

FESHM 8080: AIR EMISSIONS CONTROL PROGRAM

Revision History

Author	Description of Change	Revision Date
Teri Dykhuis (Eric Mieland)	Added relevant reference to DOE Order 458.1 <i>Radiation Protection of the Public and the Environment</i>	August 2022
Teri Dykhuis	Update to reflect reporting of Greenhouse gas emissions and change ESH&Q to ES&H	August 2020
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1.0 INTRODUCTION

The purpose of this chapter is to ensure that air emissions originating from Fermilab operations in Batavia, Illinois comply with U.S. Environmental Protection Agency (EPA), Illinois Environmental Protection Agency (IEPA) and Kane and DuPage counties air pollution regulations, including all conditions listed in this chapter. The Laboratory shall also comply with all restrictions and requirements on the use of materials (such as ozone depleting substances) regulated by the Clean Air Act (CAA) and with rules governing the acquisition of fleet vehicles in the Chicago ozone nonattainment area.

Additionally, all Fermilab leased spaces shall comply with the U.S. EPA, pertinent state and local air pollution regulations and conditions listed in the policies, procedures, and/or programs for that leased space. Furthermore, all Fermilab leased spaces shall also comply with all restrictions and requirements on the use of materials (such as ozone depleting substances) regulated by the CAA.

Air emissions are regulated under the federal CAA and its amendments. It is implemented in Illinois by the Illinois Pollution Control Board and IEPA. Illinois air pollution regulations are found in Subtitle B of Title 35 of the Illinois Administrative Code (IAC) and are summarized by topics applicable to Fermilab in Appendix A. These regulations describe general requirements for air emission units, such as permit requirements, prohibitions on or permits required for open burning, emission monitoring, organic solvent use, and vehicle acquisition requirements in the Chicago ozone nonattainment area. It is Fermilab's intent to fully comply with these regulations and to minimize, to the extent possible, pollution-causing air emissions.

Fermilab is registered in the Illinois Environmental Protection Agency's Registration of Smaller Sources (ROSS). The ROSS program requires sites that meet the applicable criteria to register in the program. Fermilab maintains renewal of the ROSS registration through an annual fee to the IEPA. Payment of the fee serves as verification of Fermilab's continued eligibility and compliance.

Within the Department of Energy's operating framework, radioactive emissions are governed by DOE Order 458.1: *Radiation Protection of the Public and the Environment*. This order requires sites to have a compliant Environmental Radiation Protection Program (ERPP). Fermilab's ERPP constitutes Fermilab's implementation plan for the requirements of DOE O 458.1. Fermilab maintains and implements several plans and programs (this chapter included) for ensuring that the management of facilities, wastes, effluents, and emissions does not present risk to the public, workers, or the environment.

2.0 DEFINITIONS

Ambient Air – that portion of the atmosphere that is external to buildings.

Air Toxics – See Hazardous Air Pollutants below.

Chicago Ozone Nonattainment Area – an area designated by EPA as being out of compliance with the National Ambient Air Quality Standard (NAAQS) for ozone. It includes the counties DuPage and Kane.

Clean Air Act Section 112(r) list – a list of 77 toxic and 63 flammable substances developed by EPA and mandated by Congress which if used in a process triggers the requirement of having a risk management plan (RMP) in place. These requirements are codified in 40 CFR Part 68; substances are listed at 40 CFR Part 68, Subpart H, Section 68.130.

Clean Fuel Fleet Vehicle – a light duty or heavy-duty vehicle that has been certified by EPA meeting the requirements needed for compliance with the state of Illinois Clean Fuel Fleet Program.

Cold Cleaning – the process of cleaning and removing soils from surfaces by spraying, brushing, flushing, or immersion while maintaining the organic solvent below its boiling point. Wipe cleaning is not included in this definition.

Criteria Air Pollutants – pollutants for which EPA has promulgated National Ambient Air Quality Standards. These are sulfur dioxide, carbon monoxide, nitrogen dioxide, lead, ozone, and particulate matter.

Degreaser – any equipment or system that uses solvent to clean solid objects.

Emission Unit – any part or activity at a stationary source that emits or has the potential to emit any air pollutant.

Emission Source – any equipment or facility of a type capable of emitting specified air contaminants to the atmosphere.

