

# Instruction & Information Manual for Stockpileable RADTriage™

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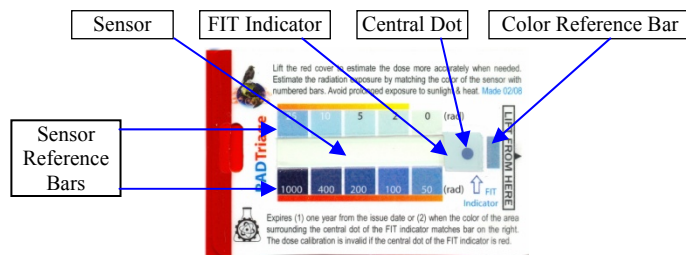
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**OBJECTIVE OF THE RADTriage™:** The RADTriage, a stockpileable [personal radiation detector](#), provides wearers, medical personnel and law enforcement personnel timely personal radiation exposure information in an event of a terrorist radiological incident or industrial accident. RADTriage, with the red filter, provides significantly longer life in direct sunlight. The red film is repositionable/liftable for more accurate reading of the dose from 0-1,000 rads. 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, 2, 5, 10 & 25 rads bars on its top and 50, 100, 200, 400 & 1,000 rads 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 turns light blue in color, a low radiation exposure is indicated. In this case, further exposure should be avoided. If the Sensor has developed a darker blue color, e.g., above 25 or 50 rads, the user should seek a medical evaluation. A person exposed to a dose higher than 50 rads 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 blue dot within the FIT indicator. The area must be much lighter than the color reference bar on its right. 2) Carry 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) 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) **Keep the red protective cover in place at all times except when need to read the dosimeter more accurately.** This will protect the radiation Sensor from prolonged exposure to ultraviolet (UV) and near UV light from sunlight or fluorescent lights. Colors referred to herein this manual are without the red filter, except when stated. 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 Central Dot of the FIT Indicator (located on the right hand end of the Sensor) should be blue while the surrounding area should be light blue. Return the dosimeter to Justacip, Inc. 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 by keeping it in a freezer when not in use.

**INTRODUCTION:** RADTriage (patents pending) 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 RADTriage develops 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 X-ray 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 DOSE WITH RADTriage:**

Estimate the exposure dose by comparing the color of the Sensor with the Sensor Reference Bars. For higher accuracy, lift the red filter and find a bar which closely matches the color of the Sensor and read the dose in rads/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 [RADTriage](#) provides sufficient protection from sunlight and can be read more accurately by lifting the red filter. The unprotected 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 (red filter lifted/removed) 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. False signals can create unnecessary problems for users and issuing organizations. 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 central dot of the FIT Indicator is blue, the sensor is active, it is monitoring radiation and the calibration is valid. However, if it has changed to purple or 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 central dot of the FIT Indicator is purple or 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, Justacip, Inc.

**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 central dot should be light blue 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. It will also develop a very faint blue color at 500 rads.

**Shelf life:** The sensor of the RADTriage will develop color equivalent to about 1 rad 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 central dot 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 significantly lighter. If you suspect the color development of the sensor is due to exposure to high energy ionizing radiation, return the RADTriage to Justacip, Inc. 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 25 rads. For a dose higher than 100 rads, report to the nearest Emergency Room.

**ADDITIONAL INFORMATION:** Only limited information can be provided in this manual. For additional useful information, please visit <http://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 central dot of the FIT Indicator is purple or red and/or the area surrounding the dot 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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