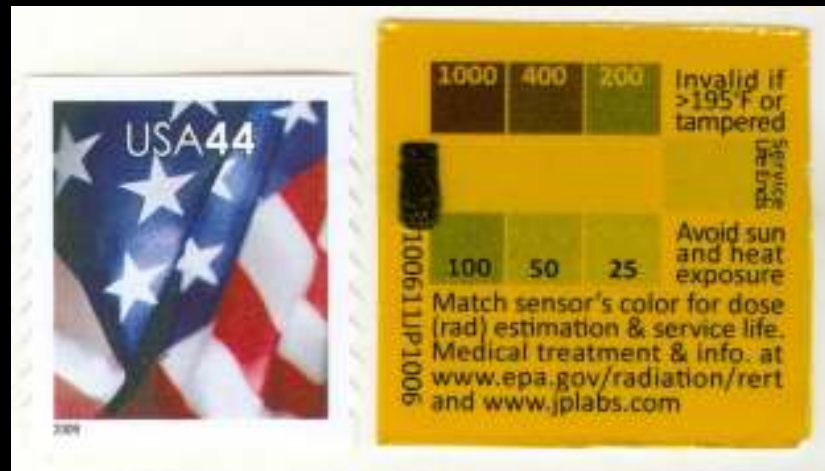


RADSticker™: A STAMP SIZED CASUALTY RADIATION DOSIMETER

A member of SIRAD® family of dosimeters



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MAIN OBJECTIVE

- To provide a small, light weight, convenient and affordable dosimeter for first responders and public for triaging exposure information and medical treatment in an event of a major radiological incident/emergency
- It is not a precision dosimeter or a substitute for any other dosimeter or detector, such as TLD, OSL and electronic

RADIOLOGICAL INCIDENTS & MAJOR CONCERNS

In an event of a major radiological incident



Chernobyl, 1986



Goiânia, Brazil, 1987

Affected people



Panic



Worry

EFFECT OF A HIGH DOSE ON HUMAN

- **5 & 25 rad:** Yearly & life time allowed dosages
- **5–25 rad:** Potential for cancer and mutation of genetic material
 - No easily detectable clinical effect in humans
- **25 - 100 rad:** Slight short-term reduction in blood cells
- **100 - 200 rad:** Symptoms: Nausea, fatigue, vomiting, hair loss...
.....
- **>600 rad:** Eventual death of nearly 100%
(1 rad = 10 mSv)

HOW TO DETERMINE DOSE?

- Carry a dosimeter, such as TLD, OSL or electronic -
Not practical for many reasons, such as cost or time for analysis/results & convenient

OR

- Be a dosimeter (i.e., biodosimetry)



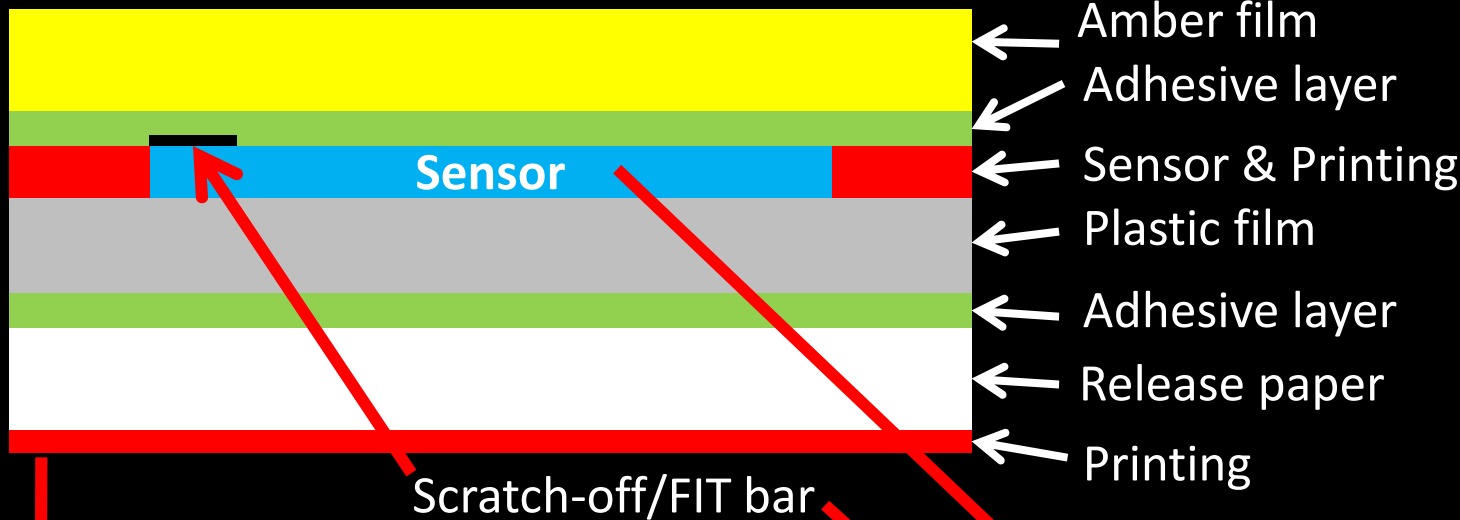
– Should be done within a few days and expensive

SOLUTION IS A STAMP SIZED RADSticker



3cm x 3cm x 0.2mm (1.1" x 1.1" x 7 mil), Wt. = 0.2g

RADSticker™



Back side

User agrees to read and follow instructions in the manual of the RADSticker & at www.jplabs.com. The sensor is always active & will instantly develop color if exposed to Gamma/X-ray. 5 and 25 rads (50 and 250 mSv) are annual and life time allowed dosages for emergency workers. Dose limits are lower for fetus and children. Contact: sirad@jplabs.com. US and other patents pending.

