

## ISRP 1999 abstract

Presenter/author	Title	Abstract
<b>Osmond, Neil M. Phillips, P. L.</b>  <i>Chemical and Biological Defense Sector, DERA Porton Down Protection &amp; Decontamination Salisbury, Wilts SP4 0JQ UK</i>	<b>Pressure Drop and Service Life Predictions for Respirator Filter Canister Performance</b>	<p>Filter designers and manufacturers have a responsibility to provide filter canisters with increasingly higher levels of protection due to rising safety standards in the workplace. Optimizing the protective capacity of conventional canisters is not simply about increasing the depth of adsorbent present in the canister since this will lead to an increased resistance to airflow, and a greater physiological burden on the user.</p> <p>In order to optimize canister design it is necessary to establish how the physical dimensions of the adsorbent bed affect breathing resistance and adsorption performance. A study was carried out as part of the UK MoD Respirator Program to investigate both the pressure drop and cyanogen chloride chemisorption performance of a granular activated carbon adsorbent.</p> <p>Results obtained show relationships which correlate adsorption performance and pressure drop to the quantity of adsorbent, the linear flow velocity, and, where applicable, the challenge vapor concentration. The results show that altering linear velocity by increasing cross-sectional surface area has a more beneficial impact on filter performance than altering the adsorbent bed depth. The use of these relationships to predict the performance of various canister designs with a view to enhancing protection whilst reducing breathing resistance will be demonstrated.</p>