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Conoco Chemicals Company
Division of Conoco Inc.
P.O. Box 91, New Highway 25
Aberdeen, MS 39730

October 20, 1980

Ms. Rebecca Hanmer
Regional Administrator
Region IV
United States Environmental Protection Agency
345 Courtland Street, N.E.
Atlanta, GA 30308

Dear Ms. Hanmer:

Conoco Chemicals Company, a division of Conoco Inc., own and operate a polyvinyl chloride plant located in Aberdeen, Mississippi. The plant operates pursuent to the National Emission Standards for Hazardous Air Pollutants, 40 CFR, Part 61, Subpart F, National Emission Standard for vinyl chloride. In accordance with Section 61.05 of Subpart A of the Standard, the plant is submitting an application for approval of construction of a spare inert vent gas incinerator system.

Presently, to meet the emission requirements of §61.64 (a)(2), (b), (c), (d), and 61.65 (b)(i)(ii), (b)(5), (b)(6)(ii), (b)(9)(ii), the vents are collected, contained, and incinerated prior to their release to the atmosphere. The plant also has a contingency plan to collect and contain this vent stream in empty VCM storage tanks if the incinerator experiences operating problems. These storage tanks have sufficient volume to allow the plant to continue to operate for several days without the incinerator in service and to still meet the venting requirements of the Standard. The plant could continue to operate until the storage tanks become pressurized and at that time would have to shut down until the incinerator was back in service. The plant desires to install the spare incinerator system so it could be put in service if problems develop with the existing incinerator thus precluding a plant shutdown. The spare inert vent incinerator system will be the same type as the existing unit and will be capable of reducing the vent stream to less than 10 ppm VCM. Plans are to operate only one incinerator at a time, either the existing unit or the proposed spare unit, but not both at the same time. Therefore, the installation of the spare incinerator will not increase the VCM emissions from the plant.

The spare inert vent incinerator system will consist of a natural-gas-fired vortex burner with a refractory lined combustion chamber installed on and firing into a downcomer tube. The combustion products are cooled in a water bath and are then scrubbed in a packed column absorber before exhaust to the atmosphere. The incinerator-scrubber design is based on a submerged combution technique, wherein the waste stream is injected directly into the burner with combustion being completed in the combustion chamber. The firing takes place above the water level and the products of combustion are discharged directly into the water bath where they are quenched and scrubbing is initiated. The partially scrubbed and quenched gases are then directed to the packed column absorber for final scrubbing. HCl formed in the combustion of the vent stream exits the scrubber in the liquid effluent and is neutralized in the existing plant waste water treatment system.

Design parameters and a heat balance for the incinerator are provided in the attached Tables.

We also wish to advise you of the following changes being made at the plant that do not require NESHAPS approval.

1. A new batch inprocess waste water stripping system will be installed. Presently, to meet the requirements of §61.65 (9)(i), the plant utilizes batch water strippers to reduce the inprocess waste water to less than 10 ppm VCM before it is exposed to the atmosphere. A collection and stripping system is provided in each of the two reactor modules. Two new waste water strippers, designed for 150 psig, will be installed. Operation of the new strippers will be similar to the existing stripping systems except the new strippers will be used to collect and strip inprocess waste water from both modules, rather than the present scheme of having a stripper in each reactor module. VCM will be stripped from the inprocess waste water using steam injection and recovered in an existing recovery system. Since the new stripping system will replace the existing system, there will be no increase in VCM emissions due to the installation and use of the new strippers. An emission test plan will be submitted to you prior to startup of the new strippers.

2. Automated emergency alpha methyl styrene (AMS) kill systems will be installed on the polymerization reactors. The systems will be used to inject AMS into a reactor in case of a runaway condition. Each reactor will be provided with an AMS addition pot, a nitrogen pressure supply system, piping, and instrumentation such that the panel operator can automatically inject AMS into each of the reactors. This will replace the current manual addition system but backup manual addition capability will be maintained.