Top view

1000 400 200
 100 50 25

Invalid if >195°F or tampered
 Service Life Ends
 Avoid sun and heat exposure

Match sensor's color for dose (rad) estimation & service life. Medical treatment & info. at: www.epa.gov/radiation/rert; and www.jplabs.com

EFFECT OF DOSE



0 rad



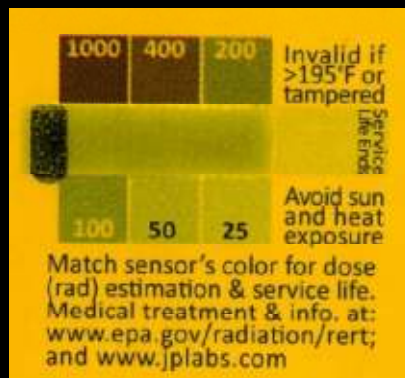
5 rad



10 rad



25 rad



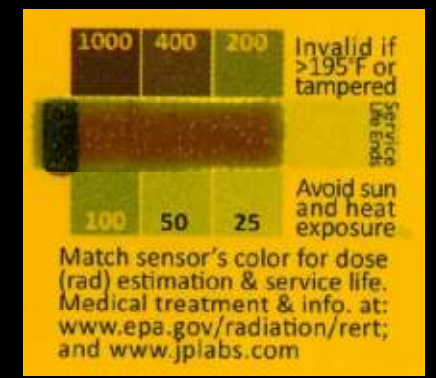
50 rad



100 rad



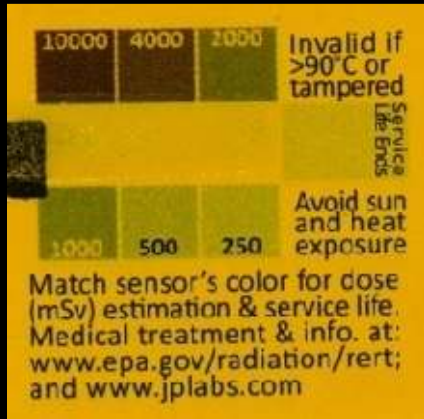
200 rad



400 rad

Metameric effect at high dose (purplish under sunlight)

EFFECT OF DOSE (mSv)



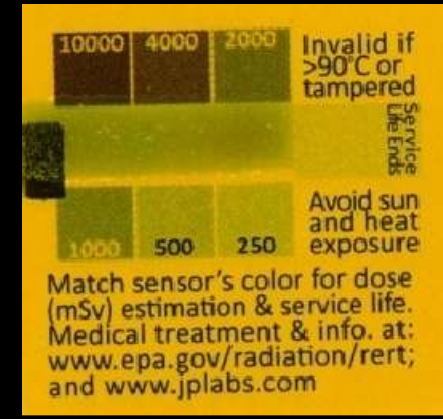
0 mSv



100 mSv



250 mSv



500 mSv



1,000 mSv



2,000 mSv



4,000 mSv



10,000 mSv

RADIATION OF RADSticker AT 100 KeV X-RAY

A video on RADSticker while being irradiated is shown at www.jplabs.com

RADSticker™

**“SEEING IS BELIEVING” DOSIMETER
MAKES RADIATION EXPOSURE VISIBLE**



RADSticker™

**“SEEING IS BELIEVING” DOSIMETER
MAKES RADIATION EXPOSURE VISIBLE**

**The smallest casualty dosimeter designed to
instantly know whether user is exposed to
harmful dose and needs a medical treatment
in an event of a radiological incident, thereby
minimizing panic and worry**

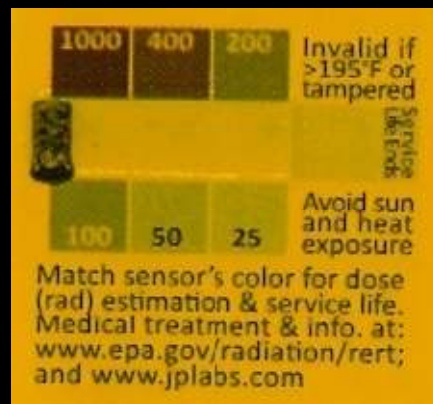
IT PREVENTS YOU FROM BEING A DOSIMETER

EFFECT OF PROLONGED SUNLIGHT

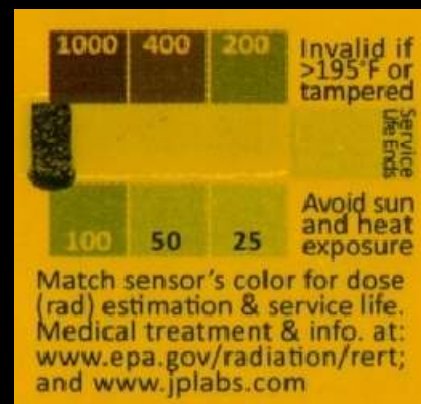
- Under the normal circumstances/use and if used as per instructions, the sensor of RADSticker will not give false signals. However, prolonged exposure to direct sunlight, RADSticker can give false positive reading



