NOTE: This is an unofficial redline intended to aid the public in visualizing the proposal; it may contain mistakes. The official rulemaking proposal is in the *Federal Register* notice, and the NRC requests that comments be made on that proposal following the *Federal Register's* instructions for submitting comments.

United States Nuclear Regulatory Commission

Unofficial Redline of Proposed Rule Language

Title 10 of the *Code of Federal Regulations* (10 CFR)

[NRC-2023-0071]

The NRC is proposing to amend the following sections as indicated by text in red:

PART 20—STANDARDS FOR PROTECTION AGAINST RADIATION

* * * *

§ 20.1003 Definitions.

* * * *

Byproduct material means—

(1) Any radioactive material (except special nuclear material) yielded in, or made radioactive by, exposure to the radiation incident to the process of producing or using special nuclear material;

(2) The tailings or wastes produced by the extraction or concentration of uranium or thorium from ore processed primarily for its source material content, including discrete surface wastes resulting from uranium solution extraction processes. Underground ore bodies depleted by these solution extraction operations do not constitute "byproduct material" within this definition;

(3)

(i) Any discrete source of radium-226 that is produced, extracted, or converted after extraction, before, on, or after August 8, 2005, for use for a commercial, medical, or research activity; or

(ii) Any material that—

(A) Has been made radioactive by use of a particle accelerator, including by use of a fusion machine; and

(B) If made radioactive by use of a particle accelerator that is not a fusion machine, ~~I~~is produced, extracted, or converted after extraction, before, on, or after August 8, 2005, for use for a commercial, medical, or research activity; and

(4) Any discrete source of naturally occurring radioactive material, other than source material, that—

(i) The Commission, in consultation with the Administrator of the Environmental Protection Agency, the Secretary of Energy, the Secretary of Homeland Security, and the head of any other appropriate Federal agency, determines would pose a threat similar to the threat posed by a discrete source of radium-226 to the public health and safety or the common defense and security; and

(ii) Before, on, or after August 8, 2005, is extracted or converted after extraction for use in a commercial, medical, or research activity.

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* * *

Fusion machine means a machine that is capable of—(1) transforming atomic nuclei, through fusion processes, into different elements, isotopes, or other particles; and (2) directly capturing and using the resultant products, including particles, heat, or other electromagnetic radiation.

* * *

Particle accelerator (or accelerator) means any machine capable of accelerating electrons, protons, deuterons, or other charged particles in a vacuum and of discharging the resultant particulate or other radiation into a medium at energies usually in excess of 1 megaelectron volt, including fusion machines. For the purposes of this definition, "accelerator" is an equivalent term.

* * * *

§ 20.1009 Information collection requirements: OMB approval.

* * * *

(b) The approved information collection requirements contained in this part appear in §§ 20.1003, 20.1101, 20.1202, 20.1203, 20.1204, 20.1206, 20.1208, 20.1301, 20.1302, 20.1403, 20.1404, 20.1406, 20.1501, 20.1601, 20.1703, 20.1901, 20.1904, 20.1905, 20.1906, 20.2002, 20.2004, 20.2005, 20.2006, 20.2008, 20.2102, 20.2103, 20.2104, 20.2105, 20.2106, 20.2107, 20.2108, 20.2110, 20.2201, 20.2202, 20.2203, 20.2204, 20.2205, 20.2206, 20.2207, 20.2301, and appendix G to this part.

* * * *

§ 20.2008 Disposal of certain byproduct material.

(a) Licensed material as defined in paragraphs (3) and (4) of the definition of *Byproduct material* set forth in § 20.1003 may be disposed of in accordance with part 61 of this chapter, even though it is not defined as low-level radioactive waste. Therefore, any licensed byproduct material being disposed of at a facility, or transferred for ultimate disposal at a facility licensed under part 61 of this chapter, must meet the requirements of § 20.2006. In addition, waste resulting from fusion machines must either be accompanied by an analysis showing the waste is manifested and labeled for disposal consistent with the description of the applicable waste class in § 61.7 of this chapter, based on the physical, chemical, and radiological characteristics of the waste, or be disposed of in a disposal facility that has completed a site-specific intrusion assessment that demonstrates the projected dose to an individual who inadvertently intrudes into the waste at the facility will not exceed 0.5 rem (5 mSv) per year.

