# ISRP 1999 abstract

| Presenter/author | Title | Abstract |
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| **Jager**, H<br>**van de Voorde**, M. J.<br>**van Bokhoven**, J. J. G. M.<br><br>*TNO-Prins Maurits Laboratory*<br>*Rijswijk*<br>*The Netherlands* | **A New Principle For an End of Service Life Indicator** | Single pass activated carbon filters form a reliable means of protection against toxic gases when used under proper conditions. However, given their limited sorption capacity the time of use is restricted, while the measure of restriction is dependent in a complicated manner of many external circumstances for the same reason it is difficult to estimate the time of use beforehand. For this reason it is extremely useful for the wearer of a mask equipped with an activated carbon filter, to have a method at his disposal to signal the imminent exhaustion of his filter during actual use. At TNO-PML a new approach is being followed towards the realization of such a method.<br><br>The principle of the method has been proven. It works as follows. Near the end of the activated carbon layer a small volume of a different sorbent is built into the activated carbon bed, while downstream of this sorbent there is a direct connection the end of the bed. The sorbent is loaded to a predetermined extent with an odorous substance. When the adsorption front of the contaminant reaches the sorbent, it starts expelling this substance. While no re-adsorption takes place the smelling substance reaches unhindered the respiratory tract of the mask wearer who detects the substance with his nose. A number of variables come into play in realizing the principle, a.o. : selection of the sorbent and its dimensions and position in the bed, selection and load of the smelling substance. These variables must be tuned in a concerted way in order to assure proper working under a prior defined conditions of canister use. Investigations at TNO-PML on these matters are being continued.<br><br>In the presentation the principle will be demonstrated on the basis of experimental results which we obtained using isomylacetate as a smelling substance. These results will illustrate the potential of the underlying principle as a method to achieve an End of Service Life Indicator that will work for a large class of compounds under a variety of conditions. |