

RESPIRATOR ARTICLE ABSTRACTS

We review the articles published in the American Industrial Hygiene Association Journal and the Applied Occupational and Environmental Hygiene Journal for information that is applicable to the field of respiratory protection; we then publish abstracts of these articles. We appreciate the cooperation of the American Industrial Hygiene Association and the American Conference of Governmental Hygienists in allowing us to do this.—Ed.

"Correlation and Reproducibility Data on a Replacement Agent for Carbon Tetrachloride Testing of Organic Vapor Cartridges," by Ernest S. Moyer, Cathy Calvert, James T. Wassell, and Gregory W. Kulczycki, *Appl. Occup. Environ. Hyg. Journal*, April 12:271-277, 1997

Carbon tetrachloride has been used for years as the standard compound for evaluating the adsorption capacity of charcoal. The National Institute for Occupational Safety and Health is mandated under 42 CFR 84 to test organic vapor/gas cartridge and canister breakthrough characteristics against carbon tetrachloride. However, due to carbon tetrachloride's toxicity and potential lack of commercial availability, a substitute test agent is desirable. Screening tests employing ethyl acetate, pentane, *n*-hexane, and heptane have been completed and published on negative-pressure organic vapor respirator cartridges. Two test conditions (550 ppm pentane and 1000 ppm *n*-hexane) were selected for limited side-by-side testing with the 42 CFR 84 test criterion of 1000 ppm carbon tetrachloride. This article presents previously unpublished cartridge breakthrough time data on negative-pressure and powered air-purifying respirator organic vapor cartridges. The data were generated to establish a correlation between possible substitute test agents and carbon tetrachloride. Reproducibility data not previously reported are also presented. The results show that both pentane and *n*-hexane are potential replacement compounds for carbon tetrachloride. Additional work with less-adsorbent charcoals still needs to be performed.

"Individual Work Performance During a 10-Hour Period of Respirator Wear," by Arthur T. Johnson, Cathryn R. Dooly, David M. Caretti, Michal Green, William H. Scott, Karen M. Coyne, Manjit S. Sahota, and Benhur Benjamin, *AIHA Journal*, May 58:345-353, 1997

A study was performed to test the effects of fatigue and food deprivation on performance while wearing respirator masks. Eleven subjects performed cognitive, psychomotor, and motor tasks, arranged in blocks of 3 hours and performed in round-robin sequence. Performance data and additional psychological and physiological information were obtained. Respirator masks were found to have little effect on task performance even with food intake denied. Fatigue and food deprivation had little effect on performance in the unmasked condition. The only measure that reflected fatigue effects was the psychological profile of mood states. An ancillary study involving five subjects who were allowed to ingest food during the day did not show any performance improvement over subjects without food.