(b) A licensee may dispose of byproduct material, as defined in paragraphs (3) and (4) of the definition of *Byproduct material* set forth in § 20.1003, at a disposal facility authorized to dispose of such material in accordance with any Federal or State solid or hazardous waste law, including the Solid Waste Disposal Act, as authorized under the Energy Policy Act of 2005.

* * * *

NOTE: This is an unofficial redline intended to aid the public in visualizing the proposal; it may contain mistakes. The official rulemaking proposal is in the *Federal Register* notice, and the NRC requests that comments be made on that proposal following the *Federal Register's* instructions for submitting comments.

PART 30—RULES OF GENERAL APPLICABILITY TO DOMESTIC LICENSING OF BYPRODUCT MATERIAL

* * * *

§ 30.4 Definitions.

* * *

Byproduct material means—

(1) Any radioactive material (except special nuclear material) yielded in, or made radioactive by, exposure to the radiation incident to the process of producing or using special nuclear material;

(2)

(i) Any discrete source of radium-226 that is produced, extracted, or converted after extraction, before, on, or after August 8, 2005, for use for a commercial, medical, or research activity; or

(ii) Any material that—

(A) Has been made radioactive by use of a particle accelerator, including by use of a fusion machine; and

(B) If made radioactive by use of a particle accelerator that is not a fusion machine, ~~I~~is produced, extracted, or converted after extraction, before, on, or after August 8, 2005, for use for a commercial, medical, or research activity; and

(3) Any discrete source of naturally occurring radioactive material, other than source material, that—

(i) The Commission, in consultation with the Administrator of the Environmental Protection Agency, the Secretary of Energy, the Secretary of Homeland Security, and the head of any other appropriate Federal agency, determines would pose a threat similar to the threat posed by a discrete source of radium-226 to the public health and safety or the common defense and security; and

(ii) Before, on, or after August 8, 2005, is extracted or converted after extraction for use in a commercial, medical, or research activity.

* * *

Fusion machine means a machine that is capable of—(1) transforming atomic nuclei, through fusion processes, into different elements, isotopes, or other particles; and (2) directly capturing and using the resultant products, including particles, heat, or other electromagnetic radiation.

* * *

Particle accelerator (or accelerator) means any machine capable of accelerating electrons, protons, deuterons, or other charged particles in a vacuum and of discharging the resultant particulate or other radiation into a medium at energies usually in excess of 1 megaelectron volt, including fusion machines. For the purposes of this definition, "accelerator" is an equivalent term.

* * * *

NOTE: This is an unofficial redline intended to aid the public in visualizing the proposal; it may contain mistakes. The official rulemaking proposal is in the *Federal Register* notice, and the NRC requests that comments be made on that proposal following the *Federal Register's* instructions for submitting comments.

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§ 30.32 Application for specific licenses.

* * *

(k) An application for a specific license filed under this part for possession, use, and production of byproduct material associated with a fusion machine must include the following information:

(1) A general description of the fusion machine

(2) A summary of the radiation safety aspects of the written operating and emergency procedures, including, as applicable,

(i) A description with diagram(s) of the radiation protection measures to be employed for the possession, use, and production of byproduct material associated with the fusion machine, including all interlocks, access control systems, shielding, and radiation monitors;

(ii) A description of the radioactive material handling procedures and inventory control procedures; and

(iii) A description of any other components or systems used to control radiation and radioactive material.

(iv) As an alternative to paragraphs (k)(2)(i) through (iii) of this section:

(A) A description of any aspects of the fusion machine relevant to radiation safety that differ from the information listed in paragraphs (k)(2)(i) through (iii) of this section, and an explanation for how they ensure the possession, use, and production of byproduct material associated with a fusion machine can be performed safely; and

(B) Any other information requested by the NRC staff in preapplication communications to enable the NRC to evaluate whether the possession, use, and production of byproduct material associated with a fusion machine can be performed safely.

(3) A description of the applicant's organizational structure that describes the radiation safety responsibilities, authorities, and qualifications.

(4) A description of training related to the fusion machine and radiation protection provided to personnel.

(5) A description of the plan for inspection and maintenance of the fusion machine.

(6) A description of the methodology for radioactive material inventory.

§ 30.33 General requirements for issuance of specific licenses.

