



NYC REMAC

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Title:	Educational Advisory: Use of Dosimeters (Radiation Detection Meters)
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The Regional Emergency Medical Services Council of New York City and the Regional Emergency Medical Advisory Committee (REMAC) of New York City, working with the New York City Department of Health and Mental Hygiene, will distribute Dosimeters (radiation detection meters) to all ambulance agencies operating in the NYC region (exclusive of municipal agencies). In order to utilize these units to best protect prehospital providers and our citizens, this Educational Advisory has been developed.

The dosimeters being distributed are Canberra UltraRadiac™ Personal Radiation Meters. Each unit comes packaged with a certificate listing the unit's serial number, belt holster/carrying case, belt clip, 4-AAA batteries, and a User's Manual. Each unit has its serial and model numbers located on the exterior rear of the battery compartment.

In order to function effectively, the Canberra UltraRadiac™ **Personal** Radiation Meter is to be worn by a member of the EMS Crew, **NOT** left in the ambulance.

Every Ambulance and ALS First response Service should develop an agency policy on the use of personal radiation meters, and identify actions to be followed by agency officers and dispatchers in the event of activation.

Attachment: REMAC NYC General Operating Procedures: Weapons of Mass Destruction Procedure.

Owners/operators of Ambulance and ALS First Response Services providing prehospital medical treatment within the five boroughs of the City of New York are responsible to provide copies of the NYC REMAC Prehospital Treatment Protocols to their personnel, and to ensure that Service Medical Directors and EMS personnel are informed of all changes/updates to the NYC REMAC Prehospital Treatment Protocols.

The revised protocols will be effective immediately.

Lewis W. Marshall, Jr., MD, JD
Chair

Regional Emergency Medical Advisory Committee of New York City

Use of Canberra UltraRadiac™ Personal Dosimeters (radiation detection meters)

I. GENERAL INFORMATION

1. The Regional Emergency Medical Services Council of New York City and the Regional Emergency Medical Advisory Committee (REMAC) of New York City, working with the New York City Department of Health and Mental Hygiene, will distribute Dosimeters (radiation detection meters) to all ambulance agencies operating in the NYC region (exclusive of municipal agencies).
2. Definitions:
 - a. Dosimeter: an instrument that measures and indicates the amount of x-rays or radiation absorbed in a given period.
 - b. Radiation: energy which travels, either as electromagnetic waves or particles.
 - c. Radioactive: material which emits ionizing radiation.
 - d. Ionizing Radiation: high energy radiation interacting with matter. This type of interaction in biological tissues causes damage (ionization) which can pose a significant health risk.

- i. Types of ionizing electromagnetic radiation:

1. x-rays
 2. gamma rays
 3. cosmic rays

- ii. Types of ionizing particle radiation:

1. beta Particles
 2. alpha particles
 3. neutrons



3. Description of the Canberra UltraRadiac™ Personal Radiation Meter (dosimeter):

- a. This dosimeter is a numeric beeper programmed to measure radiation in the form of Gamma and X-Ray photons (these two types of radiation are most likely to be encountered in an accident or to be used in a dirty bomb or other device used in a terrorist incident).

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- b. This dosimeter offers cumulative dose (Dose) and dose rate (Rate) monitoring.
- c. This dosimeter is ideal for use by emergency responders because the unit is designed to withstand extreme environmental hazards of temperature, shock, humidity, dust, immersion, and high radiation fields.

II. FEATURES

You must read the manufacturer's User's Manual for complete instruction on use and maintenance of the Canberra UltraRadic™ Personal Radiation Meter. Each unit is accompanied by a User's Manual.

1. Alarms:

- a. The Canberra UltraRadic™ Personal Radiation Meter's presettable alarms for both instantaneous RATE and cumulative DOSE can alert you to hazardous conditions.
 - i. **RATE** Alarm: High Level Rate Alarm = 50 R/HR
Low Level Rate Alarm = 1 mR/HR
 - ii. **DOSE** Alarm: High Level Dose Alarm = 12 R
Low Level Dose Alarm = 1 R
- b. When an enabled alarm's threshold is exceeded, a visual indicator will begin flashing and an audible alarm will sound.

2. Radiation Units:

- a. The Canberra UltraRadic™ Personal Radiation Meter is factory set to display the RATE and DOSE in: R (roentgen) – a measure of radiation exposure
- b. Abbreviations for Radiation Measurements
 - i. When the amounts of radiation being measured are less than 1, prefixes are attached to the unit of measure as a type of shorthand. This is called scientific notation and is used in many scientific fields, not just for measuring radiation. The table below shows the prefixes for radiation measurement and their associated numeric notations.

