

## ***Employee Training***

### ***Dose to Members of the Public***

The U.S. Nuclear Regulatory Commission (NRC) requires that facilities utilizing radioactive materials do so in a manner that prevents members of the public from receiving a total effective dose equivalent (i.e. a radiation dose) in excess of 100 mrem in a year. This limit does not include dose contributions from natural background radiation, from a medical administration that the member of the public may have received, from exposure to an individual administered radioactive material and released, from voluntary participation in a medical research program, or from exposure due to the legal disposal of radioactive materials in the sanitary sewer system. Further, a licensee must ensure that the dose in any unrestricted area, excluding dose from patients administered radioactive materials who may be released, does not exceed 2 mrem in any one hour (10 C.F.R. 20.1301(a). <http://www.nrc.gov/reading-rm/doc-collections/cfr/part020/full-text.html#part020-1301>

**Note:** The 2 mrem limit is an integrated dose and that during that hour there may be transient periods in which the *dose rate* exceeds 2 mrem per hour, so long as the average dose rate is below 2 mrem per hour.

If a licensee allows members of the public into a controlled area (e.g. the Hot Lab), the limits for members of the public continue to apply.

One possible exception to the 100 mrem in a year limit arises when members of the public visit an individual who has received a medical administration of radioactive material (e.g. low dose rate brachytherapy, I-131 hyperthyroid treatment) and can not be immediately released. If the Authorized User, as defined by 10 C.F.R. 35, determines before the visit that it is appropriate, the members of the public may receive up to 500 mrem during the visit.

In order to show compliance with the stated public dose limits, the NRC requires that licensees perform appropriate surveys of radiation levels in unrestricted and controlled areas. Demonstration of compliance with the annual dose limit mrem can be shown by measuring or calculating that the total effective dose equivalent to an individual likely to receive the highest dose is less than 100 mrem or by showing that if an individual were continuously present in an unrestricted area would not exceed 2 mrem in an hour and 50 mrem in a year (10 C.F.R. 20.1302(2)). <http://www.nrc.gov/reading-rm/doc-collections/cfr/part020/full-text.html#part020-1302>

Records sufficiently documenting compliance with the public dose limits must be maintained by the licensee. The records must be retained until the license is terminated by the NRC (10 C.F.R. 20.2107). <http://www.nrc.gov/reading-rm/doc-collections/cfr/part020/full-text.html#part020-2107>

In the event that the limits for a member of the public are exceeded or if radiation levels in an unrestricted area are in excess of 20 mrem in one hour (whether or not an individual gets exposed), the licensee must submit a written report to the NRC within 30 days (10 C.F.R. 20.2203). <http://www.nrc.gov/reading-rm/doc-collections/cfr/part020/full-text.html#part020-2203> If such a situation arises or potentially arises, immediately notify the Radiation Safety Officer.