

CDC study finds fecal contamination in pools

A study of public pools done during last summer's swim season found that feces are frequently introduced into pool water by swimmers. Through the study, released today by the Centers for Disease Control and Prevention (CDC), researchers found germs in samples of pool filter water collected from public pools.

CDC collected samples of water from pool filters from public pools and tested the samples for genetic material (for example, DNA) of multiple microbes. The study found that 58 percent of the pool filter samples tested were positive for *E. coli*, bacteria normally found in the human gut and feces. The *E. coli* is a marker for fecal contamination.

Finding a high percentage of *E. coli*-positive filters indicates swimmers frequently contaminate pool water when they have a fecal incident in the water or when feces rinse off of their bodies because they do not shower thoroughly before getting into the water. No samples tested positive for *E. coli* O157:H7, a toxin-producing *E. coli* strain that causes illness.

Pseudomonas aeruginosa, which can cause skin rashes and ear infections, was detected in 59 percent of samples. Finding *Pseudomonas aeruginosa* in the water indicates natural environmental contamination or contamination introduced by swimmers. *Cryptosporidium* and *Giardia*, germs that are spread through feces and cause diarrhea, were found in less than 2 percent of samples. The tests used in the study do not indicate whether the detected germs were alive or able to cause infections. Indoor and outdoor public pools were sampled.

The study did not address water parks, residential pools or other types of recreational water. The study does not allow CDC to make conclusions about all pools in the United States. However, it is unlikely that swimmer-introduced contamination, or swimmer hygiene practices, differ between pools in the study and those in the rest of the country.

"Swimming is an excellent way to get the physical activity needed to stay healthy," said Michele Hlavsa, chief of CDC's Healthy Swimming Program. "However, pool users should be aware of how to prevent infections while swimming. Remember, chlorine and other disinfectants don't kill germs instantly. That's why it's important for swimmers to protect themselves by not swallowing the water they swim in and to protect others by keeping feces and germs out of the pool by taking a pre-swim shower and not swimming when ill with diarrhea."

This study is presented in recognition of Recreational Water Illness and Injury Prevention Week, May 20–26, 2013. The goal of the prevention week is to raise awareness about healthy swimming, including ways to prevent recreational water illnesses (RWIs). Germs that cause RWIs are spread by swallowing, breathing in the mists or aerosols from, or having contact with contaminated water in swimming pools, water parks, hot tubs, interactive fountains, water play areas, lakes, rivers, or oceans. To view the report, please visit www.cdc.gov/mmwr.

CDC recommends that all swimmers take the following steps to prevent infections while swimming:

CDC recommends that parents of young children also take the following steps:

- **Keep feces and other contaminants out of the water.**
 - Do not swim when you have diarrhea.
 - Shower with soap before you start swimming.
 - Take a rinse shower before you get back into the water.
 - Take bathroom breaks every 60 minutes.
 - Wash your hands with soap after using the toilet or changing diapers.
- **Check the chlorine level and pH before getting into the water.**
 - Pools: Proper chlorine (1–3 mg/L or parts per million [ppm]) and pH (7.2–7.8) levels maximize germ-killing power.
 - Most superstores, hardware stores, and pool-supply stores sell pool test strips.
- **Do not swallow the water you swim in.**

CDC recommends that parents of young children also take the following steps:

- Take children on bathroom breaks every 60 minutes or check diapers every 30–60 minutes.
 - Change diapers in the bathroom or diaper-changing area and not at poolside where germs can rinse into the water.

For more information visit CDC's [healthy swimming/recreational water](#) page.