NIOSH CONTROL TECHNOLOGY ASSESSMENT OF THE PLASTICS AND RESINS INDUSTRY:

BACKGROUND AND NIOSH OBJECTIVES

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To begin, I would like to define the concept of control technology as it is being used by NIOSH. We have broadened the definition of the term to include many types of measures (such as engineering design and controls, work practices, protective equipment, monitoring devices, etc.) which may be used to prevent worker exposure to occupational health hazards. It is possible to consider a hypothetical occupational hazard as having a source of emission into the workplace, a means of transmission in and through the workplace, and a point of contact with the worker. This concept is shown in Figure 1. With this concept in mind, control measures can be divided into those which are applied to the source of emission, to the general workplace environment, or to the individual worker. Other control measures can be regarded as adjuncts or modifications to these three types of control. Table I shows a listing of control types broken down in this manner.

The objective of the NIOSH control technology program is to promote the application of effective control measures in order to prevent occupational illnesses and injuries. As Mr. Haag mentioned earlier, our intention is to work cooperatively both with industry, labor, and academia toward this end. The talent which exists in many major companies such as those represented here constitutes the greatest pool of technical resources available to solve occupational health problems. Even though this pool is responsible for many other important tasks (such as producing a product within specifications while maintaining a profitable market position), occupational health problems depend on the technical community which is represented by the group.

The study of the plastics and resins industry is the first of the NIOSH control technology studies to be completed. The contract to perform the study was awarded to Enviro Control, Inc. (ECI) in July 1976, and the study was completed in November 1977. A number of factors dictated that the plastics industry would be studied. Perhaps one of the most significant factors is the series of widely publicized health effects among workers in polymerization plants--primarily polyvinyl chloride, but also including styrene-butadiene rubber (SBR) and (sometime afterward) acrylonitrile. A second major factor is the innovative nature of the plastics industry in developing and implementing control technology, and the potential for transferring this technology to other organic chemical processes.

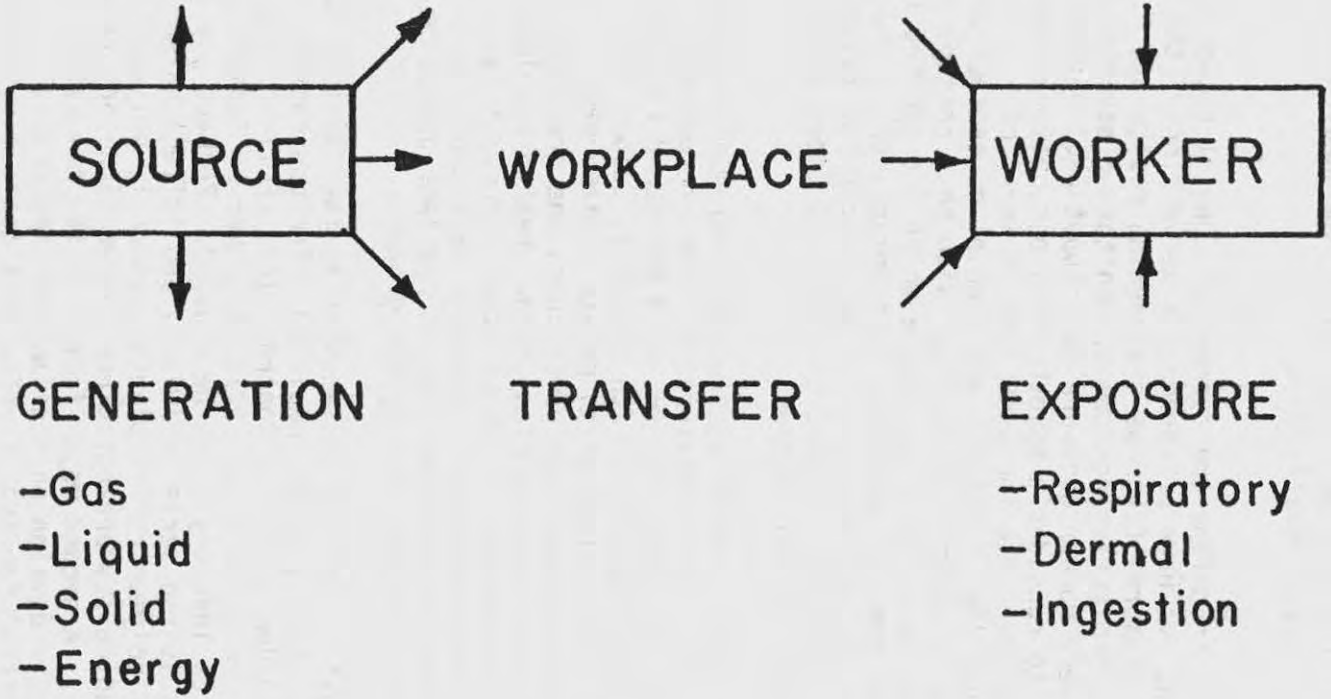

Figure 1. Generalized occupational exposure.

Table 1. Principles of controlling the occupational environment.

POINT OF APPLICATION OF THE CONTROL MEASURE	CONTROL MEASURE
At or near the hazard zone	Substitution of non-hazardous or less hazardous material
	Process modification
	Equipment modification
	Isolation of the source
	Local exhaust ventilation
	Work practices (housekeeping)
To the general workplace environment	General dilution ventilation
	Local room air cleaning devices
	Work practices (housekeeping)
At or near the worker	Work practices (housekeeping)
	Isolation of workers
	Personal protective equipment
Adjuncts to the above controls	Process monitoring systems
	Workplace monitoring systems
	Education of workers and management
	Surveillance and maintenance of controls
	Effective process-people interaction and feedback

You have been given a copy of the final report from the study entitled, "Engineering Control Technology Assessment for the Plastics and Resins Industry." The objective of this morning's session is to briefly review the study, and then to have an open discussion of its merits and weaknesses, and of ways in which other control technology studies could be improved as a result. We need your feedback in order to direct future studies in areas that will meet the real challenges which we all face.

It has been interesting to note how the study has been used thus far (particularly by younger hygienists without engineering backgrounds). The work permitted both NIOSH and Enviro Control to provide substantial input to OSHA at the acrylonitrile hearings. Numerous industrial hygienists have found the report to be particularly useful as an educational aid. OSHA staff have also made use of the report in conducting plant inspections. We will be interested in the comments of this group concerning your perception of the report's usefulness.

Clearly, there are some gaps, which Ken Schoultz will touch on. Also, we were able to draw some definite conclusions, as Julius Bochinski will discuss. The important thing for us all to realize, however, is that the study is only a first cut at describing control technology at a point in time for a complex and changing industry. The present symposium will add significantly to that study. The production of reports and the conduct of symposiums should not be regarded as an end in itself, however. The proper goal is the implementation of effective control measures to prevent worker exposure. We also support the promulgation of effective regulatory standards. That is why we are here.

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MR. WALTER HAAG: Our next speaker is Kenneth Schoultz, who served as the principal investigator for the plastics and resins control technology assessment. Ken is an industrial hygienist with extensive experience in control systems and technology. He left Enviro Control to manage the industrial hygiene programs of LFE Environmental, a consulting firm located in the San Francisco and Boston areas. While with Enviro Control, Mr. Schoultz participated in numerous studies for the NIOSH as well as for OSHA and the National Cancer Institute. Ken's discussion this morning will deal with the study methodology, the industry coverage, and some of the advantages as well as the weaker points we found in undertaking this study.

NIOSH

SYMPOSIUM PROCEEDINGS

Control Technology in the Plastics and Resins Industry

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Centers for Disease Control
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