

SAL 00064960

APR 12 11 31 AM '79

TO: DAVE KUHN -- ROOM 1958

Total of 4 pages--(Letter to Gary Foshee)



Interoffice Communication:

To Gary Foshee
From Daniel Gostylo
Date April 12, 1979
Subject VCM Plant C-500 Stack Emissions

Per your request the information that was used to complete the current Emissions Inventory Questionnaire (EIQ) and the previous EIQ has been reviewed. The previous EIQ, submitted on May 28, 1976, reported C-500 stack emissions which included vents from the direct chlorination reactor, the light ends column, and the oxychlorination train. The current EIQ, submitted on May 27, 1977, was revised to reflect the effect of the new incinerator operation, thus reducing the C-500 stack emissions to only the material venting from the oxychlorination train.

The C-500 stack emissions as reported to the State of Louisiana on the EIQ forms were as follows:

1) EIQ Submitted on 5/28/76

Component	Average Emission Rate Lbs./Hr. (Tons/Yr.)	Maximum Emission Rate Lbs./Hr.
Carbon Monoxide	530 (2169)	568
HCl	59.8 (245)	63.8
Cl ₂	7.3 (29.9)	7.79
Hydrocarbons Total	1616 (6611)	1729
VCM	94 (385)	101
C ₂ H ₄	208 (851)	223
Methane	144 (589)	154
Others	1154 (4722)	1234
Ethane	15.7 (64.2)	16.8

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2) Revised EIQ Submitted on 5/27/77

Component	Average Emission Rate Lbs./Hr. (Tons/Yr.)	Maximum Emission Rate Lbs./Hr.
Carbon Monoxide	434 (1776)	464
HCl	59.8 (245)	63.8
Cl ₂	7.3 (29.9)	7.79
Hydrocarbons Total	1127 (4610)	1205
VCM	13.63 (55.8)	14.57
C ₂ H ₄	117 (479)	125
Methane	42 (172)	45
Others	949 (3883)	1015
Ethane	5 (20)	5.4

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Based on the review of the information used to complete the EIQ forms; the C-500 stack emissions have been further broken down to the following component flows:

1) EIQ Submitted on 5/28/76

<u>Component</u>	<u>Average Emission Rate Lbs./Hr. (Tons/Yr.)</u>	<u>Maximum Emission Rate Lbs./Hr.</u>
Carbon Monoxide	530 (2169)	568
HCl	59.8 (245)	63.8
Cl ₂	7.3 (29.9)	7.79
Hydrocarbons Total	1616 (6511)	1729
VCM	94 (385)	101
C ₂ H ₄	208 (851)	223
Methane	144 (589)	154
Ethyl Chloride	621 (2541)	664
EDC	414 (1694)	443
Others @ EDC	119 (487)	127
Ethane	15.7 (64.2)	16.8

2) Revised EIQ Submitted on 5/27/77

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<u>Component</u>	<u>Average Emission Rate Lbs./Hr. (Tons/Yr.)</u>	<u>Maximum Emission Rate Lbs./Hr.</u>
Carbon Monoxide	434 (1776) ✓	464
HCl	59.8 (245)	63.8
Cl ₂	7.3 (29.9)	7.79
Hydrocarbons Total	1127 (4610) ✓	1205
VCM	13.63 (55.8) ✓	14.57
C ₂ H ₄	117 (479)	125
Methane	42 (172)	45
Ethyl Chloride	489 (2001) ✓	523
EDC	414 (1694) ✓	443
Others @ EDC	46 (188)	49
Ethane	5 (20)	5.4

As of this date, the Process Engineering Department in Ponca City has primarily reduced the alternatives being considered to clean up the oxychlorination vent to solvent absorption and pure-oxygen oxy. The concept of pure-oxygen oxy-chlorination is to dramatically reduce the size of the vent stream by eliminating the nitrogen diluent, thus allowing the vent to be destroyed in the existing incinerators. Pure-oxygen oxy will reduce the hydrocarbon emissions in the vent stream to less than 10 ppm. The concept of solvent absorption is to scrub the vent stream with a heavy solvent and then recover a majority of the chlorinated hydrocarbons. Based on a solvent absorption design completed by PED and current:

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operating conditions, the C-500 stack emissions will be as follows:

Solvent Absorption Emissions

<u>Component</u>	<u>Average Emission Rate Lbs./Hr. (Tons/Yr.)</u>	<u>Maximum Emission Rate Lbs./Hr.</u>
Carbon Monoxide	434 (1776)	464
HCl	59.8 (245)	63.8
Cl ₂	7.3 (29.9)	7.79
Hydrocarbons Total	261 (1068)	279
VCM	7 (28.6)	7.49
C ₂ H ₄	117 (479)	125
Methane	42 (172)	45
Ethyl Chloride	70 (286)	75
EDC	50 ppm -	50 ppm
Others @ EDC	50 ppm -	50 ppm
Ethane	5 (20)	5.4
i-Butylbenzene	15 (61.4)	16
n-Propylbenzene	1 (4.1)	1
n-Pentylbenzene	4 (16.4)	4
n-Hexylbenzene	Trace -	Trace
n-Heptylbenzene	Trace -	Trace

77% recd

A third alternative being considered at the VCM Plant is Union Carbide's Purasiv HR System. Purasiv HR is a carbon adsorption system which employs a continuous, fluidized mode of operation. The Purasiv System has not been used commercially on an oxychlorination vent per se, but it has been used successfully in Japan on vent streams containing a combination of EDC, ethyl chloride, and VCM. An on site pilot plant study has been proposed by the vendor to evaluate the feasibility of the system on the oxychlorination vent and to firm up the process design. Union Carbide will supply the equipment and manpower required for the month-long study at a cost to the plant of \$20,000.

Based on a preliminary design by Union Carbide, the total equipment and installation costs for the Purasiv HR System are estimated at \$1,600,000. The C-500 stack emissions downstream of the Purasiv System are expected to be as follows:

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Purativ HR Emissions

<u>Component</u>	<u>Average Emission Rate Lbs./Hr. (Tons/Yr.)</u>	<u>Maximum Emission Rate Lbs./Hr.</u>
Carbon Monoxide	434 (1776)	464
HCl	59.8 (245)	63.8
Cl ₂	7.3 (29.9)	7.79
Hydrocarbons Total	164 (671)	175
VCM	< 10 ppm -	< 10 ppm
C ₂ H ₄	117 (479)	125
Methane	42 (172)	45
Ethyl Chloride	< 10 ppm -	< 10 ppm
EDC	< 10 ppm -	< 10 ppm
Other @ EDC	< 10 ppm -	< 10 ppm
Ethane	5 (20)	5.4

85% recd.

Daniel R. Gostylo

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Copies to:
DAK-DHS

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