Washington State Continuously Improves its Radiological Preparedness

Within a span of five months, the Washington State Department of Health responded to two radiological incidents and has shown how federal preparedness funding is essential in strengthening states' radiation readiness.

In December 2016, the Washington State Department of Health (WDOH) responded to a report from an individual who found pieces of radioactive material at Twin Cities Metals, Inc., a scrap metal yard in Kennewick, WA. After responding to the incident, the Office of Emergency Preparedness and Response and the Environmental Public Health Division's Office of Radiation Protection completed an after-action report to identify response gaps, update radiation plans, and prioritize activities using funding received from CDC's Public Health Emergency Preparedness (PHEP) cooperative agreement. Five months later, WDOH faced a more severe radiation-related event at a decommissioned plutonium processing facility on the Hanford Nuclear Reservation, the largest nuclear waste cleanup site in the United States.[1]

- State health departments receive funding for planning, training, and equipment, but not for responses to emergencies. The total cost of WDOH's three-day response at the Hanford Nuclear Reservation was $51,595, or $17,198 per day. Most costs were associated with the 741 hours of staff time provided by 48 WDOH staff members responding to the incident.
- In the past three years, WDOH has identified around 330 corrective actions from 16 responses and, to date, has fulfilled sixty percent (60%) of these actions.

On May 9, 2017, the U.S. Department of Energy (DOE) reported that the roof of a tunnel located next to the Plutonium Uranium Extraction (PUREX) facility at Hanford had collapsed, creating a 400-square foot opening. The 350-foot tunnel houses eight rail cars containing contaminated material and connects to a longer tunnel with 28 additional loaded rail cars. At 8:26 a.m., the DOE activated its Emergency Operations Center (EOC) and notified WDOH of the situation by 8:40 a.m. By 10 a.m. WDOH had mobilized its full Incident Management Team (IMT) to assist in the response. The response to the incident concluded by noon on May 11, once the exposed portion of the tunnel was filled with soil. Within a few days, a heavy-duty plastic cover was installed along the entire length of the impacted tunnel. WDOH's successful response to this incident demonstrated its ability to apply lessons learned from the previous response at Twin Cities Metals.

Steps Taken:

Following the Twin Cities Metals incident, WDOH leveraged PHEP funding to improve its operational effectiveness and intra-agency collaboration for radiation-related responses. The department conducted an after-action meeting, one large workshop that included training and application in the form of a tabletop exercise, and updated its plans. The main workshop took place in Richland, WA and was attended by almost 40 participants from the WDOH Office of Emergency Preparedness and Response, Office of Radiation Protection, and Center for Public Affairs, representatives in state emergency management, and the nuclear power plant at the Hanford site. In addition, WDOH staff participated in multiple previously-scheduled radiation exercises where they were able to practice the lessons learned.

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Taking the lessons learned from the Twin Cities Metals incident, WDOH quickly set up an IMT to operate its Agency Coordination Center in Tumwater, WA and sent representatives to the state EOC at Camp Murray, the central location for multiagency coordination, to support radiation protection efforts at the Hanford site. The agencies involved were WDOH's Office of Emergency Preparedness and Response and Office of Radiation Protection, the Department of Ecology, the Department of Agriculture, the Governor's Office, the National Guard, the Washington State Military Department's Emergency Management Division, tribal nations, Washington State Patrol, Benton County Emergency Services, Franklin County Emergency Management, and Benton-Franklin County Health District. Furthermore, WDOH sent subject matter experts to the DOE's joint information center and EOC. At the EOC, these experts conducted a hazards assessment, which included researching what was stored in the tunnels, assisting in modeling the potentially impacted area, and developing a sampling collection plan.

Two environmental monitoring field teams from the Office of Radiation Protection oversaw the completion of air sampling, contamination surveys, and radiation surveys at the site to detect the presence of radioactive particles in the air and ground. WDOH's public health laboratory analyzed the samples, which were used to assess environmental health and public health impacts and determine next steps. This was a critical task since a significant proportion of the state's agriculture is concentrated within 50 miles of the facility and agriculture is the number one industry in the state.
WDOH mobilized seven PHEP capabilities: community preparedness, community recovery, emergency operations coordination, emergency public information and warning, information sharing, public health laboratory testing, and responder safety and health. In addition, WDOH asserts that environmental health should be recognized as an independent preparedness, response, and recovery capability. For this reason, the department treats environmental health as its own capability instead of a subset under the public health surveillance and epidemiological investigation capability as stated by CDC.

