ICR Number XXXX.XX
OMB Control Number: XXXX-XXXX
Expiration Date: mm/dd/yyyy

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name

Steam Electric Questionnaire
Second FRN Version Draft

PART E - WASTES FROM CLEANING METAL PROCESS EQUIPMENT

Table of Contents

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name

PART E. WASTES FROM CLEANING METAL PROCESS EQUIPMENT

INSTRUCTIONS

Complete Part E of the questionnaire for your plant. As you are completing the electronic form, note the following: When you enter your plant name and plant ID on the Part E TOC tab, all name and ID fields throughout Part E will automatically populate. Refer to the overall questionnaire instructions, the glossary, and the acronym list for assistance with completing Part E.

Please provide all free response answers in the highlighted yellow areas. Throughout Part E, you may need to make copies of certain sections/questions. Instructions are provided throughout Part E regarding making copies. Note that steam electric generating unit or metal cleaning operation names must be populated on the copied tab or section, located in the upper right corner under "Plant ID" and "Plant Name", in order to correlate the requested information with the steam electric generating unit or metal cleaning operation.

Use the Comments page at the end of Part E to do the following: provide additional information as requested in certain questions within Part E; indicate atypical data (e.g., if 2009 information is not representative of normal operations); and note methods used to make best engineering estimates in the event that exact data are not available.

Plant Name: Insert Plant ID
Plant ID: Insert Plant Name

Part: E
Section Title: 1. Metal Cleaning Operations

Instructions: Complete Part E of the questionnaire for your plant. This part collects information on operations that produce metal cleaning wastes at the plant. Metal cleaning wastes include any *process wastewaters* resulting from cleaning [with or without chemical cleaning compounds] any metal process equipment, including, but not limited to, boiler tube cleaning, boiler fireside cleaning, and air heater cleaning. This part also collects information on combined cycle combustion turbine and air compressor cleaning, and soot blowing.

CBI?
☐ Yes

E1-1. Has the plant generated any wastes from cleaning metal process equipment associated with fossil- or nuclear-fueled steam electric generating units since January 1, 2000?

○ Yes (Continue)
○ No (Skip to next Questionnaire Part)

Plant Name: Insert Plant ID
Plant ID: Insert Plant Name
SE Unit ID: Insert Unit ID

Part: E
Section Title: 2. Generating Unit Cleaning Data

Instructions: Complete Section 2 (Questions E2-1 and E2-2) for each fossil- or nuclear-fueled steam electric generating unit for which the plant has performed at least one cleaning operation on metal process equipment since January 1, 2000. See Part A Section 8 for unit classifications. Enter the steam electric generating unit ID under the section heading above (use steam electric generating unit IDs assigned in Table A-8). Make a copy of Section 2 for each steam electric generating unit identified in Table A-8 using the "Copy Section 2" button below. Please provide free response answers in the highlighted yellow areas.

NOTE: Combined cycle systems are considered steam electric generating units and, therefore, any cleaning operations performed on ANY portion of a combined cycle system, including cleaning operations associated with the combustion turbine portion of the system should be reported in this part. When responding to these questions, provide answ that describe the typical cleaning operation for the steam electric generating unit.

Copy Section 2

CBI?
☐ Yes

E2-1. In Table E-1, provide information about your most recent cleaning event for each cleaning operation with chemical addition on metal process equipment associated with fossil- or nuclear-fue electric generating units that has occured since January 1, 2000.

NOTE: "Typical Dose Concentration" refers to the average concentration of the chemical within the cleaning water and "cleaning event" refers to one instance in which the pla performs a cleaning operation on metal process equipment.

Table E-1. Metal Process Equipment Cleaning Operations Using Chemicals Performed on Steam Electric Generating Units

Operation ID	Type of Metal Cleaning Operation	Chemical Addition			Type of Water Used in Cleaning Operation	Typical Volume of Metal Cleaning Waste Generated per Cleaning Event (Gallons)	Typical Frequency Cleaning Events (e once per 3 years
		Type of Chemical Used in Operation	Typical Dose Concentration for Each Chemical (Grams per Liter)	Typical Amount Added for Each Chemical per Cleaning Event (Gallons)			
TUBE	Boiler tube cleaning	Select Select Select Other (specify):			Select Select Select Other (specify):		every
FIRE	Boiler fireside cleaning	Select Select Select Other (specify):			Select Select Select Other (specify):		every
AIR	Air heater cleaning	Select Select Select Other (specify):			Select Select Select Other (specify):		every
SOOT	Soot blowing	Select Select Select Other (specify):			Select Select Select Other (specify):		every

