G-000-104.79

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PERMIT TO OPERATE APPLICATION - CISSEL NON-RADIOLOGICALLY CONTAMINATED CLOTHES DRYER AT THE FERNALD ENVIRONMENTAL MANAGEMENT PROJECT (OPEA) NO. 1431110128 P287- FEMP ID NO. 11-005

10/14/93

C:RP:93-0170
FERMCO/HAMILTON CO
8
LETTER

Fernald Environmental

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

483 7

October 14, 1993

U. S. Department of Energy
Fernald Environmental Management Project
Letter No. C:RP:93-0170

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

Dear Mr. Sturdevant:

PERMIT TO OPERATE APPLICATION - CISSEL NON-RADIOLOGICALLY CONTAMINATED CLOTHES DRYER AT THE FERNALD ENVIRONMENTAL MANAGEMENT PROJECT (OEPA) NO. 1431110128 P287 - FEMP ID NO. 11-005

Enclosed please find the application for the Cissel non-radiologically contaminated clothes dryer at the FEMP. A check for $15.00 is enclosed to cover the application fee.

Please contact Ervin Fisher of my staff at 738-6053 if you have any questions about this application.

Sincerely,

Kenneth L. Atkema
Vice President
Regulatory Programs

KLA:EF:mhv
Attachments

cc: S. M. Beckman, FERMCO, w/o attachments
J. S. Cullen, FERMCO, w/o attachments
Robert Mendelsohn, DOE Contract Specialist
E. P. Skintik, DOE-FN
P. B. Spotts, FERMCO, w/o attachments
AR Coordinator
PR Files (P287)
File Record Storage Copy 108.6

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

483 7

U. S. Dept. of Energy - Fernald Environ. Management Project
Facility Name

Stephen M. Beckman
Person to Contact

7400 Willey Road
Facility Address

P. O. Box 398704
Mailing Address

Fernald | Hamilton | 45030
City | County | Zip

Cincinnati | Ohio | 45239
City | State | Zip

(513) 738-6200
Telephone Area Number

(513) 738-6502
Telephone

1431110128 P287
(Application no., if this is a renewal application)

2819
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): Laundry Facilities - Gas-fired Cissell Dryer

3. Your identification for Source (same as used on appendix): FEMP ID No. 11-005

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):

1) Attachment
   1) Appendix A
   b) Process Flow Diagram
   c) Emission Calculations

Kenneth L. Alkema
Authorized Signature
K. L. Alkema
Vice President Regulatory Permitting
Title

_____
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

002

For Official Use Only

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

DOE - FEMP
A-1
OEPA NO 1431110128 P287
FEMP ID NO. 11-005

APPENDIX A, PROCESS

PROCESS DATA

1. Name of process Laundry Facilities Gas-fired Cissell Dryer

2. End product of this process Dried Non-Contaminated Clothing

3. Primary process equipment Cissell Dryer
Your identification FEMP ID No. 11-005 (SN 488-289) Year Installed 1989

4. Manufacturer Cissell Make or Model N/A

5. Capacity of equipment (lbs./hr): Rated 150 lbs/batch Max. 150 lbs/batch

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: 24 hrs./day, 5 days/wk., 52 wks./year.

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

9. Hourly production rates (lbs.): Average 94 Maximum 150

10. Annual production (indicate units) 293 tons/yr dried clothes
projected percent annual increase in production N/A

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

12. If batch, indicate Minutes per cycle 60 Minutes between cycles Varies

13. Materials used in process:

List of Raw Materials	Principle Use	Amount (lbs./hr.)
WASHED CLOTHING	CLOTHES DRYING	94 lbs/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

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CONTROL EQUIPMENT

A-2
OEPA NO. 1431110128 P287
FEMP ID NO. 11-005

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 LINT FILTER
(F)	Spray Chamber	(L)	Packing Tower		

15. Control Equipment Data:

Item	Primary Collector	Secondary Collector
(a) Type (See above Code)	Q	
(b) Manufacturer	Pellerin Milnor Corp.	
(c) Model No.	N/A	
(d) Year Installed	1989	
(e) Your Identification	N/A	
(f) Pollutant Controlled	Particulate	
(g) Controlled pollutant emission rate (if known)	See Emission Calculations	
(h) Pressure Drop	1" - 2.5" W.C.	
(i) Design efficiency	Est. 75 %	
(j) Operating efficiency	Est. 75 %	

STACK DATA

16. Your Stack Identification EP11-005

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

18. Type: [X] Round, top inside diameter dimension 12 inch
    [ ] Rectangular, top inside dimensions (L)_____ X (W)_____

19. Height: Above roof 2 ft., above ground 12 ft.

20. Exit gas: Temp. Unknown °F, Volume 2250 ACFM, Velocity 2865 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 [ ] Emission Factor [X] Material Balance
    Completed by E. Fisher, Date 6/28/93

FEMP ID NO. 11-005

EMISSIONS CALCULATIONS

SUMMARY OF EMISSIONS FROM NON-RADIOLOGICALLY CONTAMINATED CISSELL DRYER:

