

**PARTICLE PHYSICS DIVISION OPERATING MANUAL
REVIEW AND APPROVAL RECORD**

**ES&H REVIEW OF EXPIRED EXPERIMENT DECOMMISSION AND
DISMANTLEMENT**

Revised by *Gene McHugh 1374715* Date *3.8.10*
Name/ID#

Approved by *Mark Henry* Date *3/9/10*
PPD Head

ES&H REVIEW OF EXPIRED EXPERIMENT DECOMMISSIONING AND DISMANTLEMENT

INTRODUCTION

The decommissioning and dismantlement of an expired Experimental Area in the Particle Physics Division (PPD) requires ES&H Review to help ensure that all appropriate standards and requirements are effectively met. These reviews, because of specificity or complexity, are outside the normal purview of the Laboratory Safety Committee (LSC) Subcommittees. Consequently, ES&H Review panels for experiments will be established. This document defines the procedures for these panels.

RESPONSIBILITIES

The Particle Physics Division Head or designee, develops the charge to the panel; and names the panel chairs in consultation with Division/Section Heads, and Department Heads, as appropriate

The ES&H Review Panel is normally charged to complete a timely and accurate safety review for decommissioning and provide a written report, with the guidance of this procedure, describing its conclusions to one or more of the following: the Division Head, the Project Manager, the Project Engineer, and the PPD ES&H Department Head.

The Principal Investigator (PI) is assigned by the appropriate Division Head to serve as the lead investigator in establishing the principal controls necessary to accomplish the experiment decommissioning, with assistance from PPD ES&H, as needed. This individual will also serve as the main point of contact during all decommissioning activities.

GUIDELINES FOR ESTABLISHING AN ES&H REVIEW

All decommissioning and dismantling activities in a former PPD Experimental Area involving the creation of new budgetary project codes will be subject to a review. This review will at a minimum follow the guidelines set forth in the included SAFETY REVIEW FORM. Additional guidelines may be required per the written request of the Particle Physics Division Head or Particle Physics Division ES&H Department.

DESCRIPTION

This is a dynamic document and is designed to establish the minimum safety review criteria for the decommissioning and dismantling of expired PPD experimental areas and equipment. This document serves as a primer for the establishment of specific Job Hazard Analyses and in no way replaces or supersedes the need for separate Job Hazard Analysis. The Review should cover all phases of the work and should be updated as new information is obtained. The Principal Investigator and ES&H Review Panel members should complete the attached form as completely as possible during the review phase in order to grasp the full extent of the project.

**EXPERIMENT DECOMMISSIONING AND DISMANTLEMENT SAFETY REVIEW
FORM**

PRINCIPAL INVESTIGATOR:

DATE:

GROUP:

EXT:

E-MAIL:

Project Title:
Location(s):
Proposed Start Date and Duration:
Area Walkthrough Date:

SIGNATURES:

Principal Investigator:	Date:
ES&H Review Panel:	Date:
	Date:
	Date:
	Date:
	Date:
Approval ES&H Department SSO or Designee:	Date:
Review/Approval Comments:	
Expiration Date (max 1 yr.):	
Has a NEPA review been performed for this project? <input type="checkbox"/> Y <input type="checkbox"/> N	

I. DEFINE THE SCOPE OF WORK

A. Description

Briefly describe the expired experiment. Identify all apparatus that were used, and any associated specifications (i.e., drawings, lifting fixtures). List any special equipment (X-ray generators, lasers etc.) that was used during the project.

Indicate if modification of facility is required. Include a list of the decommissioning phases of the experiment. The Work Permit Process/Form may better address the hazards & controls of the set-up and/or tear down phases.

B. Waste Disposal/Waste Control

Describe how you plan to minimize generation of the wastes, and identify pollution prevention opportunities. Describe how to plan, conduct, and closeout work activities to eliminate or minimize the impact of their activities on the environment.

II. IDENTIFY AND ANALYZE HAZARDS ASSOCIATED WITH THE WORK

In this section indicate the hazards in each class. Focus on all aspects of the decommissioning process.

