

PARTICLE PHYSICS DIVISION OPERATING MANUAL
REVIEW AND APPROVAL RECORD

PPD/CMS/FCPA ENVIRONMENTAL POLICY AND PROGRAM

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REVISION HISTORY

Version	Date	Section No.	Specifics
5.0	7/31/2009		Add document control disclaimer and revision history page
6.0	12/29/2011	All	Modified format of document; added responsibilities; added Oil Pollution Prevention, Refrigerant Management & Sustainable Acquisition information

PPD/CMS/FCPA ENVIRONMENTAL POLICY AND PROGRAM

1.0 INTRODUCTION

The Particle Physics Division (PPD), U.S. Compact Muon Solenoid (CMS) Center, and Fermilab Center for Particle Astrophysics (FCPA) operations can result in emissions to air and water, and to the generation of waste. It is our aim to comply with all legislation and other requirements, and continue to reduce the environmental impacts of our research and operate in an environmentally responsible manner.

2.0 SCOPE

This program establishes the responsibilities of Particle Physics Division (PPD), U.S. Compact Muon Solenoid (CMS) Center, and Fermilab Center for Particle Astrophysics (FCPA) employees.

PPD/CMS/FCPA will strive to reduce pollutants released to the air, land or water; and will properly dispose of all hazardous and non-hazardous waste. Environmental stewardship is our objective in all operations.

3.0 POLICY

The policy of PPD/CMS/FCPA is to protect the environment by following federal laws, local laws, DOE Orders, and Fermilab policies. Departments and groups shall promote this policy with the assistance of PPD staff members such as the Environmental Protection Officer (EPO) or Senior Safety Officer (SSO). This information supplements Fermilab's Environmental Policy and does not supersede any of the policies found in [Section 8000](#) of the *Fermilab ES&H Manual (FESHM)*.

4.0 RESPONSIBILITIES

4.1 PPD/CMS/FCPA Division/Section/Center Head

- Ensure that D/S/C activities are conducted in accordance with environmental laws, regulations and Fermilab policies and procedures.
- Ensure that employees complete all necessary environmental training.
- Implement emergency response procedures in the event of unplanned releases to the environment.

4.2 Supervisors/Managers

- Understand the environmental aspects that are present in their work area(s).
- Ensure the environmental aspects of all new tasks/operations have been reviewed prior to starting work.
- Ensure employees are familiar with all Fermilab environmental policies and procedures that they are to abide by.

4.3 PPD ES&H

- Provide guidance and assistance regarding application of environmental regulations to PPD/CMS/FCPA activities to maintain compliance.
- Conducting periodic audits to ensure compliance with environmental regulations and permits.
- Provide on-site response to environmental releases to mitigate adverse environmental impacts.

4.4 Employees

- Be familiar with the requirements of FESHM chapters in Section 8000.
- Meet the requirements of all FESHM chapters in Section 8000.
- Report potential violations of environmental regulations to PPD ES&H.
- Submit recommendations for improving environmental performance.

5.0 PROGRAMS

5.1 WASTE MANAGEMENT

The PPD Environment, Safety, and Health (PPD ES&H) Group is responsible for overseeing the Division's implementation of its Waste Management Program. Waste Coordinators assist and answer questions concerning waste characterization, labeling, packaging, completion of waste forms and other waste issues. They also review, approve and submit completed waste forms to the ES&H Section for pickup and disposal.

5.1.1 Waste Minimization

All groups and departments must minimize the generation of waste. This should be accomplished through education, awareness, recycling, source reduction, and substitution of less hazardous substances. All employees are encouraged to participate and to investigate other methods of waste minimization. The Fermilab programs are described in more detail in [FESHM Chapter 8022](#).

5.1.2 Process Waste Assessments (PWA)

The purpose of the waste assessment is to examine and analyze information concerning processes, operations, and waste management practices. Information is used to develop a set of waste minimization options, identify those that deserve additional detailed analysis and then aim to reduce and minimize wastes.

One of the first tasks of the waste minimization process is to identify and characterize the individual facility's waste streams. Building managers, along with the EPO, are responsible for managing waste activities within their locations. They shall assess all waste streams generated and implement, where feasible, recycling techniques.