(a) An application for a specific license will be approved if:

* * *

(6) In the case of an application for possession, use, and production of byproduct material associated with a fusion machine, the application demonstrates adequate training and planning to operate and decommission the fusion machine safely.

* * * *

§ 30.51 Records.

(a) Each person who produces or receives byproduct material pursuant to a license issued pursuant to the regulations in this part and parts 31 through 36 of this chapter shall keep records showing the production, receipt, transfer, and disposal of the byproduct material as follows:

(1) The licensee shall retain each record of production or receipt of byproduct material as long as the material is possessed and for three years following transfer or disposal of the material.

* * * *

§ 30.52 Inspections.

(a) Each licensee shall afford to the Commission at all reasonable times opportunity to inspect byproduct material and the premises and facilities wherein byproduct material is used, ~~or~~ stored, or produced.

* * * * *

PART 37—PHYSICAL PROTECTION OF CATEGORY 1 AND CATEGORY 2 QUANTITIES OF RADIOACTIVE MATERIAL

* * * *

§ 37.5 Definitions.

* * * *

Byproduct material means—
(1) Any radioactive material (except special nuclear material) yielded in, or made radioactive by, exposure to the radiation incident to the process of producing or using special nuclear material;
(2) The tailings or wastes produced by the extraction or concentration of uranium or thorium from ore processed primarily for its source material content, including discrete surface wastes resulting from uranium solution extraction processes. Underground ore bodies depleted by these solution extraction operations do not constitute "byproduct material" within this definition;
(3)
(i) Any discrete source of radium-226 that is produced, extracted, or converted after extraction, before, on, or after August 8, 2005, for use for a commercial, medical, or research activity; or
(ii) Any material that—
(A) Has been made radioactive by use of a particle accelerator, including by use of a fusion machine; and
(B) If made radioactive by use of a particle accelerator that is not a fusion machine, ~~I~~is produced, extracted, or converted after extraction, before, on, or after August 8, 2005, for use for a commercial, medical, or research activity; and
(4) Any discrete source of naturally occurring radioactive material, other than source material, that—

(i) The Commission, in consultation with the Administrator of the Environmental Protection Agency, the Secretary of Energy, the Secretary of Homeland Security, and the head of any other appropriate Federal agency, determines would pose a threat similar to the threat posed by a discrete source of radium-226 to the public health and safety or the common defense and security; and
(ii) Before, on, or after August 8, 2005, is extracted or converted after extraction for use in a commercial, medical, or research activity.

* * * *

PART 50—DOMESTIC LICENSING OF PRODUCTION AND UTILIZATION FACILITIES

* * * *

§ 50.2 Definitions.

* * * *

Byproduct material means—
(1) Any radioactive material (except special nuclear material) yielded in, or made radioactive by, exposure to the radiation incident to the process of producing or using special nuclear material;
(2)
(i) Any discrete source of radium-226 that is produced, extracted, or converted after extraction, before, on, or after August 8, 2005, for use for a commercial, medical, or research activity; or
(ii) Any material that—
(A) Has been made radioactive by use of a particle accelerator, including by use of a fusion machine; and
(B) If made radioactive by use of a particle accelerator that is not a fusion machine, ~~I~~is produced, extracted, or converted after extraction, before, on, or after August 8, 2005, for use for a commercial, medical, or research activity; and
(3) Any discrete source of naturally occurring radioactive material, other than source material, that—
(i) The Commission, in consultation with the Administrator of the Environmental Protection Agency, the Secretary of Energy, the Secretary of Homeland Security, and the head of any other appropriate Federal agency, determines would pose a threat similar to the threat posed by a discrete source of radium-226 to the public health and safety or the common defense and security; and
(ii) Before, on, or after August 8, 2005, is extracted or converted after extraction for use in a commercial, medical, or research activity.

* * * *

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PART 51—ENVIRONMENTAL PROTECTION REGULATIONS FOR DOMESTIC LICENSING AND RELATED REGULATORY FUNCTIONS

* * * *

§ 51.60 Environmental report--materials licenses.

* * *

(b) As required by paragraph (a) of this section, each applicant shall prepare an environmental report for the following types of actions:

(1) Issuance or renewal of a license or other form of permission for:

* * *

(viii) Construction and operation of a fusion machine pursuant to part 30 of this chapter.

