MEASURING ARTISTS' EXPOSURES

Pratt Fine Arts Center has substituted vegetable oil for chemical solvents in its print-making studios

border: type drawer for the sheet-fed printing presses

Industrial hygiene has its roots in—well—industry. For example, any industrial hygienist should be able to evaluate chemical exposures for a welder working an eight-hour shift on an automobile assembly line.

But what about a metal sculptor, who does a little welding, some polishing, and perhaps some metal casting to create a work of art? These fleeting exposures are more difficult to capture, creating a challenge for Gerry Croteau, an industrial hygienist with our Field Research and Consultation Group.

Little has been published about airborne exposures in the arts, he says. Artists often work alone, and he characterized art production as "millions of artists and artisans using thousands of products in hundreds of different ways." Rarely does an arts organization support efforts to assess, monitor, and control workplace health and safety hazards.

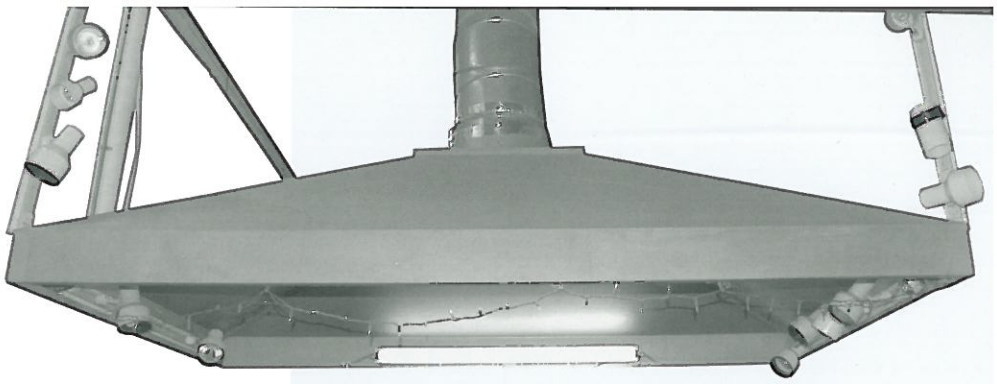
One arts organization that has made the commitment is the Pratt Fine Arts Center, a nonprofit education and resource center located in Seattle's Central District. "Pratt has been committed to safety in the arts for its entire 32-year history, but in the past five years we have made it more of an emphasis," says Executive Director Michelle Bufano.

In many ways, Pratt serves as a national model for its mission and structure, and Bufano also wants it to be a safety model for other schools. Pratt Facilities Manager James Brandalise is developing standards for the tasks and tools that artists might use.

Artists often want to know whether a material or a technique is safe, Bufano says. She wants to integrate safety into the curriculum and develop take-home information for artists and a safety resource on the school's website.

Croteau is helping provide that information. He approached the problem of airborne exposures at Pratt in three steps: 1) understanding the artistic process and media used, 2) monitoring airborne exposures, and 3) interpreting the resulting exposure monitoring data.

He started by talking with artists and watching them work. This allowed him to identify the substance being worked, its toxicity, and its potential for becoming airborne. He then fit artists with a small lapel monitoring device to collect air samples from their "breathing zone."



A canopy hood is appropriate for the relatively low exposure levels in a glass flame studio

He sampled for the duration of the task, and sometimes took additional samples in the studio.

After the exposure has been measured, Croteau determines whether it presents a potential health hazard. This is where science becomes an art. Exposure criteria for a specific toxicant are based on a combination of epidemiology and animal studies and sometimes this information is limited.

For most workplace contaminants, this is readily accomplished by comparing the worker's measured full-shift exposure level to the permissible exposure limit (PEL) that is enforced by the Washington Division of Occupational Safety and Health. The PEL is established as the airborne concentration the average worker can be exposed to eight hours per day for a working lifetime without experiencing adverse health effects. Again, this doesn't work so well in the artist's studio.

For shorter duration exposures, there is a Short Term Exposure Limit (STEL), typically set at three times the PEL for a 15-minute duration. Croteau uses these as the basis of his calculations. If he finds an artist's exposure exceeds an occupational exposure limit, he offers several recommendations.

The best solution, which is rarely feasible, is to discontinue use of the product. However, this has been done in the metal arts by introducing fluoride-free fluxes and lead-free solders, and polishing metal by tumbling instead of buffing.

The next best solution is the use of ventilation, water spray, or some other engineered control that reduces the exposure level. The last resort for addressing an elevated airborne exposure is using masks for respiratory protection.

Croteau says that Pratt, due to its prominence and stature, sets a standard for health and safety in the arts that artists will tend to employ in their own studios. The school has agreed, when possible, to reduce exposure levels and improve ventilation, even if a given exposure level is found to be less than a regulatory limit.

Further information

Pratt Fine Arts Center *http://www.pratt.org/index.html*
Field Research and Consultation Group/Job Hazards
http://depts.washington.edu/frcg/jobhaz.html
ACTS: Arts, Crafts & Theater Safety
http://www.artscraftstheatersafety.org/
Health and Safety in the Arts database
http://www.ci.tucson.az.us/arthazards/ ■

EXPANDING BEYOND INDUSTRIAL HYGIENE

Our master's program in Industrial Hygiene has been reorganized into a degree called the Master of Science in Occupational and Environmental Exposure Sciences to better represent the current content and professional practice of this discipline.

Students can now focus on exposure assessment methods, regulations, and controls for both occupational and community settings. As an alternative to completing a thesis, students can choose to develop an online portfolio based on a practical project, capstone course, and internship experience.

Occupational hygiene remains one of four learning emphasis areas. The others are ergonomics and human factors, health and safety management, and exposure biomarkers. ■

Field Group monitoring found minimal exposures to silica and heavy metals in the glass blowing studio at Pratt

Photos: Jennifer Gill