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FERNALD ENVIRONMENTAL MANAGEMENT PROJECT (FEMP) - OEPA FACILITY NO. 1431110128 APPLICATION FOR PERMIT TO OPERATE - RESPIRATOR WASHING FACILITY, PTI 14-3348

03/07/95

C:EC:95-0037
FERMCO HAMILTON COUNTY
9
PTO

Fernald Environmental

FERMCO

Restoration Management Corporation P.O. Box 398704 Cincinnati, Ohio 45239-8704 (513) 738-6200

March 7, 1995

Fernald Environmental Management Project
Letter No. C:EC:95-0037

Mr. Peter Sturdevant
Compliance Specialist
Hamilton County Department
of Environmental Services
Air Quality Management
1632 Central Parkway
Cincinnati, OH 45210

Dear Mr. Sturdevant:

FERNALD ENVIRONMENTAL MANAGEMENT PROJECT (FEMP) - OEPA FACILITY NO. 1431110128 APPLICATION FOR PERMIT TO OPERATE - RESPIRATOR WASHING FACILITY, PTI 14-3348

Reference: FERMCO Letter, Terence D. Hagen to Peter Sturdevant, "Notification of Installation Certification, PTI 14-3348 - Respirator Washing Facility," dated February 16, 1995

Enclosed is an application for a Permit To Operate (PTO) for the Respirator Washing Facility. This equipment was installed under Permit to Install application 14-3348 and assigned Permit to Operate number P284. Written certification of construction compliance was submitted via the above referenced letter. Appendix A of this PTO application reflects the minor differences noted in the installation certification letter. These differences do not result in an increase in emissions from the Respirator Washing Facility.

Please contact Kip Klee of my staff at 738-8640 if you have any questions about this application.

Sincerely,

Terence D Hagen, Director
Environmental Compliance

TDH:KOK:mhv
Enclosure - RWF PTO Application with emission calculations

cc: S. M. Beckman, FERMCO/MS65-2, w/o enclosure
P. B. Spotts, FERMCO/MS65-2, w/o enclosure
L. E. Parsons, DOE Contract Specialist/MS45
W. J. Quaider, DOE-FN/MS45
AR Coordinator/MS78
RTS Files (PTO P284)
File Record Storage Copy 108.6

OHIO ENVIRONMENTAL PROTECTION AGENCY
APPLICATION FOR A PERMIT TO OPERATE AN AIR CONTAMINANT SOURCE

D.O.E.-Fernald Environmental Management Project
Facility Name

7400 Willey Road
Facility Address

Fernald | Hamilton | 45030
City | County | Zip

513/ 738-6502
Telephone Area Number

Mr. Stephen M. Beckman
Person to Contact

Post Office Box 538704
Mailing Address

Cincinnati | OH | 45253-8704
City | State | Zip

513/ 738-6502
Telephone

(Application no., if this is a renewal application)

4953
Std. Ind. Class. Code

1. Complete and attach any of the following appendices most appropriate to the air contaminant source. In addition, a compliance time schedule form is to be attached when applicable. Check as appropriate the following:

- X Appendix A, Process
- ___Appendix B, Fuel-Burning Equipment
- ___Appendix C, Incinerator
- ___Appendix D, Surface Coating or Printing Operation
- ___Appendix E, Storage Tank
- ___Appendix H, Gasoline Dispensing Facility
- ___Appendix J, Loading Rack at Bulk Gasoline Plant or Terminal
- ___Appendix K, Surface Coating Line or Printing Line
- ___Appendix L, Solvent Metal Cleaning
- ___ Appendix M, Fugitive Dust Emission Sources
  ___ Specify Appendix No.
- ___Appendix N, Rubber Tire Manufacturing
- ___Appendix O, Dry Cleaning Facility
- ___Appendix P, Landfills
- ___Other Appendix ___
- ___Compliance Time Schedule

2. Description of Source (same as used on appendix): Respirator Washing Fac.

3. Your identification for Source (same as used on appendix): Building 11 - Respirator Washing Facility (11-004)

I, being the individual specified in Rule 3745-35-02(B) of the Ohio Administrative Code, hereby apply for a Permit to Operate the air contaminant source(s) described herein. As required, the following additional documents are submitted as part of this application (describe all attachments):

Attachments:

Appendix A - Process
Process Flow Diagram
Emission Calculations

Authorized Signature*
Terence D. Hagen, Director
Environmental Compliance
Title

3/7/95
Date

*Pursuant to OAC Rule 3745-35-02(B) (Permit to Operate).

