



Project Summary

Volatile Organic Compound and Particulate Emission Studies of AF Paint Booth Facilities: Phase I

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Results of volatile organic compound (VOC) and particulate emission studies at three Air Force spray paint facilities are presented. It was found that all three facilities (one at McClellan AFB CA and two at Travis AFB CA) were out of compliance for VOC emissions. The possibility of reducing VOC emissions with recirculation modifications and various control strategies is discussed. Specific recommendations for emission reductions pertaining to each facility are presented.

This Project Summary was developed by EPA's Air and Energy Engineering Research Laboratory, Research Triangle Park, NC, to announce key findings of the research project that is fully documented in a separate report of the same title (see Project Report ordering information at back).

Objective

This study presents the results of volatile organic compound (VOC) and particulate emission surveys performed at three Air Force painting facilities. The three facilities -- one at McClellan AFB Building 655 and two at Travis AFB buildings 550 and 1014 -- did not meet local VOC emission standards. This report discusses the possibility of reducing these emissions with recirculation modifications and various VOC reduction and control strategies.

Although VOC emissions from paint spray booths can be controlled by add-on control systems, control is expensive for present air flow rates. The use of air

recirculation within the spray booth can reduce the cost of VOC emission controls by reducing the quantity of air which requires processing. Recirculation systems were designed for two of the painting facilities included in this study. In designing the systems, various criteria such as paint booth VOC concentrations and health and safety standards were considered. Add-on VOC emission control systems which can be used in conjunction with the recirculation system are evaluated in this study. The devices of interest are a solvent incineration system and an activated carbon adsorption bed. The VOC removal efficiency, initial capital investment, and operating costs for both of these technologies are discussed.

Background

The Air Force uses a number of solvents and solvent-based coatings in many routine operations that are required to maintain aircraft-related equipment. Activities which result in the emission of large quantities of VOCs include metal cleaning, painting, paint removal, fuel storage and transfer, and industrial waste treatment. As a result of these operations, significant quantities of VOCs are released into the atmosphere. For this reason, Air Force operations comprise one of the VOC source categories regulated by the Clean Air Act and state and local laws.

Solvent-based epoxy primers and solvent-based polyurethane topcoats are normally used by the Air Force for painting aircraft. Methyl ethyl ketone, isopropyl

