

Microbes, Bacteria & Viruses in Stormwater

Microbes in Stormwater

As it falls, rain becomes polluted by particles in the air and on the ground. Often times, rain picks up fecal matter from animals along its way to the drain. Bacteria, such as coliform and fecal streptococci, can then end up in the stormwater. Coliform is a collection of different bacteria that includes bacteria found in soil, surface water, and human or animal waste. The most common coliform bacteria used for water quality indicators are total coliform, fecal coliform, and *E. coli*. Total coliform includes many different bacteria, fecal coliform is a type of total coliform that are found in feces, and *E. coli* is a sub-category of fecal coliform. If there is fecal coliform or specifically *E. coli* found in stormwater, that is an indication that there may also be pathogens, which are microorganisms that may cause disease.



Image of *E. coli* bacteria. <https://www.foodsafetynews.com/>.

Microbes found in stormwater are typically of no concern to the general public.

Most urban stormwater does carry pathogens, but typically at non-dangerous levels. While it depends on what pathogen is identified and how virulent the strain is, generally pathogens found in stormwater at such small concentrations are harmless. However, if pathogen-containing stormwater ends up in a drinking water source or public water area like a beach, it may cause a disease outbreak or shutdown of recreational areas. The risk for drinking and recreational water contamination varies by locality. For example, *Pseudomonas aeruginosa* and *Staphylococcus* bacteria can cause eye, ear, and skin disease. If stormwater or stormwater-contaminated surface water containing those bacteria is used for recreational activities, the public may be at risk unless the area is temporarily closed. That is why having a thorough and capable stormwater management program is important. Stormwater management plans attempt to direct water away from and out of streets, parks, and other areas.



Microbes

Microbes are microorganisms. Some common examples are bacteria, viruses, algae, and fungi.



Bacteria

Bacteria are microorganisms that can be both beneficial and harmful. For instance, bacteria in the gut help break down food, while others, like certain strains of *E. coli*, can cause infection.



Viruses

Viruses are infectious agents that invade living cells in order to rapidly reproduce. Examples of diseases caused by viruses include rabies, SARS, Ebola, and COVID-19.

Citations

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