TABLE I

CONOCO CHEMICALS COMPANY

ABERDEEN PVC PLANT

ABERDEEN, MISSISSIPPI

PREMIT APPLICATION FOR SPARE VENT INCINERATOR SYSTEM

SPECIFICATIONS FOR SPARE VENT INCINERATOR

DESIGNATION: H-1B

TYPE: Submerged Combustion

MANUFACTURER: Trane Thermal Company

MODLE: LV-3

BURNER CAPACITY: 1.3 MM BTU/Hr., expandable to 3 MM BTU/Hr.

QUENCH CHAMBER & SCRUBBER: Sized for Operation at 3 MM BTU/Hr.

INCINERATOR FEED: The incinerator feed will be a single plant stream which has been refrigerated to reduce concentration of VCM. Design feed conditions are:

	Minimum	Normal	Maximum
Temperature, ^{o}F	0	40	80
Pressure, psig	20	60	80
Flow, SCFH	0	500	1,000
Composition, Volume %			
VCM	20	40	100
Mecl	1	1	0
Inerts	79	59	0
Supplemental Natural Gas, SCFH	380	785	0

EXHAUST: The concentration of vinyl chloride in the exhaust gas is to be less than 10 ppm.

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3. The double rupture disc assembly pressure relief devices on the reactors will be eliminated by providing the relieving area with relief valve/rupture disc assemblies. Premature failure of the double rupture disc assemblies can occur when the reactor pressure is less than the design pressure of the rupture disc resulting in a vinyl chloride release. Also, the magnitude of a release due to overpressure would be less than with double discs since the relief valve would likely reseat as the reactor pressure decreased. Each reactor will have four relief valve/rupture disc assemblies after the change is made.

4. A data acquistion system will be installed to gather and record the output of the Honeywell fixed point monitoring systems. The "Leak Detection and Elimination Plan" dated April 6, 1979, and approved by your office on July 6, 1979, details the operation of the plant continuous monitoring program. Output from the continuous monitoring system is presently analyzed manually. Installation of the data acquisition system will automate this function. Also, the system will provide an audible alarm when the concentration of any sampling point meets the definition of a leak so that the panel operator can institute the action plan to locate and eliminate the leak. The addition of the data acquisition system will not change the sampling or analytical portion of the continuous monitoring system; only automate the handling of data generated by the chromatographs.

Your prompt attention to the application to construct the spare incinerator is appreciated as we will be ready to begin construction by March 1, 1981. If further information is required for approval of this application, please contact me at (601) 369-8111, extension 2239.

Sincerely,

R. A. Frohreich

R. A. Frohreich
Chief Process Engineer

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c: Wayne Anderson - Mississippi Bureau of Pollution Control

b/c: CLM, CRM, SJV, JJH

TABLE II

CONOCO CHEMICALS COMPANY

ABERDEEN PVC PLANT

ABERDEEN, MISSISSIPPI

HEAT AND MATERIAL BALANCE

LOW FIRING
(No Vent)

PERMIT APPLICATION FOR SPACE INERT VENT INCINERATION SYSTEM

	Stream No.	Stream Name	MW	Temp, °F	Press, psig	Weight % Vapor	Lbs/Hr	Mols/Hr	Enthalpy, BTU/Lb	Heat Content, BTU/Hr
H-1B INCINERATOR										
In	1	Inert Vent	-	40	60	100	0	0	-	0
	2	Quench Steam	18.02	366	150	100	0	0	1,195.6	0
	3	Fuel Gas	16.04	80	4	100	16	1.00	26.0	420
	4	Combustion Air (1)	28.59	80	0	100	382	13.36	30.4	11,620
		Heat of Combustion								345,310
		Total In					398	14.36		357,350
Out	5	Incinerator Effluent	27.72	2,600	0	100	398	14.36	897.9	357,350
X-1B QUENCH CHAMBER AND W-1B PACKED SCRUBBER										
In	5	Incinerator Effluent	27.72	2,600	0	100	398	14.36	897.9	357,350
	6	Quench Water	18.02	80	45	0	24,809	1,376.75	48.0	1,190,840
		Total In					25,207	1,391.11		1,548,190
Out	7	Stack Emissions	28.94	94	0	100	367	12.68	50.9	18,670
	8	Waste Water	18.02	94	0	0	24,840	1,378.43	62.0	1,529,520
		Total Out					25,207	1,391.11		1,548,190

Datum Basis: H = 0 at 32°F and 1 atm.