Greenhouse Gas - a gas that contributes to the greenhouse effect by absorbing infrared radiation, e.g., carbon dioxide, chlorofluorocarbons, SF₆, etc.

Hazardous Air Pollutants (HAPs) – EPA refers to chemicals that cause serious health and environmental hazards as hazardous air pollutants or air toxics. There are 188 of these chemicals and chemical classes listed in Section 112(b) of the CAA, for which emission standards have been established.

Major Source – any stationary source that has the potential to emit 100 tons per year (yr) or more of any criteria air pollutant, 10 tons per year or more of any one of the 188 HAPs, or 25 tons of any combination of HAPs.

Mobile Source – road vehicles (e.g. automobiles, trucks, and motorcycles) and nonroad vehicles (e.g. trains, airplanes, agricultural equipment, industrial equipment, construction vehicles, off-road motorcycles, and marine vessels). This does not include stationary sources (see Stationary Source).

Monitor – to measure and record.

Ozone Depleting Substances – any of several classes of organic compounds including chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs), halons, and related chlorinated compounds that have been designated by EPA as contributing to the destruction of stratospheric ozone.

Specified Air Contaminant - any air contaminant which has an emission standard or other specific limitations listed in 35 IAC Subtitle B and any contaminant (for example, carbon monoxide, particulate matter, nitrogen oxides, sulfur dioxides, lead, volatile organic materials, total particulates, organic material, dioxins, furans, fluorides, hydrogen chloride, hydrogen sulfide, sulfuric acid mist, or sulfur compounds) regulated in Illinois pursuant to Section 9.1 of the Act. In addition, it includes most of the 188 HAPs regulated under and listed in Section 112(b) of the Clean Air Act Amendments of 1990.

Stationary Source – any building, structure, facility, or installation that emits or may emit any air pollutant. This does not include mobile sources (See Mobile Source).

Sulfur Hexafluoride – Sulfur hexafluoride (SF₆) is an inorganic, colorless, odorless, non-flammable, non-toxic but extremely potent greenhouse gas, and an excellent electrical insulator. Due to the high global warming potential, all alternatives to use should be explored.

3.0 RESPONSIBILITIES

3.1 Division/Section Heads/ Project Managers (D/S/P)

D/S/Ps shall ensure that:

- Air emission units listed in Appendix D are operated in compliance with the applicable conditions and that all necessary reports are transmitted to ES&H EP Group. Report any noncompliances to the ES&H EP Group immediately.
- All future operations, potential sources, or changes to existing operations or sources are reviewed by the ES&H EP Group for the determination of permit exemptions.
- Emissions from all applicable airborne radiological emission units are characterized and monitored as required to maintain compliance with the radionuclide National Emissions Standard for Hazardous Air Pollutants (NESHAP) and DOE orders and to maintain all emissions as low as reasonably achievable.
- Procedures are written and approved for operating the monitoring system, identifying a person who will operate and maintain the system, and providing a quality assurance/quality control program.
- The storage and usage of any materials meets the compliance requirements listed in Appendix A.
- Acquisition of Class I Ozone Depleting Substances (see Title 40 Code of Federal Regulations (CFR) Part 82 for listing) is prohibited unless specifically approved by the Division Safety Officer or the Chief Safety Officer.

- Emissions of Greenhouse gases (for example: carbon dioxide, chlorofluorocarbons, SF₆, etc.) associated with operations are tracked and reported to ESH. (NOTE: Due to the high global warming potential of SF₆, all alternatives to use should be explored.) ESH will then report them annually to DOE via a web-based dashboard. Annual emissions are further described in the Site Sustainability Plan which is available from the Sustainability web site (<https://sustainability.fnal.gov/>)

3.2 Facilities Engineering Services Section

Facilities Engineering Services Section shall ensure that:

- All vehicle acquisitions comply with Illinois Clean Fuel Fleet requirements (see Appendix A).

3.3 ES&H Section, Environmental Protection Group

ES&H Section, EPG shall ensure that:

- Permits are obtained for air emission units as required by the applicable regulations (see Appendix A for topical list of regulatory requirements and Appendix B for list of equipment that is exempt from permitting).
- The rationale for any determination that an air emission unit is exempt from permitting is documented (see Appendix B).
- New operations, potential sources, or changes to existing operations or sources are evaluated to determine applicable regulatory requirements.
- An air related permit application is reviewed for completeness and accuracy and submitted to IEPA via DOE.
- Copies of approved permits are provided to applicable Divisions/Sections.
- Files of all environmental permit applications, permits, and related documents are maintained.
- Environmental air permit annual emission reports are submitted in a timely manner.

