

Overview

Airborne isocyanate exposure is a known hazard when polyurethane paints are applied with a spray gun. Applying the paint with a roller and brush should reduce the hazard because there is no overspray. However, little is documented for isocyanate exposure when roller and brush is used to apply polyurethane paints.

The purpose of this study was to assess isocyanate inhalation exposures when a regional transportation department applied paint with a roller and brush to metal structures at a transit station. The two moisture-cure polyurethane paints contained between 31 to 35% isocyanates comprised of 1,6 hexamethylene diisocyanate (HDI) monomer and three HDI polymers.

Isocyanate exposure from paint applied with a brush or roller

Isocyanate exposure below analytical detection when a paint brush and roller are used to apply moisture-cure polyurethane paint

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Key Findings

- Samples were short-term 15-minute samples in the workers' breathing zone and in the immediate general area. Three scenarios were evaluated:
 - Indoor test environment with no ventilation (n=12)
 - Outdoor test environment (n=11)
 - Outdoor *in situ* assessment during which a bus shelter and light poles at a public transit station were painted (n=22)
- All personal and area isocyanate air samples were below analytical detection when a moisture-cure polyurethane paint was applied with a roller and brush.

Impact

The use of a paint roller and brush when applying polyurethane paints may reduce the risk of isocyanate inhalation exposure. Regardless of isocyanate inhalation, site safety plans should provide skin protection from isocyanates as well as inhalation protection against the solvents in the paint.

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Research for Safe Work

The SHARP Program at the Washington State Department of Labor & Industries partners with business and labor to develop sensible, effective solutions to identify and eliminate industry-wide hazards. Learn more at www.lni.wa.gov/Safety/Research/

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<http://annhyg.oxfordjournals.org/content/early/2016/01/31/annhyg.mew003.abstract>

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