

Six Key Steps to Developing and Using Predictive Tools at Your Beach

Summary

EPA has published the document, *Six Key Steps to Developing and Using Predictive Tools at Your Beach*, to provide a simple, straightforward approach on how to develop a predictive tool (i.e., model) for beach water quality. EPA developed this guidance to promote use of predictive tools in state beach programs and encourage beach managers to investigate whether a predictive tool would be an appropriate and cost-effective addition to their beach monitoring and notification programs to improve public health protection. Predictive tools enhance current monitoring techniques by anticipating when water quality conditions might worsen.

Background

States, territories, tribes, and local jurisdictions monitor coastal recreation waters to determine if people swimming and playing in these waters are safe from exposure to fecal contamination. The culture-based test method that is currently widely used for assessing water quality conditions at beaches results in delays in notifying the public of water quality problems. This “persistence model” assumes that fecal indicator bacteria densities do not change—they persist—between the time a water sample is taken and the laboratory results are known. Predictive models can be used to supplement such monitoring and can help anticipate problems due to changing conditions and enable prompt public notification.

In our *National Beach Guidance and Required Performance Criteria for Grants, 2014 Edition*, EPA

encourages states, territories, and tribes to use predictive tools to make timely beach advisory decisions and issue same-day public notifications. Performance Criteria 2 requires development of a tiered monitoring plan that can adapt to changing conditions and adequately protect public health. States, territories, and tribes are required to consider the use of predictive tools in developing a tiered monitoring plan under Performance Criteria 2. This guidance will help them with that consideration.

What’s involved in developing and using predictive tools at beaches?

This guidance describes six key steps that beach programs could take to develop and use predictive tools at their beaches. The guidance was informed by the experiences of several beach managers who have developed and/or are using predictive models at their beaches, and the Texas Beach Watch program pilot-tested it.

Step 1 involves evaluating whether you need a model, if your beach is a good candidate for a model, and if you have the data and resources to develop the model. It is the “Go – No Go” step of the process.

Once a beach program has determined that a predictive tool is appropriate for their beach, the remaining steps support the development, evaluation and implementation of the tool.

Step 2 involves identifying candidate independent variables and collecting high quality data for those variables.

Step 3 involves exploring the relationship between independent variables identified in Step 2 and fecal indicator bacteria density.

Step 4 involves the development and testing of the model.

Step 5 provides factors to consider when deciding whether to integrate the model into your beach monitoring and notification program.

Step 6 recommends developing a plan for evaluating the model over time to ensure that it is performing well.

What are the benefits of using predictive tools at beaches?

Predictive tools are a means to provide rapid estimates of beach water quality conditions in the absence of water sampling results. They can be used to supplement, not replace, monitoring and are an improvement to the current approach (i.e., persistence model) used by states, territories and tribes.

Predictive tools offer states, territories and tribes the potential for same day notification and public health protection for considerably less than other rapid methods.

Where can I find more information?

For more information about the modeling guidance, please contact Samantha Fontenelle at fontenelle.samantha@epa.gov.

To view the guidance and other information about predictive models visit the EPA Beaches website at: <http://www.epa.gov/beach-tech/models-predicting-beach-water-quality>.

For general information about beaches visit the EPA Beaches website at: <http://www.epa.gov/beaches>.

For more detailed technical information visit the EPA Beaches website at: <http://www.epa.gov/beach-tech/>.

To find state and local government or EPA Regional beach program contacts visit the EPA Beaches website at: <http://www.epa.gov/beaches/state-and-local-beach-programs>.
