guidance and training on how to safely handle and dispose of tritium exit signs, and how to respond to tritium releases. These include:

- **Kansas Department of Health and Environment – Gas Tritium Light Sources**
  Provides guidance for the recovery of and response to damaged and/or broken tritium exit signs. This resource may be used as a guide for other States in responding to tritium releases. http://www.kdheks.gov/radiation/radnews/9804.html#gtls

- **Product Stewardship Institute (PSI) – Tritium Exit Sign Stewardship**
  In collaboration with EPA and other stakeholders, PSI has produced informational products pertaining to the proper handling and disposal of exit signs, including details on how and where to dispose of and recycle exit signs.
  http://www.productstewardship.us/displaycommon.cfm?an=1&subarticlenbr=191

- **U.S. EPA - Responsible Management of Tritium EXIT Signs**
  The U.S. EPA has developed an online and CD based training program to educate tritium exit sign users regarding proper handling and disposal. EPA's training program provides information on a number of topics, including an introduction to tritium and tritium exit signs, an overview of potential risks and health affects, and resources for proper regulation, handling and disposal of exit signs.
  http://www.trainex.org/web_courses/tritium/index.htm

[12] http://www.nrc.gov/reading-rm/doc-collections/news/2009/09-011.html
[13] http://www.crcpd.org/positions_resolutions/Waste_Mgmt/waste_20071114.html

Recommendations

The ASTSWMO Radiation Focus Group believes that the NRC should formally evaluate the submitted safety assessments for GL tritium exit signs with respect to disposal scenarios in solid waste transfer facilities, landfills and incinerators. The scope of an inappropriate disposal may range from a single sign to tens of signs, thus potential exposures need to be bounded. These safety assessments for GL tritium exit signs should fully assess tritium exposure scenarios via airborne and ingestion pathways.

The Focus Group recommends that NRC evaluate their regulations pertaining to generally licensed tritium exit signs, in particular, with respect to the size of labels alerting a user the exit sign contains radioactive tritium, the replacement date, and their proper transfer or disposal obligations. The Focus Group also recommends that NRC evaluate the need for a national and/or individual State-level tracking or registration program for tritium exit signs.