

STATE OF CONNECTICUT

DEPARTMENT OF PUBLIC HEALTH



Jewel Mullen, M.D., M.P.H., M.P.A.
Commissioner

Dannel P. Malloy
Governor
Nancy Wyman
Lt. Governor

Environmental and Occupational Health Program

Paul Hutcheon, Director of Health
Central Connecticut Health District
505 Silas Deane Hwy
Wethersfield, CT 06109

November 4, 2013

Dear Mr. Hutcheon:

This Letter Health Consultation (LHC) was prepared to document involvement of the Environmental and Occupational Health Program (EOHA) with the former Pratt and Whitney facility located at 60 Belamose Avenue in Rocky Hill.

Statement of Issues

The Pratt and Whitney facility located at 60 Belamose Avenue in Rocky Hill was a jet engine component manufacture and assembly facility. Pratt and Whitney operations occurred on the property beginning in 1965 until sale of the property in 2001 to the current owner. Prior to sale of the property, Pratt and Whitney performed various environmental assessment and remediation work under the EPA RCRA Corrective Action Program. The property is now in the CT Department of Energy and Environmental Protection (DEEP) Property Transfer Act Program, in which further environmental assessment and remediation will be conducted in accordance with CT remediation regulations and with CT DEEP oversight. There is an Environmental Land Use Restriction on the property which restricts residential use because there are some areas of soil with contaminant concentrations exceeding CT's Residential Direct Contact Soil Standards. The current property owner has several tenants occupying the main factory building on the property. One of the tenants is a Custom Jeep company. Located across the hall from the Jeep business is a Wrestling School for children.

In April 2013, the owner of the Custom Jeep business contacted the Occupational Safety and Health Administration (OSHA) because he was concerned about mold and moisture in his workplace and also what appeared to be a powdery green paint residue on the floor and walls. OSHA referred the owner to the CT-OSHA consultation program, which provides free workplace evaluations to public and private employers in CT. The Custom Jeep business owner arranged for CT-OSHA to evaluate his workplace and he also contacted the local media. The ensuing news coverage generated interest among other building tenants (including the Wrestling School) and local legislators. It was at this point that a local legislator asked the CT Department



Phone: (860) 509-8000 • Fax: (860) 509-7184 • VP: (860) 899-1611
410 Capitol Avenue, P.O. Box 340308
Hartford, Connecticut 06134-0308
www.ct.gov/dph

Affirmative Action/Equal Opportunity Employer

of Public Health to become involved and the matter was referred to EOHA. EOHA worked in a technical assistance capacity with the Central CT Health District (CCHD), who assumed primary responsibility for interfacing with the tenant, building owner, local media, Department of Energy and Environmental Protection, CT-OSHA, and others. In May 2013, shortly after contacting CT-OSHA, the Custom Jeep tenant closed his business and moved out of the 60 Bellamose Avenue building. CT-OSHA released its consultation report in July 2013 and CCDH requested that EOHA review the CT-OSHA consultation report to assess whether exposures in the former Custom Jeep workspace could pose a health risk to future occupants. CCHD also requested that EOHA advise them about the safety of the adjacent Wrestling School.

In August 2013, a consultant hired by the 60 Bellamose Avenue building owner conducted wipe sampling for hexavalent chromium in the space occupied by the Wrestling School. The additional testing occurred at the request of the CCHD. EOHA provided input in development of the wipe sampling plan and reviewed the results which were made available by the consultant in a September 2013 report.

Discussion

EOHA's involvement consisted of reviewing reports, providing technical assistance and advice to the local health director and facilitating communications among the various entities involved.