3.4 ES&H Section, Industrial Hygiene Group

ES&H Section, Industrial Hygiene Group is responsible for asbestos removal projects. They shall ensure that:

- Air samples are collected
- Records are generated to document compliance with the asbestos NESHAP
- Annual notification to IEPA of the total amount of asbestos removed during renovation or demolition is prepared and submitted.
- Procedures involving asbestos characterization, reporting, and removal are developed and maintained

3.5 ES&H Section, Radiation Protection Group

ES&H Section, Radiation Protection Group shall, with regard to radionuclides:

- Calculate and report the estimated committed effective dose equivalent of the maximally exposed member of the public (this includes the performance of appropriate characterization measurements as well as the maintenance and operation of the associated instrumentation)
- Arrange for the estimated dose calculations to be completed and shall ensure that an appropriate NESHAPs Report is filed with the EPA, IEPA, and DOE

4.0 PROGRAM DESCRIPTION

Fermilab air emissions are governed by air pollution control regulations as summarized by topic in Appendix A, by DOE orders, and by the Fermilab ROSS (see Appendix D). Divisions/Sections develop and implement, as needed, procedures to ensure compliance with these requirements. The criteria for inclusion in the ROSS program are as follows:

- Not required to get a Title V or Clean Air Act Permit Program (CAAPP) permit
- Not required to get a Federally Enforceable State Operating Permit (FESOP)
- Not required to get a permit under the New Source Performance Standards (NSPS) or under the NESHAP or by EPA.
- Actual emissions from the source's non-permit exempt emission units are less than the following limits for the prior calendar year:
 - 5.0 Tons/year of combined pollutants (particulate matter, carbon monoxide, nitrogen oxides, sulfur dioxide and volatile organic material)
 - 0.50 Tons/year of combined HAPs
 - 0.05 Tons/year of mercury air emissions
 - 0.05 Tons/year of lead air emissions

The air emissions inventory lists all air emission sources located at Fermilab (ES&H DocDB #2015), whether exempt or non-exempt from permitting. The current ROSS registration, issued on August 21, 2012 includes the operation of the following non-permit exempt emission unit(s) and /or air pollution control equipment:

- Magnet Debonding Oven with Afterburner
- Natural Gas Fired Boiler with Firing Rate of 15 Million British Thermal Units (mmBtu)/Hour (hr)
- Natural Gas Fired Boiler with Firing Rate of 12.247 mmBtu/hr
- Gasoline Dispensing Facility with one 12,000 Gallons Gasoline Storage Tank Equipped with Permanent Submerged Loading, with Stage 1 Vapor Balance System
- Radionuclide Emission Stacks
- Emergency Standby Diesel Fuel Fired Engine – Generator with Nominal Capacity of 2,220 Horsepower (hp)
- Cavity Processing Lab which includes: One Buffered Chemical Polishing (BCP) process, and one Electropolishing (EP) process

These are the only emissions sources at Fermilab that do not meet a permitting exemption. These sources must comply with the conditions outlined in Appendix E. All other existing air emissions sources are exempt from permitting. The D/S/P purchasing and operating an exempt emission source must inform the ES&H EP Group for inclusion in the inventory. Emission sources must comply with the relevant IEPA or USEPA regulations regardless of permit exemptions.

When a new air emission source or modification to an existing source is proposed, the D/S/P consults with the ES&H Section to determine whether registry in the ROSS program is still applicable or a construction permit will be required (see Appendix C for the decision making flow chart).

The D/S/P operating the above listed permitted emission sources develops procedures to ensure compliance with Appendix D and for submitting all necessary documentation to the ES&H Section as directed by the ES&H EP Group.

The ES&H Section submits the ROSS determination calculations to the DOE in a timely manner so that the annual ROSS site fee may be transmitted to IEPA by the regulatory due date. In addition, the ES&H Section calculates and reports the estimated committed effective dose equivalent to the maximally exposed member of the public and reports this to the DOE for transmittal to the EPA, IEPA, and DOE Headquarters by the regulatory deadline.

