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IN REPLY REFER TO:

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11 Dec 14

From: Commanding Officer, Naval Hospital Lemoore
To: Chief of Staff, Naval Postgraduate School,
1 University Circle, Monterey CA 93943

Subj: MONITORING DATA RESULTS, NAVAL POSTGRADUATE SCHOOL, MONTEREY, SPACE SYSTEMS MACHINE SHOP, FLOOR COATING APPLICATION

Encl: (1) Industrial Hygiene Air Sampling Results Report

1. Monitoring data was collected on 26 November 2014 by the Naval Hospital, Lemoore, and Monterey area Industrial Hygienist to measure the airborne xylenes concentrations generated during mixing and roller application of an epoxy coating to a small section of the Space Systems Machine Shop floor.

2. Measured airborne concentrations were approximately 40 to 50 times below exposure standards, and exposure controls other than those observed during this operation are unnecessary if other shop floor sections of the same or lesser square footage area are coated in the future. Detailed results and recommendations are provided as enclosure (1).

3. Further clarification or consultation with respect to this report is available from S. Eric Thurston, Industrial Hygienist at COMM (831)656-1074, e-mail sethurst@nps.edu.

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By direction

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MONITORING DATA RESULTS
NAVAL POSTGRADUATE SCHOOL, MONTEREY
SPACE SYSTEMS MACHINE SHOP
EPOXY COATING FLOOR APPLICATION

INTRODUCTION/DESCRIPTION OF EVENTS

References: (a) NEHC Technical Manual NEHC-TM-6290.91-2, Rev B

Air sampling was conducted in the Space Systems portion of the Building 234 combined Machine Shop during mixing and roller application of Rustoleum Sem-Epoxy 214556/238560 Floor Coating on 26 November 2014. Once the two parts of the coating were manually mixed using a wooden stir stick, it was allowed to react and set per manufacturer directions for approximately 30 minutes, and then applied to an approximately 300 square foot floor section. There was a considerable amount of coating remaining after application to the floor was complete, and the Lab Manager decided to apply most of the leftover coating on steel floor deck plates in an adjacent area using the same roller method after the plates were positioned on wooden pallets immediately in front of the nearby and fully open west wall large rollup door. During the coating's shop floor application, a large pedestal fan was positioned behind the worker, a fan mounted on the nearby jutting corner of the irregularly shaped room, and three box fans positioned on the floor approximately 10 feet in front of the rollup door were turned on to help direct chemical vapors created during the process to the building area where the west wall fully opened rollup door was located and then outside of the building. The box fans were also operating during the deck plate coating application phase.

WORKER: LEVI OWEN DATE: 26 November 2014

JOB PHASE	STRESSOR	RESULTS	EXPOSURE STANDARD
Mixing	Xylenes	STE = LTD	OEL-STEL = 150 ppm
Application	"	STE = 3.45 ppm	"
Entire job	"	8-hr TWA = 0.665	OEL-TWA = 100 ppm, MSAL = 50 ppm

MONITORING DATA RESULTS
NAVAL POSTGRADUATE SCHOOL, MONTEREY
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INTRODUCTION/DESCRIPTION OF EVENTS
(continued)

Results, traceable to San Diego Consolidated Industrial Hygiene Laboratory Survey Analysis Number 31692, indicate that the xylenes exposure levels of the worker were far below the Occupational Exposure Limits (OELs) outlined in reference (a) and far below the associated xylenes Medical Surveillance Action Level (MSAL). Besides the personal samples collected, two general area samples were also set up at the perimeter of the shop: one in the northwest corner of the Space Systems portion of the combined Machine Shop area and adjacent to the door leading to the building's central bay area and west wall's rollup door, and the other in the extreme northeast corner of the MAE department's portion of the combined Machine Shop and closest to the nearby DRMI Institute area of the building. The measured concentrations of these samples were 2.76 and 2.26 parts per million (ppm), once again well below the above exposure standards.

RECOMMENDATIONS

Results indicate significant airborne chemical exposures did not occur during this job. The Industrial Hygienist monitored for xylenes exposures since this chemical comprised the greatest percentage of mixed product constituents. Levels of other solvents present in the coating were not measured since each would require different sampling media (sorbent tubes/filters) and analyses, thus requiring the worker to have worn six separate air sampling pumps/sampling trains at the same time, a prohibitive practice since it would have greatly inhibited performance of the work. Mainly based on the xylenes' analytical results and the lesser percentages of the other solvents, significant airborne concentrations of the solvents present in the paint/coating but not monitored/measured are not expected during this process.

MONITORING DATA RESULTS
NAVAL POSTGRADUATE SCHOOL, MONTEREY
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RECOMMENDATIONS (continued)

Based on these results, use of respirators or other special measures to control exposure to airborne chemical hazards other than those observed during performance of this job are unnecessary if the shop chooses to apply the coating to equal or less square footage areas of the shop floor. Likewise, worker enrollment of workers performing this process in special medical surveillance programs are unnecessary.

The Industrial Hygienist did not observe any splashing of the coating during the application phase (rolling) of this job, and thus safety glasses should be adequate for eye protection. The potential for chemical splashing during mixing of the coating's two chemical parts is much greater due to the worker's eyes being closer to the liquids and because of the inherent nature of the manual pouring/stirring process; thus chemical safety goggles are recommended during the mixing phase to prevent inadvertent splashing of the liquid coating into the worker's eyes. However, the department should also solicit the opinion of the NPS Safety Offices on this topic for verification of eye protection requirements since responsibility for the Sight Conservation Program lies with the command's safety function and not the Navy's Industrial Hygiene Program.