

ISRP 2000 abstract

Presenter/author	Title	Abstract
<p>Jonsson, Per-Gunnar</p> <p>Asst Dir of Research, FOA NBC Defence, Umeå, Sweden</p>	<p>Protection performance of activated carbon filters against methyl isocyanate</p>	<p>Polyurethanes are a group of frequently used polymers. If polyurethane-containing objects are heated (higher than about 160°C), a large number of degradation products are formed. Among these are very toxic low molecular weight isocyanates, such as methyl isocyanate. The very low Swedish occupational exposure limit of 0.005 ppm for all types of isocyanates has been found difficult to maintain in quite a few workplaces where polyurethanes and some other nitrogen-containing plastics are heated. The use of individual respiratory protection is therefore necessary in many cases. Although the preferred method of protection is supplied air respirators, in some cases air purifying respirators have been found to be the only practically feasible solution. However, there have been some doubts about the efficiency of gas filters against low molecular weight isocyanates.</p> <p>In order to check the usefulness of gas filters against low boiling isocyanates we have determined breakthrough curves for methyl isocyanate for a number of gas filters containing various commercially available activated carbons. To be able to determine breakthrough levels lower than 0.001 ppm the effluent gas was absorbed in a series of wash bottles with dibutylamine in toluene. The resulting urea derivative was then analysed by GC-MS. In this way breakthrough curves for a number of activated carbon filters could be determined. There were large variations in performance for the various carbons. High relative humidity was found to give shorter protection times.</p>