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Protecting Your Lab Personnel Against Exposure to Hazardous Chemicals

As a member of my company's OSHA compliance team, I am constantly reading trade literature to stay abreast of the regulations. I recently came across an article regarding laboratory hygiene, which made me aware of yet another regulation that directly affects many electroplaters: Occupational exposure to hazardous chemicals in laboratories (29 CFR 1910.1450).

Labs Can Be Hazardous Centers
Many electroplaters see the laboratory as a place to work out quality problems, allow consultants to conduct tests, check bath concentrations and analyze effluent samples. The laboratory, therefore, is not always considered as a center of concern for safety, hygiene or chemical exposure, mainly because of the relatively small amounts of chemicals involved. On the other hand, electroplaters are routinely exposed to heavy metals, toxic substances and corrosives in their operations. What we tend to forget is that many of these same chemicals are utilized by the analyst who is working on the sample.

Determining if your laboratory is subject to these regulations can be a little confusing, so you must get organized. First, become familiar with the regulation, your laboratory and the terms "action level" and "permissible exposure limit" (PEL). After accomplishing these goals, you must evaluate your laboratory's chemical inventory to determine what chemicals are applicable to the standard.

Your inventory should then be referenced against the regulation to determine which items can be excluded from the list of concerns. These items include chemically impregnated test papers—such as pH paper or starch iodide paper—and

commercially available test kits where all the necessary reagents are included. After eliminating these items, you must research the OSHA regulations and material safety data sheets to determine action levels and PELs.

Then it's time to inform management of your findings. A meeting should be scheduled with your management representative or superior, the lead laboratory technician(s), and your health and safety officer or designated consultant. Be sure to spell out the purpose of the meeting by explaining the regulation, reviewing your inventory findings and expressing your concern. If management is willing to pursue this project, the first step is to conduct exposure monitoring.

Exposure Monitoring

Utilizing your inventory list, discuss with your laboratory workers the chemicals that are used most frequently, in the greatest volume, and that have the lowest action of PEL levels. Discussion of this type can give you and your health and safety officer a shorter list of target chemicals that should be monitored. Chemicals that require special attention are carcinogens, nerve agents and toxins. A small investment of your time can return large dividends when you consider the cost of exposure monitoring.

Initial monitoring results will determine your course of action. The monitoring determines significant exposure according to OSHA and will affect your company's Chemical Hygiene Plan. The monitoring results will also determine the need for periodic monitoring.

All monitoring results should be communicated to your affected employees. The standard also gives

guidelines for termination of monitoring. The purpose of the plan is to protect the employees from health hazards, and it must be available for inspection by the employees, their representatives and, if requested, OSHA.

Chemical Hygiene Plan Guidelines

The plan must include: Standard operating procedures relevant to safety and health; criteria to determine and implement control measures, such as engineering controls, personal protective equipment and hygiene practices; training and information; and a designated person responsible for the plan.

Medical evaluations by a licensed physician are also required, without cost to the employee. The examination is to be limited to the occupational exposure, and this fact should be conveyed to the physician. Finally, the plan must be reviewed annually for effectiveness, and updated, if necessary.

I recommend becoming familiar with this regulation if your company has a working chemical laboratory. Electroplating is a high-profile industry, and every effort should be made to keep working standards up to date and in full compliance. **P&SF**

About the Columnist

Britt Allgood is a senior production engineer with Universal Fasteners Inc., a subsidiary of YKK Corp. of America. He holds an MS in chemistry from Tennessee Technological University and is a member of the American Chemical Society. He is second vice president of AESF's Mid-Tennessee Branch, and is an active member of AESF's OSHA and Water committees.