

Other Radiation Sources



Radiation Producing Machine

- Any device capable of producing ionizing radiation when the associated control devices are operated, except devices which produce radiation only by the use of radioactive material.



Enclosed System

- A radiation producing machine which satisfies the requirement that all areas with exposure rates greater than 0.25 mR/hr are enclosed within an interlocked barrier.



Open Systems

- Any other radiation producing machine that does not fit the definition for an enclosed system. Examples are x-ray diffraction and radiography units, particle accelerators, electron microscopes, tokamaks, and high voltage rectifiers operating above 10kV.

Other Radiation Sources

Safety Precautions

- Follow manufacturer's or instructor's instructions
- Follow Standard Operating Procedures
- Do not alter the equipment in any way
- Always wear the proper personal protective equipment

Other Radiation Sources

Sealed Sources

- Radioactive material permanently fixed or bonded to prevent release of radioactive material under the most severe conditions which are likely to be encountered under normal use and handling
- Even though sources may be considered “low level” sources please handle as little as possible.

Other Radiation Sources

Sealed Sources

➤ Examples:

- ❖ H3 – gas sealed, luminous articles
- ❖ P32 – Self luminous light source
- ❖ Co57 – Check sources
- ❖ Co60 – Industrial, radiotherapy, clinical therapy, sterilization, gauging
- ❖ Ni63 - Gauging
- ❖ Kr85 – Ophthalmic applicators, thickness gauge, check sources
- ❖ Sr99 – Bone mineral analyzers, seeds, Industrial radiography, calibration, brachytherapy, teletherapy
- ❖ Cs137 – Industrial radiography, clinical therapy, Lightning conductors
- ❖ Ir192 - Neutron sources, well logging moisture gauges
- ❖ Ra226 – Foil thickness measurements, lightning conductors, smoke detectors

Radiation Safety Resources

- ✿ **The University of Vermont**, “The RSO Instructional Video.”
http://www.uvm.edu/~radsafe/?Page=The_RSO_Video.htm
- ✿ **Idaho State University**, “Radiation Information Network’s, The RSO Toolbox.” <http://www.physics.isu.edu/radinf/rsotoolbox.htm>
- ✿ **Iowa Department of Public Health**, “Radiation Materials Program.”
<https://idph.iowa.gov/radioactivematerials>
- ✿ **U.S. Environmental Protection Agency**, “Understanding Radiation.” <http://www.epa.gov/radiation/understanding-radiation-overview.html>

Radiation Safety Resources

❁ **Iowa State University Environmental Health and Safety**, “Radiation Safety Manual.”
<http://publications.ehs.iastate.edu/rsm/>

❁ **University of Texas**, “Basic Radiation Safety Awareness training.”
<https://www.uth.edu/dotAsset/7f418bea-3f2e-428a-92ee-0f529a7a2eba.ppt>