It's also important to note WDOH's successes prior to these two incidents. Since 2014, the department has worked on building a policy team of decisionmakers from the offices of the governor, the attorney general, and the secretary of health, along with other state and federal agencies aligned with response efforts. WDOH also works closely with the U.S. DOE to prepare for future emergencies and conducts and evaluates an annual full-scale exercise for facilities at the Hanford Nuclear Reservation. Four other annual exercises are planned for the nuclear power plant on the Hanford site. The Office of Radiation Protection also conducts daily environmental and air emissions monitoring for facilities within the site. All the activities require intensive training; WDOH staff complete FEMA trainings and quarterly IMT drills to practice different types of emergencies.

Results:
WDOH constantly engages its partners in radiation preparedness activities to enhance their ability to better handle radiological incidents. WDOH is familiar with the Hanford Nuclear Reservation, performs daily tasks to better assure the public's health is protected, practices its emergency procedures, and has experience responding to incidents at the site. This history of collaboration enabled WDOH subject matter experts to assimilate more readily in the DOE's joint information center and EOC, with everyone better understanding their roles and responsibilities in the response.

Although they were in distinct locations, the state EOC, IMT, and field responders worked in a synchronized manner due to the time and energy dedicated to planning, drilling, and training. Keeping decisionmakers and leadership informed and involved also facilitated the response. The tunnel collapse

at the Hanford site attracted national media attention and having decisionmakers co-located in the state EOC made it easier to respond to the media. Luckily, results from the air samplings, contamination surveys, and radiation surveys showed there was no contamination from the tunnel within or outside the Hanford Nuclear Reservation boundary. If there was significant radiological contamination, Washington's billion-dollar agricultural economy could have been severely impacted by potential food embargos. Collaboration between the health department, leading response agencies, and top policy leaders would have proven to be more indispensable in determining the appropriate course of action and presenting a unified voice for media.

Lessons Learned:
These event responses and the intervening preparedness actions underscore the need for increased PHEP funding for public health preparedness, specifically radiation readiness. The PHEP program helped strengthen the relationship between WDOH's IMT program and radiation protection response teams and allowed them to create a response team specific to environmental health issues by providing funding to develop a drill and training program for all-hazards preparedness and response. High employee turnover in the public health workforce calls for continuous investment of funds to train staff to have the level of expertise necessary for efficient emergency responses.

Public health preparedness is a dynamic process with a corrective action cycle that takes place after every response. The activities WDOH conducted following the Twin Cities Metals incident contributed to a successful response to the tunnel collapse at the Hanford Nuclear Reservation. WDOH started with an after-action briefing and report, followed by a corrective action plan with assigned staff members and due dates, quarterly progress tracking, trainings and drills, updates to plans, and the development and implementation of systems to support responders. WDOH currently has a list of 140 action items from past responses that have been prioritized but have not been completed due to limitations in funding and staffing resources.

Increased PHEP funding would allow WDOH to more thoroughly implement corrective actions and increase response efficiency to protect public health. Consequently, reduced PHEP funding would force state health departments like WDOH to make tough decisions on prioritizing capabilities, i.e., which diseases and outbreaks to prepare for, or providing more comprehensive environmental health planning and training. Furthermore, as a result of aging infrastructure at the Hanford site, U.S. DOE has indicated that more incidents like the PUREX tunnel collapse may be likely. Decreased PHEP funding would preclude WDOH from maintaining readiness for these increasing numbers of incidents as the Hanford Nuclear Reservation shows further signs of deterioration. PHEP funding is essential to WDOH's ability to protect the public's health during radiological emergencies until the multi-decade cleanup process is completed.

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[1] U.S. Department of Energy. "Cleanup Progress at Hanford." Available at: http://www.hanford.gov/news.cfm/DOE/Cleanup_Progress_at_Hanford_Factsheet-06-2017.pdf. Accessed 8-1-2017.