

MONITORING FOR RADIOACTIVE MATERIAL IN SOLID WASTE

Radiation...It's part of our everyday lives.

Every day each of us is exposed to naturally occurring radiation. Small amounts of radioactivity are in the air we breathe, the soil on which we walk, and even within our own bodies. Radiation plays an important and sometimes vital role in our everyday lives.

Radiation consists of invisible energy waves or particles that originate from natural and man-made radioactive materials. Although natural and man-made radiation are controlled and regulated differently, both sources of radiation behave identically and can be detected with the same instruments.

All material or matter found in nature is made of atoms, which can be either stable or unstable. As unstable atoms change or decay to become stable, they give off their excess energy. The sun, stars and other cosmic sources constantly emit radiation that enters the earth's atmosphere. Natural radiation can also originate from potassium, which can be found in living cells, and from uranium, a common radioactive element found in soil, rocks and minerals.

In addition to radiation originating from natural radioactive sources, artificial or man-made radiation can be produced by high voltage devices such as x-ray equipment. Man-made radioactivity is used in many consumer products and in various medical and research applications. Self-luminescent exit signs and watches, smoke detectors, and televisions are only a few of the many products that contain or emit low levels of radioactivity and radiation. Radiation is also an essential element used in cancer treatment, diagnostic X-rays and other medical procedures and research.



Radioactive Consumer Products

Do You Know What is in Your Trash?

With so many uses and applications for radiation available today, it's not surprising that radiation is a part of everyday life. Items containing radioactive material must be carefully used and disposed of to prevent unintended hazards.

Previously, no solid waste processing or disposal facilities in Pennsylvania, including municipal waste landfills, were permitted to accept any waste containing "radioactivity." That meant that nothing containing detectable radioactive material, even a smoke detector, could be deposited in an individual's trash for disposal. In normal everyday practices, this requirement was almost impossible to achieve.

DEP Requires Monitoring for Radioactive Material

In 2000, DEP developed regulations and guidance for radioactive material that may be found in waste and disposed of in a solid waste processing or disposal facility. These regulations represent a common-sense approach for identifying, managing and disposing of waste containing certain types of radioactive material that pose no threat to the public or the environment. These regulations do not allow the disposal of radioactive material regulated under a state or federal license, which must be disposed of at a properly licensed low-level radioactive waste disposal site, such as the facility located in Utah.

According to these regulations, all solid waste facility operators must install equipment at their facilities that will scan incoming waste and sound an alarm if radioactivity is detected. The types of facilities that will monitor waste include: transfer stations, waste processors and landfills. When the alarm is triggered, the operator must follow specific guidelines to ensure that the radioactive material detected is properly identified and managed.

The majority of alarms sounded at solid waste facilities in the state have involved radioactive material that decays rapidly and does not jeopardize human health or the environment. This includes waste contaminated with radioactive material from animals or human patients who have undergone a nuclear medicine treatment. Such material has included contaminated paper products and even kitty litter. Although it is legal to discard this type of material in the municipal waste stream, the waste could, nevertheless, set off alarms at a solid waste facility, prompting immediate action by the facility operator and DEP personnel.

Guidelines for Waste Disposal

Because some types of radioactive material decay rapidly and are neither dangerous nor harmful to public health or the environment when contained inside a landfill, DEP has determined that these radioactive materials may be disposed in a DEP permitted landfill. Depending upon the type of radioactive material detected in the waste stream, the facility operator must follow strict guidelines to ensure that the radioactive material is properly managed. Transfer stations and recycling facilities that detect radioactive materials in their waste will evaluate this material. Only material that DEP allows for disposal may be forwarded to the landfill. However, first the radioactive material must be evaluated by DEP and approval secured prior to allowing it to be transported on a public roadway. The guidelines prompt two basic levels of response when radioactive material is detected.

Action Level One Scenario

Under an Action Level One Scenario, an alarm would sound at a solid waste facility indicating the presence of radioactive material in the incoming waste. The facility operator must then determine the cause of the alarm, identify the type of radioactive material present, and the facility's next course of action. If the radioactivity in the solid waste is from the natural environment; contaminated waste from a medical patient that will decay rapidly; or an unlicensed, unregulated consumer item, DEP will allow the waste to be disposed of at the solid waste facility.



Examples of waste containing radioactive material under an Action Level One Scenario may include solid waste from a patient's home, naturally occurring radioactive material in soil and rocks, or consumer products such as smoke detectors. All radioactive material that is accepted by the solid waste facility for disposal must be managed according to specific DEP regulations.

Action Level Two Scenario

Although less likely, it is possible that radioactive sources of a more serious nature may become mixed with municipal or residual waste. If the vehicle radiation or contamination levels exceed pre-determined values, the facility operator must follow guidelines for an Action Level Two Scenario. Under this scenario, an operator is not permitted to process or dispose of the solid waste and must contact DEP immediately. A health physicist will respond to the site and ensure that the radioactive material is properly identified, handled and returned to the point of origin or disposed of at a licensed low-level radioactive waste disposal facility.

For More Information...

To learn more about the safe disposal of waste containing radioactive material, contact:

DEP's Bureau of Radiation Protection
P.O. Box 8469
Harrisburg, PA 17105-8469
Office: 717-787-2480
Fax: 717-783-8965

For more information, visit www.depweb.state.pa.us, keyword: Radiation Protection. Select Radiation Control Division, then Monitoring for Radioactive Materials in Solid Waste.