HIXSON
ARCHITECTURE ENGINEERING INTERIORS

MARCH 2025

Environmental Health & Safety From Experience

Container Quality Assurance: Using X-Ray Technology

Radiation has long been used in food processing for applications such as eliminating microbes and enhancing shelf life. Today, the use of the technology is increasingly used for container integrity, level detection, and foreign material detection.

Using x-ray technology, the system detects differences in density, identifying minute particles that are not the same as the product density. This includes plastics as well as metal. The system can also measure fill levels to prevent liquid-filled containers that are off-quality from leaving the filling room. This is accomplished by measuring the initial container fill level, then squeezing the container with a force that maintains good seal quality while pushing product through any pinhole leaks, misapplied seals and caps, and over-filled containers. Immediately after the container is squeezed, a second container fill level measurement is taken and compared to the initial value. If the two values match, the container continues to the case packer. If not, the container is rejected and reworked.

This application of x-ray technology can cost-effectively reduce product and packaging waste and the number of off-quality packages entering the supply chain. Keep in mind, however, that if your facility uses equipment that generates radiation for any use, you will need a radiation program. Regulated by a Program Management body, the requirements will vary somewhat depending on the state where your facility is located. For example, key features of a radiation program in Ohio (managed by the Ohio Department of Health or ODOH) include:

- Designation of an individual responsible for the radiation protection program. This person (e.g., a Quality Control Manager, Plant Engineer, or Plant Safety Manager) is responsible for ensuring the implementation of the program.

Continued on next page >

EXPERIENCE IN BRIEF

As of January 1, 2026, 40 CFR Part 84 requires Hydrofluorocarbons (HFCs) listed under Appendix A to be phased down due to their global warming potential.

While this regulation does not limit use of existing equipment using HFCs, there are certain requirements for the use of that equipment. Watch for more information regarding these restrictions, coming next week to Hixson's blog!

HIXSON | 659 Van Meter Street, Cincinnati, OH 45202 | 513-241-1230 | info@hixson-inc.com | www.hixson-inc.com

- Identification of the type of radiation equipment present at the facility. Verify that the facility has a detailed inventory of equipment that generates radiation, and that the inventory is easily available and up-to-date.
- Registration of units with the ODOH is required initially at purchase prior to use and a renewal is required every two years after initial registration.
- Designated employees must go through radiation training. This training is required when hired and annually thereafter to maintain an understanding of the equipment and the associated health hazards.
- Preventative maintenance of radiation-generating equipment is necessary to keep it working properly and ascertain that it is not exposing employees to excessive amounts of radiation.
- Safety information (e.g., Certification of Registration, Radiation Safety Notice to Employees, Safe Operating Procedures) must be posted near the equipment.
- Periodic agency inspections are performed to verify compliance. Inspections vary depending on the type of industry (e.g., dental, manufacturing).

Fortunately, the process is not as cumbersome as it may appear. For more information on determining your state-specific compliance regulations, contact Hixson.

RELATED CONTENT

Wastewater Pretreatment Systems Part 2

Does Your Facility Need a Wastewater Pretreatment System?

CONTACT US

Direct any comments or questions to:

Joe Weisgerber, P.E., CPEA
Manager, Environmental, Health & Safety
jweisgerber@hixson-inc.com
Phone: 513.241.1230
www.hixson-inc.com