

Subject: Accelerator Safety Order Implementation	Effective Date: April 17, 2017	Initiated by: Head, ES&H
	Supersedes: NEW	Approved: Director

Management System (Primary): 09.00 ESH and Integrated Safety Management (ESH)
Management System Owner: Head, ES&H Department
Management Process: 09.07 ES&H - Occupational Safety, Health, and
Medicine
Process Owner: Head, ES&H Department
Management Subprocess: 09.07.07 Accelerator Safety Program
Subprocess Owner: Head, ES&H Department
Subject Matter Expert (SME): Head, ES&H Department; Head, Electrical Division;

APPLICABILITY

This policy applies to devices at PPPL that meet the definition of “accelerator” in DOE O 420.2C.

The ES&H Department will maintain a current listing/inventory of accelerators under this Order, and exemptions or equivalencies granted in accordance with DOE O 420.2C.

DEFINITION

An accelerator is a device employing electrostatic or electromagnetic fields to impart kinetic energy to molecular, atomic, or sub-atomic particles and capable of creating a “radiological area” as defined in 10 CFR 835. Accelerator facilities include associated roads within site boundaries, plant and equipment utilizing, or supporting the production of, accelerated particle beams and the radioactive material created by those beams to which access is controlled to protect the safety and health of workers, the public or the environment. Per 10CFR835, radiological areas include "radiation areas", "high radiation areas", "very high radiation areas", "contamination areas", "high contamination areas", and "airborne radioactivity areas". ESHD 5008 Section 10 further defines these areas.

EXEMPTIONS

This policy does not apply to devices and facilities exempted by DOE O 420.2C and DOE G 420.2-1A, including those whose hazards can be safely managed under the provisions of 10CFR835 and 10CFR851 that are non-complex in nature and that produce only local work area impacts. Examples of these are unmodified, commercially available units, accelerator facilities not capable of creating radiological areas, nonmedical x-ray generators below 10 MeV, and low-voltage neutron generators with accelerating potential below 600 keV. These devices are typically bench-top in size or may be portable with a single external/extractable beam and may be operated in accordance with ANSI N43.3-2008,

NCRP Report 72-1983, or other applicable consensus documents. These examples are not a comprehensive list; questions of applicability of this policy should be discussed with the DOE Princeton Site Office (DOE-PSO). Exemptions not covered in this policy, and equivalencies (alternate safety standards, requirements or DOE Directives) require DOE approval in accordance with DOE O 420.2C and should be communicated through, and coordinated by, the ES&H Department.

POLICY STATEMENT

PPPL devices and associated facilities meeting the definition of “accelerator” in this policy, and not otherwise exempted by this policy or DOE-PSO, must include the following elements:

- An approved Accelerator Safety Envelope (ASE)
- A Safety Assessment Document (SAD)
- Clearly defined roles and responsibilities for accelerator activities including those for training and procedures
- An Unreviewed Safety Issue (USI) process that supports configuration management efforts to help assure facility and supporting safety documentation are current and periodically updated
- An accelerator readiness review (ARR) program that ensures facilities are adequately prepared for safe commissioning and/or operations.

DOE-PSO Manager approvals are required for the ASE, start of commissioning activities after assuring that an appropriate ARR has been conducted, start of routine operations, restart of an accelerator facility or activity after a DOE-mandated shutdown because of a USI or ASE violation, activities that justify a USI, decommissioning activities, and exemption/equivalency requests in accordance with DOE O 420.2C. In addition, DOE Program Secretarial Officer approval is required for ASEs for accelerator facilities where site boundary consequences for credible postulated accident scenarios potentially exceed 1 rem (0.01Sv) and/or Emergency Response Planning Guide ERPG-2, and for exemption/equivalency requests in accordance with DOE O 420.2C.

Details on the implementation of this policy are included in PPPL Procedure ESH-025.

REFERENCES

DOE O 420.2C, Safety of Accelerator Facilities.
DOE G 420.2-1A, Accelerator Facility Safety Implementation Guide for DOE O 420.2C.
10 CFR 835, Occupational Radiation Protection
10 CFR 851, Worker Safety and Health Program
ESH-025, Operations Hazard Classification Criteria and Safety Certification System.
ESH-5008 Section 10, Radiation Safety

TRAINING REQUIREMENTS

Head, ES&H Department 1. Ensures the following training is provided.

Target Audience: PPPL Department Heads & RLMs

Training Method:

Read only via distribution to all Department Heads &
RLMs

Frequency:

Once only

Other: _____