From: Commanding Officer, Naval Hospital Lemoore
To: President, Naval Postgraduate School Monterey

Subj: INDUSTRIAL HYGIENE VENTILATION SURVEY RESULTS

Encl: (1) Industrial Hygiene Survey Data

1. Ventilation measurements of the laboratory chemical hood located at the Mechanical and Aeronautical Engineering Department’s Rocket Propulsion and Combustion Laboratory (Building 217) at Naval Postgraduate School Monterey were conducted by the Naval Hospital Lemoore, Monterey-area Industrial Hygienist on 5 May 2016.

2. The measured air flow rate of the hood is optimal with the sash open no more than 13 inches as in the past. Details are provided in enclosure (1), the Industrial Hygiene Survey Data.

3. If further consultation in regards to the technical content of this report is needed, please contact Mr. S. Eric Thurston, Industrial Hygienist at (831) 656-1074 or by e-mail at sethurst@nps.edu.

F. X. HALL
By direction

Copy to:
NPS Monterey OSHE Director
INDUSTRIAL HYGIENE SURVEY DATA

ACTIVITY: NPS Monterey  
DATE: 5 May 2016

DEPARTMENT: MAE Dept, Rocket Prop/Comb Lab  
POC: Robert Wright

LOCATION: Bldg 217  
IND. HYG.: Eric Thurston

OPERATION/PROCESS DESCRIPTION: Process control ventilation is used to control chemical exposures while mixing; (1) experiment powders, and (2) plasticizer/lubricant with other chemical products inside a chemical fume hood.

<table>
<thead>
<tr>
<th>MEASURED FACE VELOCITY, fpm</th>
<th>SASH HEIGHT, inches</th>
<th>DESIGN CRITERION, fpm</th>
<th>CONDITION</th>
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</thead>
<tbody>
<tr>
<td>93</td>
<td>13</td>
<td>80-100</td>
<td>Optimal</td>
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</table>

RESULTS: The hood’s ventilation exhaust flow rate meets the criterion of 80 to 100 feet per minute (fpm) outlined in reference (a) if the sash is opened no more than 13 inches as in the recent past. Several years ago when the Industrial Hygienist identified a deficient flow rate with measurements taken the usual way (with the hood’s sash fully open), the Lab’s Aerospace Technician (no longer employed at the Lab) indicated that funds were not available to perform any maintenance on the system or have it redesigned. With that in mind, the Industrial Hygienist determined that an optimal flow rate could be achieved with the sash open 11 inches, with subsequent measurement surveys identifying the height of the sash opening where optimal flow was achieved ranging from 11 to 15 inches. Markings were added to the hood’s frame after the first set of such measurements to indicate where the sash height was 13 inches, the midpoint of the above height range, so that operators would be aware no to open it more than this height.

RECOMMENDATIONS: (1) Perform processes with the hood’s sash opened no more than 13 inches, or (2) contact the local Public Works Department to first determine if the flow can be increased by performing maintenance on the current system, e.g., tightening any loose pulleys on the system’s fan. If such work is performed, contact the Industrial Hygienist to remeasure the system once maintenance is complete. If those measurement results do not achieve the goal of meeting the flow rate design criterion with the sash fully open, then the department could contact the same Public Works group to determine if installing a new fan in the existing hood would by engineering calculations enable achievement of the design criterion, or if installation of an entirely new hood system would be necessary to do so.

REFERENCE:

(a) Industrial Ventilation: A Manual of Recommended Practice, 27th Edition, Chapter 13, Figure VS-35-01, page 13-49, ACGIH.