Operation of an air contaminant source without an effective permit to operate is prohibited to 3704.05 Ohio Revised Code. Page 1 EPA-3161

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For Official Use Only

Premise No. / / /
Source No. /
Application No. /

6660

OEPA NO. 1431110128 P284
A-1
FEMP ID NO. 11-004

APPENDIX A, PROCESS

PROCESS DATA

1. Name of process Respirator Washing Facility

2. End product of this process Cleaned Respirators

3. Primary process equipment See supplemental page A-1A

   Your identification _____ Year Installed _____

4. Manufacturer See supplemental page A-1A Make or Model _____

5. Capacity of equipment (lbs./hr): Rated 924 Respirators/day Max. 1320 Respirators/day

6. Method of exhaust ventilation: [X] Stack [ ] Window fan [ ] Roof vent
   [ ] Other, describe _____

   Are there multiple exhausts? [ ] Yes [X] No

OPERATING DATA

7. Normal operating schedule: 21 hrs./day, 5 days/wk., 50 wks./year.

8. Percent annual production (finished units) by season:
   Winter 25 Spring 25 Summer 25 Fall 25

9. Hourly production rates (lbs.): Average 44 Respirators/hr Maximum 55 Respirators/hr

10. Annual production (indicate units) 231,000 Respirators
    projected percent annual increase in production None

11. Type of operation: [ ] Continuous [X] Batch

12. If batch, indicate: Minutes per cycle 30 Max. Minutes between cycles 40 Max.

13. Materials used in process:

List of Raw Materials	Principal Use	Amount (lbs./hr.)
Water	Wash Water	598
Chlorine Bleach	Sanitizer	1.44
Liquid Detergent	Cleaning Agent	0.5
Soap Cleanser	Cleaning Agent	0.042
Respirators	Items to be cleaned	44 Respirators/hr

14. A PROCESS FLOW DIAGRAM MUST BE INCLUDED WITH THIS APPENDIX. Show entry and exit points of all raw materials, intermediate products, by products and finished products. Label all materials including airborne contaminants and other waste materials. Label the process equipment.

See attached Process Flow Diagram

SUPPLEMENTAL PAGE

A-1A
OEPA NO. 1431110128 P284
FEMP ID NO. 11-004

Answers to questions #3 and #4.

QUESTION #3			QUESTION #4	
Primary Process Equipment	**Identification**	**Year Installed**	**Manufacturer**	**Make or Model**
Unloading Station	Unloading Station	1994	Langdon	
Sink	Sink	1994	General Dynamics	RDM 1000R
Automatic Washer	Respirator Cleaning Module	1994	General Dynamics	RDM 1000R
Wet Vacuum Unit	Wet Vacuum	1994		
Respirator Dryer	Dryer	1994	NFS-RPS	RCM-502
Washer/Dryer	Washer/Dryer	1994	NFS-RPS	RCM-501

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CONTROL EQUIPMENT

OEPA NO. 1431110128 P284
FEMP ID NO. 11-004

Control Equipment Code:

(A)	Settling Chamber	(G)	Cyclonic Scrubber	(M)	Adsorber
(B)	Cyclone	(H)	Impingement Scrubber	(N)	Condenser
(C)	Multiple Cyclone	(I)	Orifice Scrubber	(O)	Afterburner - Catalytic
(D)	Electrostatic Precipitator	(J)	Venturi Scrubber	(P)	Afterburner - Thermal
(E)	Fabric Filter	(K)	Plate or Tray Tower	(Q)	Other, Describe Cartridge/HEPA filters
(F)	Spray Chamber	(L)	Packing Tower		

15. Control Equipment Data:

Item	Primary Collector	Secondary Collector
(a) Type (See above Code)	Q - Cartridge Filter	Q - HEPA Filter
(b) Manufacturer	NFS-RPS or equivalent	NFS-RPS or equivalent
(c) Model No.	AK-03	AK-04
(d) Year Installed	1994	1994
(e) Your Identification	RWF Control System	RWF Control System
(f) Pollutant Controlled	Particulate/Uranium	Particulate/Uranium
(g) Controlled pollutant emission rate (if known)	Unknown	PM - 9.19E-06 lb/hr U - 4.59E-07 lb/hr
(h) Pressure Drop	Unknown	1" w.g.
(i) Design efficiency	99.9% @ 1.0 Microns	99.97% @ 0.3 Microns
(j) Operating efficiency	99%	99.9%

