



DOW CHEMICAL U.S.A.

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MONITORING SYSTEMS FOR VINYLIDENE CHLORIDE MONOMER

There are two approaches to monitoring vinyl chloride and vinylidene chloride monomers. One is continuous area monitoring and the other is personnel monitoring. The latter is essential and is required by OSHA. However, continuous monitoring is extremely helpful in defining problem areas.

At Dow, we have used the halogenated hydrocarbon analyzer for continuous monitoring of vinyl chloride and vinylidene chloride for years. Enclosed is the operating principle, physical description and some pictures of the analyzer. It has been very useful and very effective in our monitoring program. This unit can be used for 6 or 12 sampling points. The sampling lines are made from 1/4-inch Saran tubing and can be extended up to a couple hundred feet. They can be strung overhead and allowed to hang in the breathing zone of the operator. In order to determine where the control points should be, an industrial hygiene survey should be conducted initially to define the areas of greatest exposure. The continuous analyzer gives a 24-hour printout on chart paper and the unit can be hooked up to an alarm system for early warning of potentially excessive exposures. Understandably, the unit itself has to be in a standardized area (outside any explosive atmosphere of vinyl chloride), and the readout chart can be located anywhere. It is our understanding that a firm in Chicago can make the unit. This firm is A.E.D., Incorporated, 1913 West Irving Park Road, Chicago, Illinois 60613, Telephone A/C 312 348-6550.

We have used infrared spectrophotometry in the past, but only recently are we using this method for continuous monitoring of vinyl chloride monomer. We have also just installed a continuous monitoring system for vinyl chloride monomer using vapor phase chromatography. The only disadvantage of this system is the lengthy time between samples (approximately 20 minutes as opposed to 2 minutes with IR and less than 1 minute for the conductivity meter).

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We have just completed a personnel monitoring method for vinyl chloride which is reliable in the 1 part per million range. This method has been sent to both OSHA and NIOSH. We are including a copy of this method for you. We feel this method can be applicable for vinylidene chloride but more work must be done on desorption and column conditions.

For personnel monitoring, in the meantime, we suggest you collect samples in the breathing zone of the worker in Saran film bags and analyze the contents by infrared or gas chromatography.

Enclosed is a description of the Saran film bags and the names of the suppliers. We use the 12 liter bags. Using an air mover such as a personnel sampler (MSA Monitaire pump), the bag can be filled (or a series of bags can be filled) and the contents analyzed by VPC. A small piece of transparent tape can be placed on the bag so a hypodermic needle can be inserted into the bag without rupturing it, and the hole can be taped over so the bag can be reused. The conditions described for the VPC analysis in the vinyl chloride personnel monitoring method can be used to analyze for vinylidene chloride collected in Saran film bags.

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