

## Instruction Manual for Stockpileable RADTriage™



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**Introduction:** RADTriage, a stockpileable personal **casualty** dosimeter provides wearers, medical personnel and law enforcement personnel timely personal radiation exposure information in an event of an accident at a nuclear power plant or a nuclear or dirty bomb explosion. RADTriage with the laminated red filter provides longer usable life under direct sunlight. RADTriage has a sensor (a rectangle strip between the color bars) with 50, 100 & 250 mSv bars on its top and 500, 1,000, 2,000, 4,000 & 10,000 mSv bars on its bottom for triaging information in emergencies. 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. The color of radiated sensor is blue but appears gray with the red color filter which helps some color blind people to read the dose.

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 gray color, a low radiation exposure is indicated. In this case, further exposure should be avoided. If the sensor has developed a darker gray color e.g., above 250 or 500 mSv, the user should seek a medical evaluation. A person exposed to dose higher than 500 mSv should immediately contact an emergency room of a nearest hospital.

It has an Expiration Bar on the top right hand corner of the sensor to indicate expiration of usable life of the dosimeter. The sensor will acquire color similar to that of the Expiration Bar after about two years of storage at room temperature (about 22°C/71°F), upon exposure to about 20 mSv and/or upon exposure to direct sunlight for a few days. **The shelf/usable-life will be reduced to half at 32°C and to a quarter at 42°C.**

**GENERAL INSTRUCTIONS:** **1.** Write your name and date received on the back of the badge. The sensor must be lighter than the Expiration Bar. **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 **casualty** radiation dosimeter. It supplements, but does not replace, other dosimeters or detectors that you may require to use. **4.** Do not deliberately expose RADTriage to ionizing radiation or UV/sunlight. Protect RADTriage from high temperatures (above 60°C/140°F) and UV/sunlight for a prolonged period. This ensures the maximum usable life of the sensor. **5. The usable life of RADTriage can be extended by keeping it in a freezer when not in use.**

**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 a normal exposure to diagnostic X-ray (e.g., chest or dental) or security X-ray machines. Multiple

exposures to medical or airport luggage CAT scans may result in sufficient 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 color reference bars. If the sensor develops a color in-between any two adjacent bars, this indicates an in-between dose. It can be viewed in any light. However, we recommend reading the dose under fluorescent lights for a better accuracy. **Color matching under other lights may not be as accurate.** Dose can be estimated with an uncertainty of ~25% with the reference chart. Where additional accuracy is needed, an optical densitometer or spectrophotometer can be used.

**LAUNDRY CYCLE:** A normal residential laundry cycle of washing and drying (below 80°C/176°F) has a negligible effect on RADTriage. However, repeated laundry cycles or exposure to temperatures higher than 80°C/176°F will damage the sensor and hence must be avoided. Replace RADTriage if it is subjected to boiling water or more than one laundry cycle.

**FALSE POSITIVE & TAMPER INDICATORS:** RADTriage is not equipped with the FIT indicator to monitor the false signals. If used as per instructions, it is least likely that it will provide false positives or negatives. Do not use the dosimeter if color of the sensor matches or darker than that of the Expiration Bar or exposed to temperature higher than 90°C/194°F.

**LIMITED LIABILITY:** In an event that the RADTriage does not perform as specified, JP Labs will replace it. JP Labs specifically disclaims any and all other warranties and liabilities expressed or implied. All warranties are null and void if any of the following occur: (1) the usable life is expired (2) RADTriage is tampered with in any way.