STACK DATA

16. Your Stack Identification EP11-004

17. Are other sources vented to this stack? [ ] Yes [X] No
    If yes, identify sources _____

18. Type: [X] Round, top inside diameter dimension 8 inches
    [ ] Rectangular, top inside dimensions (L)_____ X (W)_____

19. Height: Above roof N/A ft., above ground 10 ft.

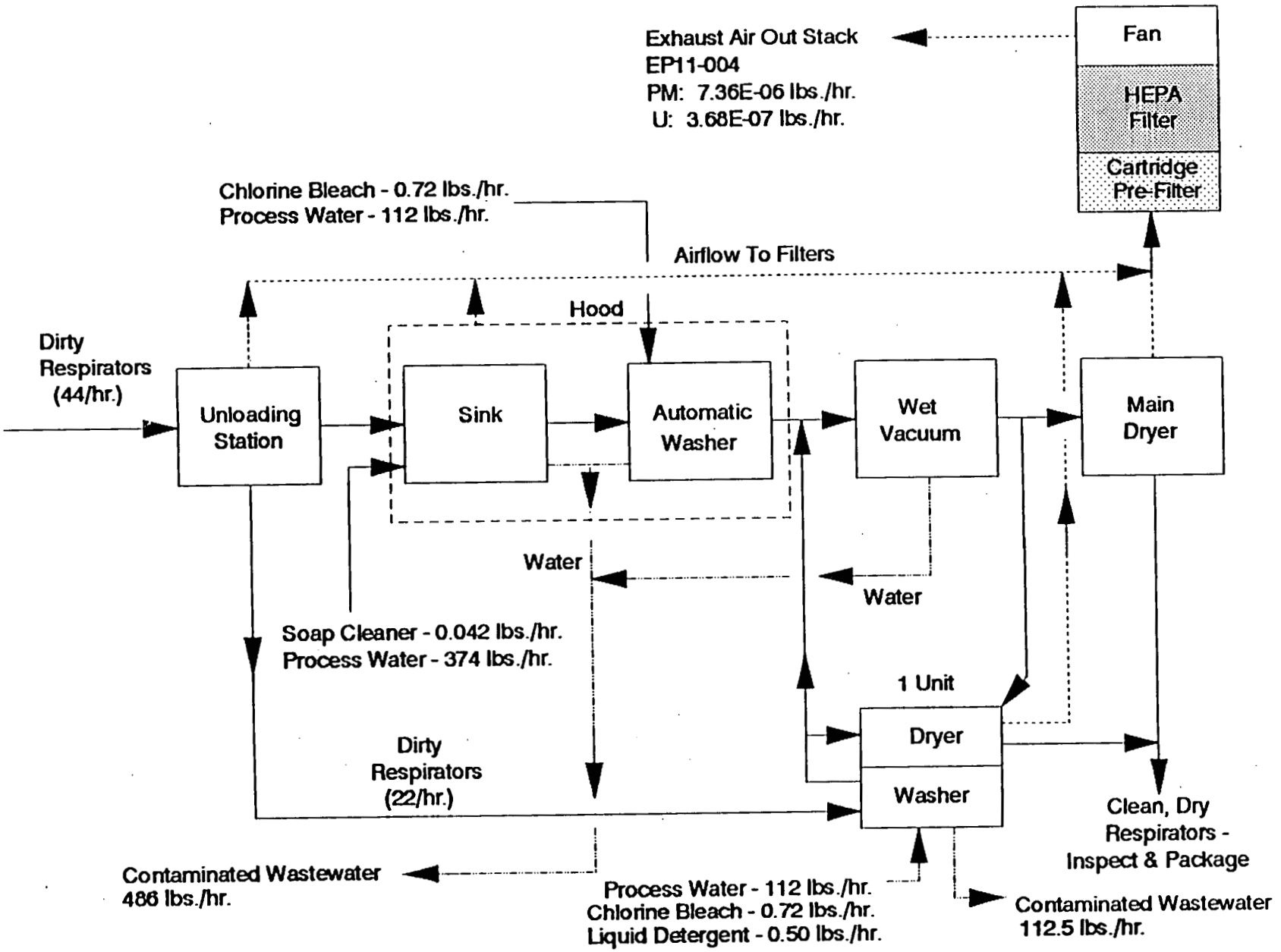
20. Exit gas: Temp. 120max. °F, Volume 2000-2500 ACFM, Velocity 5730-7160 ft./min.

