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Engelmann IAQ Survey-Electrostatic Painting

Purpose: Evaluation of solvents and general hydrocarbon levels in Engelmann Hall during electrostatic painting of locker room fixtures, January 8, 2001.

Electrostatic painting in Engelmann Hall.

Material: INSL-X Electrostatic Quick Dry Alkyd Enamel

Hazardous Ingredients of Concern, per MSDS (08/27/1999):

- Mineral Spirits

- VM&P Naphtha
- N-Butanol
- Xylene
- **Please Note:** The MSDS (dated 08/27/1999) supplied by the manufacturer has some errors (e.g., hygienic values), see official OSHA/ ACGIH documentation for correct information.

Monitoring Methods:

- Dräger length of stain tubes (xylene)
- 3M 3510 Passive Dosimeters (mineral spirits, butanol, xylene)
- Brüel & Kjær Type 1302 Photoacoustic Gas Analyzer (general hydrocarbon 0987 filter for mineral spirits, naphtha, xylene)

Occupational Exposure Limits and Hygienic Values (2000):

Mineral Spirits

- NIOSH Info
- OSHA Info
- ACGIH TLV-TWA 100 ppm
- Odor Threshold 1-30 ppm

VM&P Naphtha

- NIOSH Info

- OSHA Info

N-Butanol

- NIOSH Info
- OSHA Info
- ACGIH TLV-Ceiling 50 ppm (see notice of intended change)
- Odor Threshold: 0.12 - 11 ppm

Xylene

- NIOSH Info
- OSHA Info
- ACGIH TLV-TWA 100 ppm
- ACGIH TLV-STEL/C 150 ppm
- Odor Threshold 20 ppm

Monitoring Results:

1/08/2001 AM: Four days after the last painting episode, hydrocarbon levels in the locker room (B86) was 2.3 ppm; and 1 ppm (typical ambient level) in the hallway outside of B50.

1/08/2001 PM: Painting resumed this evening. The xylene concentration

outside of the men's B86 locker room was approximately 50 ppm (length-of-stain tube method); general hydrocarbon levels were in the 300 to 400 ppm range (B&K 1302, 0987 filter). The xylene concentration near room B79 was approximately 10 ppm; general hydrocarbons were 230 ppm. Xylene concentration in 200B hallway outside of room 280 was 10 ppm (7 PM); two hours later at this same location the general hydrocarbons were 125 ppm (average concentration). Work finished approximately 9:00 + PM. General hydrocarbons at 10 PM near B79 were 53 ppm, and 43 ppm near B19.

1/09/2001 11 AM: The level outside of B58 was 2.3 ppm, with a slight paint smell; outside of 270 was 5.4 ppm; and outside of the men's B86 locker room was 11 ppm. Xylene was not detected at any location (length-of-stain tube method). For comparison, the outdoor general hydrocarbon level was 0.9 ppm, and 2.0 ppm in Lapham B8. Non-solvent based painting will commence on 1/12/2001.

Summary/Recommendations:

- Monitoring was not performed during the week of January 2-5; hence, chemical exposure levels are unknown during this time frame.

- During the evening of January 8-9, 2001, monitoring was performed for the three-hour painting project in the men's B86 locker room. Monitoring took place directly outside of the locker room and in various other locations of the building. During the operation, solvent concentrations directly outside the locker room were approximately 3 to 4 times greater than applicable hygienic levels. Levels dissipated farther away from the operation. Levels returned to near-background levels by the next day (1/09/2001) due to normal building dilution ventilation.

- Passive dosimeter results will be available in about 3 weeks. All monitoring data was obtained by area-samples, opposed to personal exposure-samples.

- The open fire-doors probably contributed to solvent migration throughout the building during the painting occurring the week before the 1/08/2001 monitoring session. Fire-doors were kept closed during the 1/08-09/2001 monitoring session. **PLEASE NOTE: Fire Doors Are To Remain Closed At All Times.** The exception to this rule is if the doors are on an automatic closure device.

- See proposed policy on electrostatic painting.

- UWM PPS workers involved in similar processes shall be included in the campus Respiratory Protection Program.

References:

- 3M 1998 Respirator Selection Guide
- ACGIH 2000 Threshold Limit Values for Chemical Substances

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