



# MRI and Radiation Safety

Presented by the Radiology Quality Control Department

# MRI Safety

The Magnet is **ALWAYS** on!

Whether it is 2:00 AM and no one is home

OR

In the Middle of a Busy Day



# Signage in the Radiology area listing 4 MRI Safety Zones.

## **ZONE I**

- All areas freely accessible to the general public without supervision.

## **ZONE II**

- Still a public area, but this is the interface between the unregulated Zone I and the strictly regulated Zone III. MR safety screening typically occurs in this area under the direct supervision of the MRI Technologist.

# MRI Safety Zones

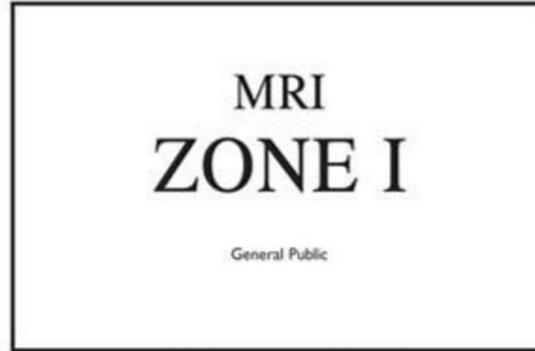
## **ZONE III**

- This is an area near the magnet room where the magnetic field is sufficiently strong enough to present a physical hazard to unscreened patients and personnel.

## **ZONE IV**

- MRI Magnet room. This has the highest magnetic field strength and from which ALL ferrous (Metal) objects must be excluded.

# MRI Safety Zones





Powerful Electro Magnet

The MRI at MCHS is many times More Powerful than the Earth's Gravity.

It WILL Take Ferrous (Metal) Objects Away From You



## Credit Cards

Cards are Read Using a  
Magnetic Strip the MRI  
Will ERASE Them!