LINT EMISSIONS

RATE	HOURLY PM(lb)	ANNUAL PM(tons)
ACTUAL	7.52×10^{-3}	2.35×10^{-2}
POTENTIAL	1.20×10^{-2}	5.26×10^{-2}
UNCONTROLLED POTENTIAL	4.80×10^{-2}	2.10×10^{-1}
ALLOWABLE 11-005	7.23×10^{-1}	3.17

COMBUSTION GAS EMISSIONS

TYPE	ACTUAL EMISSIONS	POTENTIAL EMISSIONS
Particulate	0.005 tons/yr	0.007 tons/yr
SOx	0.0007 tons/yr	0.0009 tons/yr
NOx	0.110 tons/yr	0.154 tons/yr
CO	0.023 tons/yr	0.032 tons/yr

Assumptions

1. Per process knowledge, 12500 lbs wet clothes generates about three (3) pounds of lint on the screen lint collector.

2. The screen lint collectors are considered 75% efficient.

3. The average operating basis is 24 hours per day, 5 days per week and 15 loads per day.

4. Water vapor in not considered in calculations.

CALCULATIONS OF PARTICULATE (PM) EMISSIONS RATES

(150 lbs/load)(15 loads/day)(6240 hr/yr)(1 day/24 hrs) = 585,000 lbs/yr clothes

(585,000 lbs/yr clothes) / (6240 hrs/yr)= 94 lbs clothes/hr

Particulate - (3 lbs particulate) / (75 % efficiency) = 4 lbs particulate. 4 lbs particulate/12500 lbs clothes = 0.00032 lbs Particulate/lb clothes

Actual Emissions

(94 lbs/hr clothes) (0.00032 lbs particulate/lb clothes) (1 - 0.75 efficiency) = 0.00752 lbs/hr particulate emissions.

(94 lbs/hr clothes) (0.00032 lbs particulate/lb clothes) (6240 hr/yr) (1 ton/2000 lbs) (1 - 0.75 efficiency) = 0.0235 tons/yr particulate emissions.

Potential Emissions

(150 lbs/hr) (0.00032 lbs particulate/lb clothes) (1 - 0.75 efficiency) = 0.012 lbs/hr particulate emissions.

(150 lbs/hr clothes) (0.00032 lbs particulate/lb clothes) (8760 hr/yr) (1 ton/2000 lbs) (1 - 0.75 efficiency) = 0.0526 tons/yr particulate emissions.

Uncontrolled Potential Emissions

(150 lbs/hr) (0.00032 lbs particulate/lb clothes) = 0.048 lbs/hr particulate emissions.

(150 lbs/hr clothes) (0.00032 lbs particulate/lb clothes) (8760 hr/yr) (1 ton/2000 lbs) = 0.21 tons/yr particulate emissions.

Allowable Emissions

$E = 4.10\ (P)^{0.67}$ lbs/hr
$P = 150$ lbs/hr / 2000 lb/ton = 0.075 tons/hr
$E = 4.10\ (0.075)^{0.67} = 0.723$ lbs/hr for 11-005

Emission Calculations for: PERMIT TO OPERATE

Facility: Fernald Environmental Management Project Computed by: Ervin Fisher
Source No: 1431110128 P287 Date: October 6, 1992
Source ID: FEMP ID NO. 11-005

I. Emission Estimates:
Heat input): 0.37 MMBtu/hour for the Cissell Dryer.
Annual operating hours: 6240 hours/year.
Emission factors: (given as lbs/MMcf gas burned)
particulate: 4.5, SOx: 0.6, NOx: 100.0, CO: 21.0
Emission factor reference: AP-42, Tables 1.4-1 and 1.4-2.

1. Actual emissions: (heat input basis)
Particulate: 4.5 (lbs/MMcf) / 1050.0 (btu/cf) = 0.0043 (lbs/MMbtu)
SOx: 0.6 (lbs/MMcf) / 1050.0 (btu/cf) = 0.0006 (lbs/MMbtu)

2. Annual actual (6240 hrs/year) and potential (8760 hrs/year) emission in tons/year.

Particulate:
ACTUAL: 4.5 (lbs/MMcf) x 0.37 (MMbtu/hr) x 6240 (hrs/year) / 1050 (btu/cf) / 2000 (lbs/ton) = 0.005 TPY

POTENTIAL: 4.5 (lbs/MMcf) x 0.37 (MMbtu/hr) x 8760 (hrs/year) / 1050 (btu/cf) / 2000 (lbs/ton) = 0.007 TPY

SOx:
ACTUAL: 0.6 (lbs/MMcf) x 0.37 (MMbtu/hr) x 6240 (hrs/year) / 1050 (btu/cf) / 2000 (lbs/ton) = 0.0007 TPY

POTENTIAL: 0.6 (lbs/MMcf) x 0.37 (MMbtu/hr) x 8760 (hrs/year) / 1050 (btu/cf) / 2000 (lbs/ton) = 0.0009 TPY

