

RADTriage™

Instruction & Information Manual

Nukepills.com

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OBJECTIVE OF THE RADTriage™: The [RADTriage personal radiation detector](#) provides wearers timely personal radiation exposure information in an event of a terrorist radiological incident or radiation accident. RADTriage, with the amber laminated filter, provides significantly longer life in direct sunlight. RADTriage, part of the SIRAD® (Self-Indicating Radiation Alert Dosimeter) family of SMART dosimeters, is uniquely designed to prevent erroneous readings. It has a sensor (a rectangular strip between the color bars) with 0, 20, 50, 100 & 250 mSv bars on its top and 500, 1000, 2000, 4000 & 10,000 mSv bars on its bottom for triaging information in emergencies. If, during or after the incident, the color of sensor has not changed, the wearer has not received radiation exposure large enough to cause acute medical effects and therefore has peace of mind. If the sensor changes color, radiation exposure is indicated. In this case, further exposure should be avoided. If the Sensor has developed a darker color, e.g., above 250 mSv, the user should seek a medical evaluation. A person exposed to a dose higher than 500 mSv should immediately contact the emergency room of the nearest hospital.

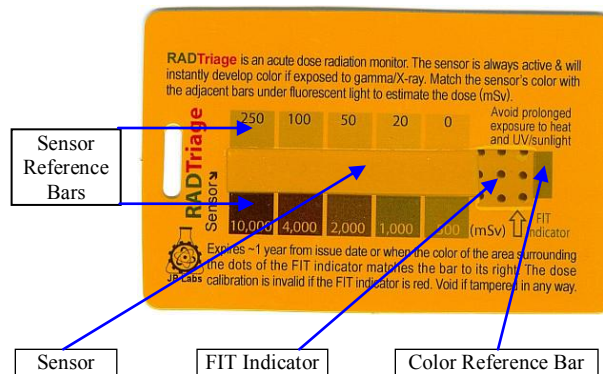
GENERAL INSTRUCTIONS: 1) Write your name and date received on the back of the badge and note the color of the area surrounding the dots within the FIT indicator. The area must be much lighter than the color reference bar on its right. 2) Carry the RADTriage in your wallet, purse or pocket. You may also hang it from your neck or belt as you would carry an ID badge. 3) The RADTriage is a warning and casualty radiation dosimeter. It supplements, but does not replace, other dosimeters or detectors that you may be required to use. RADTriage may be the only dosimeter worn by people who do not routinely work with radioactive materials & radiation sources. 4) The amber film protects the radiation sensor from prolonged exposure to ultraviolet (UV) and near UV light from sunlight or fluorescent lights. 5) Do not deliberately expose RADTriage to ionizing radiation. Protect RADTriage from prolonged periods of exposure to high temperatures (above 140°F/60°C) and UV/sunlight. This ensures the maximum usable life of the Sensor. 6) When issued, (a) the color of the sensor MUST closely match with the zero (0) indicator of the Sensor Reference Bars and (b) the dots of the FIT Indicator (located on the right hand end of the Sensor) should be dark in color while the surrounding area should be lighter. Return the dosimeter to Nukepills.com for a replacement if they are not so or the RADTriage is damaged in shipment or defective. 7) The shelf life of this stockpileable RADTriage can be extended for up to five years by keeping it in a freezer when not in use.

INTRODUCTION: The RADTriage (USP# 7,227,158 and others) is always active and ready to use. It is a **smart dosimeter and has the capability of monitoring shelf life, false positives/negatives and tampering**. When exposed to radiation, e.g., from a "dirty bomb", the sensor of the

RADTriage changes color instantly. The color changes are permanent, cumulative and proportional to dose, thereby providing the wearer and medical personnel instantaneous, easy to read information on radiation exposure of the wearer to assess the health risks and guide medical treatment.

TYPES OF RADIATION: The RADTriage Sensor responds to gamma/X-ray (energy higher than 30 KeV) and high energy (e.g., above 1 MeV) electrons/beta particles. Color development of the Sensor is essentially independent of dose rate. However, protective films attenuate low energy (below 200 KeV) X-ray. RADTriage will not be affected by normal exposures to diagnostic X-rays (e.g., chest or dental) or security/airport X-ray/CAT scan machines, except that multiple exposures (more than five) to such will result in sufficient enough exposure to produce a detectable color change in the Sensor.

HOW TO READ THE RADIATION DOSE: Estimate the exposure dose by comparing the color of the sensor with the Sensor Reference Bars. Find a bar which closely matches the color of the sensor and read the dose in mSv printed adjacent to those bars. If the Sensor develops a color in-between any two adjacent bars, this indicates an in-between dose. For a nearly tissue equivalent dosimeter, such as RADTriage, 1 rad = 1 rem = 10 mSv. It can be viewed in any light. However, we recommend reading the dose under fluorescent lights for better accuracy. Color matching under other lights may not be as accurate. Dose can be estimated with an uncertainty of about 20% with a color-matching reference chart. Where additional accuracy is needed, a spectrophotometer or an optical densitometer can be used to determine the dose to within 10%.



