Ask Alice H...

Dear Alice H.,

Recently, we have been hearing about poisonings in the laboratory. How is this possible? What steps do we need to take? Could it happen here?

Afraid of the Unknown

Dear Afraid,

You are absolutely correct there have been a number of stories in the news related to poisonings. Specifically, recent articles have focused on sodium azide but there are a host of other materials that can be a poison. In fact, your odds of dying according to the National Safety Council due to unintentional poisoning is 1 in 139. Of course this goes up a bit, if you figure in self-inflicted poisonings and poisonings by others.

We as Health and Safety Professionals don't necessarily think of things in terms of poisonings – we think in terms of exposures. By definition, a poison is a substance with an inherent property that tends to destroy life or impair health. In fact many substances can become a poison when taken in excess, i.e. the old adage "the dose makes the poison". And the most common form of unintentional poisoning is associated with either an overdose of a medication or fatal drug interactions. Hence, something in lower doses is fine but in elevated doses or in combination becomes deadly.

In most causes poisoning occurs by ingestion, but poisoning can occur through inhalation or adsorption through the skill. Thus, in a laboratory or industrial setting the pathways for poisonings become critical. The Industrial Hygienist and Safety Professions must be aware of the materials that are in use and the potential health implications. This is way the material safety data sheets (MSDSs) are so important. The MSDS provides not only the health information but the permissible exposure limits (PEL) as well as the threshold exposure limits (TEL). Additionally, the MSDS will provide first aid information if someone should be over exposed to a particular substance as well as the appropriate or recommended personal protective equipment. It is very important in the cases of ingestion that the proper first aid be applied as standard techniques (such as inducing vomiting) may actually complicate or be more harmful.

It is also critical that individuals using a particular substance understand the appropriate hazards with the material. In many causes, individuals falsely believe that the personal protective equipment (PPE) they are using will protect them from the materials they are using, i.e. do they have the proper gloves? Or the proper respiratory cartridges? It is important that the PPE be evaluated for the materials being handled. Additionally, exposure times need to be reviewed as well – i.e. not all gloves will protect for extended periods of time.

In addition to understanding the materials in use, it is also critical that good laboratory practices be followed. Some key practices to help minimize the potential for poisonings include:

- No pipetting by mouth.
- No food or beverages in the laboratory.
- Removing potential contaminated clothing before entering areas where food or beverages may be located.
- Do not use laboratory glassware for food or beverages.
- Use proper hygiene. Wash hands prior to eating or drinking.

Additionally, the poison control number, 1-800-222-1222, should be posted in prominent locations. Please review the proper PPE and laboratory practices with everyone who handles chemicals. It is critical that they understand the routes of exposures and how to minimize their exposure. This won't eliminate the potential for malicious acts but it can go a long way to prevent unintentional poisonings.



Dr. Alice Hamilton
(1869-1970) was the founder of American occupational medicine and was the first woman professor at Harvard Medical School. Her contributions to occupational safety were vital to workplace health improvements. *JCHAS* honours these contributions in this column named for her.

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