

# EnviroMatrix Analytical, Inc.

## Microbiology Technical Fact Sheet

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EMA's Microbiology Department offers the following microbiological tests:

- Total and Fecal Coliforms by SMEWW 9221 B, E
- Total Coliforms and E. Coli by Colilert® (SMEWW 9223)
- Fecal Streptococcus and Enterococcus Groups by SMEWW 9230 B and Enterococcus by Enterolert®-IDEXX
- Heterotrophic Plate Count by SMEWW 9215 B

The coliform group consists of several genera of bacteria belonging to the family Enterobacteriaceae. Fecal coliforms are classified as coliform bacteria derived from the gut and feces of warm-blooded animals. This differentiation can yield valuable information concerning the possible sources of pollution in water.

### **Total and Fecal Coliforms by SMEWW 9221:**

This method is applicable to drinking water, surface water, and wastewater. Results are reported as a most probable number (MPN) index per 100 ml of sample. This method permits appraising the sanitary quality of water and the effectiveness of treatment processes.

### **Total Coliforms and E. Coli by Colilert:**

- A qualitative presence/absence test recommended for drinking water or clean source water. Results are reported as either Presence or Absence for total coliform and escherichia coli (E. Coli) only. E. Coli is usually found in fresh pollution from warm-blooded animals. Fecal coliforms are not reported using this method.
- A quantitative test (enumeration) for drinking water or clean source water where results are reported as MPN per 100 mL of sample.

### **Fecal Streptococcus and Enterococcus Groups**

**by SMEWW 9230:** This method is applicable primarily to raw and chlorinated wastewater and sediments, and can be used for fresh and marine waters. The results are reported as a most probable number (MPN) index per 100 ml of sample. The normal habitat of fecal streptococci is the gastrointestinal tract of warm-blooded animals. Studies at marine and fresh water bathing beaches indicated that swimming associated gastroenteritis is directly related to the presence of enterococci bacteria. For recreational fresh waters the EPA guidelines are 33 enterococci/100 ml. For marine waters the EPA guidelines are 35 enterococci/100 ml.

### **Heterotrophic Plate Count by SMEWW 9215:**

The heterotrophic plate count (HPC) provides an approximate enumeration of total numbers of viable bacteria that may yield useful information about water quality. It may also provide supporting data on the significance of coliform test results. HPC is primarily used to judge the efficiency of various treatment processes and may have significant application as an in-plant control test. Results are reported as estimated colony forming units (CFUs) per milliliter.

### **\*\*\* Sampling Considerations \*\*\***

Microbiology samples should be analyzed as soon as possible after sample collection. From sample collection to delivery at the lab the hold time should not exceed 6 hours for wastewater, source water, and recreational water (up to 30 hours for drinking waters). HPC has a max hold time of 8 hours. All samples should be stored on ice < 10°C.

EnviroMatrix Analytical, Inc. provides sample containers and a courier service to our clients. To order a sample kit or schedule a pick-up of samples please call our Field Chemist at (858) 232-2703 or our Project Manager at (858) 560-7717.