ACCELERATOR DIVISION ENVIRONMENT, SAFETY AND HEALTH PROCEDURE

ADSP-08-0203

WASTEWATER DISCHARGE IDENTIFICATION PROCEDURE

RESPONSIBLE DEPARTMENT ES&H

PREPARED BY Sylvia Wilson, Environmental Officer DATE 10-28-14

APPROVED BY 11291 Sergei Nagaitsev, Division Head DATE 11/17/14

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REVIEW AND CONCURRENCE RECORD

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1.0 PURPOSE AND SCOPE

The purpose of this procedure is to formally establish Accelerator Division (AD) responsibilities and procedures for proper identification of effluents that are discharged into the sanitary system or surface waters via floor drains, sumps, or storm sewers. The identification process includes inventorying and properly characterizing effluents so that discharge approvals are obtained and reporting and monitoring requirements are met. Implementation of this procedure will be in accordance with Fermilab and DOE standards, and local, federal and state regulations. The procedure applies to all AD departments.

The Accelerator Division Radiation Safety Officer reviews all new target stations and beam line designs to ensure that any potential activation of surface or ground water is understood and is within the limitations prescribed in the Fermilab Radiological Control Manual. The Clean Water Act (CWA) is a federal law that governs discharges to surface water, and is concerned with water quality management. **There will be no intentional discharges to surface waters without a National Pollutant Discharge Elimination System (NPDES) permit and approval from the ESH&Q Section**.

2.0 BACKGROUND

AD performs a variety of activities associated with support and maintenance of beam operations. Activities include cleaning, degreasing, and electropolishing of various types of equipment and components. The use of detergents or cleaners that may be acidic or basic may be necessary for the process. Effluents may be contaminated with heavy metals, suspended particulates, greases and oils, or radioactivity. Activities that generate effluents are generally categorized as industrial process wastewaters. Proper and timely identification of the processes are important so that discharge approvals may be obtained promptly. Many process wastewaters were identified by the ES&H Department in 1991. The ES&H Department accomplished this by submitting Attachment 1, "Industrial Process Wastewater Discharge Survey Form", to all AD departments. The forms were completed by the departments and sent to the ES&H Department for review. The ES&H Department evaluated the information and sampled most of the effluents entering into the sanitary system and surface waters. Once the sampling results were received, some effluents were either approved to be discharged via sanitary system, and others were declined. The ones that were declined had to be managed as regulated chemical waste (i.e., packaged and disposed of as either Illinois Special waste or RCRA Hazardous Waste).

In addition, this procedure applies to discharges of low-conductivity water (LCW), normally slightly radioactive, to tunnel floors (and subsequently to sumps) during maintenance and repair activities. Samples are periodically collected from the LCW systems by the AD/ES&H Radiation Safety Group and the results are always well under surface water discharge limits. **LCW may be discharged to Fermilab's pond system without seeking further approval as long as it has not been used for any process other than cooling, and is not mixed with any other chemicals, i.e., ethylene or propylene glycol.**

3.0 REFERENCES

3.1 Fermilab ES&H Manual Chapter 8010, "Environmental Protection Program"

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3.2 Fermilab ES&H Manual Chapter 8025, "Wastewater Discharge To Sanitary Sewers"

3.3 DOE Order 450.1, "Environmental Protection Program"

4.0 DEFINITIONS

4.1 Effluent: Any wastewater discharged directly or indirectly, to the waters of the state (e.g., via sanitary sewer or storm sewer).

4.2 Generator: a person directly involved in the activity or process that generates a waste.

4.3 Hazardous waste: is a waste that exhibits the following characteristics as defined by the Resource Conservation and Recovery Act (RCRA) and identified or listed in 40 CFR 261.

- 40 CFR 261.21 - Ignitability
- 40 CFR 261.22 - Corrosivity
- 40 CFR 261.23 - Reactivity
- 40 CFR 261.24 - Toxicity

4.4 PH: A measure of hydrogen ion concentration in an aqueous solution. Solutions with a pH range between 0-7 are acidic and solutions with a pH range from 7-14 are basic.

