

## Abstract

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### Case Study Demonstrating the Utility of Occupational Exposure Banding

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**Background:** The draft NIOSH occupational exposure banding process is a validated approach to categorizing chemicals that lack occupational exposure limits (OELs). The process uses limited toxicity data to categorize chemicals into one of five bands, A through E, which represent specific exposure concentration ranges. In this study, dimethyl sulfate is banded using the occupational exposure banding process and the resulting band is compared to an NIOSH recommended exposure limit (REL). **Methods:** The occupational exposure banding process will be used to band dimethyl sulfate (CAS: 77-78-1). First, chemical potency and health effect data are collected from NIOSH recommended sources. Next, the user compares the extracted data, which can be either quantitative or qualitative in nature, to the NIOSH criteria. On the basis of NIOSH criteria, the user assigns the chemical to a band for each endpoint for which data exists. The most protective band is assigned as the OEB for the chemical. **Results:** The results of banding dimethyl sulfate are as follows: • Tier 1 and Tier 2 Band: E (Liquid/Vapor Range  $\leq 0.1$  ppm) • Both Tier 1 and Tier 2 bands are equally or more protective than the current NIOSH REL (Ca TWA 0.1 ppm) **Conclusion:** The preliminary results indicate that OEBs are comparable to OEL values and the draft NIOSH occupational exposure banding process could reduce the amount of time and data required to categorize a chemical based on toxicity and potency, thereby allowing employers to assess and manage risks to workers more efficiently.

Occupational health and safety

