



INTERSTATE COMMISSION ON THE POTOMAC RIVER BASIN

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Enhanced River Spill Model Provides Protection

Past events have increased the focus on the security of all aspects of our infrastructure, including public water supplies. The Interstate Commission on the Potomac River Basin's (ICPRB) recently enhanced Toxic Spill Model, is an important tool in protecting a number of public water supplies along the Potomac from an upstream contamination threat.

The model tracks the movement of spills along the Potomac from Cumberland, Md. To Little Falls, upstream of Washington, and several major tributaries. It provides timely information to water utilities along the river so they can protect area water supplies. The spill model provides estimates of travel times from the site of the spill to utility intakes on the river, including estimates of the leading edge of the spill, its maximum concentration, and the trailing edge.

While the model has served as a useful tool, most recently used in 2002, when a Hagerstown, Md., wastewater treatment plant failed and discharged raw sewage into a Potomac tributary, recent enhancements allow for greater accuracy and modeling of a wider range of substances.



Oil, sewage, and other types of spills can contaminate water needed by the Washington metropolitan area.

“The revised model has a completely new code, which added graphical output, an enhanced ability to model sewage spills, the ability to estimate concentrations of non-conservative substances, such as pathogens or volatile material, and can rapidly evaluate different spill scenarios,” said Carlton Haywood, associate director of ICPRB’s Water Quality Section, who engineered the new features.

The previous version assumed that the spilled substance would not evaporate over time, and was completely dissolved in the water, which allowed for a simpler model. The enhanced model allows greater accuracy with substances such as solvents that evaporate over time, or for the longevity of bacteria in sewage spills. These concerns are addressed in the enhanced model.

“The spill model provides 24-hour emergency response support, which gives the suppliers some advance notification of when a spill might arrive at the intakes. This information can be used to develop monitoring strategies in the river, so that the suppliers can track the location of the spill in the river as it makes its way downstream. The information can also be used to develop strategies for water supply management in the event that a spill were to temporarily shut down a water supply intake,” said Erik Hagen, deputy director of the ICPRB Section for Cooperative Water Supply Operations on the Potomac.

“The ICPRB toxic spill model gives us information in a timely manner so that we can begin taking steps while monitoring the situation,” said Jeanne Bailey of the Fairfax County Water Authority’s Public Information Office. “After receiving the information that the model gives us, we would immediately notify our operations staff and implement this data into our strategic planning.”

The strategic planning depends on the type of spill that has occurred. “Depending on the travel time and concentration of a particular spill, we may boost production until the spill reaches us, if we thought we would have to go offline,” said Karen Wright an engineer with the Washington Suburban Sanitary Commission. “The most important factor is media notice. The model would give us time to inform our customers of the problem and to be able to tell them what action to take to conserve water. Depending on the spill, we may have to alter our treatment process.”

The Toxic Spill Model was developed based on dye studies conducted in the river by the U.S. Geological Survey. In that study, a fluorescent dye was put into the river and its downstream travel monitored. Continuing enhancements to the spill model provide increased protection for the water supplies of the metropolitan area.

Created with an interstate compact by an Act of Congress in 1940, the Interstate Commission on the Potomac River Basin (ICPRB) is composed of commissioners representing the federal government, the states of Maryland, Pennsylvania, Virginia, West Virginia, and the District of Columbia. The ICPRB mission is to enhance, protect, and conserve the water and associated land resources of the Potomac River basin and its tributaries through regional and interstate cooperation.

ICPRB accomplishes this mission through a variety of actions to conduct, coordinate, and cooperate in studies and programs in the areas of water quality, water supply, living resources, and land resources. The Section for Cooperative Water Supply Operations on the Potomac River (CO-OP), a special section of the Commission, was created as a technical operations center for management and coordination among the regional water utilities to avoid water supply shortages in Metropolitan Washington during droughts.

For additional information contact the Interstate Commission on the Potomac River Basin at 301-984-1908, or visit our website at <http://www.potomacriver.org>