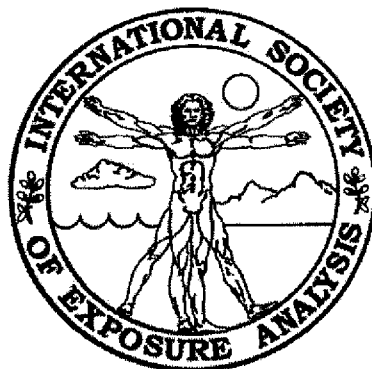


ISEA 2005

15th Annual Conference of the
International Society of Exposure Analysis



Diversity of Exposure Analysis and the Southwest

October 30th – November 3rd, 2005

Westin La Paloma Resort
Tucson, Arizona, USA

ABSTRACT BOOK

Poster Wp Air Toxics

Abstract W-30p

Airborne benzene exposure of mechanics and gasoline service station attendants

Amy K Madl,

Katie Clark, Dennis J Paustenbach
ChemRisk, Inc.

The benzene content in U.S. gasolines has differed significantly over the past 50 years. Today, U.S. gasolines generally contain less than one percent benzene, however, historically average concentrations have been up to three percent. In Europe, benzene content in gasoline has been and continues to be greater than that in the U.S. Vehicle mechanics and service station attendants have the potential for exposure to benzene from gasoline during work on carburetors, fuel filters, and fuel injection systems and during the dispensing of fuel. The objective of this analysis was to characterize the airborne concentrations of benzene during vehicle repair and filling vehicle tanks. This paper analyzes sixteen U.S. and international studies, and presents the average and upper bound short-term, as well as full-shift, airborne concentrations of benzene for mechanics and service station attendants. The impact of benzene content within the gasoline, the time period over which the work was conducted, and geographic variations on occupational exposure to airborne benzene was evaluated. The data from these studies were used to develop a range of likely airborne concentrations, which were compared to current and historical short-term and 8-hour occupational exposure limits. The results showed that average short-term (0.05-1.9 ppm) and 8 hr TWA (0.01-0.82 ppm) breathing zone benzene concentrations experienced by mechanics were within current, as well as all previous occupational standards. Results for gasoline service station attendants varied depending on the benzene content in gasoline. For service stations that were located abroad and dispensed gasoline with greater than two percent benzene, short-term and long-term benzene exposures were sometimes greater than the current occupational standards. These results suggest that mechanic and service station attendants, who work with gasoline containing less than two percent benzene, are not likely to be exposed to airborne benzene concentrations exceeding current or historical occupational exposure limits.