

Water Environment Federation Webcam
Wastewater Worker Safety- Addressing Concerns on Ebola in Wastewater
November 4, 2014

Summary by Brett Ward, UT-MTAS, November 7, 2014

Speakers

Chris Stacklin, P.E., Chair, WEF Water Reuse Committee; Vice-Chair, WEF Government, Affairs Committee, Regulatory Affairs Subcommittee; Orange County Sanitation District

Matthew J. Arduino, M.S., Dr.P.H., FSHEA, RM(NRCM), M(ASCP)^{CM}, Chief, Clinical and Environmental Microbiology Branch, Division of Healthcare Quality Promotion, National Center for Emerging and Zoonotic Infectious Diseases, U.S. Centers for Disease Control and Prevention, Ebola Response Environmental Infection Control Team

Lawrence P. Jaworski, P.E., BCEE, Interim Executive Director, Water Environment Research Foundation

Naoko Munakata, Ph.D., P.E., Chair, WEF Disinfection & Public Health Committee; Project Engineer, Wastewater Research Section, County Sanitation Districts of Los Angeles County

Sue G. Schneider, CEO, Spartanburg Water, Spartanburg, South Carolina

John W. Westcott, Special Projects Manager, Spartanburg Water, Spartanburg, South Carolina

Links

WEF- <http://www.wef.org/EbolaWastewaterConcerns/>

See the Webcast slides at a link just above all the logos of the participating organizations

CDC- <http://www.cdc.gov/vhf/ebola/index.html>

<http://www.cdc.gov/vhf/ebola/hcp/environmental-infection-control-in-hospitals.html>

Most CDC material is directed toward Health Care Workers. But what is done within a hospital can affect the utility. Because there has been a patient treated at Emory University Hospital in Atlanta, there are already “fear generating” websites in Atlanta telling people not to drink the water in Atlanta.

Summary

There are many organizations working on Ebola Virus Disease (EVD) including the Water Environment Federation and the Water Environment Research Federation. There is a lot we simply do not know about the virus especially in real life situations like the sanitary sewer system, the treatment plant, and the environment. The virus, Zaire ebolavirus, is an enveloped single stranded negative sense RNA virus. Enveloped viruses are generally less virulent, more susceptible to environmental die-off and more susceptible to disinfection products than non-enveloped viruses. Wastewater workers should use personal protective equipment (PPE) consistent with their level of risk at their work site. The highest risk workers will be the collection system workers, working in the sewerage directly outside a healthcare facility with patients who have an active case of EVD. All wastewater workers should use the appropriate PPE and good hygiene practices.

Mathew Arduino of the CDC described the virus microbiologically and the common symptoms of EVD. Buried several layers deep on the CDC website (see the second CDC link above, then go to Question #5) Mathew stated the municipal sewer systems could receive Ebola waste because the CDC basically says it is safe and that the treatment process should inactivate the virus.

Question 5 from the CDC page entitled *Interim Guidance for Environmental Infection Control in Hospitals for Ebola Virus*

5. Is it safe for Ebola patients to use the bathroom?

Yes. Sanitary sewers may be used for the safe disposal of patient waste.⁸ Additionally, sewage handling processes in the United States are designed to inactivate infectious agents.

Personal Protective Equipment recommended for sewer workers by Mr. Arduino included, Goggles or face shield, face mask, impermeable clothing, water proof gloves and rubber boots. Also good hygiene practices were stressed such as hand washing, avoiding hand to mouth-eyes-nose-and open sores touching, repeated hand washing before eating, removing work clothing and washing them at work- not with home laundry, eating away from sewage, care with tobacco use and covering open sores, cuts, and wounds.

Mr. Arduino also stated that some utilities are requiring pretreatment of waste before discharge to the sewer system with bleach or quaternary ammonia and the use of solidifying camping toilets.

The second presentation was from WERF and given by Ms. Naoko Munakata. She is the Chair of the WEF Disinfection and Public Health Committee. Naoko outlined research needs and stated that we need to have answers quickly. We do not know how long Ebola survives in the sewer system. We don't know the effectiveness of common disinfectants in real world situations. We don't know the transmission risk or how much Ebola it takes to infect an individual. The U.S. Army and National Science Foundation are in the early stages of this research.

The third section was presented by two persons from Spartanburg Water, Spartanburg, South Carolina. They repeated long lists of things we do not know about Ebola, what we need to know and that in the meantime "conservative assumptions are needed." They also repeated the list of recommended PPE's and showed a photo of one of their employees in PPE (see the Webcast Presentation Handouts on the WEF website).

Brett's Comments:

Sewage can contain many pathogenic viruses and bacteria, so protect yourself! Though Ebola is a hot topic today, there has always been and always will be disease potential in sewage related jobs. Use the appropriate PPE's and use good hygiene. Like HIV, we think Ebola is a rather wimpy virus that will be inactivated in the rather harsh collection system and treatment plant environment, but right now we really don't know. We do know that sewage contains some very tough hardy pathogenic organisms such as E. coli 0157:H7, Polio, Salmonella typhi, and vibrio cholera. We should always protect ourselves from these.