

## CASE STUDY - ARSENIC, MERCURY - SURFACE DUST CONTAMINATION

### PROJECT DESCRIPTION: ORNITHOLOGY MUSEUM SPECIMEN RELOCATION

**SCOPE OF SERVICES:** AET was contracted to evaluate surface dust contamination within storage rooms, display cabinets, drawers, etc. prior to the relocation of a museum collection of over 3000 taxidermy bird specimens.

**AET EXPERIENCE:** Taxidermy of bird specimens uses arsenic and mercury compounds as preservatives. Arsenic and mercury are systemic toxins which cause adverse health effects by inhalation, ingestion and eye/skin contact. Arsenic exposure is regulated by OSHA Standard 29 CFR 1910.1018 with a PEL Standard of 10ug/M<sup>3</sup>. Training and medical surveillance provisions of the standard are enforceable when exposures exceed the action limit of 5 ug/M<sup>3</sup>. 29 CFR 1910.1018(k) Housekeeping requires "all surfaces shall be maintained free as practical of accumulations of inorganic arsenic". OSHA regulates mercury exposure in 29 CFR 1910.1001 Table Z-2 with a ceiling standard of 0.1 ug/M<sup>3</sup>.

Disturbance of settled dust can create airborne exposure hazards particularly during cleaning activities such as dry dusting, sweeping, or vacuum use without HEPA filtration. Exposure assessment monitoring is required to document exposures during disturbance of settled dust to evaluate worker exposures in compliance with applicable OSHA standards.

### *EVALUATION PROTOCOLS*

Surface dust samples were collected on 100 cm<sup>2</sup> surfaces utilizing ASTM ghost wipes sampling media at the following locations:

- **Interior surfaces of return air ductwork** - to determine if past disturbances of settled dust have affected the facilities HVAC system.
- **Display/storage surfaces** - to determine levels of contamination in close proximity to specimens.
- **Floors, table tops, desks, etc.** - to determine levels in periodically cleaned areas by general housekeeping.
- **Specimens** - the level of contamination on individual specimens was not evaluated. Special handling protocols and personal hygiene practices will be enforced for the workers during specimen relocation.
- **Comparison standards** - as no OSHA or EPA standards have been promulgated for surface dust, results were compared to background levels in adjacent client buildings. Background levels will also serve as a level of cleanliness required prior to building reuse (after specimen relocation).

**CONCLUSION:** Significant concentrations of arsenic (and a lesser extent mercury) were found in the surface dust. Work plans were formulated by AET and implemented for the safe handling, packaging and relocation of specimens and the cleanup of the museum space following specimen relocation and prior to space reuse.

When you need professional help or advice, email Roy Mosaicant, CIH at [r.mosaicant@aetinc.biz](mailto:r.mosaicant@aetinc.biz) or Eric Sutherland at [e.sutherland@aetinc.biz](mailto:e.sutherland@aetinc.biz) or call 610-891-0114. We provide nationwide services; phone consultations are free. Check out the full range of environmental contracting/consulting services we provide at our website [www.aetinc.biz](http://www.aetinc.biz).

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