

PO 109-8 Airborne Asbestos Concentrations Associated with Replacement of Internal Valve Gaskets and Packing. A. Madl, D. Hollins, E. Donovan, ChemRisk, San Francisco, CA; K. Devlin, ChemRisk, Boulder, CO; P. Dopart, The Johns Hopkins University, Baltimore, MD; P. Scott, ChemRisk, Pittsburgh, PA.

Objective: Asbestos-containing gaskets and packing have historically been used in a variety of equipment (e.g., pumps, valves) and applications. While the use of these materials was more prevalent 20-30 years ago, there is still an opportunity for workers to handle asbestos-containing gaskets and packing during equipment repair and/or facility renovation or demolition. Although several published studies have evaluated asbestos exposures to workers handling gaskets and packing, none have specifically focused on internal equipment components (e.g., replacement of bonnet gaskets and packing during a valve overhaul). Thus, a study was performed to evaluate the replacement of gaskets and packing contained within valves.

Methods: Breathing zone samples on the lapels of the mechanic (n=78) and assistant (n=40) and area (n=57), background (n=24), and ambient (n=9) samples were collected during twelve sampling events (involving 10 valves) and analyzed using PCM (NIOSH 7400) and TEM (NIOSH 7402). Ten of the twelve sampling events involved valve overhauls, one event involved clean-up only, and one event involved clothes handling. During each overhaul, samples of all packing and gasket material removed and installed were collected for bulk asbestos analysis using PLM (NIOSH 9002).

Results: Applying the ratio of asbestos fibers:total fibers as determined by TEM to the PCM results, the average shortterm airborne chrysotile concentrations (PCM equivalent) were 0.011 f/cc for all worker samples and 0.008 f/cc for all assistant samples. Considering the time involved in a valve overhaul, and assuming eight valve overhauls per day, the average 8-hour TWA was estimated to be 0.012 f/cc by PCME.

Conclusions: Based on the results of this study, valve maintenance activities would not be expected to produce TWA exposures greater than the historical or current PEL. Further, the low airborne asbestos levels that were measured in this analysis are consistent with previous studies of gasket and packing replacement activities.