5.1.3 Waste Generation and Disposal

Waste generators shall comply with Fermilab and DOE policy and will receive training every two years. Generators must properly characterize, identify, package, label and provide temporary storage for waste. Waste generated in a Radiological/Controlled Area requires additional information to be completed prior to final pickup. All waste must be managed through the Hazard Control Technology Team. Complete and submit a

"[Hazardous/Radioactive Mixed Waste Certification and Pickup Request Form](#)" to schedule a waste pick-up.

5.1.4 Waste Inspections and Audits

All hazardous and liquid radioactive waste shall be stored in a Satellite Accumulation Area (SAA). As a best management practice, it is suggested that liquids designated as EPA "special wastes" be stored in SAAs as well. A Satellite Accumulation Area is a temporary storage location for small quantities of regulated hazardous waste. These locations shall be at or near the point of generation, under the control of the waste generator, and be protected from the weather.

Building managers and/or waste generators are responsible for inspecting their SAA for compliance with DOE and Fermilab requirements on a quarterly basis. All findings are documented on "PPD Waste Accumulation Quarterly Checklist" forms. Building managers or waste generators are required to correct all findings and maintain documentation.

The division EPO and Waste Coordinator(s) conduct periodic waste audits that include reviews of current waste streams and tours of SAA's as well as discussions with the building manager concerning other waste activity issues. All findings are entered into fRESHTRK and tracked to completion by the appropriate Building Manager.

5.2 AIRBORNE EMISSIONS (CLEAN AIR ACT)

The Clean Air Act is the major federal law that regulates air emissions to protect air quality. The Illinois Environmental Protection Agency (IEPA) generally has the lead authority for air quality regulation. Within PPD/CMS/FCPA, a construction permit is obtained from the IEPA before the construction of a new emissions source, the modification of an old source or the installation of any new air pollution control equipment. Operating permits are obtained for new emission sources and air pollution control equipment. Air Pollution Permits have been obtained for gas-fired hot water boilers. Permits are obtained under the National Emissions Standards for Hazardous Air Pollutants (NESHAPs) for radionuclide emissions from beam tunnel ventilation stacks, and are monitored by Accelerator Division and ES&H Section personnel. Radiological air emissions are reported annually to the USEPA and DOE. Emissions from other permitted air pollution sources on site are reported annually to the IEPA.

5.2.1 Refrigeration Management

Refrigerants are regulated under the Clean Air Act due to their potential as Greenhouse Gases (GHG) and/or Ozone Depleting Substances (ODS). All refrigerants are managed under [FESHM chapter 8081](#). All emissions of refrigerants are tracked by the Refrigerant Manager, and reported annually to the IEPA. PPD/CMS/FCPA is responsible for preventing/minimizing the release of refrigerants from D/S/C equipment.

5.3 SURFACE WATER & SEWER DISCHARGES (CLEAN WATER ACT)

The Clean Water Act is a federal law that regulates discharges to surface water and is concerned with water quality management. The Accelerator Division Radiation Safety Officer reviews all new target station and beamline designs to ensure that any potential influence to surface or ground water is understood and is within the limits prescribed in the Fermilab Radiological

Control Manual. All PPD operations involving industrial wastewater discharges via sanitary sewers must be in compliance with the DOE and Fermilab standards. There will be no intentional discharges to surface waters without a National Pollutant Discharge Elimination System (NPDES) permit.

Aqueous process wastewater may be discharged into the sanitary sewers at the laboratory under certain circumstances only. Both general and specific prohibitions apply to potential discharges, and for each such discharge, the responsible department or group in Particle Physics Division must make a decision as to whether it meets the applicable criteria. Potential discharges that do not meet the criteria of [FESHM chapter 8025](#) must be treated as a regulated chemical waste (i.e., packaged and disposed of as either Illinois Special waste or RCRA Hazardous waste). In order to minimize the use of these costly disposal alternatives, each department or group should make every effort to minimize the production of wastes of all kinds, through good housekeeping practices, alternative process chemicals, efficient process controls, and/or more efficient process designs.

