

6.10 PROTOCOL FOR MICROBIAL SOURCE TRACKING

Overview

Microbial source tracking is a specialized area of determining the source of bacteriological contamination. Numerous approaches have been used to determine potential sources of fecal contamination and these methods are at various stages of development and validation. One method cannot answer all questions and it is likely that this will not change in the near future. This protocol focuses on collection of samples for microbial source tracking (MST). Methods for MST analysis are dynamic with a number of new approaches being developed such as gene chips with toxin genes and/or fecal indicator sequences, and biosensors for the detection of target organisms. Methods currently used for MST fall into two broad categories, genotypic versus phenotypic analysis of either cultivated target organisms, or cultivation-independent approaches by direct analysis of samples from the environment.

Sources

US EPA (2005)

At a glance

*collect
source
library with
samples*

- 1** Composite samples are preferred to grab samples in order to include more of the entire cross-sectional area or volume of the sampled water body.
- 2** Taking several replicate samples or compositing samples over time helps to even out short-term variability.
- 3** The existence of transient animal populations implies that the known-source library may not be useful in all seasons. This stresses the need that the known-source library should be collected concurrently with water samples. Different sources of fecal contamination could be expected in storm flow from base flow.
- 4** Collect a sample of water at the desired depth with a depth sampler using precautions to minimize contamination.
- 5** Do not rinse the bottle or touch the inside of the bottle or cap, and always hold bottle upright and by the base. Keep sample bottle closed until needed.
- 6** Fill the sample bottle as requested by the laboratory and immediately cap the bottle securely.