# Radiation Safety

Let's Discuss the

Different Types of

Radiation You Will

Encounter on the MCHS Campus



# Naturally Occurring

Also Known as

Background Radiation

Or NORM

Naturally Occurring Radioactive Material



# Electro-Magnetic

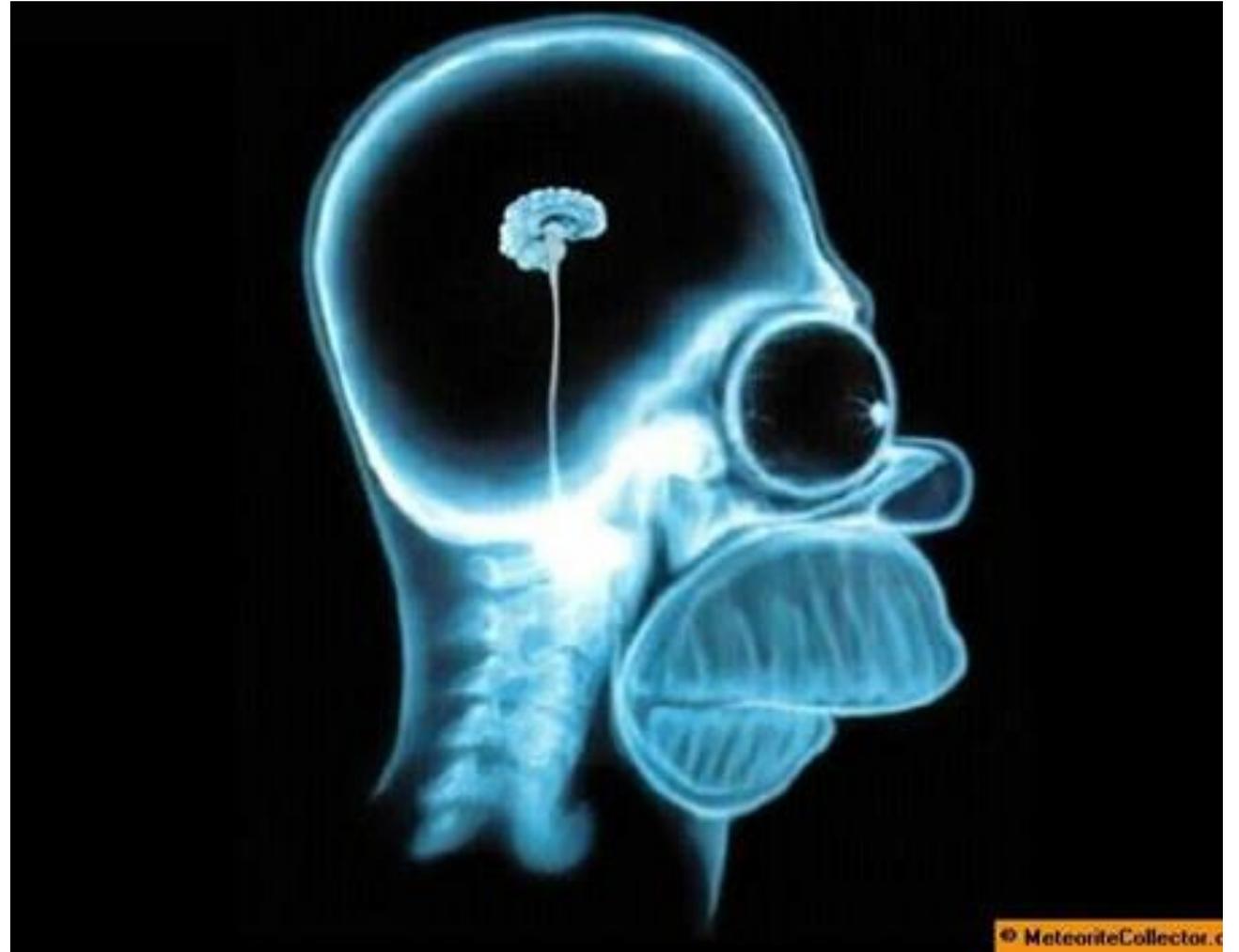
Electro-magnetically Produced

Radiation

X-Ray

Computerized Tomography (CT)

Special Procedures and Cath Lab



# Radiopharmaceuticals

Radiopharmaceuticals

Used to Treat Disease

Radio-Isotopes

Used to Detect Disease



# Radiation Causes Cellular and Biological Effects

- Destruction of White Blood Cells
- Destruction of Reticulocytes
- Destruction of Reproductive Cells
- Mutation of Genes

# Cellular/Biological

During the First Trimester, Cells and Cellular  
Mitosis Occur at a VERY Rapid Rate