4.5 Resource Conservation and Recovery Act (RCRA): federal regulations enacted to establish a framework for national programs to achieve environmentally sound management of hazardous and nonhazardous wastes.

4.6 Sanitary Sewer: A sewer intended to carry only sewage. It does not include storm water.

4.7 Special (Illinois non-RCRA): waste means a waste that is not hazardous as defined by RCRA, however, is an industrial process waste, pollution control waste, medical waste, asbestos waste, or PCB waste for which there are State of Illinois statutes governing their transport and disposal.

4.8 Storm Sewer: A sewer that is designed to drain only storm waters, surface runoff from streets, parking lots, sidewalks, roofs, etc.

4.9 Waste Stream: The waste generated by a particular process unit, product tank, or waste management unit. The characteristics of the waste stream are determined at the point of waste generation. Example of this is process wastewater

4.10 Wastewater: The spent or used water from individual homes, a community, a farm, or an industry that contains dissolved or suspended matter.

5.0 RESPONSIBILITIES

5.1 The AD Division Head is responsible for approving this procedure and holding the department heads accountable for its implementation.

5.2 The AD department heads are responsible for:

a. Supervising their employees to ensure that the implementation of this procedure is being followed correctly;

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b. Notifying the AD Environmental Officer (EO) of any activities that will generate process wastewater or will involve any changes to activities that will alter the previously approved effluent (e.g., increases in discharge frequency and/or quantity and changes in materials/constituents used);

c. Completing/updating the Industrial Wastewater Discharge Survey Form for wastewaters being planned or revised, and as requested by the AD/EO;

d. Obtaining prior approval from the AD ES&H Department before wastewaters are discharged into any AD sanitary sewers or surface waters; and

5.3 The AD/EO is responsible for:

a. Updating this procedure as required;

b. Reviewing activities and information;

c. Sampling process wastewaters;

d. Approving and maintaining an inventory; and

e. Providing the ES&H Section Environmental Team with effluent discharge information, upon request.

6.0 INSTRUCTIONS

Effluents may be discharged into the sanitary sewers under certain conditions only. Both general and specific prohibitions apply to potential discharges, and for each discharge, the responsible AD department or group 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 Illinois Special waste or RCRA Hazardous waste). Departments should make every effort to minimize the generation of wastes of all kinds, through:

- good housekeeping practice
- substitution of a less hazardous chemicals;
- Efficient process controls
- And/or more efficient process designs.

All AD activities that generate process wastewaters that have not been previously approved shall be documented and approved by the AD/EO prior to being discharged. **Discharges to surface waters via sumps, floor drains and storm sewers are generally prohibited. Exceptions may be made on a case-by-case basis and can only be approved by the ESH&Q Section.**

6.1 INVENTORY OF EFFLUENTS

6.1.1 Department Heads are responsible for ensuring that the Accelerator Division Industrial Wastewater Discharge Survey Form (Attachment 1) is completed whenever a new wastewater is planned. The form should be submitted to the AD/EO for review and approval.

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6.2 CHARACTERIZATION OF EFFLUENTS

6.2.1 Extreme care must be exercised when evaluating a new effluent. The waste generator typically has a good knowledge of the process, and usually can provide the following information:

- Description of the process;
- Chemicals and metals used;
- Volume that will be discharged;
- Frequency of discharge
- The discharge location that will be used;
- Are the components radioactive

6.2.2 Samples are usually collected by the AD/EO and ES&H Department. However, contingent upon the location of the effluent, the waste generator may be asked to collect the samples at the discretion of the AD Radiation Safety Group or the AD/EO.

6.2.3 The AD/EO will make arrangements with the ESH&Q Section to have the sample(s) analyzed. The sample is surveyed and analyzed on site before it is sent off site for further analysis, if necessary.

6.2.4 Once the effluent has been characterized, the AD/EO will document the information and notify the waste generator. See 6.3 below.

