

InfoPak

Guidelines on environmental topics
for USPS employees

March 2009

Management of Tritium-containing EXIT signs

Introduction

Emergency EXIT signs may contain tritium, a naturally occurring radioactive gas.

Tritium-containing EXIT signs are self-luminous and do not require electricity or batteries.

While such signs have been used in selected USPS areas, they are not included in the USPS facilities specifications published in Handbook AS-503. These specifications recommend energy efficient “LED” type exit sign with maintenance-free battery back-up and minimum UL requirements for brightness and distribution.

What you need to know

Tritium-containing EXIT signs require:

- Proper identification and handling until the end of their useful life to prevent possible radiation exposure.
- Proper recordkeeping of existing units and disposal of tritium as required by the Nuclear Regulatory Commission (NRC) and various states’ regulatory agencies.

What are our objectives ?

- Ensure the safety of our employees and the general public where tritium-containing EXIT signs are being used in USPS facilities through location identification, proper labeling, maintenance, and disposal.
- Comply with NRC recordkeeping and disposal requirements.



What are the regulations ?

- **NRC regulations (10 CFR Part 31)**
Under NRC regulations, USPS facilities that have installed tritium-containing EXIT signs are considered “general licensees.” Regulatory requirements on handling, transfer, or disposal of the signs must be followed because of the presence of a contained nuclear source.
- **Agreement-State Regulations**
Certain states have agreements with NRC over the commercial uses of radioactive materials, including tritium signs. Consult with USPS Environmental staff about whether your state has additional requirements if you have tritium EXIT signs.

What are the risks ?

- Of tritium gas
Tritium gas is odorless, colorless, and tasteless and is lighter than air. It emits low-energy beta radiation that cannot

penetrate a sheet of paper, clothing, or human skin. If inhaled, tritium leaves the body relatively quickly.

The NRC has stated that the tritium gas in these EXIT signs poses little to no risk to the health and safety of the public and does not constitute a security risk. The signs are considered inherently safe enough to be handled or used by anyone with no radiation training or experience.

- Of damaged signs
 - Tritium EXIT signs should not be tampered with, due to the potential for radioactive contamination.
 - If the glass tubes within the signs become damaged or broken, the tritium gas might escape into the local area although it will likely quickly disperse in the air. Mild radioactive contamination of the immediate vicinity could occur.

How do I identify tritium EXIT signs?

Installation heads, postmasters, and station managers should survey their facilities to identify existing and in-stock emergency EXIT signs to determine if they are the tritium-containing type.

Tritium-containing signs:

- Usually are less than 1½ inches thick.
- Have a permanent warning label that:
 - Mentions tritium (H-3), displays the three-bladed radiation warning symbol, and states “*Caution-Radioactive Materials.*”
 - Is usually on the bottom or an edge and the radiation trefoil symbol is usually visible.

- Displays the sign manufacture date and how much tritium it contains, i.e., “7 Curies.”

If the label is not observable, check the rear of the sign or try extinguishing all lights in the vicinity. If the word “EXIT” is green, the light contains tritium. Each letter in the word EXIT is an individual tube. If all four letters of “EXIT” are not fully lit, the sign may be damaged and should be replaced.

(See sample label below.)

What should I do if I find tritium EXIT signs at my facility?

- If the EXIT signs are tritium-type, collect the following data for each such sign:
 - Serial number
 - Date of manufacture
 - Manufacturer’s name
 - Location of sign
 - Condition (Are all tubes or only one or more illuminated?)
- Submit the collected data via email, FAX, or phone to your respective safety office.
- Designate an individual at your facility to be responsible for compliance with regulatory requirements.

How do I properly handle and dispose of tritium EXIT signs?

To properly handle, transfer, and dispose of tritium EXIT signs and comply with NRC regulations:

- Do not remove the radioactive symbol and labeling.
- When feasible, replace tritium EXIT signs with non-tritium signs.