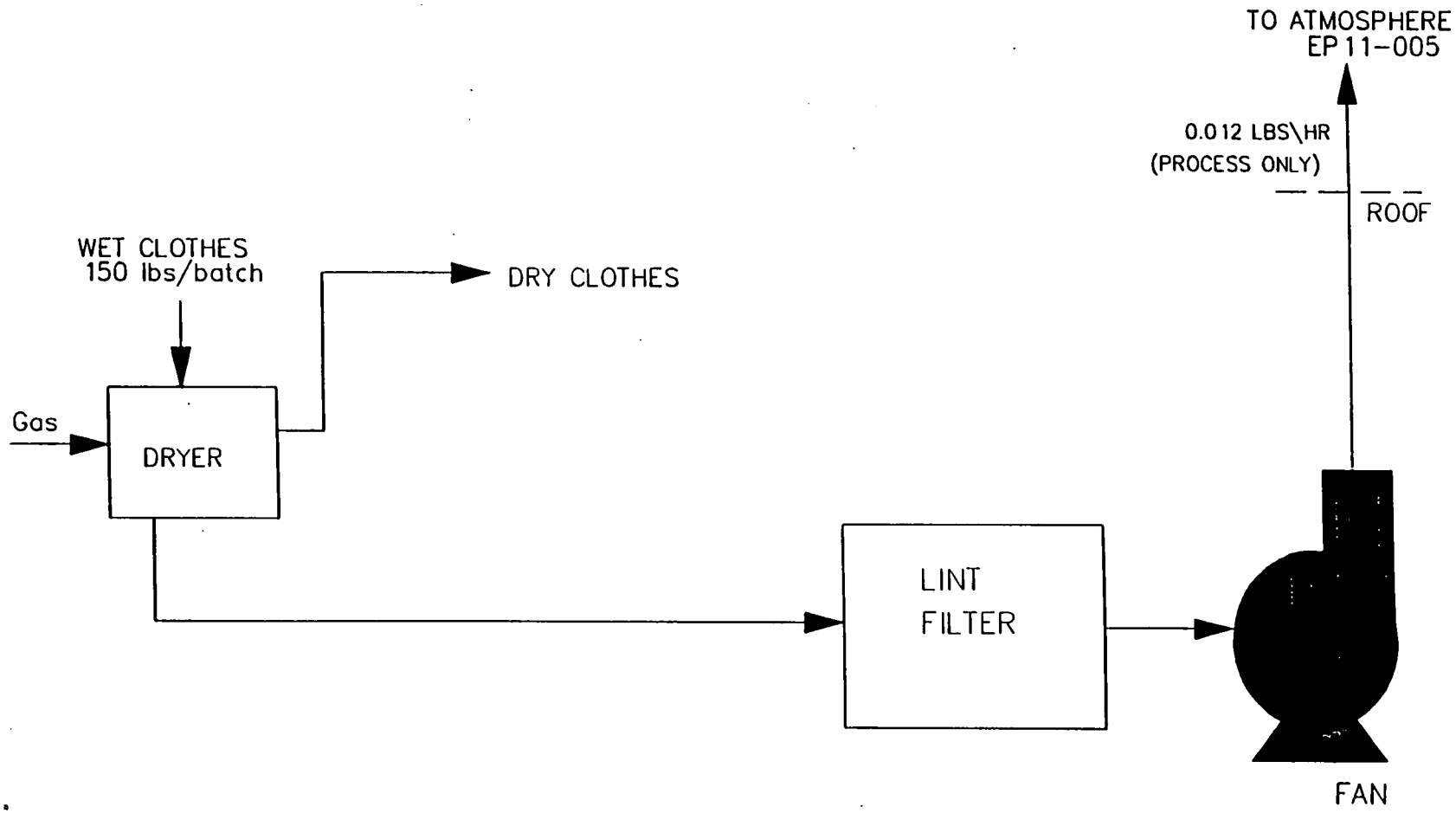
NOx:
ACTUAL: 100.0 (lbs/MMcf) x 0.37 (MMbtu/hr) x 6240 (hrs/year) / 1050 (btu/cf) / 2000 (lbs/ton) = 0.110 TPY

POTENTIAL: 100.0 (lbs/MMcf) x 0.37 (MMbtu/hr) x 8760 (hrs/year) / 1050 (btu/cf) / 2000 (lbs/ton) = 0.154 TPY

CO:
ACTUAL: 21.0 (lbs/MMcf) x 0.37 (MMbtu/hr) x 6240 (hrs/year) / 1050 (btu/cf) / 2000 (lbs/ton) = 0.023 TPY

POTENTIAL: 21.0 (lbs/MMcf) x 0.37 (MMbtu/hr) x 8760 (hrs/year) / 1050 (btu/cf) / 2000 (lbs/ton) = 0.032 TPY

LAUNDRY FACILITY
GAS-FIRED CISSEL DRYER
NON-RADIOLOGICALLY CONTAMINATED



DATE 10/06/93
EF
FEMP ID NO. 11-005

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