CONOCO

Interoffice Communication

To J. C. Ledvina - Houston

From V. M. Fisher

Date October 9, 1981

Subject VOC Regulations Impact on VCM Plant's Oxychlorination Revamp Project
REVISIONS

Attached is the new Table I which was previously issued in the letter, "VOC Regulations Impact on VCM Plant's Oxychlorination Revamp Project," September 22, 1981. Since this letter the number of valves in light liquid and vapor service for both the entire expansion (Case I) and the oxychlorination revamp and direct chlorination modification (Case II) have been estimated. Based on these updated numbers the total available offsets from modifications in the existing plant will not compensate for the increased emissions from the entire expansion, but will for the Oxy revamp only.

It was assumed that all valves in vapor service have an uncontrolled emission factor of 0.0463 Lb/Hr, while the valves in light liquid service have an uncontrolled emission factor of 0.022 Lb/Hr. These factors are found in Appendix D of the Guideline Series for the Control of Volatile Organic Chemical, Polymer, and Resin Manufacturing Equipment. Originally, the uncontrolled fugitive emissions from the additional valves were computed using the uncontrolled emission factor for light liquid service, 0.022 Lb/Hr. Since then, an estimate has been made of the number of valves in either vapor service on light liquid service. It should be noted that the emission factor for valves in gas service was used for valves in vapor service. This assumption seems to be valid from definitions in the EPA proposed standards but needs verification as to its applicability.

Using this information the increased emissions from the valve additions for the entire expansion, and oxychlorination revamp/direct chlorination modification are 44.337 Lb/Hr and 16.622 Lb/Hr, respectively. Thus, the total available offsets from the existing plant would limit the compensation of the increased emissions to Case II.

	Lbs/Hr Voc
Total available fugitive emissions offsets	36.499
Total increased fugitive emissions Entire Expansion - Case I	44.337
Total increased fugitive emissions Entire Expansion - Case II	16.622

The increased fugitive emissions from the entire expansion exceed the total available fugitive emissions offsets from modifications of the existing plant by 8.0 Lb/Hr. Ways to offset this excess need to be investigated to avoid the recordkeeping and reporting requirements. One method would be the elimination of 173 valves in vapor service or the elimination of 364 valves in light liquid service. The inability to offset this excess would increase the probability of the VCM Plant being subjected to the rigors of the regulations.

In addition, the following items need clarification.

1) It is being assumed that the regulations (in particular, the monitoring and reporting requirements) are not applicable to modified facilities provided there is no net increase in the overall VOC fugitive emissions. Is this a valid assumption ?

2) It is also being assumed that offsets of new fugitive emissions can be accomplished by controlling dissimilar equipment. For example, increased fugitive emissions from valves installed as part of the revamp do not necessarily have to be offset by the removal of an existing valve in VOC service. These emissions could be offset by the modification of existing pumps, compressors, and relief valves.

3) What time duration does the EPA allow for the completion of a modified or expanded facility ? (i.e., if the oxy revamp were completed on schedule and the remainder of the Expansion work delayed 2-4 years.)

4) Assuming there is a substantial time lag between the Oxychlorination revamp and the remainder of the plant expansion, would equipment modifications have to be made before the completion of the revamp ? Or before the completion of the entire plant ? Or staggered to just offset each increment as it is completed ?

5) What would be the most economical way to offset the increased emissions through the modification of a certain number of existing fugitive emission sources ? (e.g., if just the oxy revamp were to be offset, it could be accomplished by only installing rupture discs under existing relief valves and double mech. seals on two pumps.)

A response to the questions above is requested as soon as possible. Please contact me concerning any questions or comments you have regarding this letter.

Virgil M. Fisher

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Process Engineer

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TABLE I

NEW VOC FUGITIVE EMISSIONS FOR OXY REVAMP

Fugitive Emission Source	Number of Sources	Uncontrolled Emission Factor lb/hr	Total Uncontrolled Emissions lb/hr	Controlled Emission Factor	Total Controlled Emissions lb/hr
New Pumps (Controlled)[2]	2			0.00	0.00
New Relief Valves (Controlled)[2]	6			0.00	0.00
New Non-Vinyl Compressors (Controlled)[2]	3			0.00	0.00
New Valves					
Case 1: (1)					
Process Valves in Vapor Service	241	0.0463	11.158		
Process Valves in Liquid Service	500	0.022	11.000		
Instrument Valves in Vapor Service	298	0.0463	13.797		
Instrument Valves in Liquid Service	381	0.022	8.382		
Total	1,420		44.337		
Case 2: (2)					
Process Valves in Vapor Service	107	0.0463	4.954		
Process Valves in Liquid Service	98	0.022	2.156		
Instrument Valves in Vapor Service	185	0.0463	8.566		
Instrument Valves in Liquid Service	43	0.022	0.946		
Total	433		16.622		

(Table I)

NOTES:

1) A definitive estimate of the entire expansion from PED.

2) A preliminary estimate of the oxychlorination revamp and direct chlorination modification from PED.

3) Estimated valve split for the entire expansion is 40% in vapor service and 60% in liquid service. Estimated valve split for the oxychlorination revamp and direct chlorination modification is 70% in vapor service and 30% in liquid service.

TABLE II

AVAILABLE OFFSETS FROM EXISTING VOC FUGITIVE EMISSION SOURCES

Fugitive Emission Source	Number of Sources	Uncontrolled Emission Factor lb/hr	Total Emissions lb/hr	Controlled Emission Factor	Total Available Offsets lb/hr
Existing Pumps	52	0.265	13.780	0.00	13.780
Existing Safety Relief Valves	46	0.353	16.238	0.00	16.238
Existing Sampling Connections	20	0.033	0.661	0.00	0.661
Existing Compressors	6	0.97	5.820	0.00	5.820
					36.499