

Regulatory and alternate fecal-indicator microorganisms summary

Regulatory fecal-indicator microorganisms used to monitor various water resources.

Organism	Type	Where found	Regulations
Total coliforms	Gram-negative, lactose-fermenting bacteria	Feces and many other environments	Drinking water, ground water
Fecal coliforms	Subset of total coliform bacteria that are heat tolerant	Feces and few other environments	Shellfish-harvesting water, inland recreational water
<i>Escherichia coli</i>	One species of fecal coliform bacteria	Feces and rare other environments	Coastal fresh recreational water, ground water
Enterococci	Gram-positive, salt- and pH-tolerant bacteria	Feces and leaf surfaces	Coastal fresh and marine recreational water; ground water
Coliphages	Bacteriophages (viruses) that infect coliforms	Feces, Sewage	Ground water

Total coliforms

- Used for monitoring finished drinking water
- Recommended for GW—used for source water in the total coliform rule
- Not recommended for SW monitoring

Fecal coliforms

- Still the only indicator used in recreational water-quality standards in some states, can be used to compare to historical data
- The regulatory fecal indicator for shellfish-growing waters

E. coli

- Related to the risk of swimming-associated gastroenteritis
- Required for BEACH act monitoring of fresh coastal recreational waters
- Recommended by USEPA for monitoring fecal contamination to fresh surface waters
- One of three indicators used for source water as part of the USEPA Ground Water Rule

Enterococci

- Required for BEACH act monitoring of fresh and marine coastal recreational waters
- Recommended by USEPA for monitoring fecal contamination to fresh and marine surface waters
- Enterococci have different survival rates and shape than members of the coliform group and, therefore, different transport and dieoff properties in water.
- One of three indicators used for source water as part of the USEPA Ground Water Rule

Clostridium perfringens

- Used as a surrogate for environmentally-resistant forms of microorganisms
- Used to monitor fecal contamination in tropical waters
- A more conservative tracer of point sources than other bacterial indicators

Cryptosporidium and Giardia

- Provides information on quality of source waters
- Provides information on the causative agent of a local outbreak of disease
- Not recommended for ground water systems unless under the influence of surface water

Enteric viruses

- Determines the presence of viral pathogens in ground water and surface water
- Provides evidence that a source of fecal contamination is human
- Provides information on the causative agent of a local outbreak of disease

Coliphage

- Provides information on the transport and survival of viruses in the environment
- Indicates fecal/sewage contamination
- One of three indicators used for source water as part of the USEPA Ground Water Rule