Physical Hazards (check all that apply)		<input type="checkbox"/> None	
<input type="checkbox"/> Cryogenics	<input type="checkbox"/> Oxygen deficient atmosphere	<input type="checkbox"/> Noise > 85 dBA	
<input type="checkbox"/> Fall hazards (e.g., ladders, elevated platforms, towers)			
<input type="checkbox"/> Material handling equipment (e.g., cranes, hoists, forklifts)			
<input type="checkbox"/> Machine shop or non-portable powered tools use			
<input type="checkbox"/> Electrical hazards (exposed conductors, large batteries, capacitors, etc) (<i>“Electrical Hazard Analysis/Work Permit” FESHM Form 5042.01 may need to be completed and approved for some work</i>)			
<input type="checkbox"/> Electrical hazards (Dismantling of existing electrical delivery components, i.e., conduit)			
<input type="checkbox"/> Confined space		<input type="checkbox"/> Trenching/soil excavation	
<input type="checkbox"/> Extreme temperatures in workplace (> 80 ⁰ Fahrenheit)		<input type="checkbox"/> Remote location/Underground Enclosure	
<input type="checkbox"/> Thermal Sources of Heat			
<input type="checkbox"/> Compressed gases (lecture bottles, cylinders, gas lines)			
<input type="checkbox"/> Pressurized vessels or systems			
<input type="checkbox"/> Vacuum chambers or systems			
<input type="checkbox"/> Interlock Systems			
<input type="checkbox"/> Open flames		<input type="checkbox"/> Welding, cutting, brazing, silver soldering (<i>permit required, FESHM 6020.2</i>)	
<input type="checkbox"/> Flammable gases/liquids/solids		<input type="checkbox"/> Other spark producing activity	
<input type="checkbox"/> Material Rigging (e.g., shielding materials, magnets, calorimeters, etc.)			
<input type="checkbox"/> Magnetic fields			
<input type="checkbox"/> Limited facility lighting (Is lighting sufficient to perform all required work activities?)			
<input type="checkbox"/> Ergonomic Conditions (contact, stress, vibration, repetitive motion, manual lifting?)			
<input type="checkbox"/> Low Clearance or multi-level simultaneous work			
<input type="checkbox"/> Other (specify):			
Chemical Hazards (check all that apply)		<input type="checkbox"/> None	
<input type="checkbox"/> Carcinogens	<input type="checkbox"/> Highly acute toxins	<input type="checkbox"/> Reproductive toxins	<input type="checkbox"/> Corrosives
<input type="checkbox"/> Flammable liquids	<input type="checkbox"/> Flammable solids	<input type="checkbox"/> Strong oxidizers	<input type="checkbox"/> Oils
<input type="checkbox"/> Explosives	<input type="checkbox"/> Peroxidizers	<input type="checkbox"/> Pyrophoric materials	<input type="checkbox"/> PCBs

<input type="checkbox"/> Asbestos	<input type="checkbox"/> Pesticides/herbicides	<input type="checkbox"/> Controlled substances
<input type="checkbox"/> Highly reactive materials		<input type="checkbox"/> Perchlorates
<input type="checkbox"/> Lead (used in Experiment Design)		
<input type="checkbox"/> Beryllium or Beryllium hybrid articles used in Experiment		
<input type="checkbox"/> Cadmium		<input type="checkbox"/> Zinc
<input type="checkbox"/> Other Toxic metals (e.g., As, Ba, Cr, Hg, Se, Ag)		
<input type="checkbox"/> Other (specify):		
Radiation Hazards (check all that apply)		<input type="checkbox"/> None
<input type="checkbox"/> Sealed radioactive sources	<input type="checkbox"/> Windowless radioactive sources	
<input type="checkbox"/> Dispersible radioactive materials	<input type="checkbox"/> Neutron-emitting radioactive sources	
<input type="checkbox"/> Non-fissionable radioactive materials	<input type="checkbox"/> Fissionable radionuclides	
<input type="checkbox"/> Ionizing radiation-generating devices (x-ray sources, accelerators)		
<input type="checkbox"/> Class II, IIIa, or IIIb (visible <15mW) lasers		<input type="checkbox"/> Class IIIb (nonvisible >15mW) or IV lasers
<input type="checkbox"/> Dynamic magnetic fields >1G at 60 Hz or dynamic electric fields > 1kV/m at 60 Hz		
<input type="checkbox"/> Static magnetic fields < 5 G. No Exposure Form is required		
<input type="checkbox"/> Static magnetic fields > 5 G and < 600 G		<input type="checkbox"/> Static magnetic fields exposure. Attach Static Magnetic Fields Exposure Form when required.
<input type="checkbox"/> Static magnetic fields ≥ 600 G		
<input type="checkbox"/> Radio frequency (RF) or Microwave sources exceeding 10 mW radiated output		
<input type="checkbox"/> Other (specify):		
Biological Hazards (check all that apply)		<input type="checkbox"/> None
<input type="checkbox"/> Regulated etiological agent		<input type="checkbox"/> Animals
<input type="checkbox"/> Visible Fungal Growth		
<input type="checkbox"/> Other (specify):		
Security Issues Checklist (check all that apply)		<input type="checkbox"/> None
<input type="checkbox"/> Access controls		<input type="checkbox"/> Cyber security
<input type="checkbox"/> Classified materials or information		<input type="checkbox"/> Valuable materials
<input type="checkbox"/> Import or export controls		<input type="checkbox"/> Personnel security
<input type="checkbox"/> Nuclear material control and accountability		<input type="checkbox"/> Other (specify):

