Your Radiation Dosimeter: A Tutorial

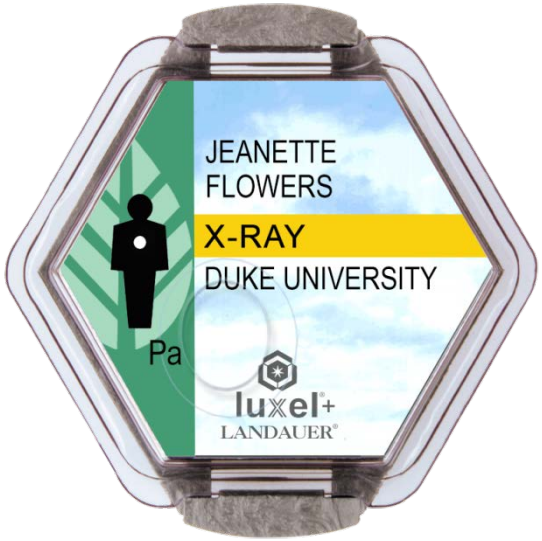
Radiation Safety Division

Duke University Health System

As a Duke Radiation Worker…

…you have an obligation to help us monitor your occupational radiation dose. This tutorial can help you understand how to do that!

Your Radiation Dosimeter ("Film Badge")



Body Badge

Ring Badge

There are many different types of radiation dosimeters, sometimes called "film badges" or "radiation badges", that we can use to measure your dose. The type of dosimeter you wear will depend upon the type of work you do, and your work environment.

When to Wear Your Radiation Dosimeter

- **You *must* wear your dosimeter ("film badge") whenever you are working with:**
  - **x-ray equipment**
  - **radioactive patients**
  - **radioactive materials**
- **You *must not* wear your dosimeter while having x-rays that are part of your medical or dental care**
  - **Radiation exposure from these sources is not included in your occupational exposure**

Types of Dosimeters

- ***Body Dosimeter***: Depending on your situation, you will wear a body dosimeter at:
  - collar level (fluoroscopy, x-ray)
  - chest level (nuclear medicine)
  - waist level (during pregnancy)

- ***Ring Dosimeter***: Ring dosimeters (used for measuring beta and gamma dose to the hand) should be worn:
  - on the hand which is closest to the radiation source
  - so that the label is on the palmar (inside) surface of the finger, toward the radiation source

