Fact Sheet on Tritium Exit Signs

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Self-luminous EXIT signs containing the radioactive gas tritium are widely used in a variety of facilities across the United States, such as public and private office buildings, theaters, stores, schools and churches – anywhere the public needs a rapid exit path. Those who possess tritium EXIT signs are general licensees of the Nuclear Regulatory Commission (NRC) or an Agreement State[1] and are subject to certain reporting and handling requirements, including proper disposal of unwanted or unused signs.

Tritium EXIT signs pose little or no threat to public health and safety and do not constitute a security risk. **However, the Colorado Department of Public Health and Environment (CDPHE) requires proper accounting and disposal of all radioactive materials.** Proper handling and accounting are important, because a damaged or broken sign could cause mild radioactive contamination of the immediate vicinity, requiring a potentially expensive clean up.

Use of Tritium in EXIT Signs

More than two million tritium EXIT signs are estimated to be in use in the United States. The signs do not require electricity or batteries, and are commonly installed in areas where electrical power is not conveniently accessible. They serve a safety function by remaining lit during power outages and emergencies.

The tritium gas is contained in sealed glass tubes. The insides of the tubes are lined with a phosphor. Low-energy Beta particles emitted by the tritium bombard the phosphor, causing it to glow.

There are a couple ways to determine whether an EXIT sign near you contains tritium. The device should contain a permanent warning label that mentions tritium (H-3), displays the three-bladed radiation warning symbol, and states "Caution-Radioactive Materials." (as seen in the example below)

If the label is not readily observable, try extinguishing all lights in the vicinity. If the word EXIT is green, the sign contains tritium. If all four letters in EXIT are fully lit, the sign is working properly. If not, the sign may be damaged. In addition, as tritium EXIT signs age, they may not glow as brightly and may not meet building codes. When this happens, they should be replaced.

Tritium emits low-energy beta radiation that cannot penetrate a sheet of paper or clothing. If inhaled, it leaves the body relatively quickly. Tritium gas is odorless, colorless and tasteless, and is lighter than air.

Regulatory Requirements

Manufacturers of tritium EXIT signs are "specific licensees," meaning they are licensed by the NRC or an Agreement State. The signs are considered "generally licensed devices," because they are inherently safe enough to be handled or used by anyone with no radiation training or experience.

Although purchasers – known as "general licensees" – do not need authorization from the state of Colorado to possess the signs, they are subject to certain regulatory requirements regarding handling, transfer or disposal of the signs.[2] **They are also subject to Colorado Department of Public Health and Environment inspection and enforcement action (typically civil fines) for violating those requirements.** Manufacturers must inform purchasers of the EXIT signs of the regulatory requirements for generally licensed devices. The general licensee is required to designate an individual responsible for complying with the regulatory requirements.

Under NRC and Colorado regulations, a general licensee using tritium EXIT signs:

- Must NOT remove the labeling or radioactive symbol, or abandon a sign;
- Must properly dispose of an unused sign (see below);
- Must report to the Colorado Department of Public Health and Environment any lost, stolen or broken signs;
- Must inform the Colorado Department of Public Health and Environment of a name change, change of address or
- Replacement of a general licensee's designated representative;
- Must **NOT** give away or sell the sign to another individual, company or institution unless the device is to remain in use at its original intended location; in such a case, the transferor is to notify the recipient of the regulatory requirements and must notify the Colorado Department of Public Health and Environment of the transfer within 30 days.

Tritium EXIT signs must NOT be disposed of as normal trash. To dispose of a sign properly, a general licensee must transfer the sign to a specific licensee. This licensee typically would be a manufacturer, distributor, licensed radioactive waste broker, or a licensed low-level radioactive waste disposal facility. These facilities may charge a fee for this service.

Within 30 days of disposing of a sign, the general licensee is required to file a report with the Colorado Department of Public Health and Environment that includes:

- The device manufacturer's (or distributor's) name, model number and serial number;
- The name, address and license number of the person receiving the device; and
- The date of the transfer.

Reports should be sent to:

Colorado Department of Public Health and Environment
Radiation Management Unit
HMWM-RM-B2
4300 Cherry Creek Drive South
Denver, CO 80246-1530

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[1] The NRC has agreements with 35 states under which the states assume regulatory jurisdiction over the commercial, industrial and medical uses of radioactive materials. The State of Colorado is one of these Agreement States.

[2] The regulatory requirements for generally licensed devices are contained within Part 3 of the State of Colorado *Rules and Regulations Pertaining to Radiation Control*, which can be found online at: http://www.cdphe.state.co.us/regulations/radiationcontrol/ and in the NRC Regulatory Issue Summary 2006-25 .