104 - Personal PID chemical sensor coupled with a real-time location system to create a novel direct-reading exposure assessment method

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A novel direct-reading method was developed using a commercial Real-Time Location System (RTLS) and a custom-built photoionization detector (PID) to monitor workplace exposures to gases and vapors. The resulting wireless personal chemical vapor monitor was designed by researchers at the University of Cincinnati, built by MeasureNet Technology, and interfaced to an Ubisense RTLS package using custom software. The system was tested for accuracy and precision in a 5000 square foot work area providing eight simultaneous exposure measurements: location in the X, Y, Z coordinate planes, isobutylene gas concentration, humidity, temperature, time, and sensor identification. A workplace chemical release was simulated and exposure assessed using the CEMWIP method. The personal PID was remotely tracked in real-time on floor plans, measuring instantaneous location and concentration of the contaminant, and the collected data were plotted in a “four-dimensional dose map”. This enabled visualization of location and concentrations for exposure assessment purposes.

Monday, September 9, 2013 03:50 PM
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