* * * * *

PART 72—LICENSING REQUIREMENTS FOR THE INDEPENDENT STORAGE OF SPENT NUCLEAR FUEL, HIGH-LEVEL RADIOACTIVE WASTE, AND REACTOR-RELATED GREATER THAN CLASS C WASTE

* * * *

§ 72.3 Definitions.

* * * *

Byproduct material means—

(1) Any radioactive material (except special nuclear material) yielded in, or made radioactive by, exposure to the radiation incident to the process of producing or using special nuclear material;

(2)

(i) Any discrete source of radium-226 that is produced, extracted, or converted after extraction, before, on, or after August 8, 2005, for use for a commercial, medical, or research activity; or

(ii) Any material that—

(A) Has been made radioactive by use of a particle accelerator, including by use of a fusion machine; and

(B) If made radioactive by use of a particle accelerator that is not a fusion machine, ~~I~~is produced, extracted, or converted after extraction, before, on, or after August 8, 2005, for use for a commercial, medical, or research activity; and

(3) Any discrete source of naturally occurring radioactive material, other than source material, that—

(i) The Commission, in consultation with the Administrator of the Environmental Protection Agency, the Secretary of Energy, the Secretary of Homeland Security, and the head of any other appropriate

Federal agency, determines would pose a threat similar to the threat posed by a discrete source of radium-226 to the public health and safety or the common defense and security; and
(ii) Before, on, or after August 8, 2005, is extracted or converted after extraction for use in a commercial, medical, or research activity.

* * * *

PART 110—EXPORT AND IMPORT OF NUCLEAR EQUIPMENT AND MATERIAL

* * * *

§ 110.2 Definitions.

* * * *

Byproduct material means—
(1) Any radioactive material (except special nuclear material) yielded in, or made radioactive by, exposure to the radiation incident to the process of producing or ~~utilizs~~ing special nuclear material;
(2) The tailings or wastes produced by the extraction or concentration of uranium or thorium from ore ~~(see 10 CFR 20.1003)~~processed primarily for its source material content, including discrete surface wastes resulting from uranium solution extraction processes. Underground ore bodies depleted by these solution extraction operations do not constitute "byproduct material" within this definition;
(3)
(i) Any discrete source of radium-226 that is produced, extracted, or converted after extraction, before, on, or after August 8, 2005, for use for a commercial, medical, or research activity; or
(ii) Any material that ~~has~~—
(A) Has been made radioactive by use of a particle accelerator, including by use of a fusion machine; and
(B) If made radioactive by use of a particle accelerator that is not a fusion machine, is produced, extracted, or converted after extraction, before, on, or after August 8, 2005, for use for a commercial, medical, or research activity; and
(4) Any discrete source of naturally occurring radioactive material, other than source material, that—
(i) The Commission, in consultation with the Administrator of the Environmental Protection Agency, the Secretary of Energy, the Secretary of Homeland Security, and the head of any other appropriate Federal agency, determines would pose a threat similar to the threat posed by a discrete source of radium-226 to the public health and safety or the common defense and security; and
(ii) Before, on, or after August 8, 2005, is extracted or converted after extraction for use in a commercial, medical, or research activity.

* * *

Particle accelerator (or accelerator) means any machine capable of accelerating electrons, protons, deuterons, or other charged particles in a vacuum and of discharging the resultant particulate or other radiation into a medium at energies usually in excess of 1 megaelectron volt, including fusion machines. For the purposes of this definition, "accelerator" is an equivalent term.

* * * *

PART 150—EXEMPTIONS AND CONTINUED REGULATORY AUTHORITY IN AGREEMENT STATES AND IN OFFSHORE WATERS UNDER SECTION 274

* * * *

§ 150.3 Definitions.