5.0 APPENDIX A

The following is a summarized description, listed alphabetically by topic, of the regulatory requirements governing existing or potential air emissions at Fermilab in Batavia, Illinois.

5.1 Asbestos [35 IAC Part 228]

The asbestos NESHAP standards require that the IEPA be notified before large asbestos removal projects (involving more than 260 feet of pipe insulation or 160 square feet of other material) have begun. Renovation or demolition involving asbestos-containing material must be done in compliance with the work practice standards in the above-designated regulations.

5.2 Clean Air Act 112(r) See Toxic or Flammable Substance below.

5.3 Coating Operations [35 IAC, Part 218, Subpart F]

These regulations limit emissions resulting from coating ("Coating" means, for purposes of 35 IAC 218 and 219, a material applied onto or impregnated into a substrate for protective, decorative, or functional purposes. Such materials include, but are not limited to, paints, varnishes, sealers, adhesives, thinners, diluents, and inks.) operations (for example spray paint booths). The limits are expressed in units of Volatile Organic Material per volume of coating as applied at each coating applicator. Compliance with this Subpart is demonstrated through the applicable coating analysis test methods and procedures specified in Section 218.105(a) and the recordkeeping and reporting requirements specified in Section 218.211(c) except where noted.

5.4 Cold Cleaning [35 IAC, Part 218, Subpart E]

These regulations limit the maximum vapor pressure of organic solvents that can be used in cold cleaning operations in the Chicago ozone nonattainment area (this includes Kane and DuPage counties where Fermilab is located). As of March 15, 2001, no operation of a cold cleaning degreaser in the Chicago ozone nonattainment area can utilize a cleaner with a solvent vapor pressure that exceeds 1.0 millimeters of mercury (mm Hg) (0.019 pounds (lbs) per square inch (psi)) measured at 20 degrees Celsius (°C) (68 degrees Fahrenheit (°F)). All persons subject to the above requirement must retain for three years records that include for each purpose: 1) name and address of solvent supplier; 2) date of purchase; 3) type of solvent; and 4) vapor pressure of solvent measured at 20°C (68°F). The cleaning of electronic components is exempt from these requirements, and wipe cleaning is not included in the definition of cold cleaning.

5.5 Criteria Pollutants [35 IAC Subtitle B; 40 CFR 50]

Fermilab has a number of sources (magnet debonding oven, Central Utility Building boilers, gasoline dispensing facility, radionuclide emissions stacks) of criteria pollutants (sulfur

dioxide, carbon monoxide, nitrogen dioxide, lead, ozone, and particulate matter). IEPA regulations establish limits for criteria pollutants and enforce these limits through a permit system, including ROSS. Appendix D includes limits for all non-exempt criteria pollutant sources on site.

5.6 Fleet Vehicles [35 IAC Part 241]

IEPA requires that a specified percentage of all annually acquired light duty and heavy-duty vehicles (including leasing) be clean fuel fleet certified. Some vehicles are exempted from meeting the percentage, but all must be reported to IEPA on an annual basis. These regulations apply only to fleets based in the Chicago ozone nonattainment area (this includes Kane and DuPage counties where Fermilab is located).

5.7 Hazardous Air Pollutants (HAPs) [35 IAC Subtitle B; 40 CFR 61]

Fermilab has a few sources (radionuclide emission stacks, magnet debonding oven) of HAPs (radionuclides). Emission limits on these sources are also regulated by permit (see Radionuclides below) for Fermilab. The Clean Air Act requires the EPA to establish a National Emission Standard (NES) for each HAP, referred to as NESHAP.

5.8 Ozone Depleting Substances [40 CFR 82]

These regulations cover federal procurement, usage, labeling, recycling, and alternatives for chemicals designated by EPA as contributing to the destruction of stratospheric ozone. They also require that all chillers, air conditioners (including mobile source units) and other refrigeration units be serviced by EPA-certified technical personnel. In addition, these regulations cover annual leak rate limitations and associated repair/replacement requirements.

See FESHM 8081 Refrigerant Management for guidance on Ozone Depleting Substances.