Significant Environmental Aspects (check all that apply)	<input type="checkbox"/> None
<input type="checkbox"/> Any amount of hazardous waste generation	
<input type="checkbox"/> Any amount of radioactive waste generation	
<input type="checkbox"/> Any amount of mixed waste generation (radioactive hazardous waste)	
<input type="checkbox"/> Any amount of transuranic waste generation	
<input type="checkbox"/> Any amount of industrial waste generation (e.g., oils, vacuum pump oil)	
<input type="checkbox"/> Any amount of Regulated Medical Waste	
<input type="checkbox"/> Any atmospheric discharges that require engineering controls to reduce hazardous air pollutants or radioactive emissions, or are identified as a Title V emission unit, or require monitoring under NESHAP	
<input type="checkbox"/> Any liquid discharges that require engineering controls to limit the quantity or concentration of the pollutant, or include radionuclides detectable at the point of discharge from the facility	
<input type="checkbox"/> Storage or use of any chemicals or radioactive materials that require engineering	
<input type="checkbox"/> On-site or off-site transportation of chemicals or dispersible radioactive materials	
<input type="checkbox"/> Any use of once-through cooling water discharged to the sanitary sewer	
<input type="checkbox"/> Soil contamination or activation	
<input type="checkbox"/> Any underground pipes/ductwork that contains chemical or radioactive material/contamination	
<input type="checkbox"/> Other environmental aspects related to your work (specify):	

III. DEVELOP AND IMPLEMENT HAZARD CONTROLS

For each hazard identified in the previous section, describe how each significant hazard is to be controlled. Identify the Engineering Controls (e.g., interlocks, shielding), Administrative Controls (e.g., procedures, Radiological Work Permits) or Personal Protective Equipment (e.g., respirators, gloves) that will be employed to reduce hazards to acceptable levels.

The PI develops and implements hazard controls in consultation with, and using feedback from, the PPD ES&H Group.

A. Physical Hazards/Controls

Hazard	Controls (Administrative, Engineered, Protective Equipment)

Note: Include maintenance, inspection and testing, and formal calibration, including frequency as appropriate.

B. Chemical Hazards/Controls

Hazard	Controls (Administrative, Engineered, Protective Equipment)

Note: Refer to the Fermilab MSDS Database for requirements, especially for information regarding particularly hazardous chemicals such as carcinogens, reproductive toxins, and highly acute toxins, including postings, decontamination plan, and address above.

C. Environmental Hazards/Controls

Hazard	Controls (Administrative, Engineered, Protective Equipment)

Note: Identify the requirements from applicable waste management subject area (hazardous, radioactive, mixed)

D. Radiation Hazards/Controls

Hazard	Controls (Administrative, Engineered, Protective Equipment)

Note: List sources/materials. Attach or refer to Radiation Work Permits.

E. Biological Hazards/Controls

Hazard	Controls (Administrative, Engineered, Protective Equipment)

Note: List additional approvals/permits/reviews required .

F. Offsite Work Hazards/Controls

Hazard	Controls (Administrative, Engineered, Protective Equipment)

Note: List the location of all off-site work and identify any off-site organization whose ESH requirements will be followed (e.g., other DOE Labs). Indicate additional controls (not specified above) that are needed.

G. Security Issues/Controls

Issue	Controls (Administrative, Engineered, Protective Equipment)

Note: Consult the security office at x4507 or x4949 for more information or guidance.

IV. PERFORM WORK WITHIN CONTROLS

All work shall be performed within the controls identified within this document. It is the PI's responsibility to ensure that this document is kept up to date. The PI should consult with the Division ES&H Department as appropriate to determine if changes to this document are significant enough to require a new review/document.

The PI should document any hazard assessments performed for this experiment in Section VI.

