

ISRP 2002 abstract

Presenter/author	Title	Abstract
Makowski, Krzysztof <i>Central Institute for Labour Protection, Lodz, Poland</i>	The Effect of Selected Aerosols on the Electrostatic Filtering Materials for Respiratory Protective Devices	<p>The main aim of this study was to analyse the non-steady state of filtration for the selected electrostatic filtering material for respiratory protective devices. The studies were carried out using different contaminants (dusts) and in different working conditions. Particles of the aerosols were neutralised and then ionised with different electric charges. Filtering materials were specially prepared with different levels of electrostatic charge as well. Tests were conducted on the test stand specially build for the purpose of this study.</p> <p>Results obtained show that the filtration process in electrostatic filters mainly depends on:</p> <ul style="list-style-type: none">• Type of filtering material,• Material electrostatic field strength,• Charge of aerosol. <p>To a lesser extent it depends on the sign of the charge and the relative humidity of the air. A significant correlation was found between the increase in penetration and the decrease in breathing resistance during filter loading. Observed step changes of penetration and breathing resistance with time show that the effect of re-suspension (tearing off and re-deposition of dust agglomerates inside the filter) on the filtration process has great significance. It has been found also that in some conditions electrostatic filtering materials lose their protection properties. The analysis of results obtained allowed the elaboration of recommendations for proper selection and use of filtering respiratory protective devices.</p>