

Biological Hazards in Sewage and Wastewater Treatment Plants

Hazard Alert



During construction and maintenance of sewage and wastewater plants, workers may be killed by drowning, trench collapses, falls, confined spaces, and exposure to chlorine or hydrogen sulfide gas. The work can also make you sick.

Sewage and wastewater contain bacteria, fungi, parasites, and viruses that can cause intestinal, lung, and other infections. If equipment, work practices, and personal protective equipment (PPE) don't protect you from swallowing these agents, you can get sick.

During any part of treatment, transport, or application of sewage sludge, you can be exposed to materials that can cause disease. This is true even if you work around treated (class B) biosolids. Careful work habits can help protect you.

Some Biological Hazards That May Be in Sewage Or Wastewater

Bacteria may cause diarrhea, fever, cramps, and sometimes vomiting, headache, weakness, or loss of appetite. These are some bacteria and diseases they cause: E-coli, shigellosis, typhoid fever, salmonella, and cholera.

Funguses

- Aspergillus and other fungi often grow in compost. These can lead to allergic symptoms (such as runny nose) and sometimes can lead to lung infection or make asthma worse. If you have other health problems, you may be more likely to get sick from aspergillus.

Parasites

- Cryptosporidium and giardia lamblia may cause diarrhea and stomach cramps, and even nausea or a slight fever.
- Roundworm (ascariasis). Most people have no symptoms. With a lot of roundworms, you may cough and have trouble breathing or you may have pain in your belly and blocked intestines.

Viruses

- Hepatitis A causes liver disease. You may feel tired, pain in your belly, nauseous off and on; you may have jaundice (yellow skin) or diarrhea or not be hungry. The CDC says sewage workers are not at more risk of hepatitis A infection than other workers (see #1, below). If a lot of people in the community have hepatitis A, your risk may be higher than usual.

Bloodborne viruses are a hazard mainly to workers in health care facilities. Hepatitis B and HIV are bloodborne:

- Hepatitis B causes liver disease. You may feel tired, have jaundice (yellow skin), pain in your belly, feel nauseous off and on, throw up, or not be hungry. The disease has not been linked to exposure to sewage in the U.S. (2)
- Human immunodeficiency virus (HIV) causes AIDS. There are no known cases of wastewater workers getting HIV from their jobs in the U.S. and the risk is virtually nonexistent (2,3).

(Please turn the page.)

Protecting the Worker

For work around sewage or wastewater, engineering controls and work practices are the best ways to protect workers from exposures to disease. When engineering controls are not possible, use personal protective equipment (PPE). For some jobs and around some hazards, respiratory protection is required.

OSHA says the employer should give the worker:

- Training and education about the hazards of wastewater and sewage
- A place onsite with clean water for washing your hands
- A place to wash and clean up after work
- The right PPE, such as gloves, goggles, a face shield, water-resistant suit, or respirator – depending on the job
- Clean areas set aside for eating and smoking
- Cleaning facilities or services for clothing and equipment. (If clothing is badly soiled, change out of it. Keep equipment clean to limit your exposures to the disease-causing agents.)

What you can do:

- Most important: **Wash your hands well with clean water and soap before you eat or smoke and after work.**
- **Do not touch your nose, mouth, eyes, or ears with your hands, unless you have just washed. Most of the time, people get these diseases when they have germs on their hands and they touch their mouth or nose or eyes.**
- Keep your fingernails short; use a stiff soapy brush to clean under your nails.
- Wear waterproof gloves when you clean pumps or screens and when you handle wastewater, sludge, or grit.
- Always wear gloves when your hands are chapped or burned or you have a rash or a cut.
- Shower and change out of your work clothes before you leave work.
- Do not keep your soiled work clothes with your other clothes.
- Report any injury or illness you think you got from work right away.
- **If you do get sick, be sure to tell your doctor you work in a sewage or wastewater treatment plant.** That information will help the doctor know what to look for.

Vaccinations

You need up-to-date shots for tetanus and diphtheria. If you want to know about shots to prevent hepatitis A, ask a nurse or doctor (4).

For more information, call your union, the Center to Protect Workers' Rights (CPWR) (301-578-8500 or www.cpwr.com), the National Center for Infectious Diseases (www.cdc.gov/ncidod), National Institute for Occupational Safety and Health (NIOSH) (1-800-35-NIOSH or www.cdc.gov/niosh), or OSHA (1-800-321-OSHA or www.osha.gov). Or check the website www.elcosh.org

1. CDC. Prevention of Hepatitis A Through Active or Passive Immunization. *Morbidity and Mortality Weekly Report*, 48 (RR-12), Oct. 1, 1999.
2. California Dept. of Health Services. Recommended immunization for sewage workers. *California Morbidity*. Feb. 1998. www.dhs.cahwnet.gov/ps/dcdc/html/cal morb.htm
3. AFSCME. *Risky Business: An AFSCME Health and Safety Guide for Water and Wastewater Treatment Plant Workers*. 2000. www.afscme.org/health/riskybtc.htm
4. Trout, Douglas, and others. Evaluation of occupational transmission of hepatitis A virus among wastewater workers, *Journal of Occupational and Environmental Medicine*, 42:83-87, Jan. 2000.

© 2004, The Center to Protect Workers' Rights. All rights reserved. CPWR is a research, development, and training arm of the Building and Construction Trades Dept., AFL-CIO: CPWR, Suite 1000, 8484 Georgia Ave., Silver Spring, MD 20910. (Edward C. Sullivan is president of the Building and Construction Trades Dept. and of CPWR and Sean McGarvey is secretary treasurer.) Production of this card was supported by grant 1U54OH008307 from the National Institute for Occupational Safety and Health and grants U45-ES09764 and U45-ES06185 from the National Institute of Environmental Health Sciences. The contents are solely the responsibility of the authors and do not necessarily represent the official views of NIOSH or NIEHS.
Sewage, 9/22/04