

B.F.GOODRICH CHEMICAL COMPANY
Akron Chemical Plant

March 1, 1974

Mr. S. S. Michels
Louisville, Kentucky

TIME WEIGHTED AVERAGE EXPOSURE OF
LOUISVILLE EMPLOYEES TO VINYL CHLORIDE

On February 19 and 20, 1974, Mr. Claude Brunot, PIC Engineer, and Mr. Everald Deane, Industrial Engineer, visited the Louisville plant to recommend procedures for determining, on a statistical basis, the time weighted average exposure of PVC plant employees to vinyl chloride.

After discussing the problem with Messrs. Joseph Robbin, James Kute, John Sandoz and yourself, we inspected the PVC plants. Upon returning and continuing our discussion, the following program was recommended:

1. Break up both PVC plants into logical subgroups by physical area or type of equipment involved. This has been done.
2. Establish a program to sample men in an area on a random sampling basis. (We pointed out that the time required to reach a solution is proportional to the number of inspections per shift. We recommended eight or more per shift.)
3. Collect the above data by job classification rather than by individual, at least at the beginning.
4. Use the men who are doing the Organic Vapor Analysis (OVA) sampling to collect the man-area data.
5. Segregate the data by both area and job classification so that areas with high monomer concentration (as determined by OVA or by Bendix analysers) and a high incidence of employee occupation (by sampling) can be identified and studied in detail. A format was suggested for data collection.
6. Use the Mark II time sharing program to determine the number of samples needed at a desired confidence level. It also gives the random sampling times.
7. Concentrate on high risk areas as data begins to point them out.

By this method we can determine which job classifications are exposed for what percentage of their time in areas of concern. The present OVA sampling of designated points in PVC areas allowed us to set up areas to be sampled for the job classifications which normally frequent an area. These areas may be the entire floor of a building or three or four specific areas on a single floor depending upon the type of equipment involved and the risk of exposure.

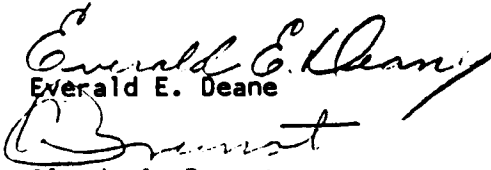
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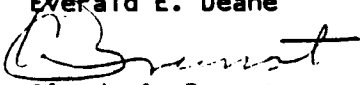
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Because of the number of areas and the number of people involved, it becomes paramount to begin eliminating, as soon as possible, those areas which become of less concern because of infrequent visits by personnel. Any high vapor area can then be posted "off limits" for the present, unless recommended equipment is used for protection. You then may concentrate on areas of higher incidence of employee occupation. When it has been determined that a classification has the greatest exposure on the basis of time and VC concentration in the area, that classification should then receive intense study. At this time employees may be sampled by name if it appears necessary. Several sampling programs may then be run in different areas, independently. This will provide better control and break the problems down into something easier to handle. Repeated samplings of these areas can be made in the future and results compared to determine if time weighted average exposure is increasing or decreasing. We would recommend that three sigma control units be kept of the sample data so that any trends may be observed. As improvements are made in ventilation and as the risk is lowered in all affected areas, the areas being sampled may be reduced. Once a safe level is reached in any area, only periodic sampling need be done in that area. It may be done on all people in the area, or only specific people in the area who represent the population.

Mr. Claude Brunot reviewed the Mark II user's guide, work sampling, WKSAM~~XXXX~~, published by General Electric Information Service Department with Mr. James Kute. This program provides a source of random observation times, and from the input posts results as well as the number of observations necessary to assure one that the results of the study will fall within $\pm 5\%$ of the true value with a degree of confidence between 95 and 100 percent.

It has been our pleasure to serve you. If we can be of additional help, or if you have questions, please give us a call.


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