5.9 Radionuclide [35 IAC Subtitle B; 40 CFR 61, Subpart H]

The NESHAP regulation establishes standards for radionuclide emissions (other than point sources of radon-220 and -222) from DOE facilities and imposes monitoring, reporting, and record keeping requirements. The NESHAP regulation limits the effective dose equivalent (EDE) of the maximally exposed member of the public due to radionuclide emissions from all sources to 10 millirem (mrem)/year and requires a continuous monitoring of any stack that has the potential to produce an EDE of 0.1 mrem/year. In addition, Fermilab has an internal policy that requires air emissions to be maintained as low as reasonably achievable and has set an internal goal of 1 mrem/year of the maximally exposed individual. Fermilab is responsible for the measurement of annual radionuclide emissions. The computer simulation model CAA Assessment Package 88PC is used to calculate the dose.

5.10 Toxic or Flammable Substances [40 CFR Part 68]

The Clean Air Act Section 112(r) requires that any process containing toxic or flammable substance on the 112(r) list (substances are listed at 40 CFR Part 68, Subpart F, Section 68.130) that exceeds the specified threshold to have a Risk Management Plan (RMP) on file with IEPA. The RMP must be on file prior to establishing a process with a listed substance on site. At the time of this chapter, Fermilab does not exceed the thresholds requiring a RMP.

6.0 APPENDIX B

6.1 Exemptions from State Permitting Requirements (Title 35 IAC, Subtitle B, Chapter I, Subchapter a, Part 201, Subpart C, Section 201.146)

Construction or operating permits are not required for the classes of equipment and activities listed in the link below. **The permitting exemptions in this Section do not relieve the owner or operator of any source from any obligation to comply with any other applicable requirements:**

<ftp://www.ilga.gov/JCAR/AdminCode/035/035002010C01460R.html>

7.0 APPENDIX C

7.1 Stationary Internal Combustion Engines

The US EPA published two rules that govern stationary Internal Combustion Engines (ICE). The standards, New Source Performance Standard (NSPS) and NESHAP, limit emissions of nitrogen oxides (NO_x), particulate matter (PM), carbon monoxide (CO), non-methane hydrocarbons (NMHC), sulfur oxides (SO_x), and HAPs.

NSPS applies to all stationary ICE located at Fermilab that are constructed, modified, or reconstructed after 2006. The NESHAP applies to all stationary ICE regardless of construction date. The NSPS and NESHAP rules are broken down by engine type (compression ignition (CI), spark ignition (SI) or combustion turbine).

In order for Fermilab to be sure it purchases/uses only compliant engines, D/S/Ps should only purchase “certified” engines. In this way Fermilab can ensure only complying engines are installed. However, there may be cases where non-certified engines are purchased. In those cases extra requirements, including notifications and performance testing, may be required. CI ICE, SI ICE and combustion turbines all have specific emission standards based on power rating, fuel fired, and manufacture date.

7.2 Definitions

Certified Stationary Internal Combustion Engine means an engine that belongs to an engine family that has a certificate of conformity that complies with the emission standards and requirements in 40 CFR 60, 40 CFR 90, 40 CFR 1048, or 40 CFR 1054, as appropriate.

Combustion Turbine means all equipment, including but not limited to the turbine, the fuel, air, lubrication and exhaust gas systems, control systems (except emissions control equipment), and any ancillary components and sub-components comprising any simple cycle combustion turbine, any regenerative/recuperative cycle combustion turbine, the combustion turbine portion of any cogeneration cycle combustion system, or the combustion turbine portion of any combined cycle steam/electric generating system.

Compression Ignition means relating to a type of stationary internal combustion engine that is not a spark ignition engine.

Emergency Stationary ICE means any stationary internal combustion engine whose operation is limited to emergency situations and required testing and maintenance. Examples include stationary ICE used to produce power for critical networks or equipment (including power supplied to portions of a facility) when electric power from the local utility (or the normal power source if the facility runs on its own power production) is interrupted, or stationary ICE used to pump water in the case of fire or flood, etc. Stationary ICE used for peak shaving are not emergency engines. Stationary ICE used to supply power to an electric grid or that supply power as part of a financial arrangement with another entity are NOT considered emergency engines.

Spark Ignition means relating to a gasoline, natural gas, or liquefied petroleum gas fueled engine or any other type of engine with a spark plug (or other sparking device) and with operating characteristics significantly similar to the theoretical Otto combustion cycle. Spark ignition engines usually use a throttle to regulate intake air flow to control power during normal operation.

