

TO	DISTRIBUTION	FIELD POINT OR DEPT. & BLDG. NO.	25-3316 DATE THIS LETTER January 10, 1980
FROM	P. M. Zakriski	Brecksville R & D Center, D/8506	
SUBJECT			

OSHA Related Laboratory Operations at Plaquemine

OSHA laboratory operations at Plaquemine are limited to the measurement of vinyl chloride collected with personnel samplers. This testing should be conducted following the "Flasher tube" method, Procedure 1021. Some improvements in laboratory procedure are needed. Calibration of the area VCM monitors should be performed daily by the laboratory staff.

The analysis of vinyl chloride personnel monitor samples is performed using a procedure which combines solvent washing and headspace analysis. Although sensitivity and linearity with this method looks acceptable, it would be best if the plant changed to the "Bendix Flasher Tube" method (#1021). All the plants of the Chemical Group successfully use this procedure. There is considerable value gained from uniformity of test procedure throughout the group and that is the reason for changing.

While reviewing the laboratory's execution of their test procedure, several operations were noted which should be changed. It is hoped that the changes noted for these observations will be followed when the new procedure is started.

- A. Instrument Calibration. Primary standards of vinyl chloride in a solvent are prepared from syringes, volumetric flasks, graduated cylinders and stoppered bottles. It is better procedure to include an analytical balance. Standards should be prepared with an appropriate weighing and not solely volumetric measurements. The instruments should be calibrated daily but with 3 standards (not one). These standards should be designed to cover the range of concentrations encountered in daily operations.
- B. The Adsorption Tubes. The carbon adsorption tubes (Flasher tube or dual section tubes) should always be refrigerated when they are returned from the field. When dual section tubes are used, a reasonable percentage of these tubes should be analyzed with separate measurement for the front and back sections. This is also true for Flasher tubes. In a reasonable number of instances, the personnel sampling should be performed with two flasher tubes in series and each analyzed and reported separately.

The calibration of pumps employed in conjunction with the adsorption tubes is extremely important. Proper procedure requires calibration before and after the shift long sampling. Then the calibration measurements are averaged to determine the total flow through the collection tube.
- C. Data. Instrument measurements need to be recorded along with calculated concentrations. This is preferable to only recording the final calculated result. For instance it is very simple to record the area of a vinyl chloride peak then representatively show the conversion of an area measurement to micrograms and then to air concentration (ppm). Furthermore, data sheets

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with these machine measurements, calibration factor, air volumes and resultant air concentrations should be retained for several months (perhaps 6 months) rather than a few weeks.

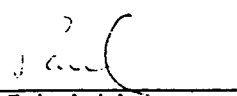
- D. Instrument Maintenance. The maintenance and repair of instruments is carried out by laboratory staff and should be followed up with brief notations in a log. At the present it is difficult to determine what service was performed on an instrument and when it was performed.
- E. Quality Control. I recommend that a chart be maintained that shows a running display of the VCM calibration measurement. Also helpful would be a display of the frequency of measuring the breakthrough of vinyl chloride to the backup section (tandem tube). Our criteria for this plot is 20%. When the backup measure is equal to or greater than 20% of what was measured in the front section, then the sampling is labeled as "breakthrough". The frequency of breakthrough is followed to monitor for sampling problems.
- F. Area Monitors. The area monitors should be calibrated daily by the laboratory staff. The calibration measurements should be reported monthly and retained with the summary reports describing work room vinyl chloride concentration.

During my review with the plant staff I noted that the area monitors were being calibrated weekly and by the maintenance staff. After reviewing the record book (found in the maintenance shop) I found that on September 26, 1979 the area monitor measured a 10.0 ppm standard as 2.6 ppm. The log noted only this measurement and the second measurement (near 10 ppm) made after tuning of the electronics. I have not been able to determine an explanation for the low measurement. Therefore, I must conclude that the analyzer was actually measuring low.

Analyzer problems like the one discovered on 9/26/79 should be discovered and corrected promptly. The best way to do this is to calibrate the monitors daily.

- G. EPA Testing of VCM Sources. It is not necessary to use Method 106, complete with the leak tight 50 gal. container, every time you test a VCM discharge source. Method 106 is only necessary for compliance tests. For daily or weekly testing, grab samples with a small bag or glass vessel are sufficient. Unnecessary effort is expended to conduct every test with the bulky sampler from Method 106.

In summary, the laboratory should begin using the flasher procedure and make some technique changes at the same time. More care should be paid to calibration of laboratory and process instruments.


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