Health and Safety

All the News That's Fit to Print

The biggest Heath and Safety news for conservators is the study "Child Neurodevelopmental Outcome and Maternal Occupational Exposure to Solvents." The journal *Archives of Pediatric and Adolescent Medicine* isn't something I've heard of, much less await breathlessly every month. However, Monona Rossol, of Arts, Crafts and Theater Safety, keeps a keen eye out for such research, and I do eagerly await the arrival of *ACTS FACTS* each month.

Monona's lead article from the Dec. 2004 issue of *ACTS FACTS*, "Babies Born to Moms Who Work With Solvents Studied," is reprinted, with the kind permission of Monona, preceding this column. If you haven't read it already, please do so now.

We clearly need further research on this topic. But as I'm writing this in the holiday season, let's look for the good news in this research. While findings of "lower scores in a variety of … tests" is certainly disturbing, the good news is that "the children did not differ in birth weight or the age at which they reached developmental milestones." Of particular interest, the study included conservators. [We are somebody!]

Clearly, women who are pregnant or attempting to have children should exercise the utmost caution. This would include all of the familiar lifestyle changes – no alcohol and no smoking – as these activities increase the total body burden and add to any occupational exposure to solvents. In addition, you must be extra vigilant in minimizing exposure. Reduce your exposure by means of changing your work patterns, utilizing engineering controls, or using personal protective equipment (PPE). The most obvious PPE is the lowly respirator. Don't forget that changes in your face as a result of pregnancy can affect respirator fit. Getting re-fit-tested may be wise.

Minimizing exposure doesn't stop with wearing a respirator 'till it hurts. There are other routes of exposure. Solvent exposure can occur through the skin, so wear gloves. Thin nitrile gloves are best for general use, but choose the appropriate heavier duty gloves by using a glove chart. Avoid latex or vinyl gloves when working with solvents. Remember that if a glove softens or swells with exposure to solvent, that solvent is diffusing through the glove. This can change a 5 second short-term exposure to a much longer exposure that doesn't stop until you remove the now poultice-like glove.

Also, be sure to wear a lab coat or smock. Remember that solvent vapors can adsorb onto your outer surface and then slowly be re-released after the exposure has ended. So wear an outer surface that you can shed when you leave the smelly work area. And, please, remember to doff your stinky lab coat when you go home.

In a column in the September 2000 *WAAC Newsletter* (22/3), I mentioned the ad-hoc experiment a clever conservator and doctor used to examine respirator use while pregnant. The conservator donned her respirator, and the doc measured her blood oxygen levels while performing typical work tasks. The good news was that no change in oxygen levels were detected. So, at least in my mind, a pregnant conservator needn't worry about not getting enough oxygen for herself and her fetus while working with a respirator. This is certainly an experiment that deserves to be repeated. Should you and your MD choose to do so, please drop me a line with the results.

The AIC Health and Safety committee is also very interested in the article in *Archives of Pediatric and Adolescent Medicine*. Look for additional insights and recommendations in upcoming issues of *AIC News*.

Now in print: it can now be told! The article by Cathy Hawks and Kathy Makos (and coworkers) on the procedure for testing for low levels of mercury vapor is out. I mentioned this test in the January 2003 *WAAC Newsletter* in "Mercury,

the other heavy metal." For those of you who don't regularly read *TAXON* (the *Journal of the International Association for Plant Taxonomy*) or perhaps you just missed the August 2004 (53/3, pp. 783-790) number, allow me to fill you in.

Two years ago I said of the C/Kathys' research: "The most exciting aspect of their research is that they've taken a commercially available product and developed a test-strip indicator that is exquisitely sensitive to mercury vapor…. For the details, you will have to wait for them to publish."

So, the wait is over! Here's what you do: Make a suspension of 10 ml of J.T. Baker Mercury Indicator Powder (Product Code 4509) with 25 ml distilled water by stirring with a clean, glass stirring rod. Using glass microscope slides cleaned with distilled water and then with undenatured ethanol, brush the suspension onto the slides with a clean nylon-bristle artist's brush. When dry, the slides can be placed into areas suspected of mercury contamination.

Check the slides in 7 days and compare them with control slides kept in an area known to be free of mercury contamination. The indicator changes color in response to mercury vapor. The article cautions that "While color change is a reliable indicator of the presence of mercury, the association is not strong enough to accurately calculate $\mu g/M^3$ mercury concentration levels from ΔE readings. However, the data do strongly suggest that a yellow indicator slide would represent no detected, or extremely low, mercury vapor concentrations. The presence of any gray color indicates that mercury levels of concern are likely to exist (i.e., with potential to exceed the ACGIH occupational TLV-TWA of 25 $\mu g/M^3$, (ACGIH, 2003)."

If *TAXON* is not one of your regular reads, email Kathy Makos makosk@si.edu or Cathy Hawks cahawks@aol.com to get a copy of the article. The article which has color illustrations and a good number of references, discusses the testing procedure in greater depth, the limitations of the test, and discusses safe work practices, ventilation guidelines, and safety protocols for working with contaminated collections.

