

## **INVESTIGATION OF SHORT-TERM DISSOLUTION RATES OF ZINC IN SIMULATED LUNG FLUID**

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### **ABSTRACT**

There are 2 million workers in the United States who are potentially exposed to Zinc in the workplace. The most prevalent toxic effect from exposure to Zinc is a condition known as “Metal Fume Fever”. Symptoms include chills, fever muscular pain nausea and vomiting. The main route of exposure to zinc oxide is through the inhalation of welding fumes generated during the brazing, cutting or welding of galvanized metal. A recent study suggested that intracellular macrophages are able to dissolve particles and translocate them throughout the body in the first day following exposure.

The data gathered during this project will allow the researchers to determine the solubility of zinc oxide in simulated lung fluids over a short time period during the first day of zinc contact with the simulated lung fluid.

Approximately 250 mg of zinc will be introduced into a container of simulated lung fluid and agitated. One container of Type I water with zinc will be used as quality control/quality assurance. Ten milliliter sample aliquots will be drawn from each of the simulated lung fluid solutions and Type I water solution at the beginning and every half-hour following for 10 hours. Each sample will be analyzed three times using atomic absorption spectrophotometer at Data Chem Laboratories, Inc. in Salt Lake City, Utah.

Establishing a rate of dissolutions will help Occupational Medicine physicians and Industrial Hygienists better understand the potential for exposure of those workers exposed to zinc.