21. Continuous monitoring equipment: [ ] Yes [X] No
    If yes, indicate : Type _____ , Manufacturer _____

    Make or Model _____, Pollutant(s) monitored _____

22. Emission data: Emissions from this source have been determined and such data is included with this appendix: [X] Yes [ ] No
    If yes, check method: [ ] Stack Test [X] Emission Factor [ ] Material Balance

Completed by Kip Klee , Date 2-27-95



PROCESS FLOW DIAGRAM RESPIRATOR WASHING FACILITY

Rev.1 11/23/93

EMISSION CALCULATIONS

A. SUMMARY OF EMISSIONS

	Particulate		Uranium	
	Hourly (lbs/hr)	Annual (tons/yr)	Hourly (lbs/hr)	Annual (tons/yr)
Actual Emissions	9.19E-06	2.41E-05	4.59E-07	1.21E-06
Potential Emissions	9.19E-06	4.02E-05	4.59E-07	2.01E-06
Uncontrolled Potential Emissions	8.09E-05	3.54E-04	4.04E-04	1.77E-05
Allowable Emissions	9.19E-06	4.02E-05	4.59E-07	2.01E-06

B. ASSUMPTIONS, PROCESS INFORMATION AND TEST DATA

1. The Normal Operating Hours are:
$$\frac{21 \text{ hrs}}{\text{day}} \left| \frac{5 \text{ days}}{\text{week}} \right| \frac{50 \text{ wks}}{\text{year}} = 5250 \text{ hrs/year}$$
2. The Potential Operating hours are 8760 hours/year.
3. The efficiency of the MEPA/HEPA control equipment is 99.9%.
4. As a conservative estimate, assume that the particulate emissions are comprised of 5% uranium.
5. Stack test data was collected during processing runs of approximately 11 respirators per hour. Since the processing of respirators is expected to be a maximum of 55 respirators per hour, the test data has been scaled up by a factor of 5 for the emissions estimates.

C. PROCEDURE FOR CALCULATING AVERAGE ANNUAL EMISSIONS:

NOTE: Stack emissions of the current respirator washing activities were sampled using a continuous stack monitor. The results of that testing (scaled up by a factor of 5) have been used to estimate emissions for the Respirator Washing Facility.

(1) Add the mass (mg) of emissions for the time period data was collected.

NOTE: Where the analytical results showed samples less than the minimum detection limit (0.01 mg for U) the minimum detection limit was used. The total amount of U collected was scaled up by a factor of 5. (All analyses were less than 0.01 mg U.)

(2) Determine the appropriate time period for which data is available (either from process knowledge or by summing the differentials between the on and off dates for the sample filters). (Total sample time was 30 hours per week for 8 weeks.)

(3) Convert the mass from mg to lb/yr using the following formula:

$$\text{Lbs/yr} = (\text{X mg})(1 \text{ g}/1000 \text{ mg})(\text{CF Kg/g})(2.205 \text{lbs/kg})/\text{hrs}$$

where

$$\text{CF} = \frac{[\text{Stack area } (\text{ft}^2)][\text{Average Stack Velocity (ft/min)}][1 \text{ Kg}/1000 \text{ g}]}{[\text{Sample nozzle area } (\text{ft}^2)][\text{Sample nozzle velocity (ft/min)}]}$$

D. CALCULATION OF EMISSION FACTORS

The streams entering and leaving the MEPA/HEPA filter were sampled continuously for a period of eight weeks. The following data is provided by the continuous samplers:

	Before MEPA/HEPA	After MEPA/HEPA
Sample time	mg U	mg U
2 weeks	<0.01	<0.01
2 weeks	<0.01	<0.01
2 weeks	<0.01	<0.01
2 weeks	<0.01	<0.01
TOTALS = 8 weeks	0.04 mg U	0.04 mg U
SCALED UP BY A FACTOR OF 5 =	0.2 mg U	0.2 mg U
CONVERSION FACTOR (CF) =	2.2	0.25

