

Gym Lighting Can Cause Radiation Burns

Many schools use high intensity **metal halide** and **mercury vapor** lights in their gymnasiums and other indoor facilities. These bulbs are very popular because they are cost-effective, have a long life and produce a lot of light.

Metal halide and mercury vapor bulbs, although not exactly the same, both use an amalgam of mercury to produce bright, long lasting sources of light. They have an inner quartz tube, containing the mercury vapor discharge, enclosed by an outer glass bulb that filters out harmful short-wavelength ultraviolet (UV) radiation. If the outer bulb breaks and the inner bulb continues to operate unshielded, intense UV radiation is emitted. This radiation is similar to the UV radiation from strong sunlight. Exposure at this level, even for a short period of time, can cause eye and skin burns, as well as blurred or double vision, headaches and nausea.



There are two types of metal halide and mercury vapor light bulbs sold in the United States. "R" type bulbs should only be installed in fixtures that are fully enclosed by a lens of glass or plastic to shield from UV radiation. "T" type bulbs have a self-extinguishing feature that shuts the light off within 15 minutes after the outer bulb is broken. They can be used in open fixtures. However these bulbs are not available in all sizes, give less light and are generally more expensive.

All schools using metal halide or mercury vapor lighting should inspect both the light bulb and the fixture on a regular basis and replace any that are damaged. Damaged, open or fixtures with wire guards DO NOT protect from UV radiation.

Only "T" type bulbs should be used in open fixtures or fixtures with only wire guards. "R" type bulbs should be used only in fully enclosed fixtures that have a glass or plastic lens to protect from breakage and UV radiation.

School supervisors should make sure that those responsible for the maintenance of these lighting systems fully understand the hazards involved. They should read and understand all caution notices that manufacturers print on the packages of these light bulbs.

If a bulb should be broken during use:

- Move people out of the area as soon as possible.
- Advise persons exposed to the damaged bulb to see a doctor if symptoms of skin burns or eye irritations occur.
- Report all incidents that involve injury to the light bulb manufacturer, who in turn is obligated to report to the U.S. Food and Drug Administration.
- Retain any broken bulb to help assist in positive identification of the manufacturer.
- Assist with any official investigation conducted after the event.
- Check to make sure the fixture is turned off before replacing the damaged bulb.
- Make sure the maintenance person is wearing appropriate protective equipment, such as eye protection and work gloves.

Additional information about metal halide lighting systems, including a FAQ section, can be found at www.nema.org. Search under "metal halide".