

37—Industrial Hygiene

A hazardous materials information sheet similar to the sample shown in Fig 37-2 could be prepared to elicit toxicological information from the supplier. The information in this questionnaire would be useful to the medical, purchasing, managerial, engineering, and safety departments in setting guidelines for safe use of these materials in industry. This information would be very helpful in the event of an emergency. The survey should include those materials actually in use in a plant, together with those which may be contemplated for early future use. Possibly the best and earliest source of information concerning such materials is through the purchasing agent. Accordingly, it is strongly recommended that a close liaison be set up between the purchasing agent and the health and safety personnel so that early information will be provided concerning materials in use and those which are to be ordered.

Basic procedure

There is a basic, systematic procedure which can be followed in the recognition of occupational health hazards. J W Lake described the following method in his talk at the 1966 National Safety Congress. (See References.)

The first item to consider is the end product or products that will determine the raw material, processes, and equipment needed for production.

After the materials and processes are named or determined, then material properties, effects, and process flows, including pressures and temperatures involved, should be reviewed.

At this time a simple block process flow sheet should be established which will show, stepwise, the introduction of each material and the product of each step. A material and process hazard-and-effects checklist should be established. Some sources of information to assist in preparing this list are data sheets published by the National Safety Council, the American Industrial Hygiene Association, the Manufacturing Chemists' Association, and the American Insurance Association. (See listings in the next two chapters.)

With these two things accomplished following close coordination with other pertinent departments, the location for needed

controls and their adequacy becomes clearer. For example, foundry operations produce dust. The flow sheet should show where this occurs. The hazards check sheet should identify the kind of dust and how it is formed. These items taken in combination indicate (a) where dust control measures such as ventilation should be placed, and (b) that care should be exercised to see that dust collection equipment should be located so that dust is not fed back into the plant environment. (See Fig 37-3.)

Another example involves an exothermic (heat-evolving) reaction in a chemical plant. From information which you have established, make sure that process interlocks and adequate rupture disks (or relief vents) are present to prevent a sudden flooding of the working environment with hazardous chemicals or vapors.

Basically, then, a hazard checklist is required for each step of the manufacturing process, it should be reviewed to determine its impact on the next step and on the total process.

The different ways that equipment could fail or the process could go wrong should be explored for hazard anticipation and recognition. Do this not only from a single failure standpoint but also for the possibility of two separate and distinct failures. The failure effects should be analyzed.

The time taken to prepare process block flow diagrams and hazard checklists will save much more time in plant and process familiarization and does allow the safety professional to sit at his desk and probe for weak spots and evaluate the overall production program.

In some instances, the safety professional may be hundreds of miles away from the plant when an incident occurs. His previous evaluations and diagrams enable him to have immediate knowledge of the hazards and their location, and to initiate and assist in action which minimizes injury or loss.

It is vital that all process flow and plant facility prints be kept current to provide the knowledge required for proper recognition of hazards. A desirable practice is to operate the plant on paper from the plant layout flow diagrams. All that remains then is a follow-up on operating and emergency procedures.