

Abstract Book

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## conazole among Farm

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orth Carolina A&T State

farmers applying propiconazole to peach  
d using tape-strips applied to the stratum  
propiconazole was normalized by keratin  
ured using an OSHA Versatile Sampler  
e mixing, loading, and application. The  
eometry in electron impact ionization  
o 2.2 µg/m<sup>3</sup> and dermal exposure levels  
. The breathing-zone concentrations and  
elation was observed between breathing-  
(87). The total-body propiconazole dose,  
estimated dermal dose (non-detectable to  
µg/kg bw/day), ranged from 0.01 to 12.0  
farmers in this study indicate that dermal  
e type of personal protective equipment  
e amount of propiconazole detected on  
etection (20 fmol/µl) on sampled skin  
face mask were used. Rinsing of hands  
remove propiconazole from the exposed  
emphasize the importance of wearing  
othing, such as long sleeves or coveralls

## Among Skilled Craftsmen in

P.S. Chapman<sup>1</sup> P.R.D.  
D.J. Paustenbach<sup>2</sup> <sup>1</sup> ChemRisk,

of asbestos-related disease for different  
estros in non-manufacturing occupations  
e available literature on this topic, and  
ysis of asbestos-related disease among  
itial review of the literature included  
entified. Studies were included in a  
populations, source of mortality data,  
exposure, latency period, and possible  
dy setting (shipyard vs. non-shipyard)  
results of each analysis yielded relative  
gs indicated that, not surprisingly, the  
served among workers with the most  
ts employed in Naval shipyards, and  
relative risks were also observed for  
as in the construction industry, where

sprayed asbestos or insulation removal activities often occurred. Despite some limitations, the results of this analysis were generally consistent with prior estimates of asbestos exposure for various craftsmen in different occupational settings.

### Abstract 301

#### Worker Exposure to Methanol Vapors during Cleaning of Semiconductor Wafers in a Manufacturing Setting: Results of a Simulation Study

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The purpose of this study was to characterize occupational exposure to methanol for persons who cleaned wafers in the semiconductor industry. Work activities were simulated based on historical accounts. Personal samples and samples in the immediate workspace were collected to characterize near field vapor concentrations; samples collected three to four feet and 10 to 20 feet away characterized far field concentrations. The first simulation involved wafer cleaning during which approximately 12 ounces of methanol was volatilized over eight hours at a distance of approximately 16 inches from the breathing zone. The second scenario simulated two workers cleaning wafers simultaneously where a total of 26 ounces of methanol were volatilized over 8 hours. The 8-hr TWA airborne concentration of methanol for the worker in the first simulation averaged 60 ppm. During the second simulation, the average personal TWA was 118 ppm. The average concentration measured at about four feet from a single worker was 27 ppm, and 73 ppm when two workers used methanol simultaneously. For the workroom, the concentrations averaged 18 ppm and 48 ppm with one and two persons performing this task, respectively. In addition to the amount of methanol used, changes in the room ventilation rate were found to markedly influence both the near field and far field concentrations. The results suggest that the use of methanol to clean semiconductor wafers, for the conditions tested, even without local exhaust ventilation and with relatively low room ventilation rates is unlikely to result in exposures that exceed the current PEL of 200 ppm. This study also confirmed prior estimates that when a point source is located in the near field, the concentration in the breathing zone is approximately two to three fold greater than the room concentration when the air exchange rate is about 5-10 air changes per hour.

### Abstract 320

#### Benzene Exposures of Dock Facility Workers Serving a Refinery and Chemical Plant: 1977-2005

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Benzene is a natural constituent in crude oil. Potential exposure of refinery workers to benzene has been studied for many years. In this study, we evaluated benzene exposures of workers at a refinery dock facility over the period from 1977-2005. The dock facility in this evaluation handles product from the refinery and a nearby petrochemical facility. As a result, the workers are potential exposed to a wider range of benzene-containing materials than a typical refinery worker. In this analysis, workers were categorized using job and task descriptions. The results of nearly 1,000 industrial hygiene air samples were evaluated including 382 long term (≥ 120 minutes) and 374 short term (< 120 minutes) personal samples. The long term samples indicated that airborne concentrations vary significantly across dock worker job classes and are dependent on short duration tasks and activities. The job category Tankerman was associated with the highest potential