

246 - Chemical exposure monitor with indoor positioning (CEMWIP)

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A Direct Reading Method (DRM) was developed that combined a Real-Time Locating System (RTLS) with a wireless personal chemical exposure sensor that could track a worker and provide the continuous exposure data of location, time, VOC concentrations, temperature, humidity, and personal ID. Isobutylene vapors were measured to a sensitivity of 30 ppb ranging up to 20 ppm. Radio beacon signals received at antennas in the room were used to calculate the position of the sensor. The ultra-wide band (UWB) RF beacon used for positioning could penetrate dry walls. Novel software was developed that graphically displayed the moving chemical sensor location on floor plans. The prototype was tested using four calibrated locations and four levels of calibration gas in 16 random permutations. The location data were analyzed by regression analysis for accuracy and the chemical data were analyzed by the method of Kennedy et al. (1995) for precision, bias, and accuracy.

Monday, September 9, 2013 08:00 PM

[Sci-Mix \(08:00 PM - 10:00 PM\)](#)

Location: Indiana Convention Center

Room: Halls F&G

Wednesday, September 11, 2013 06:00 PM

[Air Monitoring \(06:00 PM - 08:00 PM\)](#)

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