Stationary Internal Combustion Engine (ICE) means any internal combustion engine, except combustion turbines, that converts heat energy into mechanical work and is not mobile. Stationary ICE include reciprocating ICE (RICE), rotary ICE and other ICE, except combustion turbines.

7.3 Responsibilities

7.3.1. Division/Section Heads and Project Managers (DSP)

D/S/Ps shall ensure that consultation with the ES&H EP Group occurs before any stationary ICE are purchased. D/S/Ps should purchase ICE certified to the appropriate emission standards described in the NSPS and NESHAP rules. D/S/Ps shall also ensure that the following information is provided to the ES&H EP Group:

- certification documentation, or, for non-certified ICE, documentation showing compliance with the appropriate emission standards
- engine make/model
- manufacture date or model year
- location
- power (kilowatt or hp)
- engine type
- maintenance schedule
- other documentation or recordkeeping as requested by the ES&H EP Group

7.3.2. ES&H Section Environmental Protection Group

The ES&H EP Group will provide guidance to D/S/Ps prior to purchasing stationary ICE in order to ensure only compliant engines are constructed. Also, the ES&H EP Group will ensure that appropriate documentation and recordkeeping is maintained. In addition, keep inventory of ICE subject to NSPS and NESHAP and file the appropriate documentation.

8.0 APPENDIX D

8.1 Conditions for Operating Non-Exempt Emission Units

The current ROSS registration, issued on August 21, 2012 includes the operation of the following non-permit exempt emission unit(s) and /or air pollution control equipment:

Magnetic Debonding Oven with Afterburner

One 15 mmBtu/hr Natural Gas-Fired Boilers

One 11.55 mmBtu/hr Natural Gas-Fired Boiler

Gasoline Dispensing Facility with one 12,000 Gallons Gasoline Storage Tank

Equipped with Permanent Submerged Loading, with Stage 1 Vapor Balance System

Radionuclide Emission Stacks

One Emergency Standby Diesel Fuel Fired Engine – Generator with Nominal Capacity of 2,220 hp

One Cavity Processing Facility which includes:

One Buffered Chemical Polishing (BCP) process

One Electropolishing (EP) process

Magnet Debonding Oven

Emissions and operation of equipment shall not exceed the following limits:

E M I S S I O N S

Item of Equipment	Operating Hours (hr/yr)	Volatile Organic Material		Particulate Matter	
		(Lbs/Hr)	(Tons/yr)	(Lbs/Hr)	(Tons/yr)
Debonding Oven	1,664	1.77	0.88	0.55	0.46

These limits are based on 35 Ill. Adm. Code 212.321. Volatile Organic Material (VOM) emission limits are based on stack test results as provided in permit application. Compliance with annual limits shall be determined from a running total of 12 months of data.

The afterburner shall maintain an operating temperature of not less than 1400° F and a control efficiency of not less than 99%.

Boilers

The 12.247 mmBtu/hr boiler is subject to the NSPS for Small Industrial – Commercial – Institutional Steam Generating Units, 40 CFR Part 60 Subparts A and Dc. The IEPA is administering NSPS in Illinois on behalf of the United States EPA under a delegation agreement.

The Permittee shall perform the applicable monitoring, reporting and recordkeeping as required by 40 CFR 60.47c and 60.48c.

At all times the Permittee shall, to the extent practicable, maintain and operate the boilers, including associated air pollution control equipment, in a manner consistent with good air pollution control practice for minimizing emissions.

Emissions and operation of the two boilers shall not exceed the following limits:

The 15 mmBtu/hr boiler shall not exceed the following:

Natural Gas Usage: 11.2 million standard cubic feet (mmscf)/month (mo), 132 mmscf/yr

<u>Pollutant</u>	<u>Emission Factor (Lbs/mmscf)</u>	<u>Emissions (Ton/Mo)</u>	<u>Emissions (Ton/yr)</u>
NOx	100.0	1.32	13.2
CO	84.0	1.11	11.1
PM	7.6	0.10	1.0
VO	5.5	0.07	0.7

These limits define the potential emissions of NOx, CO, PM, and VOM and are based on maximum fuel usage and standard emission factors. Compliance with annual limits shall be determined from a running total of 12 months of data.

