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Tritium Exit Signs

EXIT signs that glow in the dark often contain a radioactive gas called tritium. These signs do not require electricity or batteries and can be used where it is hard to install electric signs, such as above doors. They serve an important safety function by marking exits to be used during power outages and emergencies. The signs pose little or no threat to public health and safety or security.

Use of Tritium in Exit Signs

Tritium, also known as 3H or H-3, is a form of hydrogen. In EXIT signs, tritium gas is contained in sealed glass tubes lined with a light-emitting compound. The tritium gives off low-energy beta radiation that causes the lining to glow. This type of radiation 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.

There are a couple ways to know whether an EXIT sign contains tritium. When the lights are off, tritium will make the word EXIT glow green or red. The sign should also have a permanent warning label that mentions tritium, 3H or H-3; displays the three-bladed radiation warning symbol; and states "Caution-Radioactive Materials." If all four letters in EXIT are fully lit, the sign is working properly. If not, the sign may be damaged or have reached the end of its working life.

Many types of facilities across the United States use tritium EXIT signs, including public and private office buildings, theaters, stores, schools and churches.

Regulatory Requirements

Manufacturers and distributors of tritium EXIT signs are "specific licensees." This means they must apply for and receive a radioactive materials license from the NRC or an Agreement State. [i] Facilities that use tritium EXIT signs are "general licensees," meaning they do not need apply for a license to use the signs. The signs, considered "generally licensed devices," are designed to be inherently safe so they can be used without the need for radiation training.

But the signs are still subject to certain regulatory requirements. [ii] Most important is the requirement for proper disposal, because a damaged sign could contaminate the immediate area and require expensive cleanup. Manufacturers and distributors must let purchasers know what NRC regulations require. The general licensee must put one person in charge of meeting those requirements. The general licensee must also report any changes affecting a device or the person responsible for it.

General licensees may be inspected by the NRC or an Agreement State and may face penalties for violating the regulations.

- Under NRC regulations, a general licensee using a tritium EXIT sign must:
- NOT remove the labeling or radioactive symbol or abandon the sign;
- properly dispose of an unwanted sign (see below);
- report to the NRC or appropriate Agreement State any lost, stolen or broken sign;
- let the NRC or Agreement State know of changes to the name or address of the general licensee or the person in charge of complying with the regulations;
- NOT give away or sell the sign unless it is to remain in use at its original location; in such a case, the general licensee making the transfer must give the new owner a copy of the regulations and report the transfer to the NRC or Agreement State 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—such as a manufacturer, distributor, licensed radioactive waste broker or licensed low-level radioactive waste disposal facility. These facilities may charge a fee for disposing of the sign.

Within 30 days of disposing of a sign, the general licensee must file a report to the NRC or Agreement State. More information about the regulatory requirements for tritium exit signs can be found at 10 CFR Part 31.5.

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[i] Agreement States have received approval from the NRC to assume regulatory jurisdiction over the commercial, industrial and medical uses of radioactive materials.

[ii] The regulatory requirements for generally licensed devices are spelled out in NRC regulations at 10 CFR Part 31 and in Regulatory Issue Summary 2006-25.