General prohibitions

These requirements apply at the point where the process discharge enters the Fermilab sewerage system, i.e., at the point of generation. The following substances are prohibited from entering into the system:

1. Flammable and/or explosive materials
2. Any RCRA hazardous waste
3. Any solids or viscous substances (e.g., garbage, paper, cinders, sand, metal, rags, tar, wood, etc.)
4. Biocides (toxins or poisons) in a quantity sufficient to disrupt the sewage treatment process
5. Ethylene glycol in any concentration. The lab has permission to release up to 100 gallons per day of a 50% propylene glycol solution; however, you must first receive permission from the PPD ES&H group prior to releasing any propylene glycol to ensure the lab does not exceed their daily allowance.
6. Storm water, surface water, ground water, roof runoff, subsurface drainage, cooling water or unpolluted process water
7. Any other material that would cause any disruption to the wastewater treatment process, e.g., high chemical oxygen demand, high oil and grease, high suspended solids, etc.

5.4 OIL POLLUTION PREVENTION

The Oil Pollution Prevention regulations (40 CFR 112) have been developed to ensure that U.S. waters are protected from oil pollution. The Oil Pollution Prevention regulations require facilities that store more than 1,320 gallons of oil on-site, to have a Spill Prevention, Controls and Countermeasures (SPCC) Plan. The plan includes detail of the site oil inventory, work procedures, and how the facility will prevent or control an oil release, and ensure there are necessary countermeasures in place.

[FESHM Chapter 8031](#) addresses SPCC requirements. Under this plan, all bulk storage containers of oil products (bulk, meaning 55 gallons or greater) are required to be placed in secondary containment. All bulk storage containers must be inspected monthly for signs of distress or leakage.

If you will be adding a bulk container of oil, you must contact the PPD ES&H group to ensure this will be included on the Fermilab Oil Inventory. Oils that are no longer useful to the lab should be considered for recycling. Contact the Hazard Control Technology Team (x4498) for further details/assistance.

5.5 SPILL CONTROL

Local spill plans are necessary in areas where a potential source of a credible spill is identified. (A credible spill has the potential to release quantities of regulated chemicals that have the potential to impact the environment and warrant emergency response.) If it is determined that a spill plan is needed, the departments and groups associated with the spill source will be responsible for writing the local spill plan and providing secondary containment. All individuals having responsibility for working with the spill source (including, but not limited to: pouring, pumping, draining, filling, transporting, etc.) must be trained on the spill plan. The spill plan should be posted in a conspicuous place. The spill plan shall be reviewed/updated any time there is a change to the process, or every five years.

As part of a Laboratory program, the PPD ES&H Group investigates all Particle Physics Division sump pit and drain discharge points. Information is documented on a site wide map and assists the Division in determining spill pathways. See [FESHM Chapter 8030](#) for further information.

5.6 NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)

The Division complies with the Fermilab NEPA Policy, described in [FESHM Chapter 8060](#). The policy ensures that all activities and tasks which may have an adverse effect on the environment are reviewed by qualified Particle Physics Division and ES&H Section personnel as required. PPD departments and groups are responsible for notifying the PPD Office and the PPD ES&H Group prior to any activities and modifications. **All PPD/CMA/FCPA projects (including experiments, tests, and R&D) must be reviewed by the Environmental Officer for NEPA.** The review will either identify environmental aspects or state there are no environmental impacts. This review process should begin in the planning stages of PPD projects for timely reporting.

All projects that fall under the NEPA reporting requirements will be reviewed at any time during the construction, operation and/or decommissioning process to ensure all environmental impacts are addressed as stated in the NEPA documentation.

5.7 SUSTAINABLE ACQUISITION

See PPD ES&H Manual: [PPD_ESH_019](#) ES&H/NEPA Review of Procurements and Proposed Projects for information on the policy for sustainable purchasing.

6.0 References

- Fermilab ES&H Manual, [Section 8000: Environmental Protection](#)
- Illinois Environmental Protection Agency, [Illinois Environmental Regulations](#)
- U.S. Environmental Protection Agency, [Laws & Regulations](#)