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ST-TURB	Steam turbine cleaning	Select / Select / Select / Other (specify):			Select / Select / Select / Other (specify):		every	
CT-COMB	Combustion turbine cleaning (combustion portion of turbine)	Select / Select / Select / Other (specify):			Select / Select / Select / Other (specify):		every	
CT-COMPR	Combustion turbine cleaning (compressor portion of combustion turbine)	Select / Select / Select / Other (specify):			Select / Select / Select / Other (specify):		every	
Other:	Other:	Select / Select / Select / Other (specify):			Select / Select / Select / Other (specify):		every	
Other:	Other:	Select / Select / Select / Other (specify):			Select / Select / Select / Other (specify):		every	

CBI?

☐ Yes

E2-2. In Table E-2, provide information about your most recent cleaning event for each cleaning operation without chemical addition on metal process equipment associated with fossil- or nuclear fueled electric generating units that has occured since January 1, 2000.

NOTE: "Typical Dose Concentration" refers to the average concentration of the chemical within the cleaning water and "cleaning event" refers to one instance in which the pla performs a cleaning operation on metal process equipment.

Table E-2. Metal Process Equipment Cleaning Operations Without Chemicals Performed on Steam Electric Generating Units

Operation ID	Type of Metal Cleaning Operation	Type of Water Used in Cleaning Operation	Typical Volume of Metal Cleaning Waste Generated per Cleaning Event (Gallons)	Typical Frequency of Cleaning Events (e.g., once per 3 years)	
TUBE	Boiler tube cleaning	Select / Select / Select / Other (specify):		every	yrs
FIRE	Boiler fireside cleaning	Select / Select / Select / Other (specify):		every	yrs
AIR	Air heater cleaning	Select / Select / Select / Other (specify):		every	yrs

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SOOT	Soot blowing	Select Select Select Other (specify):		every	yrs
ST-TURB	Steam turbine cleaning	Select Select Select Other (specify):		every	yrs
CT-COMB	Combustion turbine cleaning (combustion portion of turbine)	Select Select Select Other (specify):		every	yrs
CT-COMPR	Combustion turbine cleaning (compressor portion of combustion turbine)	Select Select Select Other (specify):		every	yrs
Other:	Other:	Select Select Select Other (specify):		every	yrs
Other:	Other:	Select Select Select Other (specify):		every	yrs

Plant Name: Insert Plant ID
Plant ID: Insert Plant Name
SE Unit ID: Insert Unit ID
Metal Cleaning Operation ID: Insert Operation ID

Part: E
Section Title: 3. Cleaning Operation Data

Instructions: Complete Section 3 (Questions E3-1 through E3-8) for each type of metal cleaning operation performed on the steam electric generating unit, which are identified in Tables E-1 and E-2 of Section 2. Make a copy of Section 3 using the "Copy Section 3" button below. Enter the steam electric generating unit ID under the section heading above (use steam electric generating unit IDs assigned in Table A-8). In addition, enter the metal cleaning operation ID performed on the steam electric generating unit (use the IDs from Tables E-1 and E-2). Please provide all free response answers in the highlighted yellow areas.

Copy Section 3

CBI?

☐ Yes

E3-1. In the space below, provide a description of the process equipment cleaning operation. Include the type of equipment and metal cleaned, any chemical preparation steps (e.g., diluting the chemical prior to use), and a short description of the cleaning operation. An example is provided below.

Example: *The plant uses citric acid to remove copper deposits and iron oxides from the steel tube surfaces of the boiler. The citric acid is diluted to a pH of 3.5 and then used for cleaning in a two-stage process. In the first stage, the citric acid dissolves iron oxides. In the second stage anhydrous ammonia is added to raise the pH of the cleaning solution between 9 and 10 and air is bubbled through the solution to dissolve copper deposits.*

CBI?
☐ Yes

E3-2. Is the cleaning waste commingled with other *process wastewaters*? If yes, indicate the process wastewaters with which the metal cleaning waste is commingled. [Check all boxes that apply.]

○ Yes

☐ Fly ash transport water
☐ Bottom ash transport water
☐ FGD scrubber purge
☐ Cooling tower blowdown
☐ Once through cooling water
☐ Other:

○ No

CBI?
☐ Yes

E3-3. What is the destination(s) of the cleaning waste? If the plant *recycles* the waste, indicate the plant process to which this waste is recycled. [Check all boxes that apply.]

