From: Officer in Charge, Naval Medical Administrative Unit, Monterey
To: Superintendent, Naval Postgraduate School, Monterey, 1 University Circle, Monterey CA 93940-5100

Subj: MONITORING DATA RESULTS, NAVAL POSTGRADUATE SCHOOL, MONTEREY, MWR DEPARTMENT, MARINA, FRANK SIINO BOATYARD, BOAT HULL SANDING (ET-0119)

Ref: (a) Industrial Hygiene Field Operations Manual NEHC-TM6290.91-2 Revision B, Appendix A
(b) OPNAVINST 5100.23E, Chapter 21, paragraph 2103a
(c) OPNAVINST 5100.23E, Chapter 21, paragraph 2103b
(d) NMAU Monterey ltr 62600 04M/166 of 14 Aug 00
(e) OPNAVINST 5100.23E, Chapter 21, paragraph 2109a
(f) OPNAVINST 5100.23E, Chapter 21, section 2106
(g) 29 CFR 1910.1025, Appendices A and B
(h) OPNAVINST 5100.23E, Chapter 5, paragraph 0502c(2)
(i) OPNAVINST 5100.23E, Chapter 21, paragraph 2104f(4)
(j) OPNAVINST 5100.23E, Chapter 21, paragraph 2107
(k) 29 CFR 1910.1025(d)(5)(1)
(l) OPNAVINST 5100.23E, Chapter 6, paragraph 0803f

Excl: (1) Industrial Hygiene Air Sampling Survey Forms

1. Workplace monitoring was conducted on 16 March 2001 to determine the copper dust and lead exposure of a worker sanding a fiberglass boat hull below the waterline. The job was conducted at the Frank Siino Boatyard in Monterey and the monitoring was conducted by Eric Thurston, Naval Medical Administrative Unit, Monterey Industrial Hygienist.

2. Results are as follows:

<table>
<thead>
<tr>
<th>WORKER'S NAME</th>
<th>AGENT</th>
<th>TWA, mg/m³</th>
<th>CRITERION, mg/m³</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bates</td>
<td>Copper Dust</td>
<td>0.030</td>
<td>PEL-TWA = 1</td>
</tr>
<tr>
<td></td>
<td>Lead</td>
<td>0.0368</td>
<td>PEL-TWA = 0.05</td>
</tr>
</tbody>
</table>

3. Results, traceable to Industrial Hygiene Survey ET-0119 and San Diego CIHL Analysis Number 5309, indicate that copper dust exposure during this job is far below both the Medical Surveillance Action Level (MSAL) and Permissible Exposure Limit (PEL) outlined in reference (a). However, the lead dust exposure, although below the PEL outlined in reference (b), is above the Action Level (AL) outlined in reference (c).
Two bulk samples of paint chips were collected along with the air samples. Results, traceable to Industrial Hygiene Survey ET-0119 and San Diego CCL Analysis Number 5310, indicated that:

a. the black outer layer contained approximately 33% lead and approximately 0.25% copper, and
b. the blue inner layer contained approximately 0.25% lead and approximately 15% copper.

The rather high lead exposure level as compared to earlier monitoring (reported via reference (d)) likely resulted from sanding off of the black layer of paint rather than sanding of the solid lead keel portion indigenous to this type of boat. A lead-based paint must have been applied to the boat hull prior to its 18-month cycle sanding. The lower copper dust exposure level as compared to earlier monitoring could have resulted either from the extremely windy conditions the day the sanding was performed, because of use of a pneumatic sander equipped with a hose connected to a dust bag via a partial vacuum system, or a combination of both.

No deficiencies were noted during performance of this job. Personnel must continue to wear respirator equipped with HEPA filter cartridges during this job because of the high copper dust level measured during the previous job (reported via reference (d)). Enrollment in medical surveillance programs for copper or lead dust exposure is not required because the job's frequency does not meet the 10 days per quarter criterion outlined in reference (a) or the 30 days per year criterion outlined in reference (e). However, annual training on the health hazards of lead must be provided to the workers as required by reference (f); contact the Industrial Hygienist to schedule this training. A copy of reference (g) will be provided to the workers as required by reference (f) during this training. As outlined in reference (h), engineering controls are the preferred means of controlling exposure to airborne toxics; therefore, the pneumatic sander equipped with the partial vacuum/dust bag setup should continue. After starting this job, personnel must wash their hands before eating, drinking, chewing, smoking, or applying lip balm or cosmetics as required by reference (i).

References (j), (k) and (l) require that this job be monitored every 6 months, or the next time that sanding is performed if more than 6 months has transpired since the last job. The worker performing this job expressed an interest in switching to a dust mask if exposure concentrations permit it. The industrial hygienist is interested in gathering further data for both copper and lead dust since the previous two monitoring result sets have varied so much. Therefore, it is requested that the Marina schedule every sanding job for monitoring with the Industrial Hygienist.

For further information or clarification, please contact Eric Thurston at COM 618-684-4666, e-mail sethurst@nps.navy.mil.