



Memorandum

June 2, 2016

To: CASA Members and Partner Associations
From: Greg Kester, Director of Renewable Resource Programs
Subject: Revised Consensus Recommendations for Dialogue between the Wastewater Sector and Hospitals on the Management of Wastewater Generated by Patients Infected with the Ebola Virus

This memo serves to update the previous version released on January 13, 2015. While the Ebola virus scare has diminished, the need for clear communication and effective management of wastewater generated by infected hospital patients has not. Furthermore, recent research conducted at the University of Arizona and confirmed elsewhere has informed the changes in this guidance.

The available information at the time of the Ebola crisis regarding the need for treatment of wastewater generated in hospitals by patients infected with the Ebola virus led to some confusion. Interim guidance from the Centers for Disease Control and Prevention (CDC), consistent with guidance from the World Health Organization (WHO), states that sanitary sewers may be used for the safe disposal of Ebola patient waste, and notes that sewage handling processes in the United States are designed to inactivate infectious agents. However, the wastewater community has concerns for the safety of workers handling wastewater prior to its treatment at the wastewater plant. As an additional level of protection, leading microbiologists support the recommendations below. The information provided in this memo should be used as a basis for dialogue between wastewater agencies and hospitals that may treat Ebola patients as a pragmatic means of pretreatment for Ebola patient wastewater. This represents a revision to the January 13, 2015 guidance based on updated information:

While a zero waste discharge would be a desirable approach for the wastewater community, wastewater managed in the same manner as Ebola contaminated solid waste from the patient(s) presents significant challenges for hospitals, such as safety concerns and cost effectiveness.

If a zero discharge is not feasible, pre-treatment of all wastewater, including toilets and graywater from showers and sinks, is recommended as follows: For toilet waste, first disable the auto-flush feature if available and instruct the patient not to manually flush the toilet. Carefully add Peracetic Acid (PAA) (1 cup of 0.25% PAA per bowl) or 1 cup of low alcohol quaternary ammonium disinfectant per bowl and hold for 15 minutes prior to flushing. A PAA product which has been approved by the Food and Drug Administration (FDA) for spores, viruses and *M. tuberculosis*, may be used. The quaternary disinfectant should have documented effectiveness against norovirus and enterovirus. Sinks should be plugged prior to any waste discharge into them and the waste treated with ½

cup of 0.25% PAA or low alcohol quaternary ammonium disinfectant and held for 15 minutes before draining. Pre-treatment of Ebola patient waste should only be done by individuals wearing appropriate personal protective equipment and properly trained in the disinfection process.

Wastewater utility workers, by the nature of their work, are likely aware of the risk that pathogens in sewage pose and already take appropriate care to practice sound personal protection and hygiene when handling sewage at any point in the treatment process. Nonetheless, to ensure worker safety, appropriate personal protective equipment and proper hygiene practices should be used and regularly reviewed as part of worker health and safety preparedness and training. The CDC's [*Interim Guidance for Managers and Workers Handling Untreated Sewage from Individuals with Ebola in the United States*](#) should be referenced for recommendations on proper equipment and hygiene. The Standard Operating Procedures (SOP) released by the US Army Institute of Public Health at the Aberdeen Proving Ground on October 22, 2014, and available at this link <http://www.casaweb.org/documents/evdwastemanagementonmtfsop.pdf> may also be consulted as an additional resource, especially Section 3 for the safe pretreatment of patient generated wastewater. However it should be noted that PAA or quaternary disinfectants should be used, as noted above, in place of bleach.

In addition to the current planning and coordination by hospitals and wastewater agencies, hospitals that actually do receive patients suspected or known to be infected with the Ebola virus are urged to notify their local wastewater agency immediately.

The notification should include:

1. The facility name
2. The facility address
3. The status of the patient (suspected/known to be infected)
4. The date and time of the patient's arrival at the facility
5. The name, title, and contact information of the person from whom the wastewater plant may obtain additional information on the suspected Ebola case and its handling by the facility.

The recommendations contained in this memo are supported by Dr. Charles Haas (Drexel University), Dr. Mark Sobsey (University of North Carolina), Dr. Charles Gerba (University of Arizona), and Dr. Kyle Bibby (University of Pittsburgh), endorsed by the California Association of Sanitation Agencies and the National Association of Clean Water Agencies, and were prepared in consultation with the California Department of Public Health.

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Research is ongoing to better confirm the recommendations and this memo will be revised as appropriate pending research findings. If you have questions or need additional information, please feel free to contact me at (916) 844-5262 or gkester@casaweb.org.