

**INDUSTRIAL HYGIENE FOUNDATION
OF AMERICA, Inc.**



SEVENTH ANNUAL MEETING OF MEMBERS

**PITTSBURGH, PENNSYLVANIA
NOVEMBER 10-11, 1942**

**PRODUCED
JM - 83**

MT-001490

WHAT THE FOUNDATION PLANT SURVEYS ARE DISCLOSING

FRANCIS R. HOLDEN, Ph. D.*

Foundation surveys made this year disclose an increased appreciation by management of the application of interpretive and preventive health measures to conditions in the workplace. This viewpoint is especially true of those companies that have active medical and safety departments, even though they may have no trained hygienists.

Industrial, medical and safety departments often detect hazardous exposures in time to prevent serious consequences. The extensive educational program sponsored by governmental agencies, various societies and the Foundation are showing results. Numerous requests for information and services from member and non-member companies alike are indications of industry's efforts to prevent occupational disease and to foster employee health.

Foundation surveys frequently show that equipment for exhaust ventilation is used improperly. Often an exhaust system for controlling dust where batch cars are loaded has been designed, for reasons of economy, to have only a few chute exhausts in operation at any one time. Workmen, through improper instruction or supervision, will open all the exhaust valves, resulting in insufficient suction at any point to remove the dust.

Similarly, there is frequently a failure to provide adequate air to compensate for that removed by exhaust system. This neglect is true especially in winter when windows and doors are closed. The result is that the required amount of air cannot be removed and unless the system has been greatly overdesigned the health hazard will not be controlled. At least as much air should be provided as will be exhausted and this air should be conditioned during cold weather. By means of louvres it is possible to feed air into the room, avoiding drafts.

We have observed a number of cases where an operation would be exhausted by means of a fan located in a wall near a window, or through a portion of a large window. Workmen desiring to increase the ventilation will open the window, setting up a return air current that carries the dust, gas, vapor, or fume back into the workplace. The fallacy of this procedure can be illustrated by means of a smoke bomb, which clearly shows the exhausted material returning to the room through the open window. We have also found cases where dangerous gas, vapor, dust or fume enters adjoining departments through open windows after having been exhausted from an operation nearby. The obvious answer is to extend the exhaust duct above the level of the roof.

Recently, during an inspection of a spray booth department in a large plant, it was seen that the exhaust system was not operating. It had been shut down because of a complaint from a nearby department that the vapors made the men sick. The vapors were exhausted into a court, exposing many workmen to a hazard that was not a part of their job.

The use and care of respirators continues to be a problem in spite of the know how information published by the U. S. Bureau of Mines and other organizations, including our own. Most surveys disclose at least one

* Industrial Hygiene Foundation.

case where the wrong respirator is used. A most common mistake is the employment of dust respirators for protection against vapors. There are also many instances where the maintenance of respirators is inadequate or negligible. Under such circumstances it is difficult to obtain the necessary cooperation from workers. Wearing a respirator is usually a new experience for a recently employed workman. He must be taught to obtain a comfortable fit and the reason for the respirator should invariably be explained.

Many companies have their troubles in getting workmen to wear respirators. But a clay products firm had the opposite experience. A general order warned in effect that employees would wear their respirators "or else." One wintry morning the plant manager coming to work found the janitor busily sweeping snow and wearing a respirator!

Not all industrial health problems are solved by specialists. A recent hazard involved exposure to a material which is a skin irritant. Glass plates were immersed in a mixture of unpolymerized resin, and in spite of the utmost care some of the resin would wet the clothes of the worker. The liquid would then remain in contact with the skin for several hours, producing a dermatitis. Rubber and cloth aprons were of no value, as the resin penetrated them. The mother of one of the girl workers suggested that a sheet of the polymerized resin itself would be impervious to the liquid. Several thin sheets were then prepared and proved an absolute protection.

"Criminal negligence" regarding one's own health and safety is an ever-present problem. An inspection of an acid-pickling process in a steel plant disclosed what appeared to be complete disregard for the potential dangers of the acids by the workers exposed. Nevertheless the accident and health experience in this department had been excellent with one exception. A workman decided to clean thoroughly his dinner bucket after finishing his turn. He dampened a cloth with concentrated hydrofluoric acid and proceeded with the cleaning. The next day his hands were in a very serious condition and grew rapidly worse. It was finally necessary to amputate several of the fingers to arrest the necrosis which resulted.

There is needed middle ground between frightening a workman to the point where he is of little value, and where he shows a wilful disregard or ignorance for the dangers of his occupation. A continuous systematic program of education and supervision administered by foremen and supervisors, backed by top management, has amply demonstrated its practical worth.

The need for speed in production today is of paramount importance, but it should not be at the expense of forethought in the provision of safeguards for health and safety. Mr. Barnes, in his excellent paper on keeping score on toxic materials in the plant, has provided a practical, working method for accomplishing that task. All too frequently the first knowledge that the medical or safety department has of a new process, machine or material is when it is in operation, perhaps in an obscure corner of the plant. Forethought will prevent dangerous exposure. The cost is higher for placing makeshift safeguards or exhaust equipment on a machine after it is in use. Time is lost and confidence in management is endangered if adequate planning is neglected in supplying proper protective devices.

The Foundation is now engaged in a study of the toxicity of the products of reaction from the manufacture of a new chemical by a member company. During the laboratory stages of the developmental work on this

**PRODUCED
JM - 83**

MT-001556

chemical there were no indications of danger. Ten days after it was placed in pilot plant production two workmen were stricken seriously from exposure to the chemical or one of the byproducts.

By means of the data obtained from animal studies it will be possible to avoid a recurrence of this tragic experience. Every new chemical or product should be investigated as to its toxicity before it is prepared in large amounts and released to the public. This practical common-sense procedure is followed by several larger producers of synthetic chemicals. At least two of the companies are members of the Foundation and can furnish details of their experience to other interested members.

There are still too many cases of dermatitis caused by workmen washing in kerosene, gasoline, or carbon tetrachloride. Protective creams will prevent grease and grime from being ground into the skin. The protective cream and the dirt can be removed simply by warm water. In stubborn cases a safety soap may be needed.

Restrictions on strategic materials for our military needs have resulted in the increased severity of some common hazards. The amount of tin present in solders has been reduced, resulting in an increased amount of lead and occasionally the addition of other toxic metals such as cadmium. Exposures to fumes from solder should be re-evaluated in the light of these new conditions. There will undoubtedly be cases where protective measures which were adequate for the normal solders will fail to prevent lead or cadmium poisoning.

A summary of typical surveys conducted by the Foundation so far during the year 1942 is appended to this report. The industries studied in this way comprise large and small companies and include chemical, steel, stone products, glass, electrical, and container manufacturers.