(a) Emission factor for U entering the MEPA/HEPA filter:

$$\frac{0.2\ mg}{1000\ mg}\left|\frac{g}{}\right.\left|\frac{2.2\ Kg}{g}\right|\frac{2.205\ lbs}{Kg}\left|\frac{}{8\ wks}\right|\frac{Week}{30\ hrs} = 4.04E\text{-}06\ \frac{lb\ U}{hr}$$

(b) Emission factor for PM entering the MEPA/HEPA filter:

$$\frac{4.04E\text{-}06\ lb\ U}{}\left|\frac{100}{5}\right. = 8.09E\text{-}05\ \frac{lbs\ PM}{hr}$$

(c) Emission factor for U leaving the MEPA/HEPA filter:

$$\frac{0.2\ mg}{1000\ mg}\left|\frac{g}{}\right.\left|\frac{0.25\ Kg}{g}\right|\frac{2.205\ lbs}{Kg}\left|\frac{}{8\ wks}\right|\frac{Week}{30\ hrs} = 4.59E\text{-}07\ \frac{lb\ U}{hr}$$

(d) Emission factor for PM leaving the MEPA/HEPA filter:

$$\frac{4.59E\text{-}07\ lb\ U}{}\left|\frac{100}{5}\right. = 9.19E\text{-}06\ \frac{lbs\ PM}{hr}$$

E. CALCULATION OF EMISSIONS

1. PARTICULATE

a) ACTUAL
Hourly emissions = 9.19E-06 lbs PM/hour

$$\text{Annual emissions} = \frac{9.19E\text{-}06\ lbs\ PM}{hr}\left|\frac{5250\ hrs}{yr}\right|\frac{ton}{2000lbs} = 2.41E\text{-}05\ \frac{tons\ PM}{year}$$

b) POTENTIAL
Hourly potential emissions = 9.19E-06 lbs PM/hour

$$\text{Annual potential emissions} = \frac{9.19E\text{-}06\ lbs\ PM}{hr}\left|\frac{8760\ hrs}{yr}\right|\frac{ton}{2000lbs} = 4.02E\text{-}05\ \frac{tons\ PM}{year}$$

c) UNCONTROLLED POTENTIAL
Hourly uncontrolled potential emissions = 8.09E-05 lbs PM/hour

$$\text{Annual uncontrolled potential emissions} = \frac{8.09E\text{-}05\ lbs\ PM}{hr}\left|\frac{8760\ hrs}{yr}\right|\frac{ton}{2000lbs} = 3.54E\text{-}04\ \frac{tons\ PM}{year}$$

d) ALLOWABLE
New sources are required to use BAT to control process emissions. Since this process uses BAT, the allowable emissions for particulate matter are equal to the potential particulate matter emissions from the process.

. CALCULATION OF EMISSIONS (Continued)

. URANIUM

a) ACTUAL
Hourly emissions = 4.59E-07 lbs U/hour

$$\text{Annual emissions} = \frac{4.59\text{E-}07 \text{ lbs U}}{\text{hr}} \left| \frac{5250 \text{ hrs}}{\text{yr}} \right| \frac{\text{ton}}{2000 \text{lbs}} \Bigg| = 1.21\text{E-}06 \frac{\text{tons U}}{\text{year}}$$

b) POTENTIAL
Hourly potential emissions = 4.59E-07 lbs U/hour

$$\text{Annual potential emissions} = \frac{4.59\text{E-}07 \text{ lbs U}}{\text{hr}} \left| \frac{8760 \text{ hrs}}{\text{yr}} \right| \frac{\text{ton}}{2000 \text{lbs}} \Bigg| = 2.01\text{E-}06 \frac{\text{tons U}}{\text{year}}$$

c) UNCONTROLLED POTENTIAL
Hourly uncontrolled potential emissions = 4.04E-06 lbs U/hour

$$\text{Annual uncontrolled potential emissions} = \frac{4.04\text{E-}06 \text{ lbs U}}{\text{hr}} \left| \frac{8760 \text{ hrs}}{\text{yr}} \right| \frac{\text{ton}}{2000 \text{lbs}} \Bigg| = 1.77\text{E-}05 \frac{\text{tons U}}{\text{year}}$$

d) ALLOWABLE
New sources are required to use BAT to control process emissions. Since this process uses BAT, the allowable emissions for uranium are equal to the potential uranium emissions from the process.