

**Safety Culture**

The Nuclear Regulatory Commission expects that individuals and organizations establish and maintain a positive safety culture. Do your part by:

- Taking responsibility for safety
- Talking about safety
- Planning for safety
- Looking out for others
- Modeling safety

**Safety Moments**

- One way to talk about safety is by incorporating [safety moments](#) into your regular meetings.
- A safety moment is a brief safety talk about any topic that is intended to remind others of the importance of safety, whether at work or at home.
- These talks could take place at scheduled department meetings and are designed to reinforce safety knowledge to help avoid accidents and injuries.

**Personal Contamination Surveys**

- Personal surveys should be performed during and after every use of radioactive material.
- Along with time, distance and shielding, surveys are one of the best ways to reduce exposure.
- Always notify EHS of any personal contamination on the EHS Emergency Line at 203-785-3555.
- See reverse for a refresher on how to perform a meter survey.

**EHS Integrator**

- EHS Integrator is a web portal designed for your use to make safety recordkeeping easy.
- In EHS Integrator, you can edit your PI profile, submit and update registrations, resolve surveys, request waste pickups and maintain your inventory lists. Contact your Safety Advisor for assistance.

**P-32 Safe Handling**

- P-32 is the most commonly ordered radionuclide at Yale.
- It is a high-energy beta emitter that is readily detectable with a GM survey meter.
- Protect yourself by working behind a Plexiglas benchtop shield, performing personal surveys and wearing gloves, a lab coat, safety glasses and your assigned dosimeter.

**Isotope Fact Sheets**

- Know the properties of any radionuclide you handle (i.e. decay mode, decay energy, half-life).
- Isotope fact sheets for many commonly used radioisotopes at Yale are available at <https://ehs.yale.edu/radiation-tools-resources>.

**Radioactive Material Shipments**

- Order radioactive materials through Workday. EHS will receive, review and approve these orders.
- Survey incoming shipments following your lab's protocol. Find an example protocol at <https://ehs.yale.edu/sites/default/files/files/radioactive-material-use-log.pdf>.
- Store newly received stock vials securely.

**Please see reverse side for tips on how to perform a meter survey.**

# How to Perform a Meter Survey

## What is a Survey Meter?

A survey meter is a portable handheld, electronic instrument used to detect ionizing radiation. There are three elements to a meter a probe, which converts the incident ionizing radiation to an electrical signal which is sent to the electronics package, which converts the electrical signal to a visual indication on the meter scale of the intensity of the ionizing radiation field; and an optional speaker, which provides an audible indication in addition to the visual.

## How to Perform a Meter Survey

**Choose the correct probe:**

Isotope	Preferred Probe
3H	None acceptable – wipe test only
125I	Nal / Scintillation (44-3)
All other Isotopes	Pancake (44-9)

**Check Batteries:** Each time the meter is used, the batteries should be checked. Turn the dial to “BAT”. As long as the needle is at or above “BAT TEST” (as in the picture) the meter is OK to use. If not, replace the batteries. The meter uses 2 “D” batteries.

**Switch to most sensitive scale:** Turn the dial to the lowest scale. This will typically be 0.1 or 1 depending on the type of meter you have.

**Check Operability:** Verify that an instrument does indeed respond to a radiation field. This may be performed by using a known source of radiation in your laboratory.

**Take background reading:** Take a step back from your experimental setup and check what the meter is reading. Remember this number: anything that is twice background is considered contaminated.

**Survey yourself:** Each finger should be checked with special attention paid to thumbs. Wrist and forearm areas should be surveyed as well as lab coat sleeves, fronts and pockets. Monitor the tops and bottoms of shoes. Shoe soles are an excellent indicator of the presence or absence of floor contamination. Keep the probe close (about 1cm) to the surface you are checking, but do not touch the surface. Move the probe slowly at a rate of one probe width per second. The slow movement is to make sure you can see both low energy material and small amounts of contamination.

**Survey your work area:** following the same guidelines for surveying yourself, check the work bench, floor, equipment you’ve used, and anything else that may have come into contact with radioactive material.

**Determine your results:** Adjust the scale as needed (if the needle is at the 5k mark or is all the way to the right, you should switch to a higher scale by turning the knob). Only read in CPM, even if your meter has mr/hr listed. Multiply the cpm on the meter face by the number of the scale you are on to determine counts. If the counts are twice background, you must clean the area. For example, if the needle is at 4K and the knob is on the X10 scale, you have  $4K \times 10 = 40,000$  cpm.