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Notes: (1) Assumed relative humidity of 80 percent.
(2) Heat balance shown is for combustion temperature of 2600°F. Actual incineration temperature is somewhat lower than this.

TABLE III

CONOCO CHEMICALS COMPANY

ABERDEEN PVC PLANT

ABERDEEN, MISSISSIPPI

HEAT AND MATERIAL BALANCE

NORMAL VENT

PERMIT APPLICATION FOR SPACE INERT VENT INCINERATION SYSTEM

	Stream No.	Stream Name	MW	Temp, °F	Press, psig	Weight % Vapor	Lbs/Hr	Mols/Hr	Enthalpy, BTU/Lb	Heat Content, BTU/Hr
H-1B INCINERATOR										
In	1	Inert Vent	42.42	40	60	100	56	1.32	86.8	4,860
	2	Quench Steam	18.02	366	150	100	0	0	1,195.6	0
	3	Fuel Gas	16.04	80	4	100	33	2.07	26.0	860
	4	Combustion Air (1)	28.59	80	0	100	1,095	38.33	30.4	32,160
		Heat of Combustion								978,100
		Total In					1,184	41.72		1,015,980
Out	5	Incinerator Effluent	28.20	2,600	0	100	1,184	41.99	858.1	1,015,980
X-1B QUENCH CHAMBER AND W-1B PACKED SCRUBBER										
In	5	Incinerator Effluent	28.20	2,600	0	100	1,184	41.99	858.1	1,015,980
	6	Quench Water	18.02	80	45	0	24,809	1,376.75	48.0	1,190,840
		Total In					25,993	1,418.74		2,206,820
Out	7	Stack Emissions	28.48	117	0	100	1,138	39.95	92.0	105,890
	8	Waste Water	18.02	117	0	0	24,855	1,378.79	84.5	2,100,930
		Total Out					25,933	1,418.74		2,206,820

Datum Basis: H = 0 at 32°F and 1 atm.

Notes: (1) Assumed relative humidity of 80 percent.
(2) Heat balance shown is for combustion temperature of 2600°F. Actual incineration temperature is somewhat lower than this.

TABLE IV

CONOCO CHEMICALS COMPANY

ABERDEEN PVC PLANT

ABERDEEN, MISSISSIPPI

HEAT AND MATERIAL BALANCE

MAXIMUM VENT

PERMIT APPLICATION FOR SPACE INERT VENT INCINERATION SYSTEM

	Stream No.	Stream Name	MW	Temp, °F	Press, psig	Weight % Vapor	Lbs/Hr	Mols/Hr	Enthalpy, BTU/Lb	Heat Content, BTU/Hr
H-1B INCINERATOR										
In	1	Inert Vent	62.00	80	60	100	163	2.63	147.4	24,030
	2	Quench Steam	18.02	366	150	100	303	16.81	1,195.6	362,390
	3	Fuel Gas	16.04	80	4	100	0	0	-	0
	4	Combustion Air (1)	28.59	80	0	100	1,095	38.33	30.4	32,160
		Heat of Combustion								1,308,940
		Total In					1,561	57.77		1,727,520
Out	5	Incinerator Effluent	26.43	2,600	0	100	1,561	59.07	1,106.7	1,727,520
X-1B QUENCH CHAMBER AND W-1B PACKED SCRUBBER										
In	5	Incinerator Effluent	26.43	2,600	0	100	1,561	59.07	1,106.7	1,727,520
	6	Quench Water	18.02	80	45	0	24,809	1,376.75	48.0	1,190,840
		Total In					26,370	1,435.82		2,918,360
Out	7	Stack Emissions	28.02	140	0	100	1,256	44.82	164.1	206.060
	8	Waste Water	18.02	140	0	0	25,114	1,391.00	108.0	2,712,300
		Total Out					26,370	1,435.82		2,918,360

Datum Basis: H = 0 at 32°F and 1 atm.

Notes: (1) Assumed relative humidity of 80 percent.
(2) Heat balance shown is for combustion temperature of 2600°F. Actual incineration temperature is somewhat lower than this.

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