

DHS Science and Technology Directorate

Radiological Emergency Management System (REMS)

How REMS Benefits First Responders and the Public

REMS is a post-event gamma radiation sensor network designed for response and recovery after an accidental or deliberate release of radiation in an urban area. Gamma radiation (one of three types of natural radiation) sensors distributed throughout a city at fixed rooftop sites transmit real-time data to a central command center, where emergency management officials can determine the scope of a radiological incident. The benefits of having access to this data include:

- A *single* picture of the threat in the earliest moments of the incident;
- Critical information about radiation levels *before* responders enter the affected area;
- Guidance on which areas to evacuate and which to shelter-in-place;
- Timely and accurate information for the public about potential radiation exposure to reduce panic and prevent unnecessary evacuations; and
- When integrated with an atmospheric plume dispersion model, predicting the path of the radioactive plume, and giving advance warning to affected areas.

REMS Development, Testing and Evaluation, and Commercialization

Shortly after the events of September 11, 2001, the concept of a city-wide response and recovery system for a radiation emergency was created and put into action. Several design iterations involving various hardware and software alternatives were tested before the system was proven in a six-year pilot project during which data was monitored at the New York City Office of Emergency Management. The success of the pilot project led the New York Police Department (NYPD) to commit to a city-wide implementation of REMS. The Science and Technology Directorate's National Urban Security Technology Laboratory's (NUSTL) concept and design were turned into a commercial product via a Cooperative Research and Development Agreement with a major instrument manufacturer, which is now building the REMS units for the NYPD. Sensors are being installed on buildings throughout the city in a staged deployment (Figure 1) and data is monitored in real-time at the Lower Manhattan Security Initiative command and control center (Figure 2).



Figure 1 – REMS sensor installation



Figure 2 – Simulation of REMS network display

NUSTL Support to NYPD in Deploying REMS

NUSTL does not own or operate the REMS network; rather, it provides scientific expertise and services to NYPD in support of their implementation of REMS. NUSTL performs independent testing of the sensors using its licensed radioactive sources, and it has developed a comprehensive test plan to ensure the proper operation of sensors, communications, and system software. NYPD consults with NUSTL often on issues like choosing optimal sensor locations and making use of the Federal reach back capability.

What's Next?

REMS offers an enhanced response and recovery capability for radiological/nuclear incidents, potentially saving lives and reducing economic losses as a result of lower medical treatment costs, fewer "worried well" (people who seek treatment fearing radiation exposure yet were not actually exposed), and reduced worker productivity losses. As a result, REMS is becoming a model post-event radiation detection and monitoring system for other U.S. cities. NUSTL is sharing its New York City REMS experience by delivering presentations at conferences attended by first responders, publishing a detailed lessons learned report, and seeking to transfer the technology to other cities interested in a post-event radiation detection and monitoring network.

