

# The Truman Lab

## Data Interpretation Guide: Bacteria

Revised: 3/20/2024

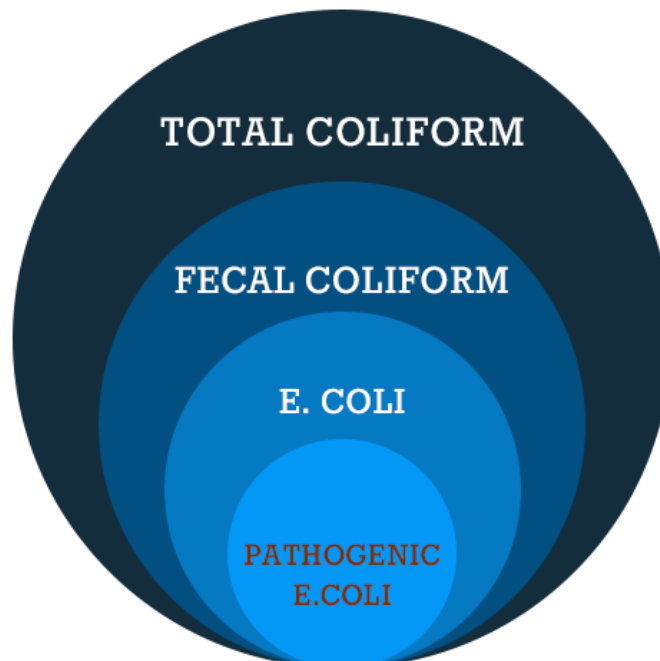
### 1.0 SCOPE AND APPLICABILITY

This guide provides water quality standards to which test results for total coliforms and *E. coli* in drinking water and surface water samples can be compared. For other important information, visit <https://www.hstcc.org/water-testing>.

**Note:** Our certified procedures include presence/absence for total coliform and *E. coli*, based on SM 9223B Enzyme Substrate. To view our state-issued certification, visit <https://www.hstcc.org/water-testing>. The Truman Lab and HSTCC are non-regulatory agencies. All data produced by this program is to be used for informational purposes only. The Truman Lab is a separate organization from HSTCC. The standards used for comparison in this program (shown below) are to be used exclusively as a *general* reference.

### 1.1 GENERAL CONSIDERATIONS

- Test results for total coliforms and *E. coli* are reported as Most Probable Number (MPN) per 100mL and/or present/absent (P/A). MPN provides estimated enumeration, usually for surface water, while P/A is used for drinking water. This is because surface water naturally has a certain level of total coliforms and *E. coli* bacteria, while drinking water should have none. Enumeration is therefore not necessary for drinking water.
- According to the Environmental Protection Agency, total coliforms and *E. coli* are groups of bacteria that are *not*, with few exceptions, harmful to humans. However, total coliforms and *E. coli* are used as an indicator of other pathogens. Pathogens are a variety of bacteria, parasites, and viruses that can potentially cause health problems if ingested by humans.
- Coliforms are naturally present in both the environment and the digestive tracts of animals. *E. coli* is only found in human and animal digestive tracts and waste. *E. coli* is therefore considered a superior indicator of fecal contamination, which suggests probable contamination of other pathogens.



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### 2.0 Drinking Water

**Table 1** shows the Water Quality Standards adopted by the Environmental Protection Agency in 79 FR 10665. This numeric criterion is applicable to drinking water only. If test results find bacteria to be present, the water is not safe to drink.

**Table 1: Drinking Water Standards: Bacteria**

| Parameter                                                         | MCLG       |
|-------------------------------------------------------------------|------------|
| Total Coliforms<br>(including fecal coliform and <i>E. coli</i> ) | 0 (Absent) |

#### Definitions:

1. Maximum Contaminant Level Goal (MCLG) - The level of a contaminant in drinking water below which there is no known or expected risk to health.
  - a. Test results for drinking water will be provided as present or absent. Enumeration is not necessary.

### 3.0 Surface Water

**Table 2** below shows the Water Quality Standards adopted by the State of Missouri in 10 CSR 20-7.031. These numeric criteria are applicable to surface water only. The numeric criteria are the upper limits for the respective designated water use.

**Table 2: Surface Water Standards: Bacteria**

| Parameter (Unit)                       | WBC-A | WBC-B | SCR   |
|----------------------------------------|-------|-------|-------|
| <i>E. Coli</i> Bacteria<br>(cfu/100mL) | 126   | 206   | 1,134 |

#### Definitions:

1. Colony-Forming Unit (CFU) - A CFU is a bacteria colony that results from a single bacteria cell.
  - a. Results will be reported in MPN/100mL, with upper and lower 95% confidence limits.
2. Whole body contact recreation (WBC) - Activities involving direct human contact with waters of the state to the point of complete body submergence. The water may be ingested accidentally and certain sensitive body organs, such as the eyes, ears, and the nose, will be exposed to the water. Although the water may be ingested accidentally, it is not intended to be used as a potable supply unless acceptable treatment is applied. Waters so designated are intended to be used for swimming, water skiing, or skin diving.
  - a. (I) Category A (WBC-A) - This category applies to waters that have been established by the property owner as public swimming areas welcoming access by the public for swimming purposes and waters with documented existing whole body contact recreational use(s) by the public. Examples of this category include, but are not limited to: public swimming beaches and property where whole body

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contact recreational activity is open to and accessible by the public through law or written permission of the landowner.

- b. Category B (WBC-B) - This category applies to waters designated for whole body contact recreation not contained within category A.
3. Secondary contact recreation (SCR) - Uses include fishing, wading, commercial and recreational boating, any limited contact incidental to shoreline activities, and activities in which users do not swim or float in the water. These recreational activities may result in contact with the water that is either incidental or accidental and the probability of ingesting appreciable quantities of water is minimal.