The 11.55 mmBtu/hr boiler shall not exceed the following:

Natural Gas Usage: 10.0 mmscf/month, 99.25 mmscf/yr

<u>Pollutant</u>	<u>Emission Factor (lb/mmscf)</u>	<u>Emissions (tons/month)</u>	<u>Emissions (tons/year)</u>
Nitrogen Oxides (NOx)	32*	0.16	1.59
Carbon Monoxide (CO)	84	0.417	4.17
Sulfur Dioxide (SO ₂)	0.6	0.003	0.03
Particulate Matter (PM)	7.6	0.038	0.38
Volatile Organic Material (VOM)	5.5	0.027	0.27

*The emission factor for flue gas recirculation is used. This boiler is constructed with flue gas recirculation.

Natural Gas shall be the only fuel used in the two boilers. Use of any other fuel other than natural gas requires a permit change.

Fuel Dispensing

The Gasoline Dispensing Facility is subject to NESHAP for Source Categories: Gasoline Dispensing Facilities, 40 CFR Part 63 Subparts A and CCCCCC. The IEPA is administering NESHAP in Illinois on behalf of the USEPA under a delegation agreement.

The source shall comply with the applicable requirements of 40 CFR Part 63 Subparts A and CCCCCC.

This permit is issued based on negligible emissions of VOM from the gasoline dispensing storage tank. For this purpose, emissions shall not exceed nominal emission rates of 0.1 lb/hr and 0.44 tons/year.

The gasoline tank shall be equipped and operated with a submerged loading pipe, pursuant to 35 IAC 218.122 (b) and 218.583(a)(1).

All tank vent pipes shall be equipped with pressure/vacuum relief valves with the following design specifications:

- a. The pressure/vacuum relief value shall be set to resist a pressure of at least 3.5 inches of water column and to resist a vacuum of no less than 6.0 inches of water column; or
- b. The pressure/vacuum relief valve shall meet the requirements of Section 218.586(c).

The permittee shall implement the following with respect to the Stage I Vapor Balance System:

- a. Maintain and operate the system in accordance with the established procedures and instructions. [35 IAC 218 583 (d) (1)]
- b. Maintain gauges, meters, or other specified testing devices in proper working order [35 IAC 218.583(d)(3)]
- c. Operate the vapor balance system and delivery vessel unloading points in a manner that prevents:
 - i. A reading equal to or greater than 100 percent of the lower explosive limit (LEL measured as propane) when tested in accordance with the procedure described in EPA 450/2-78-051 Appendix B, and
 - ii. Avoidable leaks of liquid during the filling of storage tanks. [35 IAC 218.583 (d) (4)]
- d. Repair, replace, or modify any worn out or malfunctioning component or element of design. [35 IAC 218.583(c)(3)]
- e. Within 15 business days after discover of the leak, repair and retest a vapor balance system which exceeds the above limits in Condition 14©. [35 IAC 218.583(d)(5)]

- f. Provide instructions to the personnel operating the gasoline dispensing facility describing necessary maintenance operations and procedures for prompt notification of the Permittee in case of any malfunction of a vapor balance system. [35 IAC 218.583(c)(2)]

Personnel operating the gasoline dispensing facility shall operate in accordance with the Permittee's instructions and shall promptly notify responsible maintenance personnel or their supervisor of any scheduled maintenance or malfunction requiring replacement or repair of a major component of a vapor balance system. [35 IAC 218.583(d)(1) and (2)]

Radionuclide Emission Stacks

This DOE facility is subject to a NESHAP for radionuclide emissions, 40 CFR 61, Subparts A and H.

Pursuant to the NESHAP, emissions of radionuclides shall not exceed those amounts that cause a dose equivalent to 10 mrem/yr to any member of the public. Dose due to radon-220, radon-222, and their respective decay products are excluded from these limits.

The Permittee shall demonstrate compliance with NESHAP using the procedures specified by 40 CFR 61.93

The Permittee shall fulfill applicable notification, record keeping and reporting requirements for the NESHAP, 40 CFR 61.09, 61.10(c) and 61.94(c).

At all times, the Permittee shall also, to the extent practicable, maintain and operate the plant, including associated air pollution control equipment, in a manner consistent with good air pollution control practice for minimizing emissions.

