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PROGRESS REPORT

JUNE, 1974

Analytical, Flammability, On-Line
Instrumentation & Physical Testing Groups

L. B. Crider

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Code Zero Activities - L. B. Crider

1. Analyses of perimeter air samples taken at distances up to 3 miles from the Avon Lake General Chemical Plant showed VCM concentrations in the range of 0-176 ppb. This first set of 26 samples were collected at locations and at frequencies derived from the modified EPA method. A statistical analysis of these data has lead to the recommendation that two additional sets of similar data be collected to provide an adequate data base to develop a sampling model for our other production plants. This additional sampling and analyses are scheduled to be completed the first week in July.
2. A gas chromatographic method based on flame ionization detection has been developed for detecting VCM in ambient air samples at the 1 ppb level. The basic principle involves the adsorption of a 250 cc air sample on activated charcoal contained in the sample loop of a gas chromatograph. The VCM is then thermally desorbed in the GC. A calibration curve has been obtained covering the range of 5 to 280 ppb. At the 20 ppb level a 9% deviation in reproducibility was found.
3. To provide the necessary instrumental systems that may be required to meet future OSHA criteria for monitoring VCM levels below 10 ppm we have established a new set of objectives for the AVCM Task Group to rapidly identify and field test new monitoring systems. In general, this new system must be specific for VCM in the range of 0.1 - 10.0 ppm; be continuous or rapid sequential in monitoring operation; be inexpensive, easy to operate, have low maintenance requirements; and it must be compatible with our present Bendix sampling systems. The methodology that we will apply in meeting these objectives are essentially the same as in our previous task group function, i.e., make a survey of available methods; select the best candidates for laboratory and field testing; install and operate a prototype system; compare the performance with our present Bendix System.
4. An EA has been approved to fund the PVC degradation study at the University of Akron. This work, under Dr. Paul Garn will be directed toward a definition of VCM (if any) produced at processing temperatures. Work on this project will begin about mid-July.

NMR and Mass Spectroscopy - J. L. Dorsch

1. Support of Code Zero work consumed about 95% of our effort this month. We are continuing to determine ambient vinyl chloride monomer (AVCM) in air samples taken at our PVC customers' plants. The concentrations found have been 1 ppm or less in most samples except ones taken in PVC storage containers (railroad cars, tanks, bins, etc.) or taken in the exhaust gases of mixers or extruders.
2. We have begun Phase 1 of the AVCM perimeter monitoring program for our PVC plants using the method developed by O'Mara and Quisenberry. Phase 1 will be the analysis of four air samples taken from each plant perimeter. We hope to shift the analytical work for Phase 2 to the plant laboratories.

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