EFFECTS OF HEAT AND UV LIGHT: The sensor of the RADTriage will develop colors faster if exposed to UV/sunlight for a prolonged period. Keep the RADTriage at or below normal body temperature. Repeated, e.g., hundreds, of readings where the sensor gets exposed for less than a minute per reading (even under direct sunlight) will cause little or no color development in the sensor.

LAUNDRY CYCLE: A normal residential laundry cycle of washing and drying (below 175°F/80°C) has a negligible effect on the RADTriage. However, repeated laundry cycles or exposure to temperatures higher than 175°F/80°C will damage the sensor and hence must be avoided. Replace the RADTriage if it is subjected to boiling water or more than one laundry cycle.

FALSE POSITIVE & TAMPER INDICATORS: If used as per instructions, it is unlikely that the RADTriage will provide false positives or false negatives. Your RADTriage is a SMART personal dosimeter, equipped with a simple-to-use revolutionary indicator for monitoring the deliberate or inadvertent exposure to high temperatures or ultraviolet light. We call it the FIT™ Indicator (**F**alse-positive, **I**nactivation and **T**amper) and it is located on the right hand end of the sensor. The FIT Indicator simultaneously monitors false positives & negatives, overexposure to heat & UV/sunlight, shelf-life, inactivation and/or altered sensitivity.

Inactivation & False Negative Indicator: If the dots of the FIT Indicator are dark blue, the sensor is active, it is monitoring radiation and the calibration is valid. However, if it has changed to red, your RADTriage has been heated near or above 175°F/80°C which has made the sensor inactive to radiation or of altered sensitivity to radiation. **DO NOT USE the dosimeter if the dots of the FIT Indicator are red.** Turn the dosimeter in to the issuing organization with a description of the circumstances. The heat treatment can be used by medical authorities to fix the sensor for permanently documenting the radiation exposure as a part of a medical record. Medical personnel requiring this capability should contact the distributor, Nukepills.com.

False Positive Indicator: The shelf life (expiration date) of the dosimeter is based on storage of the RADTriage at room temperature (77°F/25°C) or below and continuous protection from ultraviolet/sunlight exposures. Shelf life will be reduced if it is stored at higher temperatures and/or exposed to UV/sunlight for a prolonged period (e.g., more than a few hours of direct sunlight). The area surrounding the Fit Indicator dots should be lighter in color when issued/purchased. If it has developed a color matching or darker than the Color Reference Bar on its right, the shelf-life of the RADTriage has expired; it was overexposed to UV light, and/or exposed to higher temperatures for a prolonged period. The sensitivity of the FIT Indicator to X-rays is hundreds of times lower than that of the sensor.

SHELF LIFE: The sensor of the RADTriage will develop color equivalent to about 10 mSv in about one year if stored at 77°F/25°C. The shelf life of the RADTriage can be extended to about five years if kept in a freezer. The shelf life of the RADTriage expires one year from the issue date and definitely when the color of the area surrounding the dots of the FIT Indicator matches or is darker than the Color Reference Bar on the right hand side.

UV/TAMPER DETECTOR: A small portion of the sensor is covered with the FIT Indicator. The substrate of the FIT Indicator is 100% opaque to visible and UV light but transparent to X-rays and gamma-rays. If the color development of the sensor is due to

exposure to high energy ionizing radiation, the whole sensor will be uniformly colored. If the color development of the sensor is due to exposure to UV light, the color of the sensor under the FIT Indicator will be lighter. If you suspect the color development of the sensor is due to exposure to high energy ionizing radiation, return the RADTriage to Nukepills.com. For a fee, we will remove the sensor for determination of genuine exposure or false positive.

REPORTING EXPOSURE: If the sensor of the RADTriage develops darker color and the color development is not due to prolonged exposure to high temperatures, UV/sunlight, and/or expiration of shelf life, estimate the dose and immediately report it to the department/agency/organization issuing the dosimeter. Seek advice and medical help immediately from your agency/company medical office, your personal health care provider or county public health office, especially if the dose is higher than 250 mSv. For a dose higher than 500 mSv, report to the nearest Emergency Room.

ADDITIONAL INFORMATION: Only limited information can be provided in this manual. For additional useful information, please visit www.nukepills.com.

LIMITED LIABILITY: Reasonable efforts have been made to make this product free from defects. It is expected to perform as specified if used as recommended and instructions are followed. In the event that the product does not perform as specified, JP Laboratories, the manufacturer, will replace the product. JP Laboratories specifically disclaims all other warranties and liabilities expressed or implied. All warranties are null and void if any of the following occur: (1) the dots of the FIT Indicator are red and/or the area surrounding the dots is matching or darker than that of its Color Reference Bar and (2) the RADTriage is tampered with in any way.

Authorized Distributor:

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