If you Are or If you Think

You might be Pregnant

Let Your Immediate Supervisor Know

If you Work near a source of Radiation



# The “Golden Rule”

The Golden Rule of

Radiation

Protection

**REMEMBER THIS!!**



# TIME

- Limit Time;
- Limit
- Radiation
- Exposure



# DISTANCE

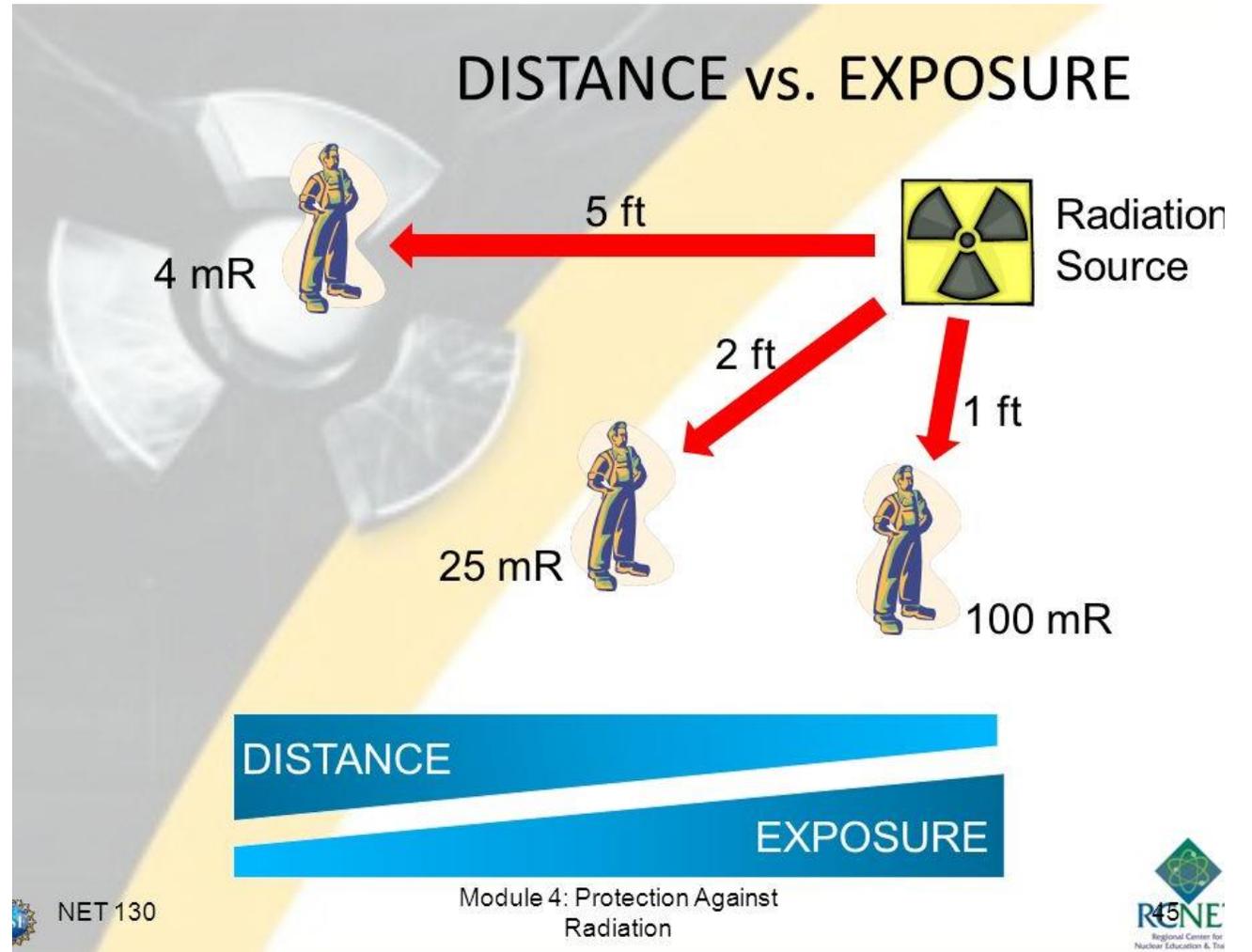
Further From

A Source of

Radiation

Is

Better





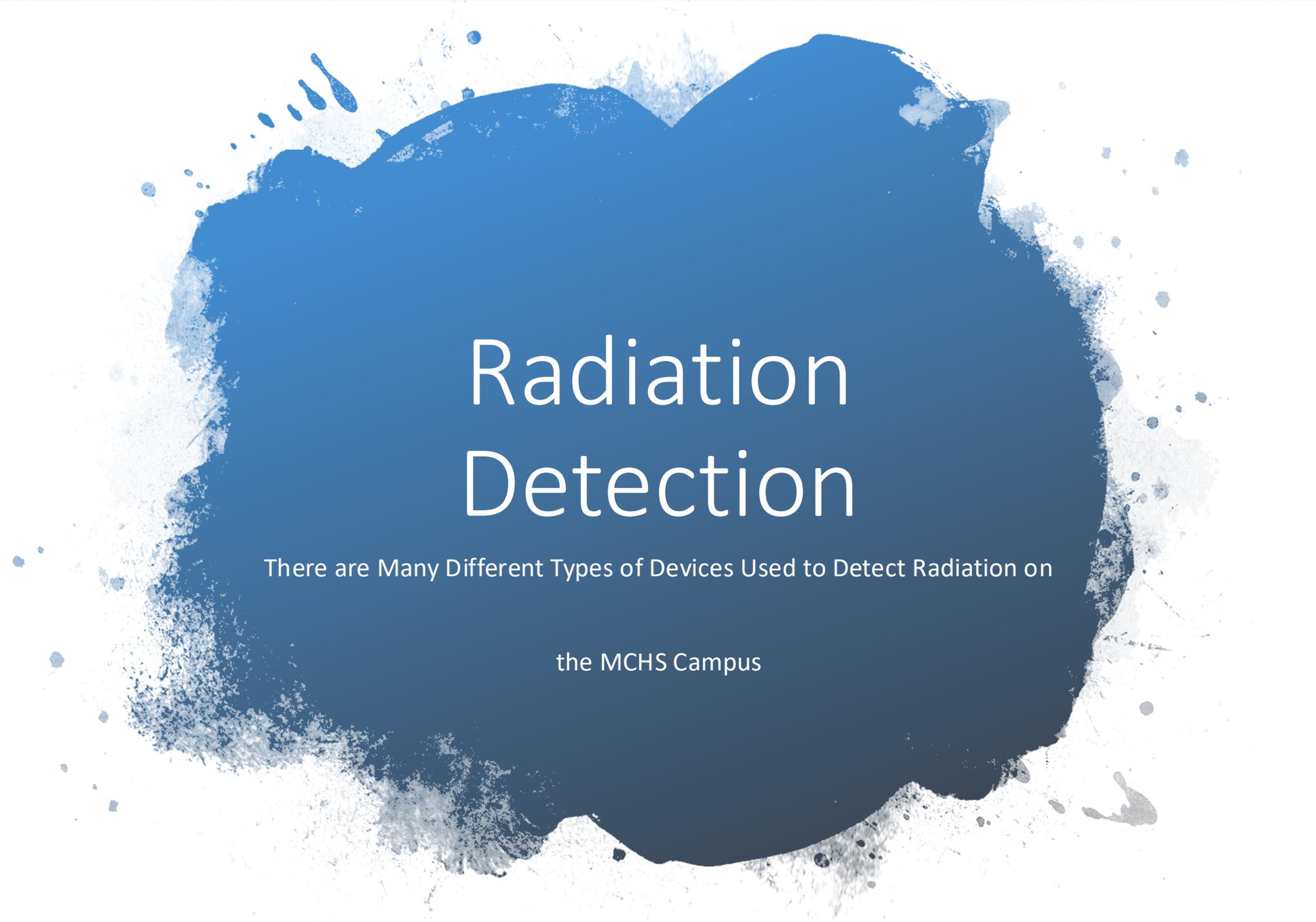
# SHIELDING

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- Anything
- Placed Between
- You And the
- Radiation Source

