

## Abstract

### **Personal respiratory protective devices: efficacy of Millipore and Whatman filters.**

Tanpowpong K. Personal respiratory protective devices: efficacy of Millipore and Whatman filters. J Med Assoc Thai. 2000 Feb;83(2):117-22. Department of Otolaryngology, Faculty of Medicine, Ramathibodi Hospital, Mahidol University, Bangkok, Thailand.

A Millipore filter with 0.22 micron pore size and a Whatman grade 1 filter with > 11 microns particle retention were used to capture laser smoke particle mimic atmospheric suspended particulate matter. The experiment was conducted at the Department of Otolaryngology in Ramathibodi Hospital from April 1996 to October 1997. The laser smoke particle evacuator with rotameter created an air flow rate of 15 l/min through the filters. The mean and standard deviation of the laser smoke particle count under high power optical microscope in a 10 Millipore filter and a 10 Whatman filter were 411,327.6 +/- 13,325.0 and 290,453.0 +/- 28,409.8 respectively, 29.4 per cent different. Laser smoke particle size distribution in both filters under eyepiece micrometer was: 1 to 10 microns in Millipore (99.0%) and in Whatman (96.2%), 1 to 5 microns in Millipore (77.1%) and in Whatman (77.6%), no laser smoke particle larger than 17 microns was detected. The Millipore filter ruptured when the air flow rate was greater than 15 l/min. The Whatman filter was suitable for evaluating filtration efficacy of various personal respiratory protective devices in a high air flow rate condition.