

ABSTRACT

A study was conducted to evaluate potential worker exposures to 4,4'-Diphenylmethane diisocyanate (MDI) during the application of spray-on truck bed liners. The NIOSH investigators examined the MDI concentrations in the air and in the spray mist during the application of MDI to the truck bed. The NIOSH investigators used a variety of instruments to measure the MDI concentrations in the air and in the spray mist. The NIOSH investigators found that the MDI concentrations in the air and in the spray mist were significantly higher than the OSHA PEL. The NIOSH investigators also found that the MDI concentrations in the spray mist were significantly higher than the OSHA PEL. The NIOSH investigators also found that the MDI concentrations in the spray mist were significantly higher than the OSHA PEL.

CRITERIA

- OSHA: 0.1 mg/m³ (0.07 ppm) as a ceiling limit
- NIOSH: 0.2 mg/m³ (0.15 ppm) as a ceiling limit; 0.15 mg/m³ (0.11 ppm) as a 15-minute TWA
- ACGIH: 0.05 mg/m³ (0.037 ppm) as a 15-minute TWA

HEALTH EFFECTS

Isocyanates are powerful irritants to the mucous membranes of the eyes and the upper respiratory tract. They also irritate the skin and cause allergic dermatitis. Respiratory irritation may progress to chronic bronchitis with serious consequences. Irritation of the eyes and the upper respiratory tract may lead to conjunctivitis and allergic rhinitis. Isocyanates can also cause asthma in sensitive individuals. Isocyanates are also known to cause occupational asthma. Occupational asthma is a chronic respiratory disease characterized by reversible airway obstruction and hyperresponsiveness to various inhaled antigens. Isocyanates are also known to cause occupational asthma. Occupational asthma is a chronic respiratory disease characterized by reversible airway obstruction and hyperresponsiveness to various inhaled antigens.

RESULTS & CONCLUSIONS

The data from Tables 1 and 2 (Tables 1, 2, and 3 show two MDI concentrations in each case within the spray mist and in the spray mist). The spray mist concentrations in the spray mist were significantly higher than the OSHA PEL. The spray mist concentrations in the spray mist were significantly higher than the OSHA PEL. The spray mist concentrations in the spray mist were significantly higher than the OSHA PEL. The spray mist concentrations in the spray mist were significantly higher than the OSHA PEL.

TABLE 1
Geometric Mean MDI Concentrations (ppm)

| Site | Spray mist | Non-spray mist | Outdoor ambient | Ratio |
|-----------|-------------|----------------|-----------------|-------|
| Company A | 1.1 (n=1) | 0.065 | 0.003 | 190 |
| Company B | 0.75 (n=7) | 0.075 | 0.003 | 110 |
| Company C | 0.91 (n=18) | 0.065 | 0.007 | 140 |
| Site 1-6 | 0.91 (n=18) | 0.065 | 0.007 | 140 |

Table 1 shows the geometric mean MDI concentrations (ppm) in the spray mist for each of three Company A sites, each of three Company B sites, and one Company C site. The ratio of spray mist MDI concentration to outdoor ambient MDI concentration is also shown. The spray mist MDI concentrations were significantly higher than the OSHA PEL.

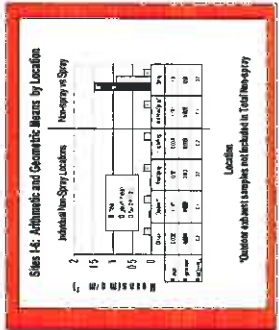
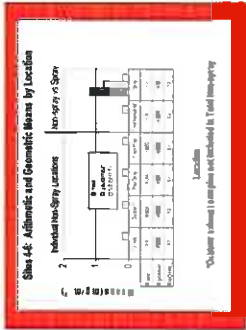
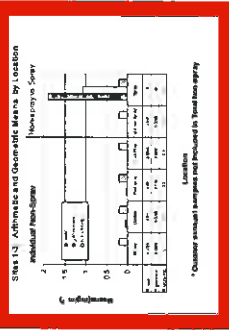
TABLE 2
Spray Mist Concentrations

| Company | Company A | Company B | Company C | Mean (mg/m ³) |
|-------------------------|-----------|-----------|-----------|---------------------------|
| Site 1 | 1.1 | 0.75 | 0.91 | 0.92 |
| Site 2 | 1.1 | 0.75 | 0.91 | 0.92 |
| Site 3 | 1.1 | 0.75 | 0.91 | 0.92 |
| Site 4 | 1.1 | 0.75 | 0.91 | 0.92 |
| Site 5 | 1.1 | 0.75 | 0.91 | 0.92 |
| Site 6 | 1.1 | 0.75 | 0.91 | 0.92 |
| Company B, Sites 1-3 | | 0.75 | | 0.75 |
| Company C, Site A | | | 0.91 | 0.91 |
| Company A,B,C Sites 4-6 | | | | 0.91 |

METHODS

A total of six sites were sampled for MDI. The sampling was completed at an outdoor site, a spray-on truck bed liner site, and a spray-on truck bed liner site. The spray-on truck bed liner site was sampled at two different locations. The spray-on truck bed liner site was sampled at two different locations. The spray-on truck bed liner site was sampled at two different locations. The spray-on truck bed liner site was sampled at two different locations.

GRAPHS



BACKGROUND

The NIOSH investigators conducted a study to evaluate potential worker exposures to MDI during the application of spray-on truck bed liners. The NIOSH investigators found that the MDI concentrations in the air and in the spray mist were significantly higher than the OSHA PEL. The NIOSH investigators also found that the MDI concentrations in the spray mist were significantly higher than the OSHA PEL. The NIOSH investigators also found that the MDI concentrations in the spray mist were significantly higher than the OSHA PEL.

RECOMMENDATIONS

- To prevent further exposures to MDI, spray applicators must use an approved respirator.
- The spray applicator must be trained in spray mist control and protective measures.
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