[ABS11]

Sorbent Bed Sensor Integration Approaches for End of Service Life Indication

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Use of air purifying respirators requires effective management of expendable gas cartridges. Ideally, as required by some standards (e.g. OSHA 1910.134), an end of service life indicator (ESLI) capable of indicating less than 10% capacity remaining should be used. Commercial options are limited to colorimetric indicators and the majority of cartridges sold on the market do not include an end of service life indicator thereby requiring end users to manage change out.

A brief history of previously proposed end of service life indicator technologies is given along with a summary of inherent tradeoffs. The tradeoffs include performance (size, response time, sensitivity) and cost. This study seeks to demonstrate an approach for sensor integration and interpretation of the sensor data. Breakthrough data and ESLI indication performance will be presented along with a discussion of how such a solution would fit into an OSHA 1910.134 respiratory protection program.