

## **An Exposure Study of Bystanders and Workers During the Installation and Removal of Asbestos Gaskets and Packing**

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*From 1982 until 1991, a series of studies was performed to evaluate the airborne concentration of chrysotile asbestos associated with replacing gaskets and packing materials. These studies were conducted by the senior author in response to concerns raised by a report from the Navy in 1978 on asbestos exposures associated with gasket work. A series of studies was conducted because results of those who worked with gaskets within the Navy study did not address the background concentrations of asbestos in the work areas, which may have been significant due to the presence of asbestos insulation in the ships and shipyards. The intent of the studies performed from 1982 through 1991 was to re-create the Navy's work practices in a contaminant-free environment during an 8-hour workday (so the data could be compared with the OSHA permissible exposure limit [PEL]). Samples were collected to characterize personal and area airborne asbestos concentrations associated with the formation, removal, and storage of gaskets, as well as the scraping of flanges and the replacement of valve packing. The results indicate that the 8-hour time-weighted average (TWA) exposures of pipefitters and other tradesmen who performed these activities were below the current PEL and all previous PELs. Specifically, the highest average 8-hour TWA concentration measured for workers manipulating asbestos gaskets during this study was 0.030 f/cc (during gasket removal and flange face scraping onboard a naval ship). Likewise, the 8-hour TWA breathing zone concentrations of a worker removing and replacing asbestos valve packing did not exceed 0.016 f/cc. In most cases, the concentrations were not distinguishable from ambient levels of asbestos in the ships or the general environment. These results are not surprising given that asbestos fibers in gasket materials are encapsulated within a binder.*

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