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Catalytic Oxidation of Volatile Organic Liquids

Authors: [Shane E. Roark](#); [Jimena Cabrera-Fonseca](#); [Michael C. Milazzo](#); [James H. White](#); [Joseph D. Wander](#); [AIR FORCE RESEARCH LAB TYNDALL AFB FL](#)

Abstract: Metal oxide and supported-Pt catalysts were developed for complete oxidation of volatile organic compounds (VOCs) and other solvent-derived organic vapors (OVs) in air at relatively low temperatures. The goal for this work is to produce a simple, cost-effective technology for reducing the concentration of organic contaminants in air to acceptable levels before the air is released into the atmosphere or recirculated. Specific applications include ventilated work spaces for spray painting and engine maintenance, indoor air decontamination, dry cleaning, food processing, fume hoods, residential use, and solvent-intensive industrial processes. Catalyst powders and monolith-supported catalysts were screened for conversion of 1-butanol, toluene, and methyl ethyl ketone to carbon dioxide and water. ... However, the catalysts quickly deactivated in the presence of sulfur and **phosphorus**.

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