Wearing Your Ring Dosimeter

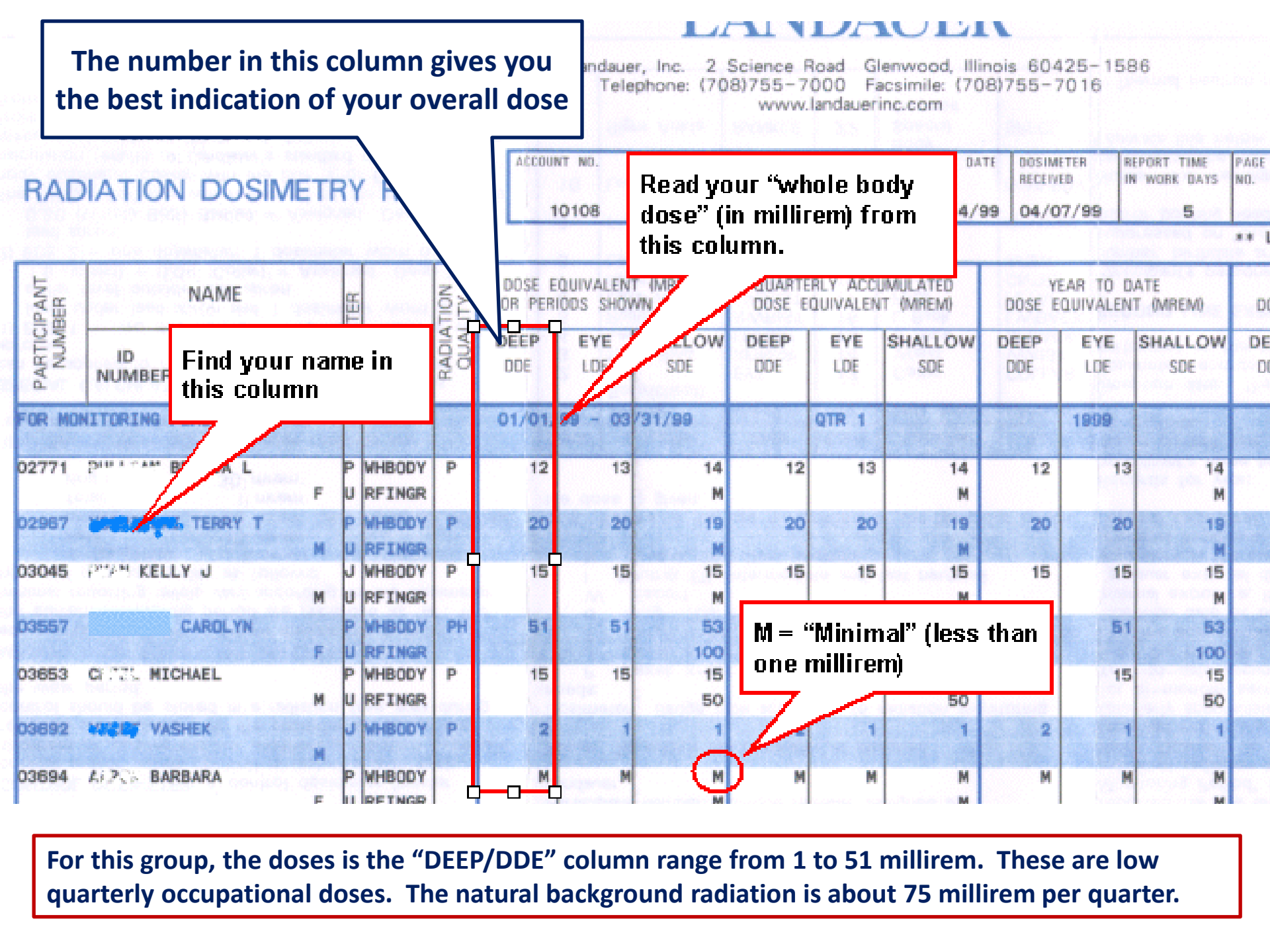
<u>LEFT</u>: Note how the label side of the ring, which contains the dosimeter's active element, is on the *inside* of the hand. This ensures that short-range beta particles, which are a skin hazard, are not blocked by the fingers. <u>RIGHT</u>: When wearing gloves, wear the dosimeter on the *inside* of the glove. This ensures that the dosimeter is not lost when the glove is removed and disposed.

"Single-Badging" for Fluoroscopy Users

- **You will wear your dosimeter:**
  - **at the collar level**
  - **on the *outside* of any x-ray shielding personal protective equipment (lead apron, thyroid shield) you are wearing**
- **Your assigned dose is calculated by a formula called the "ED-2" formula, which multiplies the badge reading by a factor designed to better reflect your true effective dose**

Know Your Radiation Dose!

- **Depending upon the type of work you do, your dosimeter may be changed monthly or quarterly**
- **You should check your *dosimetry report* (see *example* on next slide) to help you minimize your exposure**
- **Your reports are sent to the "badge contact" person in your work area and are available for your inspection**
- **You will be contacted by Radiation Safety if your dose exceeds acceptable levels**



For this group, the doses is the "DEEP/DDE" column range from 1 to 51 millirem. These are low quarterly occupational doses. The natural background radiation is about 75 millirem per quarter.

Dosimeter Do's and Don't's

- ***DO:***
  - **Wear your dosimeter correctly**
  - **Check your reports**
  - **Let us know if you lose your badge**
- ***DON'T:***
  - **Wear some one else's badge, or give your badge to some else to wear**
  - **Wear your badge during your medical x-rays**
  - **Put your badge in the laundry**

Resources

- **Duke Radiation Safety: (919)684-2194**
- **Lost Badge Certificate:**
  http://www.safety.duke.edu/RadSafety/DOCS/lostbdge.pdf
- **History Release Form:**
  http://www.safety.duke.edu/RadSafety/DOCS/history.pdf
- **Badge Wearer Policy:**
  http://www.safety.duke.edu/RadSafety/badges/docs/badge_wearer_policy.pdf