FCC Generator

The only fuel fired in the Emergency Engine-Generator shall be distillate fuel oil (No. 1 and 2 oil).

The total annual consumption of fuel by the standby engine-generator shall not exceed 5,000 gallons/month and 60,000 gallons/year.

At the above location, the Permittee shall not keep, store, or utilize:

- i. Distillate fuel oil (Grades No. 1 and 2) with a sulfur content greater than the larger of the following two values:
 - A. 0.28 weight percent, or
 - B. The wt. Percent given by the formula: Maximum wt. Percent sulfur = $(0.000015) \times (\text{Gross heating value of oil, Btu/lb})$.

Emissions and operation of the engine-generator shall not exceed the following limits:

<u>Pollutant</u>	<u>Emission Factors (Lb/Hp*Hr)</u>	<u>Monthly Limits (Tons/Month)</u>	<u>Annual Limits (Tons/Year)</u>
NO _x	0.024	1.11	13.32
CO	0.0055	0.25	3.05
SO ₂	0.0004	0.02	0.22
VOC	0.00071	0.03	0.39
PM	0.0007	0.03	0.39

These limits are based on standard AP-42 emission factors and information provided in the permit application, a maximum of 120 gallons per hour of fuel usage, a heat content of 137,000 Btu/gallon, and maximum operation of 500 hours per year for the engine-generator. Compliance with annual limits shall be determined from a running total of 12 months of data.

The Permittee shall comply with the applicable requirements of 40 CFR Part 63 Subpart ZZZZ for the emergency generator.

Maintain records of the following items to address compliance with the limits:

- a. Records of the sulfur content of the fuel oil for each shipment of fuel oil received, percent by weight.
- b. Hours of operation for the engine-generator (hrs/month and hrs/year).
- c. Monthly and annual records of fuel consumption by the engine-generator (gallons/month and gallons/year).
- d. Monthly and aggregate annual emissions of NO_x, CO, SO₂, VOC, and PM in tons/month and tons/year of the engine-generator, with supporting calculations.

The Permittee shall keep a maintenance and repair log for the engine-generator, listing significant activities performed with date.

Cavity Processing Laboratory

This permit is issued based on the cavity processing operations not being subject to the NESHAP for Area Source Standards for Plating and Polishing Operations, 40 CFR 63 Subpart WWWW because the source does not use or have emissions of compounds of one or more plating and polishing metal HAPs, listed in 40 CFR 63.11504.

Operation and emissions of the Cavity Processing Facility shall not exceed the following limits:

Pollutant	(lbs/hr)	Emissions (tons/month)	(tons/year)
Nitrogen Oxides (NO _x)	0.13	0.06	0.58
Particulate Matter (PM)	0.02	0.004	0.042

These limits are based on a maximum of 2,000 hrs/year operation of the BCP process and a maximum 5,000 hrs/year operation of the EP process and the information provided in the application. Compliance with annual limits shall be determined from a running total of 12 months of data.

General

Pursuant to 35 IAC 216.121, no person shall cause or allow the emission of carbon monoxide (CO) into the atmosphere from any fuel combustion emission source with actual heat input greater than 10 mmBtu/hr to exceed 200 ppm, corrected to 50 percent excess air.

The IEPA shall be allowed to sample all fuels stored at the above location.

If there is an exceedance of or deviation from the requirements of this permit as determined by the records required by this permit, the Permittee shall submit a report to the IEPA's Compliance Section in Springfield, Illinois within 30 days after the exceedance/deviation. The report shall include the emissions released in accordance with the recordkeeping requirements, a copy of the relevant records, and a description of the exceedance or deviation and efforts to reduce emissions and future occurrences.

Records Maintenance

The permittee shall maintain monthly records of the following items:

- a. The amount of natural gas burned in the two boilers (mmscf/mo and mmscf/yr);
- b. Hours of operation of the debonding oven (hrs/mo and hrs/yr);
- c. The hours of operation of the EP process and the BCP process (hrs/month and hrs/year);
- d. Quantity and percent concentration of nitric acid used (gallons/month and gallons/year);
- e. The amount of gasoline dispensed (gallons/month and gallons/year); and
- g. PM, NO_x, CO, SO₂, VOM, and HAP emissions with supporting calculations (tons/month and tons/year).