

What Does ALARA Mean?

By Geoffrey C. Sirr Jr.

How many times have you heard the acronym ALARA mentioned at either a radiation safety training session, Radiation Hazard Control Group (RHCG) meeting or an audit / inspection conducted by your friendly Radiation Safety staff member? Most of us quickly think; "I know what that means; ALARA stands for as low as reasonably achievable." Typically, that is the end of it and we move onto something else.

Besides trying to ensure that occupational and public exposure to radiation is kept as low as reasonably achievable (ALARA) and complying with regulatory requirements, is there anything else that should be added or known about the ALARA concept?

Once a philosophy, and now regulation, ALARA is the core concept of any Radiation Safety Program. ALARA applies to all radiological situations that can give rise to personal dose including both occupational and public

exposures to direct and indirect radiation from either radioactive materials, or radiation producing machines. "Licensees are required to make every reasonable effort to maintain radiation exposures, and releases of radioactive materials in effluents to unrestricted area, as low as reasonably achievable."

Dose limits are well defined in the Department of Public Health regulations (105 CMR 120.00) and are set to protect individuals from deterministic effects and unacceptable stochastic risk.

Tufts ALARA program incorporates administrative controls (e.g. ALARA I level = 125 mrem) to monitor radiation exposure and is overseen by the Radiation Hazard

Control Group. Radiation dose limits are 10% of the established occupational regulatory limits, assigned to monitor individual radiation dose and to ensure exposures remain ALARA.

Committee members meet on a quarterly basis to review the Radiation Safety Program per-

formance and identify areas within the program that could be further developed or improved.

ALARA is promoted by:

1. Providing appropriate training for workers to enhance Radiation Safety awareness.
2. Posting and labeling accordingly to alert personnel to the presence of potential radiation hazards.

3. Providing appropriate facilities and equipment to contain radiation and radioactive material including shielding, engineered containment, engineered protective equipment, specified handling tools and personnel protective equipment.

4. Investigating deficiencies, conducting audits and radiological assessment to determine areas for improvement

5. Drafting radiological safety procedures or SOPs and reviewing existing policies or procedures for effectiveness

6. Radiation Safety tracking the performance of the Radiation Safety Program in RHCG minutes or metrics

More information concerning the Radiation Safety Program is detailed within the Radiation Safety Manual located at:

<http://publicsafety.tufts.edu/ehs/downloads/TUSMRules&Mode->



Identifying the Infrared or UV Laser Beam

By Geoffrey C. Sirr Jr.

Special tools or materials are often employed by individuals during the beam profiling stage. This is often the case when dealing with infrared or ultraviolet bandwidths. Unlike with visible light, materials such as fog or smoke or even the unaided eye provide the essentials for quickly picking up the beam profile or stray radiation energy. However, with additional effort, and more sophisticated tools, profiling and characterization of non-visible spectra is a snap. Tools and equipment are readily available to purchase via the internet.

Sensor cards or viewing cards are inexpensive and provide beam identification for both ultraviolet and infrared laser light (Wavelength coverage from 200

nm to 1700 nm) and provide a low-cost alternative to an infrared viewer. If your budget allows, infrared viewers are very useful for nominal hazard zone (NHZ; the space within which the level of direct, reflected, or scattered radiation may exceed the applicable maximum permissible exposure) assessment and provide users the capability to characterize the direct beam and / or the surrounding work environment. It is important to continually evaluate your environment for stray radiations from intense light sources to ensure inadvertent exposures to students, employees or visitors are avoided.

Personal protective equipment is required for anyone entering the NHZ. Protecting your eyes from class 3B or IV laser radiation is

afforded by wearing eyewear specifically engineered to the laser wavelength and intensity of the direct or scattered laser beam. Safety eyewear is required by regulation to be properly marked or engraved to include the wavelength and optical density value.

The purpose of defining the NHZ is to establish an area in which control measures are required. Contact the Tufts EHS Laser Safety Officer @ 617-636-3450 for assistance in determining the NHZ and for recommending the appropriate control measures for your environment.