* * * *

Byproduct material means—

(1) Any radioactive material (except special nuclear material) yielded in, or made radioactive by, exposure to the radiation incident to the process of producing or using special nuclear material;

(2) The tailings or wastes produced by the extraction or concentration of uranium or thorium from ore processed primarily for its source material content, including discrete surface wastes resulting from uranium solution extraction processes. Underground ore bodies depleted by these solution extraction operations do not constitute "byproduct material" within this definition;

(3)

(i) Any discrete source of radium-226 that is produced, extracted, or converted after extraction, before, on, or after August 8, 2005, for use for a commercial, medical, or research activity; or

(ii) Any material that—

(A) Has been made radioactive by use of a particle accelerator, including by use of a fusion machine; and

(B) If made radioactive by use of a particle accelerator that is not a fusion machine, ~~I~~is produced, extracted, or converted after extraction, before, on, or after August 8, 2005, for use for a commercial, medical, or research activity; and

(4) Any discrete source of naturally occurring radioactive material, other than source material, that—

(i) The Commission, in consultation with the Administrator of the Environmental Protection Agency, the Secretary of Energy, the Secretary of Homeland Security, and the head of any other appropriate Federal agency, determines would pose a threat similar to the threat posed by a discrete source of radium-226 to the public health and safety or the common defense and security; and

(ii) Before, on, or after August 8, 2005, is extracted or converted after extraction for use in a commercial, medical, or research activity.

* * * *

PART 170—FEES FOR FACILITIES, MATERIALS, IMPORT AND EXPORT LICENSES, AND OTHER REGULATORY SERVICES UNDER THE ATOMIC ENERGY ACT OF 1954, AS AMENDED

* * * *

§ 170.3 Definitions.

* * * *

Byproduct material means—

(1) Any radioactive material (except special nuclear material) yielded in, or made radioactive by, exposure to the radiation incident to the process of producing or using special nuclear material;

(2)

(i) Any discrete source of radium-226 that is produced, extracted, or converted after extraction, before, on, or after August 8, 2005, for use for a commercial, medical, or research activity; or

(ii) Any material that—

(A) Has been made radioactive by use of a particle accelerator, including by use of a fusion machine; and

(B) If made radioactive by use of a particle accelerator that is not a fusion machine, ~~I~~is produced, extracted, or converted after extraction, before, on, or after August 8, 2005, for use for a commercial, medical, or research activity; and

(3) Any discrete source of naturally occurring radioactive material, other than source material, that—

(i) The Commission, in consultation with the Administrator of the Environmental Protection Agency, the Secretary of Energy, the Secretary of Homeland Security, and the head of any other appropriate Federal agency, determines would pose a threat similar to the threat posed by a discrete source of radium-226 to the public health and safety or the common defense and security; and

(ii) Before, on, or after August 8, 2005, is extracted or converted after extraction for use in a commercial, medical, or research activity.

* * * *

PART 171—ANNUAL FEES FOR REACTOR LICENSES AND FUEL CYCLE LICENSES AND MATERIALS LICENSES, INCLUDING HOLDERS OF CERTIFICATES OF COMPLIANCE, REGISTRATIONS, AND QUALITY ASSURANCE PROGRAM APPROVALS AND GOVERNMENT AGENCIES LICENSED BY THE NRC

* * * *

NOTE: This is an unofficial redline intended to aid the public in visualizing the proposal; it may contain mistakes. The official rulemaking proposal is in the *Federal Register* notice, and the NRC requests that comments be made on that proposal following the *Federal Register's* instructions for submitting comments.

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§ 171.5 Definitions.

* * * *

Byproduct material means—

(1) Any radioactive material (except special nuclear material) yielded in, or made radioactive by, exposure to the radiation incident to the process of producing or using special nuclear material;

(2)

(i) Any discrete source of radium-226 that is produced, extracted, or converted after extraction, before, on, or after August 8, 2005, for use for a commercial, medical, or research activity; or

(ii) Any material that—

(A) Has been made radioactive by use of a particle accelerator, including by use of a fusion machine; and

(B) If made radioactive by use of a particle accelerator that is not a fusion machine, ~~I~~is produced, extracted, or converted after extraction, before, on, or after August 8, 2005, for use for a commercial, medical, or research activity; and

(3) Any discrete source of naturally occurring radioactive material, other than source material, that—

(i) The Commission, in consultation with the Administrator of the Environmental Protection Agency, the Secretary of Energy, the Secretary of Homeland Security, and the head of any other appropriate Federal agency, determines would pose a threat similar to the threat posed by a discrete source of radium-226 to the public health and safety or the common defense and security; and

(ii) Before, on, or after August 8, 2005, is extracted or converted after extraction for use in a commercial, medical, or research activity.

* * * *