CT-OSHA Consultation Report

On July 2, 2013, CT-OSHA completed its consultation report for the owner of the Custom Jeep business. As part of the consultation, CT-OSHA collected bulk samples from ceiling materials in three areas of the Custom Jeep shop and analyzed them for fungal growth. CT-OSHA also collected bulk samples of overspray paint taken from inside a spray booth, an exhaust duct, and a door handle. Floor sweepings from two locations in the shop were also collected. Bulk samples of overspray paint and floor sweepings were tested for hexavalent chromium. Indoor air in several areas of the shop was tested for hexavalent chromium, fungi, carbon dioxide, carbon monoxide, relative humidity and temperature. All samples were collected in April 2013.

With regard to fungal growth, analytical results indicated relative humidity at levels which can encourage fungal growth, ceiling materials with active fungal growth, and indoor air samples with greater fungal levels than outdoor air.

Results of bulk paint samples showed the presence of hexavalent chromium in overspray paint from all four locations tested (two samples from inside the paint booth, one sample from exhaust duct and one sample from door handle). In addition, both floor sweeping samples had detectable levels of hexavalent chromium. Air samples had no detectable levels of hexavalent chromium. Table 1 below summarizes the hexavalent chromium results.

The CT-OSHA report made several recommendations. With regard to fungal growth, CT-OSHA recommended that a number of steps be taken to eliminate sources of moisture incursion. These include:

- inspect materials in areas subjected to moisture for signs of water damage, odors and fungal growth,
- clean non-porous materials subjected to moisture,

- discard and replace porous materials showing signs of water damage, fungal growth and odors, and
- maintain relative humidity levels below 60%.

Hexavalent Chromium Results from AAS Custom Jeep, LLC, 60 Belamose Ave, Rocky Hill, CT, April 2013.

Medium	Location	Hexavalent Chromium Result	Units
Air	Office	<0.099	ug/m ³
Air	Front of Shop	<0.10	ug/m ³
Air	Back of Shop	<0.10	ug/m ³
Air	Spray Booth	<0.10	ug/m ³
Bulk Paint	Spray Booth	3,191	ug/g*
Bulk Paint	Spray Booth	17,952	ug/g
Bulk Paint	Exhaust Duct	125	ug/g
Bulk Paint	Door handle in Office	1,780	ug/g
Floor Sweepings	Front of Shop	0.013	ug/g
Floor Sweepings	Back of Shop	1.2	ug/g

*parts-per million; mg/kg

With regard to the presence of hexavalent chromium in overspray paint and floor sweepings, CT-OSHA recommended that all work surfaces in which employees may have direct skin contact be as free as practicable from hexavalent chromium.

Hexavalent Chromium Wipe Testing

In August 2013, a consultant hired by the 60 Belamose Avenue building owner collected wipe samples from three floor horizontal surfaces in non-carpeted areas in the Wrestling School tenant space and analyzed them for hexavalent chromium. Hexavalent chromium levels in all three samples were non-detect. EOHA evaluated the detection limits to determine whether they were sufficiently low. In the absence of readily available health-based standards or guidelines for hexavalent chromium in wipe samples, EOHA compared the detection limits with background concentrations reported in a study of residential house dust in NJ (Stern et al., 2010). A concentration of 1 nanogram/cm² is the point of departure for when hexavalent chromium concentrations in dust wipes are considered elevated. The detection limits achieved in the wipe samples from the Wrestling School are well below this background level.

Public Health Implications

In May 2013, the Custom Jeep owner closed his business and moved out of the main factory building at 60 Bellamose Avenue building. Because the workplace was unoccupied at the time CT-OSHA was finalizing their consultation report, they concluded that there were no exposures and no risks from hexavalent chromium or fungal growth in the workspace. With regard to the fungal growth, EOHA did not evaluate the air or bulk sample results because there are no health-based mold standards or guidelines for comparison. However, EOHA concurs with the recommendations in the CT-OSHA report about steps that should be taken to eliminate mold and moisture as they are consistent with our general recommendations about addressing mold and moisture in buildings. Exposure to mold spores can cause allergic reactions, and trigger asthma episodes and other respiratory problems. Therefore it is prudent to eliminate mold and the moisture conditions which facilitate mold growth.