☐ Immediately recycled back to plant process. Please describe how the cleaning waste is reused:

☐ Transferred to on-site treatment system. Identify the type of treatment system below. [Check all boxes that apl

☐ Settling pond
☐ pH adjustment
☐ Chemical precipitation
☐ Constructed wetlands
☐ Other, specify:

☐ Discharged to surface water. Provide NPDES permitted outfall number (from Part A Section
☐ Indirect discharge to a publicly or privately owned treatment works
☐ Evaporated during a cleaning operation
☐ Other, explain:

CBI?
☐ Yes

E3-4. Are *residues* or other solid by-products generated from the cleaning operation?

○ Yes (Continue)
○ No (Skip to next Questionnaire Part)

CBI?

☐ Yes

E3-5. If residues are generated, indicate if they are considered always hazardous, sometimes hazardous, or non-hazardous waste.

- ○ Always hazardous (Continue)
- ○ Sometimes hazardous (Continue)
- ○ Always non-hazardous (Skip to Question E3-7)
- ○ Uknown (Skip to Question E3-7)

CBI?

☐ Yes

E3-6. Indicate what characteristic(s) make the waste hazardous.

CBI?

☐ Yes

E3-7. Indicate how the plant handles the residue or other solid by-products and provide the annual tonnage (tpy) for each type of storage handling technique. If the solid by-products are stored in a *landfill* or *pond/impoundment*, indicate whether the solid by-products are stored permanently or temporarily. [Check all boxes that apply.]

- ☐ Landfilled
  - ☐ Stored permenently _____ tpy
  - ☐ Stored temporarily (later hauled off-site) _____ tpy
- ☐ Sent to a pond/impoundment
  - ☐ Stored permenently _____ tpy
  - ☐ Stored temporarily (later hauled off-site _____ tpy
- ☐ Hauled off-site for disposal _____ tpy
- ☐ Other (specify): _____ _____ tpy

CBI?

☐ Yes

E3-8. If the plant stores the residues or other solid by-products from cleaning operations in a landfill or pond/impoundment, are they combined with other solid by-products generated at the plant? If yes, indicate which. [Check all boxes that apply.]

○ Yes

- ☐ Fly ash
- ☐ Bottom ash
- ☐ FGD solids
- ☐ Mill rejects
- ☐ Other: _____

○ No (residues/solid by-products transferred to landfill but not combined with other was

○ Not applicable (residues/solid by-products not transferred to landfill or pond/impoundm

Plant ID: Insert Plant ID
Plant Name: Insert Plant Name

Part: E
Section Title: Part E Comments

Instructions: Cross reference your comments by question number and indicate the confidential status of your comment by checking the box next to “Yes” under "CBI?" (Confidential Business Information).

CBI?	Question Number	Comment
☐ Yes		
☐ Yes		
☐ Yes		
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CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		

Plant Name: Insert Plant ID
Plant ID: Insert Plant Name
SE Unit ID: Insert Unit ID

Part: E
Section Title: 2. Generating Unit Cleaning Data

Instructions: Complete Section 2 (Questions E2-1 and E2-2) for each fossil- or nuclear-fueled steam electric generating unit for which the plant has performed at least one cleaning operation on metal process equipment since January 1, 2000. See Part A Section 8 for unit classifications. Enter the steam electric generating unit ID under the section heading above (use steam electric generating unit IDs assigned in Table A-8). Make a copy of Section 2 for each steam electric generating unit identified in Table A-8 using the "Copy Section 2" button below. Please provide free response answers in the highlighted yellow areas.

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CBI?
☐ Yes

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FIRE	Boiler fireside cleaning	Select Select Select Other (specify):			Select Select Select Other (specify):		every
AIR	Air heater cleaning	Select Select Select Other (specify):			Select Select Select Other (specify):		every
SOOT	Soot blowing	Select Select Select Other (specify):			Select Select Select Other (specify):		every

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ST-TURB	Steam turbine cleaning	Select / Select / Select / Other (specify):			Select / Select / Select / Other (specify):		every	
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Other:	Other:	Select / Select / Select / Other (specify):			Select / Select / Select / Other (specify):		every	
Other:	Other:	Select / Select / Select / Other (specify):			Select / Select / Select / Other (specify):		every	

CBI?

