

The state-of-the-science workshop: **Fecal Source Identification and Associated Risk Assessment Tools**, was held on November 28-29, 2012, at the Southern California Coastal Water Research Project (SCCWRP) Authority, 3535 Harbor Blvd., Costa Mesa, CA 92626

The workshop summarized and encouraged audience discussion about the state of knowledge regarding: 1) How accurate are present techniques for determining whether the fecal signature at a beach is human or non-human in origin, 2) What are the relative health risks associated between human and non-human fecal sources, and 3) What is the level of scientific uncertainty in using this information in a management context. The workshop also served to identify the research most needed to enhance the scientific foundation for each of these questions.

This workshop was intended for California's Beach Water Quality Working Group and the California Clean Beach Task Force. Other individuals interested in the science associated with beach management were welcome on a space-available basis, and there were over 100 participants at the workshop.

There were four sessions over the course of two days, each lasting three hours. The first two sessions addressed the scientific foundation for determining and interpreting sources of fecal contamination. The remaining two sessions addressed scientific uncertainties associated with potential evaluation at beaches with non-human sources. Half the time in each session was allocated to hearing talks by national experts who provided the latest scientific information on the topic. The expert's presentations are available as pdf files. The second half of each session was devoted to a panel discussion where the experts addressed a set of predefined questions (identified in the agenda), as well as those provided by the audience.

The presentations in each session generated many questions, leading to lively panel discussions that only ended when the time allocated to each session was over. The nature of the discussions can be summarized in a few major points as follows:

There was widespread recognition that the field of source identification is still evolving rapidly and that associated evaluation tools are in their infancy. There will be many new and novel advances in the field of source tracking over the next several years.

Experts from the USEPA explained how fecal source identification abilities have spurred development of new risk evaluation tools such as quantitative microbial risk assessment (QMRA) and natural source exclusion (NSE), that are becoming part of the regulatory framework.

Questions about using QMRA and NSE indicated that much research is still needed before these risk assessment tools can be fully utilized. Major knowledge gaps include pathogenicity of microorganisms, especially from non-human hosts, and survival and detection of appropriate pathogens under different environmental conditions over time.

Lastly, much discussion indicated that there is great need for a research study to address the persistence and degradation of source-associated markers from various hosts and fecal indicator bacteria over time in different matrices under a wide range of environmental conditions.