The bulk paint sample results indicate that hexavalent chromium is present in the painted surfaces. This is not surprising considering that Pratt and Whitney formerly used the factory building for jet engine component manufacture. Hexavalent chromium is an ingredient in the type of paints that could have been used in the factory. Bulk paint results cannot be used to evaluate exposure because they do not provide information about how much of the hexavalent chromium in the paint is available for exposure. Wipe samples of a painted surface would provide such information but wipe samples were not collected by CT-OSHA. EOHA used the floor sweeping results to assess exposure by comparing them with CT's proposed direct contact soil standard for hexavalent chromium in soil of 20 ppm (DEP 2008). While exposure to floor sweepings is not exactly like soil, the hexavalent chromium levels in the floor sweepings are below the soil standards, which indicates that exposure is very unlikely to pose a health risk.

With regard to the air data, the US Environmental Protection Agency (EPA) has derived a Reference Dose (RfD) of 0.1 ug/m^3 for inhalation of hexavalent chromium particles (ATSDR 2008). The RfD is the air concentration that is likely to be without adverse non-cancer health effects over long term exposure. EPA has also derived a hexavalent chromium air concentration protective of cancer effects. Long term exposure to an air concentration of 0.00008 ug/m^3 is associated with a de minimus excess lifetime cancer risk (one excess cancer in one million exposed persons), (<http://www.epa.gov/iris/subst/0144.htm>). The detection limit for the air samples collected by CT-OSHA is at the EPA RfD for non-cancer effects but is greater than the air concentration associated with trivial cancer risks. However, given that hexavalent chromium in paint is not volatile and the hexavalent chromium concentrations in the floor sweepings were very low, we would not expect air concentrations to be of concern from a public health perspective unless the material on the floor was made airborne for long periods of time. The wipe sample results collected from the Wrestling School indicate no public health risk from exposure because hexavalent chromium was not detected.

Conclusions

Based on the data collected from the workspace formerly occupied by Custom Jeep, exposure to hexavalent chromium does not pose a public health risk. Data indicate that there are moisture issues that may be contributing to active mold growth.

Based on the data collected in the workspace occupied by the Wrestling School, hexavalent chromium is not present. Therefore, there is no exposure or risk from hexavalent chromium.

Limitations

There are some limitations in the data collected by CT-OSHA. No wipe samples were collected from painted surfaces in which bulk testing found hexavalent chromium. This data gap prevents exposures from those surfaces from being assessed directly. Air samples did not have low enough detection limits to be meaningful. In addition, air samples were collected during non-aggressive conditions. Hexavalent chromium concentrations in air could be higher during sweeping or other activities that would suspend dust.

In the Wrestling School, wipe samples were only analyzed for hexavalent chromium and not other chemicals which could have been used when Pratt and Whitney occupied the building.

Recommendations

Mold and moisture issues in the workspace formerly occupied by the Custom Jeep business should be addressed. The recommendations contained in the CT-OSHA report pertaining to mold and moisture should be implemented.

Given that there are low, detectable levels of hexavalent chromium in floor sweepings in the workspace formerly occupied by the Custom Jeep business, it would be prudent to do a thorough cleaning of the workspace prior to it being re-occupied.

Citations:

Stern, Alan, Chang, H., Black, K., et al. Hexavalent chromium in house dust — A comparison between an area with historic contamination from chromate production and background locations, Science of the Total Environment 408 (2010) 4993–4998.

Department of Energy and Environmental Protection, Proposed Revisions to the CT Remediation Standard Regulations, Technical Support Document, October 20, 2008.

Toxicological Profile for Chromium, ATSDR 2008.

Please contact me at 860-509-7748 if you have any questions.

Sincerely,



Meg Harvey
Supervisor

Site Assessment and Chemical Risks Unit
Environmental and Occupational Health Assessment Program

cc: Suzanne Blancaflor, Section Chief
Greg Ulirsch, ATSDR