6.2.5 If the effluent does not meet discharge requirements, the wastewater will need to be disposed of as a regulated chemical waste. Efforts to avoid future disposal of wastewaters as a regulated chemical waste shall be made through process alterations and resampling.

6.3 DISCHARGE APPROVALS

6.3.1 Sanitary System

6.3.1.1 Requests to discharge process wastewaters into a sanitary sewer must be submitted to the AD/EO for approval. See Attachment 1.

6.3.1.2 Approvals will be based upon FESHM chapter 8025, as indicated in Reference 3.2. It usually can take a few working days (i.e., 2-5 days) before a decision is made by the AD/ES&H Department. The waste generator will be notified electronically regarding the decision.

6.3.2 Surface Waters

6.3.2.1 **Approval to discharge any effluent into surface waters via storm sewers, storm floor drains, or sump may be granted only by the ESH&Q Section. The AD ES&H Department will act as the liaison between the generator/requester and the ESH&Q Section**.

6.3.2.2 Discharge requests are reviewed and granted on a case-by-case basis.

6.4 RECORDKEEPING

6.4.1 The process wastewater inventory, sampling data and any correspondences with the waste generator will be maintained by the AD/EO and ES&H Department.

7.0 DISTRIBUTION

7.1 An electronic controlled copy of this procedure is maintained at http://www-bdnew.fnal.gov/esh/adsp/ADSP-08-0203.pdf.

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Accelerator Division Industrial Wastewater Discharge Survey Form

Name_____ **ID**_____ **Ext.**_____ **MS**_____

Department _____ **Group** _____ **Date** _____

Location _____ **Return completed form to S. Wilson, MS 371**

Brief Description of Operation/Process	Materials Used	Possible Constituents/ Contaminants	Estimated Total Volume Discharged (# gallons)	Frequency of Discharge (#/day/week/month)	Disposal/Discharge Location	SDS Number (formerly MSDS), Manufacturer's Name, Address, and Phone Number

Do Not Complete Below This Line

Comments: _____

_____

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INSTRUCTIONS

1) Brief Description of Operation/Process - Any activity, operation, or process which effluent is being disposed/discharged into sinks, drains, or surface waters, etc.

2) Materials Used - Materials(s) used/introduced in the activity, operation, or process. Include water, if used, and type. Please provide volumes, if known.

3) Possible Constituents/Contaminants - Any material/liquid, other than primary materials used, that may be released into the effluent as a result of the activity, operation, or process.

4) Estimated Volume - The approximate amount of effluent that is generated as a result of the described activity or operation.

5) Frequency - How often the process occurs.
For Example: # per day, # per week, # per month.

6) Proposed Disposal/Discharge Location - Specific location of this disposal/discharge. Also, if the effluent is collected in drums, tanks, etc., please note this.

7) SDS Number or Manufacturer's Name, Address & Phone No.- Laboratory-assigned SDS number on the materials used in the process. If the SDS number is not available, provide the manufacturer's name, address & phone no. for the material.

EXAMPLE

1) Cleaning of new stainless steel parts to remove oil residue used in machining

2) Micro Cleaner and distilled water

3) Dust, dirt, machine oils

4) 100 gallons

5) Once per week

6) Waste is collected in 2 55-gallon drums and disposed of in the floor drain in the NE corner of the building. Outlet unknown.

7) Cole-Parmer Instrument Co., 425 N. Oak Park Ave., Chicago, IL 60648, 1-312-647-7600.

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Accelerator Division
ES&H Department
630.840.4489 (phone)
630.840.4721 (fax)

To: File I.D.2.b

From: Sylvia Wilson, AD/EO

Date: *(CURRENT DATE)*

Subject: Documentation of Process Wastewater Discharge

Description of Generating Process: *(Include brief process description, responsible department, generator's name)*

Location of Process:

Volume to be Discharged:

Metals Involved:

Chemicals Involved (include SDS #s):

Water Source:

pH:

Sampling Data including Sample Id Numbers & Summary of Results:

Radioactive Considerations:

Other Observations:

Conclusion Regarding Discharge:

Discharge location:

ATTACHMENT 2

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