- Carefully handle all tritium EXIT signs, without breaking the sealed tube within the sign.
- Do not abandon, give away, or sell tritium EXIT signs to another individual or institution.
- ***Do not dispose of intact or damaged tritium EXIT signs as normal trash; do not ship damaged or possibly leaking signs.***
- Arrange for proper disposal by notifying the Commodity Management Center (CMC) at the following phone numbers:
 - Purchasing & Supply Management Specialist, Dallas CMC
 - 214-819-7108
 - 214-819-7125 Fax
- Notify USPS environmental staff of the shipment.
- Keep the following disposal records for each tritium EXIT sign:
 - The device manufacturer’s name, model number, and serial number.
 - Name, address, and license number of the person receiving the device.
 - The date of transfer.

What should I do if an Exit sign containing tritium is damaged and releasing tritium?

- Leave it alone.
- Evacuate the immediate area
- Ventilate the area to the outside.
- Isolate the area and do not allow entry.
- Contact the Safety Office.
- Identify all individuals possibly exposed to the tritium.
- **Ensure that individuals possibly exposed immediately:**
 - Shower with soap and water (or at least wash face and hands).

- Change clothing (retain in plastic bag).
- Drink plenty of fluids.

Employees will likely be advised to collect a urine sample immediately, collect 24-hour cumulative samples, and to follow NRC, state, or health consultants’ advice on where to send them for analysis.

Future Purchases:

- Do not buy tritium EXIT signs in the future.
- Follow the requirements published in Handbook AS-503, section 5-3.1.4, for acquiring exit signs or consult with Facilities.
- Contact Facilities if there is a need for another type of sign.

Recommendations

- Provide this information on tritium EXIT signs to responsible USPS personnel so that they can properly identify and monitor tritium-containing EXIT signs.
- Maintain a record of your EXIT signs. Set up an inspection log sheet as part of the environmental records kept at the facility.

Where can I learn more?

For additional information about potential risk or proper documentation:

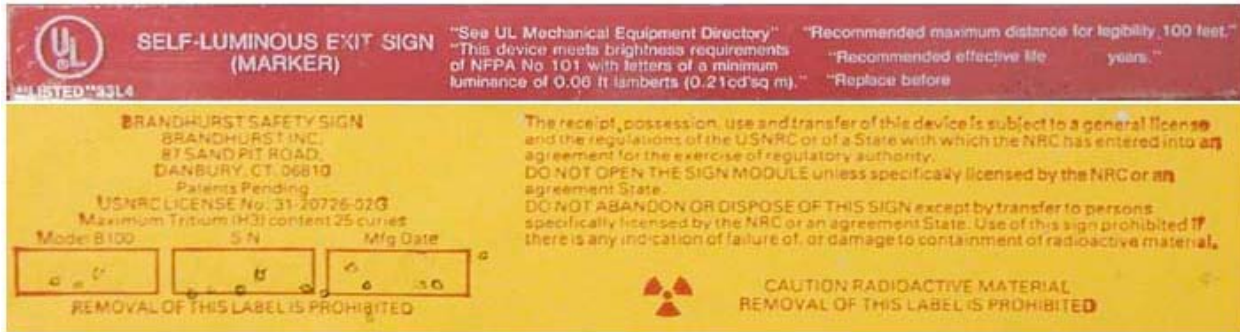
- Contact USPS environmental staff or your district Safety Office
- NRC Website: <http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/tritium-radiation-fs.html>
- U.S. Environmental Protection Agency Websites:

<http://www.epa.gov/rpdweb00/radionuclides/tritium.html>

- <http://www.epa.gov/radtown/exit-signs.html>

For online training on identifying, using, and disposing of tritium EXIT signs go to:

- <http://www.trainex.org> and search for “Tritium EXIT Signs, Responsible Management.”



Sample tritium warning label



Sample of 3-bladed radiation warning symbol