

**EMERGING WORKPLACE HAZARDS: Creating Adaptable  
and Innovative Safety and Health Training**

May 2–4, 2023 / Indianapolis, Indiana



**WORKSHOP SESSION SUMMARY**

**POST-CONFERENCE PROCEEDINGS**

**1. Session Title and Presenter's Contact Information:**

Workshop number and title: #77 Incorporating Wide Area Exposure Simulation in Field Exercises

Presenter (s) Name: Cesar Bandera, Peter Schmitt, Mitch Rosen

Presenter Organization: Cell Podium

Presenter Email: cesar.bandera@cellpodium.com

**2. Workshop Summary:**

The exposure readings from handheld chemical and radiological sensors drive the real-time actions of HAZMAT workers, and knowing how to make and interpret such readings are life-saving skills in man-made and environmental incidents. Field exercises, such as those conducted at the end of the 40-hour HAZWOPER course, build responders' skills with PPE, tools, and mock hazards. However, traditional sensors do not simulate exposure to mock hazards or build the related skills. At this workshop, participants will learn how to (1) add wide area mock hazards to satellite imagery of their training sites, such as a large spill or contaminated floodwaters, (2) use any mobile device with GPS and a web browser as a handheld sensor that displays realistic simulated exposure levels from these hazards in real time, and (3) augment their current field exercises with this simulation technology. Participants will be able to use this training tool in their field exercises for free for one year, including the mock hazards and exposure sensor simulator. The workshop will cover technology trends, including the strengths and weaknesses of GPS-based exposure simulation.

This workshop will be fun and very interactive. It demonstrates SensorSim - a technology resulting from a collaboration between a training grantee (Rutgers) and an SBIR grantee (Cell Podium). The workshop is designed for organizations that conduct HAZMAT field exercises, and NIOSH will subsidize free access to the technology for all interested workshop participants.

**3. Methods:**

Participants were asked to direct the web browser of their cell phones to a SensorSim web site that simulates a chemical and radiological sensor. They were then instructed to use the simulator to find the epicenter of a hydrogen disulfide leak south of the conference venue, and report back in 30 minutes to discuss the experience and observe post-exercise reports including participants' breadcrumbs on Google Maps.

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**4. Main Points/Key Points Raised from Participants:**

*[Lists key points raised during the workshop by the participants resulting from the session discussion, as well as main points raised by presenter.]*

Participants gave examples of HAZMAT training exercises they conduct that would benefit from this training technology. They also noted how the recorded paths of participants, superimposed over the simulated plumes, can help evaluate learner performance in a training exercise. The presenters showed how the error inherent in a cell phone's GPS position estimates manifests in the exercise, and how newer phones are more accurate.

**5. References:**

SensorSim Brochure: <https://www.cellpodium.com/products/SensorSim.html>

iPhone App (free): <https://apps.apple.com/us/app/sensor-simulator/id6447448264>

Android App (free):

<https://play.google.com/store/apps/details?id=com.sensorsimulator.sensorsimulator>

**6. Workshop Handouts/Resources:**

See attached.