

Human Health and Exposure Assessment

The relationship between surface water quality, the associated quality of resident fish and other edible aquatic life, and the health of the human population utilizing these natural resources are subjects of substantial public concern. In the Ohio Valley, such concerns are understandable and justified given the dependency of 13 million citizens on its streams for drinking water and the current and fast rising utilization for boating, swimming and sport fishing. Moreover, risks to the public health have been recognized by agencies of government to the extent advisories have been issued against swimming (due to bacterial levels) and fish consumption (due to the presence of contaminants in tissue).

The underlying science necessary to a working understanding of risk is multi-disciplinary in nature and thus highly complex. Aggressive national and regional programs have been established to perform an array of investigations of the Great Lakes and estuaries but no similar program has materialized for the Ohio Valley. As the national environmental laws are updated to address emerging concerns (ex., Safe Drinking Water Act), the “science deficit” in the Ohio Valley will be exacerbated resulting in an increase in another type of risk—the risk of decision making based on knowledge not reflecting the unique dimensions of the Valley and how its citizens interact with its water resources.

Examples of Research Needs:

Exposure Assessment

- Effects of human exposure to low levels of chemical contaminants to determine the current status of water quality and health risk
- Quantification of persistence, dose and conditions of human exposure to waterborne pathogens which produce effects
- Nature and extent of occupational exposure to low levels of waterborne contaminants, particularly from barge transportation

Health Effects and Response

- Development of models or modification of existing models concerning health effects and response to reflect societal activity in the Ohio Valley
- Investigation of chemical fate of single species