Prefix	Which is this much	Abbreviation
atto-	.000000000000000001	a
femto-	.0000000000000001	f
pico-	.000000000001	p
nano-	.00000001	n
micro-	.000001	μ
milli-	.001	m
centi-	.01	c

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- ii. When the amount to be measured is 1000 (that is, 1×10^3) or higher, prefixes are attached to the unit of measure to shorten very large numbers (also scientific notation). The table below shows the prefixes used in radiation measurement and their associated numeric notations.

Prefix	Which is this much	Abbreviation
kilo-	1000	k
mega-	1,000,000	M
giga-	100,000,000	G
tetra-	100,000,000,000	T
peta-	100,000,000,000,000	P
exa-	100,000,000,000,000,000	E

III. PROCEDURE

NOTE: For each tour, on every ambulance unit, the dosimeter must be **WORN** or **CARRIED** by at least one member of the EMS crew for the duration of the tour. The dosimeter must be easily accessible so that alarm lights are visible and chirps audible. Do not rely on the alarm's vibration setting when wearing heavy clothing.

1. At the beginning of the shift, each personal radiation meter will be inspected by the designated EMS crew member.
2. Turn dosimeter **ON** by pressing the ON/OFF button until **000** is displayed. Release ON/OFF and after a few seconds the RATE will appear.
3. Reset the accumulated DOSE to zero by pressing and holding DOSE + CLR/TEST. The display will flash for a few seconds, and then clear the accumulated dose. To return to the Rate Mode, press the RATE button.
4. Keep the dosimeter turned **ON** for the duration of the shift. Turn it **OFF** upon end of shift.
5. After the dosimeter is turned on the unit will default to accumulated dose mode. This mode will display the cumulative dose received since the last reset. It is normal for the dosimeter to accumulate dose from normal background radiation.
6. RATE mode. It is normal for the DOSE RATE mode to fluctuate from 0 to .02 mR/hr
7. **If the alarm activates:** (Refer to REMAC NYC General Operating Procedures: Weapons of Mass Destruction Procedure-attached)
 - a. **Identify that the radiation detected is not from a legitimate source (e.g., portable x-ray machine in hospital, a patient who underwent medical testing involving radioactive medium).**

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- b. When a situation is identified where either the release of hazardous materials (HAZMAT), or the use of weapons of mass destruction (WMD) are suspected, ambulance units and/or EMS personnel shall:**
 - i. Immediately notify 911 and agency dispatcher. Provide an initial scene survey report.**
 - ii. If not exposed or contaminated, immediately withdraw to a safe distance upwind.**
 - iii. If exposed or contaminated, isolate the unit and crew, and await decontamination instructions.**

- 8. Note these events as directed by individual agency policy.

GENERAL OPERATING PROCEDURES

WEAPONS OF MASS DESTRUCTION PROCEDURE

INTRODUCTION:

The purpose of this protocol is to set forth New York City Regional guidelines regarding Hazardous Materials and/or Weapons of Mass Destruction (Biological, Nuclear, Incendiary, Chemical, Explosive: B-NICE).

1. The safety of both crew and public is paramount. Do not endanger yourselves or others.
2. Patients must be decontaminated prior to being removed from the scene.
3. EMS personnel shall wear appropriate Personal Protective Equipment (PPE), as determined by the Incident Commander.
4. When a situation is identified where either the release of hazardous materials (HAZMAT), or the use of weapons of mass destruction (WMD) are suspected, ambulance units and/or EMS personnel shall:
 - Immediately notify 911 and agency dispatcher. Provide an initial scene survey report.
 - If not exposed or contaminated, immediately withdraw to a safe distance upwind.
 - If exposed or contaminated, isolate the unit and crew, and await decontamination instructions.
 - Operate within the Incident Command System and under FDNY's operational responsibility for the coordination of prehospital resources and patient care.
5. Only those resources specifically designated by the 911 FDNY incident command shall be initially utilized on-scene or within the immediate vicinity of the incident.
6. Ambulances not already on the scene shall report to an established mobilization or staging area as directed.
7. Any non-911 ambulance inadvertently responding to, or "flagged down" for such an event, will upon recognizing the situation as HAZMAT or WMD, immediately withdraw to a safe distance upwind and simultaneously notify 911 and their dispatcher.