



# Sewage Contamination in Buildings Sampling Guide



- Methods available to test for sewage contamination in buildings include:
  - M117 – a culture-based method detecting Total Coliforms, *E. coli*, and Enterococci (48 hr TAT)
  - M013 – a culture-based method detecting Total Coliforms, Fecal Coliforms, *E. coli*, and Fecal *Streptococcus* (6-10 day TAT)
  - M095 – a new PCR-based method detecting Total *Bacteroides* (24 hr TAT available)
  - M199 – a new PCR-based method detecting Human *Bacteroides* (24 hr TAT available)
- The culture-based methods have the advantage of looking for only living bacterial contaminants which may be the only ones of interest if disease is of concern. Endotoxin testing can also be of value to measure the total amount of Gram negative bacteria in the building.
- The *Bacteroides* test has some advantages over the traditional culture-based tests including:
  - Total *Bacteroides* test is specific for fecal contamination from all sources – animals, birds, and human
  - Human *Bacteroides* test is specific for human fecal contamination only and therefore suitable for detecting sewer overflows
  - Coliforms, *E. coli*, Fecal Streptococci, and Enterococci can grow in water, soil, sediments and on vegetation in uncontaminated environments (*E. coli* is found in pristine tropical environments).
  - ***Bacteroides* will not multiply in the environment.**
  - *Bacteroides* outnumber coliforms by 1,000:1 and outnumber *E. coli* by 10,000:1; therefore, the chance of finding *Bacteroides* is greatly enhanced.
  - Traditional culture-based tests rely on the presence of live bacteria. These bacteria often will not be viable in indoor environments. **THIS MEANS THAT A NEGATIVE COLIFORM or *E. COLI* RESULT DOES NOT MEAN THE ABSENCE OF FECAL CONTAMINATION.** The new *Bacteroides* test overcomes these culture limitations. The laboratory can detect live, nonviable, or viable but not culturable bacteria.

## Sampling Procedure for all Sewage Contamination Tests

1. Obtain a sterile 1 mL Butterfield's Solution swab (EMSL Product ID 8708935) to collect and transport samples (provided at your request by EMSL).
2. With gloves on, remove swab from sterile packaging.
3. Carefully unscrew cap of sampling device – swab is attached to the lid of the cap.
4. Gently press out excess solution from sampling swab by pressing the swab against the inside wall of the tube with a rolling motion.
5. Hold swab at an approximate 30° angle from the sampling surface, taking care not to contaminate any part of the swab or the sampling site.
6. Using firm, even pressure move the swab slowly and thoroughly over an entire 4" x 4" sampling area, rewetting the swab tip with the Neutralizing Solution as needed. First horizontally, then vertically:
7. After sampling is complete, carefully put swab back into vial and close cap tight.
8. Label the sample using a permanent ink marker.
9. Background samples in non-fecally contaminated areas should be taken.

## Sample Shipping

- Samples that will be submitted for culture-based analysis must be shipped overnight cold, not frozen, within 24 hours from the sample collection. The best method of shipment for these samples is to use a cooler with freezer packs, not bags of ice or loose ice.
- There are no special shipping requirements or hold times for *Bacteroides* since they will not multiply outside of the intestine. However, do not store sample longer than a month before analysis.