A. Training

List all project jobs classifications, and identify any certifications or specific training required. Contact your ES&H Training Coordinator or review the Individual Training Needs Assessment (ITNA) form, as appropriate for assistance.

It is the responsibility of the Principal Investigator to maintain a complete up-to-date list of personnel and their full training requirements, and to ensure that training and qualifications are appropriate for the workers job.

Job Type (e.g., rigger, technician)	Required Training (Course or FN code)

Note: Consult FESHM Chapter 4010 for further information about training program implementation

B. OSHA/DOE Required Medical Surveillance

Indicate if potential exposure is in excess of trigger levels listed. Exposure evaluation and/or medical surveillance may be required. Additional training may be required for any indicated agent. See the MSDS or contact the PPD ES&H (x2977) for additional information and controls on the hazards listed.

Regulated Hazard	Hazard Specific Training Trigger	Medical Surveillance Exposure Trigger
<input type="checkbox"/> None		
<input type="checkbox"/> Inorganic Arsenic	Any day above the OSHA action level (without regard to respirator use)	30 days/year above the action level (without regard to respirator use)
<input type="checkbox"/> Biohazards (CDC/NIH/WHO listed Agent)	None	See Subject Area for guidance
<input type="checkbox"/> Cadmium	Any day above the OSHA action level	30 or more days/year at or above the action level
<input type="checkbox"/> Lasers	Use Class IIIb or Class IV Lasers	Use Class IIIb or Class IV Lasers
<input type="checkbox"/> Lead	Any day above the OSHA action level	30 or more days/year at or above the action level
<input type="checkbox"/> Methylene Chloride	Any day above the OSHA action level	<ul style="list-style-type: none"> - 30 days/year at or above the action level - 10 days/year above the 8-hour TWA PEL or the STEL - Any time above the 8-hour TWA PEL or STEL for any period of time where an employee at risk from cardiac disease or other serious MC-related health condition and employee requests inclusion in the program

Regulated Hazard	Hazard Specific Training Trigger	Medical Surveillance Exposure Trigger
<input type="checkbox"/> Noise	Any day above the ACGIH TLV	Any time equal or greater then 85 dBA TWA 8-hour dose
<input type="checkbox"/> OSHA Regulated Chemicals <i>Acrylonitrile</i> <i>Benzene</i> <i>Benzidine</i> <i>1,3 Butadiene</i> <i>4-Dimethyl aminoazobenzene</i> <i>Ethylene oxide</i> <i>Ethyleneimine</i> <i>Formaldehyde</i> <i>Vinyl Chloride</i>	Any day above the OSHA PEL	<ul style="list-style-type: none"> - Routinely above the action level (or in the absence of an action level, the PEL) - Event such as a spill, leak or explosion results in the likelihood of a hazardous exposure
<input type="checkbox"/> Static Magnetic Fields	Worker who routinely works in magnetic field	<ul style="list-style-type: none"> - Any time at ≥ 0.5 mT (5 G) for Medical Electronic Device wearer - Any day at ≥ 60 mT (600 G) to whole body [8 hour average] - Any day at ≥ 600 mT (6000 G) to limbs [8 hour average] - Any Time at ≥ 2 T (20,000 G) to whole body [ceiling] - Any time at ≥ 5 T (50,000 G) to limbs [ceiling]

*Note: CDC = Centers for Disease Control,
 NIH = National Institutes of Health,
 WHO = World Health Organization,
 STEL = Short-Term Exposure Limit
 ACGIH TLV = American Congress of Governmental Industrial Hygienists Threshold Limit Value*

C. Emergency Procedures

Identify any emergency actions, procedures, or equipment that must be in place to insure personnel safety and environmental protection. Include the location of emergency shutoffs, and spill control materials.

D. Transportation

Identify materials, hazards and controls for any on-site and off-site transportation of hazardous and/or radioactive materials.

E. Notifications

The PI or designee should notify building occupants of any activities that might impact them or their work, and document this here. List external personnel/organizations that require notification related to experimental activities and/or to be notified of changes (e.g., Fire/Rescue).

V. PROVIDE FEEDBACK ON ADEQUACY OF CONTROLS AND CONTINUE TO IMPROVE SAFETY MANAGEMENT

Provide comments on the review process, including this form and communication. Identify any lessons learned or worker feedback contributing to modifications/improvements to the controls or process.

VI. ATTACHMENTS

Use this section to include any supporting documents, hazard assessments, engineering notes, tables, etc. that were not entered into the previous sections of the form.

