



Fact Sheet

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Byproduct Materials

The Nuclear Regulatory Commission's mandate to protect public health and safety and the environment, and to provide for the common defense and security, includes regulation of byproduct material used for commercial, medical, and academic purposes. The NRC and its predecessor, the Atomic Energy Commission, have regulated the use of radioactive materials since 1946. The Energy Policy Act adopted August 8, 2005, amended the definition of byproduct material to include additional types of materials.

There are four categories of byproduct material as defined in the Atomic Energy Act of 1954, as amended. Byproduct material is radioactive material that results from the use of uranium or thorium in a nuclear reactor or particle accelerator. Examples include cobalt 60, cesium 137, and iridium 192. The second type of byproduct material is the tailings or wastes produced by the extraction of uranium or thorium (source material) from ore. The third type of byproduct material is radioactive material made reactive by a particle accelerator that is produced, extracted or converted after extraction for a commercial, medical or research activity. The fourth type is any discrete source of naturally occurring radioactive material (other than source material) that would pose a public health and safety or common defense and security threat similar to that of a discrete source of radium-226.

Byproduct material is regulated by either state or federal laws. Thirty-four states, known as Agreement States, have entered into agreements with the NRC to regulate the use of byproduct material, as authorized by the Atomic Energy Act, as amended. These states issue licenses and currently regulate approximately 17,300 materials licensees. The NRC maintains jurisdiction in matters regarding the common defense and security, such as security enhancements in the use of byproduct material.

Commercial licensees use byproduct material in both civilian and military applications in such areas as industrial radiography, manufacture of gauging devices, gas chromatography, and well logging. Byproduct material is also used by the general public in various consumer products, such as smoke detectors, some self-luminous "Exit" signs, static eliminators, and luminous watch dials. Medical licensees use byproduct material for the diagnosis or treatment of patients in hospitals or physicians' offices, with an estimated 16 million clinical procedures performed annually.

Colleges, universities, and other academic institutions use byproduct material in course work and research.

The NRC regulates the use of byproduct material in 16 non-Agreement States, the District of Columbia, the Commonwealth of Puerto Rico, and various territories of the United States. The NRC also regulates federal licensees in all states. Currently, NRC administers approximately 4500 licenses. In Fiscal Year (FY) 2005, the NRC completed approximately 4,200 reviews of materials licensing actions, including new applications, amendments to existing licenses, license renewals, and sealed source and device reviews. The NRC conducted between 1,150 and 1,200 inspections of materials licensees in the same year. The corresponding radiation control programs in the Agreement States have approximately 75% of the materials licensees, so the actual number of licensing actions and inspections performed within the United States is actually much greater.

The NRC conducts nearly all of its materials licensing and inspection activities from its four regional offices. The Office of Nuclear Material Safety and Safeguards (NMSS) provides technical support and guidance, and conducts periodic evaluations of the regional programs to ensure their technical adequacy, consistency, and timeliness. The Office of State and Tribal Programs (STP), together with NMSS, conducts similar evaluations of the Agreement States through the Integrated Materials Performance Evaluation Program.

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