

## Overview

Isocyanate exposure was evaluated in 33 spray painters from 25 Washington State autobody shops. A total of 228 personal breathing zone samples were analyzed for isophorone diisocyanate (IPDI) monomer, 1,6-hexamethylene diisocyanate (HDI monomer), IPDI polyisocyanate, and three polyisocyanate forms of HDI.

The objective of this study was to describe exposures to isocyanates while spray painting, compare them with short-term exposure limits (STELs), and describe the isocyanate composition in the samples.

## Isocyanate Exposures in Collision Repair

Airborne Isocyanate Exposures in the Collision Repair Industry and a Comparison to Occupational Exposure Limits

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Carolyn Reeb-Whitaker,<sup>1</sup> SG Whittaker,<sup>1,2</sup> DM Ceballos,<sup>3</sup> EC Weiland,<sup>1</sup> SL Flack,<sup>4</sup> KW Fent,<sup>4</sup> JM Thomasen,<sup>4</sup> LG Trelles Gaines,<sup>4</sup> LA Nylander-French<sup>4</sup>

## Key Findings

- Automotive paints contain a variable mixture of isocyanates:
  - There was a significant inverse relationship between the percentage composition of HDI isocyanurate in a given air sample to IPDI and to HDI uretdione
- Air samples were compared against the two most relevant short-term exposure levels (STELs) for isocyanates:
  - 80% of personal samples exceeded the Oregon-OSHA STEL
  - 98% of personal samples exceeded the United Kingdom-HSE STEL
- The STELs had significant limitations:
  - OR-OSHA STEL does not include all polyisocyanates
  - UK-HSE STEL is derived from monomeric isocyanates, whereas the species present in typical spray coatings are polyisocyanates.

## Policy Impact

Current U.S. Occupational Exposure Levels (OELs) fail to adequately address mixed isocyanate exposures such as found in automotive painting; a U.S. OEL for total isocyanates is needed.

### Find the article here:

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<sup>1</sup>WA State Department of Labor & Industries, Tumwater WA

<sup>2</sup>Public Health-Seattle & King County, Seattle, WA

<sup>3</sup>University of Washington, Seattle, WA

<sup>4</sup>University of North Carolina at Chapel Hill, Chapel Hill, NC

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### Contact the author:

Carolyn.Whitaker@Lni.wa.gov

## 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](http://www.Lni.wa.gov/Safety/Research)