☐ Yes

E2-2. In Table E-2, provide information about your most recent cleaning event for each cleaning operation without chemical addition on metal process equipment associated with fossil- or nuclear fueled electric generating units that has occured since January 1, 2000.

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Other:	Other:	Select Select Select Other (specify):		every	yrs

Plant Name: Insert Plant ID
Plant ID: Insert Plant Name
SE Unit ID: Insert Unit ID
Metal Cleaning Operation ID: Insert Operation ID

Part: E
Section Title: 3. Cleaning Operation Data

Instructions: Complete Section 3 (Questions E3-1 through E3-8) for each type of metal cleaning operation performed on the steam electric generating unit, which are identified in Tables E-1 and E-2 of Section 2. Make a copy of Section 3 using the "Copy Section 3" button below. Enter the steam electric generating unit ID under the section heading above (use steam electric generating unit IDs assigned in Table A-8). In addition, enter the metal cleaning operation ID performed on the steam electric generating unit (use the IDs from Tables E-1 and E-2). Please provide all free response answers in the highlighted yellow areas.

CBI?
☐ Yes

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CBI?
☐ Yes

E3-2. Is the cleaning waste commingled with other *process wastewaters*? If yes, indicate the process wastewaters with which the metal cleaning waste is commingled. [Check all boxes that apply.]

○ Yes

☐ Fly ash transport water
☐ Bottom ash transport water
☐ FGD scrubber purge
☐ Cooling tower blowdown
☐ Once through cooling water
☐ Other:

○ No

CBI?
☐ Yes

E3-3. What is the destination(s) of the cleaning waste? If the plant *recycles* the waste, indicate the plant process to which this waste is recycled. [Check all boxes that apply.]

☐ Immediately recycled back to plant process. Please describe how the cleaning waste is reused:

☐ Transferred to on-site treatment system. Identify the type of treatment system below. [Check all boxes that apl

☐ Settling pond
☐ pH adjustment
☐ Chemical precipitation
☐ Constructed wetlands
☐ Other, specify:

☐ Discharged to surface water. Provide NPDES permitted outfall number (from Part A Section
☐ Indirect discharge to a publicly or privately owned treatment works
☐ Evaporated during a cleaning operation
☐ Other, explain:

CBI?
☐ Yes

E3-4. Are *residues* or other solid by-products generated from the cleaning operation?

○ Yes (Continue)
○ No (Skip to next Questionnaire Part)

CBI?

☐ Yes

E3-5. If residues are generated, indicate if they are considered always hazardous, sometimes hazardous, or non-hazardous waste.

- ○ Always hazardous (Continue)
- ○ Sometimes hazardous (Continue)
- ○ Always non-hazardous (Skip to Question E3-7)
- ○ Uknown (Skip to Question E3-7)

CBI?

☐ Yes

E3-6. Indicate what characteristic(s) make the waste hazardous.

CBI?

☐ Yes

E3-7. Indicate how the plant handles the residue or other solid by-products and provide the annual tonnage (tpy) for each type of storage handling technique. If the solid by-products are stored in a *landfill* or *pond/impoundment*, indicate whether the solid by-products are stored permanently or temporarily. [Check all boxes that apply.]

- ☐ Landfilled
  - ☐ Stored permenently _____ tpy
  - ☐ Stored temporarily (later hauled off-site) _____ tpy
- ☐ Sent to a pond/impoundment
  - ☐ Stored permenently _____ tpy
  - ☐ Stored temporarily (later hauled off-site _____ tpy
- ☐ Hauled off-site for disposal _____ tpy
- ☐ Other (specify): _____ _____ tpy

CBI?

☐ Yes

E3-8. If the plant stores the residues or other solid by-products from cleaning operations in a landfill or pond/impoundment, are they combined with other solid by-products generated at the plant? If yes, indicate which. [Check all boxes that apply.]

○ Yes

- ☐ Fly ash
- ☐ Bottom ash
- ☐ FGD solids
- ☐ Mill rejects
- ☐ Other: _____

○ No (residues/solid by-products transferred to landfill but not combined with other was

○ Not applicable (residues/solid by-products not transferred to landfill or pond/impoundm

Part E Drop Downs

Process Equipment Cleaning Chemical
Select
Alkaline
Ammoniated EDTA
Anhydrous ammonia
Citric acid
Formic acid
Hydrochloric acid
Hydroxyacetic acid
Sulfuric acid
Other

Type of Water
Select
Potable (city) water
Raw plant intake water
Steam
Treated plant intake water
Other