Personal Dosimeters

Supersedes:
Effective: 01-19-05

Boston EMS ALS and BLS response units are each equipped with 2 (two) MGP DMC 2000s personal Dosimeters. Supervisory and Command units will be equipped with a single monitoring device. Specialty units (X-Ray units, Squad, etc) will be issued one dosimeter at the start of their shift, which will then be returned to a Supervisor at the conclusion of their tour of duty.

These Dosimeters are designed to measure gamma radiation and will serve to warn personnel if they are in proximity to a potentially dangerous gamma radiation source. The devices should be worn on the person of the staff member on duty during their shift, and may be worn under a sweater / jacket, or carried in a pocket. A belt clip and nylon carrying pouch will also be supplied. The device is also designed to record any exposure.

TRANSFER

The MGP 2000 devices must be transferred between the staff members during change of shift. Any staff member who does not receive a personnel dosimeter at the start of their shift shall notify their supervisor immediately. Units that do not have an oncoming relief will secure the dosimeters at their satellite station in the same location as vehicle keys.

OPERATION

While the MGP DMC 2000S is in the "*Pause Mode*" the LCD screen will display the unit ID assignment ie "EA01-A". In this setting the device will record exposure but it will not display dose, rate or alarm. Therefore the MGP DMC 2000S should always be turned on in the "*Measurement Mode*". In this mode, the device measures and records both **dose rate** and accumulated **dose**. While in the "*Measurement Mode*" the screen will display the letter "d" for dose and if you depress the button once the display will toggle to "r" for rate.

To change the device from the "*Pause Mode*" pause to the "*Measurement Mode"*, depress and release the button once. The screen will display "CHANGE" then "ENTER". While ENTER is displayed depress the button once more. The word "IN" should display. Quickly press the button once more. The dosimeter should then activate and will display "d" for dose.

To switch the device into the "*Pause Mode*" you must depress and hold the button down for several seconds. The screen should read "change", continue to hold the button down, it will read "OUT". At that point quickly release then depress the button one more time. The display should change to the unit ID.

ALARMS

The DMC 2000 has four alarms settings. There are two alarm levels for both dose rate and for dose, which will sound and alert the wearer when a predetermined threshold is met.

The alarm level settings are recommended by the National Council on Radiation Protection and Measurements and by the National Institute of Standards and Technology. These alarm points were chosen to afford *protection* for first responders.

Lower level alarms will afford *detection* but are not optimal for first responders. BEMS members routinely encounter patients who may have therapeutic radiological sources in their bodies. In addition BEMS members are frequently inside hospitals or clinic areas where legitimate sources of radiation are present. Such low level and transient sources of radiation are harmless but can trigger nuisance alarms on detectors with lower settings.

Regardless of the alarm setting, the dosimeter will record *any* exposure for personal protection and documentation.

If you get an alarm and cannot identify a legitimate reason for it, then you should consider the item to be a potential hazard. EXAMPLE; At a MVC a truck triggers an alarm, you should separate the driver/victims from the truck to determine which is the source. If an object or area is suspicious, isolate it and notify police and fire.

Dose Rate Alarm Settings

The initial “pre-alarm” or warning setting for the dose rate is 10mR/hr. This rate is low enough to offer protection to members to continue emergency medical care. Once this threshold is reached the DMC2000S will sound a series of three short beeps, a red LED will flash while the display will read “Dose” and display a warning sign. This will continue until acknowledged by pressing the button and holding it down for three seconds. Once silenced, the device will still continue to record the dose rate.

The second dose rate alarm setting is 75 R/hr. {75,000 mRhr.}. A series of three long beeps will constantly sound. The red LED will flash and the display will read “RATE ALARM” and the value be displayed. This alarm cannot be silenced. The wearer should immediately assist others in leaving the immediate area and notify Dispatch Operations.

DOSE ALARM SETTINGS

The initial dose alarm {warning} setting is 2.5 Rem or [2,500 millirem]. The detector will sound a succession of three short beeps, the red LED will flash and the screen will display “DOSE” with a warning symbol. The alarm can be silenced/acknowledged by depressing the button three seconds. The dosimeter will continue to measure dose.

This dose level {2,500 millirem or 2.5 REM} represents one half of the annual allowed dose level for workers in the nuclear industry. The member should now pay attention to any increase in dose. While this dose is within levels determined to be safe and allowable, consideration should be given to leaving the area or rotating other members into the area to complete patient care.

The secondary dose alarm is set for 10Rem {10,000 millirem}. This alarm will sound a succession of three long beeps, the red LED will flash and the display will read DOSE

and the value. This alarm cannot be silenced and is considered a “turnaround and leave dose”.

SAIC-PD3SI PERSONAL ELECTRONIC DOSIMETER

Boston EMS owns 6 of these older style units and may deploy them on an as needed basis. These units are different from the MGP2000s in that they have a single alarm setting for dose rate and one alarm setting for dose. It measures gamma radiation in mR [millirem], and R [Rems] units. The dose rate alarm will sound (beep) when threshold of 10 mR/hr is detected. This is a safe level and the alarm will prompt the wearer to be aware, to investigate further, to notify police and fire and to relocate if possible. The dose alarm setting is 2.5 REM dose. Total accumulated dose is recorded as well on this unit.