0 hr



6 hrs



12 hrs



20 hr



28 hr



36 hrs



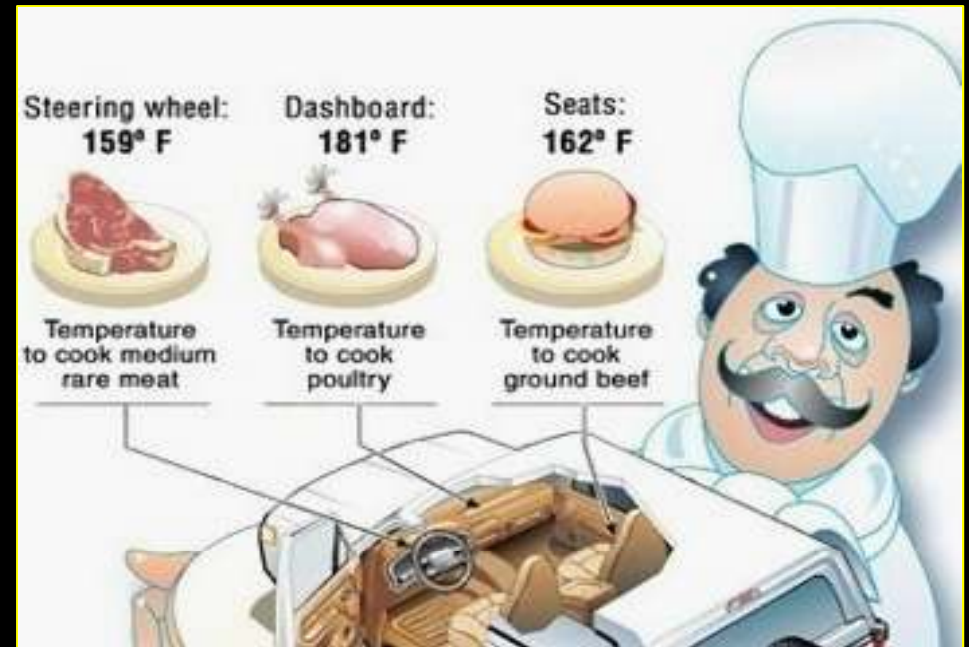
42 hrs



48 hr

MAXIMUM OPERATING TEMPERATURE

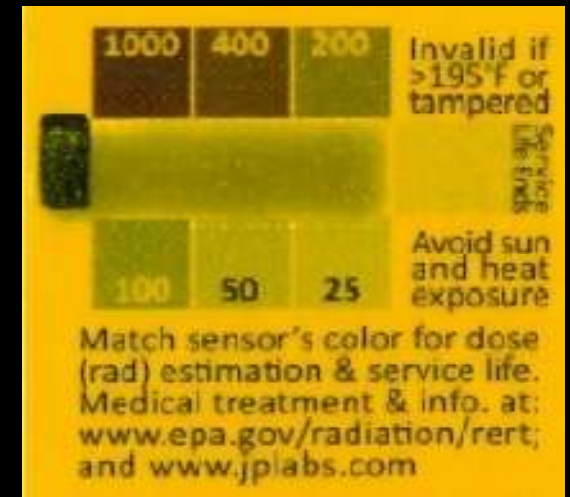
- A few laundry cycles of washing and drying (below 80°C) has a negligible effect
- It is unaffected by humidity and water



Control



90°C, 4 hrs + 50 rads



90°C, 4 hrs + 100 rads

OTHER EFFECTS & PARAMETERS

- **Shelf life:** ~2-3 years at 25°C
 - ~10 years in a freezer (stockpiled)
 - Less than 1 year at higher temperatures
- **Effect of dose rate:** Negligible
- **Uncertainty:** $\pm 25\%$ visually
- **Response time:** Instant, 95% within a minute
- **Energy:** Negligible above ~200 keV
 - slight attenuation at lower energy
- **Temperature of radiation:** Small ($\sim 0.1\%/^{\circ}\text{C}$ between -10°C - 60°C)

RADSticker can prevent from being a dosimeter



- Instant & self-indicating
- User friendly
- Tamper resistant & indicating
- User in control (You see & estimate dose)
- Monitors 25-1,000 rads
- Small, thin & light wt.
- Almost non-destructible
- Service life of 1-5 years
- Pre-calibrated & reliable
- Stockpileable for 10 years
- Operates up to 90°C/195°F
- Always ready without battery
- No electronics or moving parts
- Maintenance & service free

SIRADs are not substitutes for precision dosimeters

Thanks