The Metropolitan Museum of Art and Yale University Press have released *Art, Biology, and Conservation: Biodeterioration of Works of Art*, edited by Robert J. Koestler, Victoria H. Koestler, A. Elena Charola, and Fernando E. Nieto-Fernandez. The nicely designed, 565 page, hardback contains the papers from the eponymous conference held at the MET in June of 2002.

There is quite a lot of interesting material in the volume. I had requested a review copy so that I could comment on the health and safety component of the volume. While there is no specific article on health aspects of molds or working with contaminated cultural materials, a few articles do mention the potential health effects to the conservators and users of contaminated cultural materials.

Many of the studies begin with culturing the molds present on the artifact and identifying the species present. Of particular interest were the articles on the Louis Comfort Tiffany drawings in the collection of the MET. Prior to their acquisition in 1967, the collection suffered significant mold damage. The molds were sampled and identified both by classical culturing and by using DNA amplification followed by sequencing.

Once the species of mold present were determined, potential health hazards to the conservators and public were evaluated. Also interesting, the treatment of the stains was informed by the knowledge gleaned from the analysis. Melanin produced by the fungi were treated with lignin-degrading enzymes, which, while promising, were "not completely satisfactory from the conservator's point of view."

Mary-Lou Florian's contribution makes the case that fungal analysis is, shall we say, problematic. "The problem is that interpretation of all these analytical results is almost impossible." There are problems with sampling, and a lack of background or baseline references. And, if one is considering health implications, the wide variability of individual's responses to exposure complicate matters even more. Her important conclusion is that "when dealing with any fungal problem, no mater what the size of the infestation, all precautions must be taken regarding personal protection, and stringent aseptic techniques should be used to prevent an increase of airborne fungal structures and cross-contamination of objects."

The papers don't just cover molds, there is an article on bacteria that produce proteases that degrade silk. Submissions are international in source and scope. The book is subdivided into sections on Special Topics, Paper, Textiles, Stone and Mural Paintings, Wood and Archaeological Materials, and Treatment and Prevention. There is a fascinating paper on using copper and zinc strips on outdoor surfaces to function as a source of metallic oxides which inhibit biodeterioration.

My favorite paper is the last, by A.R. Cavaliere, "In defense of the fungi," which reminds us that fungi can be our friends. Mushrooms, antibiotics… there is a long list of fungi that are not actively degrading our cultural and artistic patrimony.

Art, Biology, and Conservation: Biodeterioration of Works of Art is available from Yale University Press' website (http:// yalepress.yale.edu/yupbooks/) for $65.00. To locate the book on the website, search for "biodeterioration."

In all fairness, if one is to discuss books on mold, one must also mention Mary-Lou Florian's 2002 book *Fungal Facts: Solving Fungal Problems in Heritage Collections*, published by Archetype Publications. The 146 page paperback *Fungal Facts* is available from Archetype (www.archetype.co.uk) for $40.00. This excellent resource should be on every conservator's book shelf if they ever deal with or consult on mold.

Quoting from the introduction: "This book is organized to allow you to build logically (by reading the chapters sequentially) a knowledge base that will enable you to solve fungal problems related to heritage objects, regardless of the environment or material or how small or large the infestation. Health hazards caused by fungal infestations are a major concern and this issue is addressed where relevant throughout the text…."

And, this just in via MacWorld.com: the journal *Human Reproduction* published an article "Increase in scrotal temperature in laptop computer users" by Y. Sheynkin et al, of SUNY Stony Brook. Summarized best on the Macworld website: "A combination of the heat generated by a laptop and the position of the thighs that is needed to balance the computer leads to higher temperatures around a man's genitals and over time can result in decreased sperm production…." The upshot of this research is that males should use laptops on the desk rather than on their laps.

Lastly – This is my first column of 2005. 2005 is volume 27 in WAAC years. Carolyn Tallent has now been the editor of the *WAAC Newsletter* for over 10 years (since Volume 16 number 3). [Carolyn - Sorry I missed your 10th anniversary.] She has been *WAAC Newsletter* editor longer than anyone else.

We tend to recognize the efforts of someone like Carolyn only when they resign their position. Were she to resign today (and for pity's sake, please don't) the next *Newsletter* editor wouldn't exceed her record number of *WAAC Newsletters* until some time in 2016.

Chris Stavroudis is a conservator in private practice.

WAAC Publications

Handling Guide for Anthropology Collections

Straightforward text is paired with humorous illustrations in 41 pages of "do's and don'ts" of collection handling. A Guide to Handling Anthropological Museum Collections was written by Arizona State Museum conservator Nancy Odegaard and illustrated by conservation technician Grace Katterman. This manual was designed to be used by researchers, docents, volunteers, visitors, students, staff or others who have not received formal training in the handling of museum artifacts. Paperbound and printed on acid-free stock.

Price, postpaid:
$8.85 ($6.60 per copy for orders larger than 10 copies)

Make your check payable to WAAC. Mail your order to:
Nancy Odegaard

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