MEMORANDUM
From: Monterey Area Industrial Hygienist
To: Occupational Safety, Health and Environmental Director, Naval Postgraduate School
Subj: LABORATORY CHEMICAL FUME HOODS VENTILATION SURVEY RESULTS

Ref: (a) BUMEDINST 5100.13E, BUMED-M44, para (4)(f)4

Encl: (1) Industrial Hygiene Ventilation Survey Measurements Report

1. I conducted ventilation measurements of the two Naval Postgraduate School, Physics Department, Building 245 Microsystems (nanoMEMS) Laboratory Clean Room chemical fume hoods were conducted on 27 October 2017.

2. The signed formal report’s review required by reference (a) by the Naval Hospital, Lemoore’s Industrial Hygiene Department Head is expected to be delayed. Until such time that review occurs and the report is signed and forwarded to me for forwarding, enclosure (1) serves as an interim document. Results and recommendations are discussed in enclosure (1).

3. If further consultation in regards to the technical content of this report is needed, please contact me at (831) 656-1074 or by email at sethurst@nps.edu.

S. E. THURSTON
INDUSTRIAL HYGIENE SURVEY DATA

ACTIVITY: Naval Postgraduate School, Monterey

DATE: 27 October 2017

DEPARTMENT: Physics Dept, Bldg 245

POC: Professor Dragoslav Grbovic/

Research Scientist Jens Klosterman

LOCATION: Microsystems (nanoMEMS) Lab, Room 214

IND. HYG.: Eric Thurston

OPERATION/PROCESS DESCRIPTION: Two electronically controlled laboratory flow hoods are present in the Watkins Hall, Room 214, 1,000 Level Clean Room. Measurement results are summarized below:

<table>
<thead>
<tr>
<th>LOCATION</th>
<th>SOURCE</th>
<th>MEASUREMENT</th>
<th>CRITERION</th>
<th>CONDITION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Room 214, 10,000 Level Room</td>
<td>Flammables (LE-2) Lab Hood</td>
<td>110 fpm</td>
<td>80-100 fpm</td>
<td>Satisfactory</td>
</tr>
<tr>
<td></td>
<td>Corrosives (LE-1) Lab Hood</td>
<td>170 fpm</td>
<td>80-100 fpm</td>
<td>Excessive flow</td>
</tr>
</tbody>
</table>

DISCUSSION: The measured flow rates of both systems were higher than those during the previous survey conducted in May 2016. Higher face velocities can drag the vapors from chemicals handled along the worker’s body and up to their breathing zone; as a result, higher velocities do not translate into greater protection, but rather can increase chemical exposure.

In the past, the German Exchange Research Scientists have been able to make adjustments to the valves located at the top of the hoods, but this action wasn’t possible during the current survey due to the incumbent’s unfamiliarity on how such adjustments are made. However, it is doubtful that the position of the Flammable (LE-2) hood’s valve was changed since the previous survey, when an adjustment was made to set it to the lowest of six positions without completely closing the exhaust duct; that adjustment resulted in an optimal flow rate. Because the flow rate is not excessively higher than the criterion for this hood, and because such small amounts of chemicals are handled inside it, adjustments to the system, such as lowering the speed of the roof fan, are not deemed necessary to better control exposures to solvent vapors.

Since the Corrosives (LE-1) Lab Hood is still not being used, and the Research Scientist doubts if will be anytime in the near future, no corrective action is recommended to lower its excessively high flow rate so that it is closer to meeting the criterion. However, if in the near future and before the system’s next annual measurements, the Clean Room process involving use of acids and bases is initiated and this hood is actively used, contact the Industrial Hygienist as soon as possible prior to processes occurring to remeasure the system to assess its effectiveness in controlling exposures to airborne acid or alkali mists.

Enclosure (1)
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OPNAVINST 5100.23G, Ch 8, para 0802g