**REMEMBER ANYTHING!**





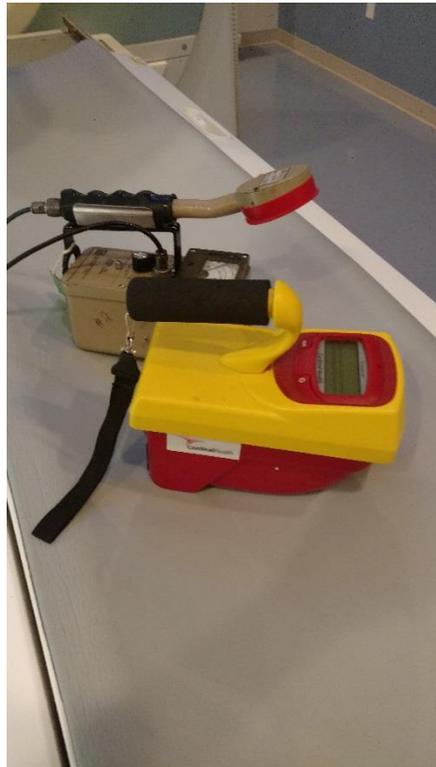
# Radiation Detection

There are Many Different Types of Devices Used to Detect Radiation on

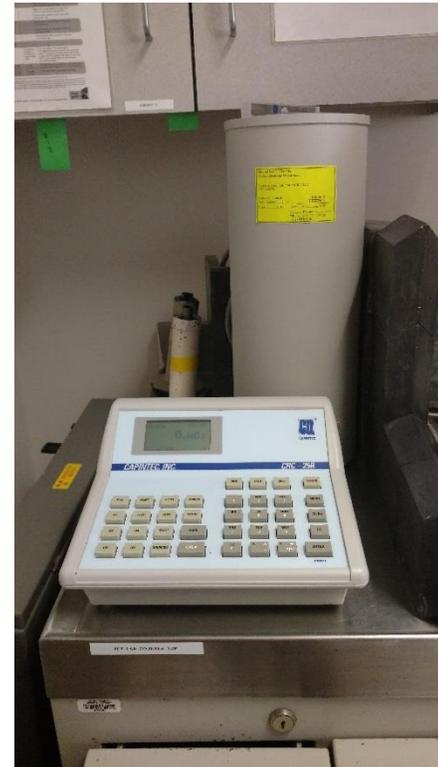
the MCHS Campus

# Electronic Devices

**Geiger-Mueller Counter**



**Dose Calibrator**

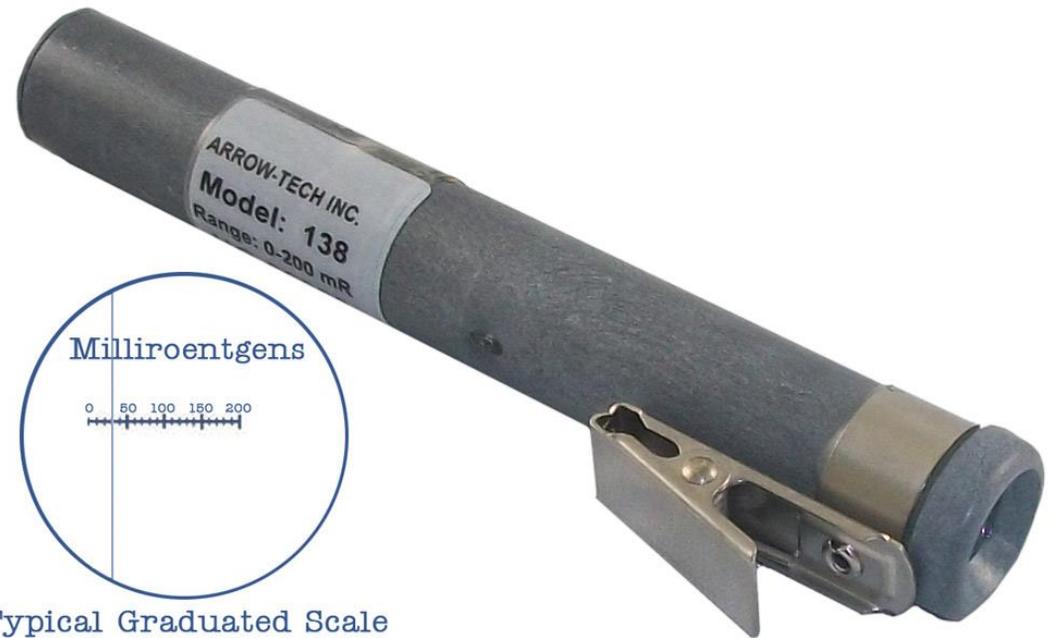


# Dosimetry

**T.L.D. or Film Badge**



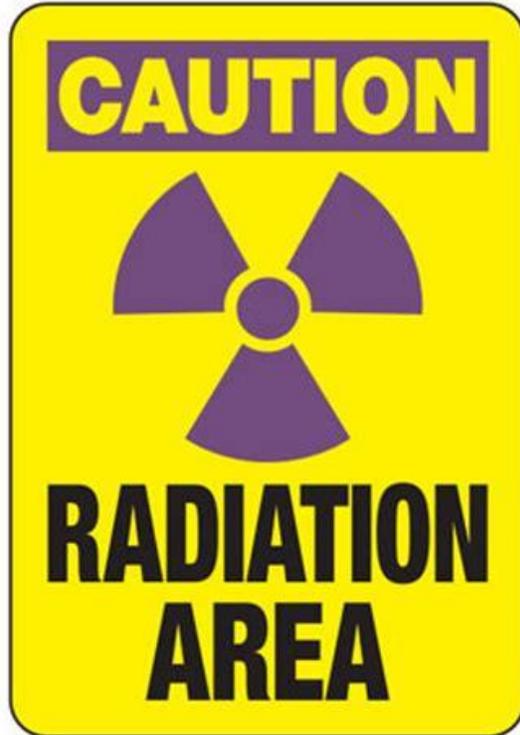
**Pocket Dosimeter**



Typical Graduated Scale  
(Enlarged View)

# RADIATION WARNING SIGNS

ALL SIMILAR



ALL SIMILAR

