

ALLIED CHEMICAL CORPORATION

MEMORANDUM

October 31, 1974

TO: N. F. Knowlden
Process Control
Corporate Information Systems and Services

FROM: K. E. Hoff
Business Planning
Corporate Information Systems and Services

SUBJECT: VCM OSHA Study

This memorandum summarizes the results of my meeting with Mr. W. C. Koch of ICD on 10/29/74.

SUMMARY

The recommended sampling plan is given below.

1. Use all six testers (or as many testers as men are available) during a given eight hour shift. Take as many as 15-minute samples as can be physically accomplished.
2. Test all eighteen plant sectors within a given shift using a randomized pattern.
3. Develop fixed spots within each plant sector and take sector sample on a circular basis at those fixed spots.
4. Sample each shift in a random pattern in order to determine concentration variability between shifts.

This plan is discussed in the next section.

The objective of this plan is to get as much meaningful data as soon as possible in order to be able to demonstrate to OSHA that monitoring is being done. This plan will be able to test the significance of concentration variability between and within shifts and between and within plant sectors.

Mr. Koch will be back in Morristown on 11/6/74 to review the implementation of this plan at the plant. He said that he shall also get any data developed prior to implementation to us as soon as possible. The data from the recommended plan will be given to us when available.

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DISCUSSION

1. Use all six (6) testers (or as many testers as men are available) during a given eight hour shift. Take as many as 15-minute samples as can be physically accomplished.

Since OSHA standards require VCM concentration control over 15-minute intervals, 15-minute intervals must be tested in order to determine whether VCM concentrations are in control. OSHA standards also require control over an eight hour period, but since sufficient manpower and testing devices are not available, use shall have to assume initially that the 15-minute intervals are independent.

2. Test all eighteen (18) plant sectors within a given shift using a randomized pattern.

Allot the eighteen sectors among the six (or as many as available) ~~men~~ with testers according a randomized pattern, as for example on the attached design. For example, the six men could be assigned for Day #1 as follows:

<u>Man No.</u>	<u>Sectors</u>
1	18, 16, 1
2	12, 8, 9
3	7, 15, 2
4	13, 4, 17
5	3, 14, 10
6	6, 5, 11

Have each man circulate among his allotted sectors during a shift. We shall assume that taking samples in the same order by a man will not confound the results. DO NOT have a sector sampled by different testers to allow for the assumption of independence between testers.

NOTE: According to Mr. Koch, a 30-minute elapsed time is estimated for each sample. This time includes movement time and actual 15-minute sample time. Based on a given 8-hour shift, sixteen samples could be taken but actually only 12 (maybe, as many as 14) samples could be taken on a given shift due to meals and other duties.

3. Develop fixed spots within each plant sector and take each sector sample on a circular basis at those fixed spots.

In order to test concentration variability within a sector a sample should be taken at various

spots. Three or four spots will probably be sufficient initially and their choice is best left to plant personnel. (This fixed place sample is different than the present pattern of traversing the entire sector for a given sector. The traversing would tend only to average results and loses a degree of variability that could be significant.) The assumption is made that testing the spots in the same order will not confound the results.

4. Sample each shift in a random pattern in order to determine concentration variability between shifts.

The shifts cannot be measured consecutively since the battery life of the testers is, in general, four hours (two of the six have eight hour lives) and recharging takes sixteen (16) hours. Therefore, sample the shifts in the following pattern:

<u>Day No.</u>	<u>Shift</u>	
1	7 - 3	
2	3 - 11	
3	11 - 7	
4	none	
5	7 - 3	} since less than 16 hours to next shift being sampled
6	3 - 11	
7	11 - 7	
8	none	
.		
.		
.		
etc.		

The assumption is made that sampling the shifts in the same order will not confound the results. Also, even though two of the testers have 8-hour battery lives, we shall ignore this in order to get uniformity of testing by shifts.

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/dp
Enc.
cc: W. H. Wagner

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