

TO J. K. Jacob AT Piscataway DATE March 22, 1977
FROM P. J. Patel AT Flemington COPY TO See Copy List
SUBJECT Activated Carbon VCM Emissions Evaluation

At your request, the performance of the activated carbon in meeting 10 parts per million (ppm), as well as a possible 5 ppm EPA's vinyl chloride requirement was evaluated. From the attached data, the following observations can be made:

- (1) In the three separate pilot plant studies, 544 carbon column vent gas samples were analyzed by gas chromatograph for vinyl chloride content. 2.6% were above 10 ppm and 9.74% were above 5 ppm. The average vinyl chloride level in the study was 3.0 ppm.
- (2) In the four separate studies conducted on the Pasadena carbon adsorber, it was found that 7.2% of the samples analyzed by gas chromatography contained vinyl chloride above 10 ppm. However, 43.5% were above 5 ppm. The average VCM value was determined to be 4.65 ppm.

It is felt that, in order to evaluate and draw definitive conclusions with regard to whether the Pasadena activated carbon adsorber is capable of consistently meeting EPA's vinyl chloride standards, equipment modifications are required. It is necessary to eliminate possible vinyl chloride contamination from the slurry tank by-pass stream. In order to correct this problem, the carbon adsorber vent should be separated from the combined slurry tank/carbon adsorber system. It is also suggested that the automatic gas chromatograph be reconnected for continuous vinyl chloride emission monitoring.

The Pilot Plant data currently represents the best capabilities of carbon adsorption under controlled and consistent conditions. Even under these conditions, less than 10 ppm and less than 5 ppm exit gas concentrations are not achieved 100% of the time. The key to the acceptability of our existing process is the frequency of excursions above 5 or 10 ppm allowed by EPA. The carbon adsorption process as it now exists does not provide readings below 10 ppm 100% of the time.


P. J. Patel

PJP/cet

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ACTIVATED CARBON ADSORBER EVALUATION
VCM EMISSIONS (GAS CHROMATOGRAPH ANALYSIS)

<u>Description</u>	<u>Total Number of GC VCM Analysis</u>	<u>Vinyl Chloride Emissions (Readings)% above</u>			<u>(VCM) Mean</u>	<u>Std. Deviation</u>	<u>Variance</u>
		<u>10ppm</u>	<u>5ppm</u>	<u>1ppm</u>			
Flemington Pilot Plant* (Table A2)	307	3.6	11.0	41.96	3.61	2.66	7.07
Flemington Pilot Plant* (Table A3)	58	0.00	0.00	28.8	0.87	0.97	0.94
Flemington Pilot Plant* (Table A4)	179	1.6	10.6	74.6	2.72	3.56	12.65
Pasadena Jan.Trial ** Table IIa)	16	6.25	56.3	100.0	5.93	2.32	5.4
Pasadena Jan.Trial** (Table IIb)	19	5.26	36.84	100.0	4.81	2.82	7.97
Pasadena Jan.Trial** (Table III(i)	13	7.7	76.9	84.6	3.6	3.14	9.89
Pasadena Jan.Trial** Table III(j)	21	9.5	19.0	81.0	4.19	4.84	23.46

* Refer to Research Report No.0906-3 Pilot Plant Investigation of the Adsorption of Vinyl Chloride on Activated Carbon, October 8, 1975.

** Refer to Evaluation of Tenneco Chemicals' Commercial Carbon Adsorbers at Pasadena,Texas, January 23, 1977.

P. A. Mango

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