

Combined Sewer Overflows and the Multimetric Evaluation of Their Biological Effects: *Case Studies in Ohio and New York*

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Summary

A new document entitled *Combined Sewer Overflows and the Multimetric Evaluation of Their Biological Effects: Case Studies in Ohio and New York* is available from the U.S. Environmental Protection Agency. This document reports on a project undertaken to measure the biological effects of combined sewer overflows (CSOs). CSOs are discharges to surface waters of mixtures of untreated domestic sewage, industrial and commercial wastewaters and stormwater runoff. Concern has grown in recent years over the possible adverse ecological effects of CSOs.

Effects of CSO Discharges

Aquatic biological communities are exposed to many environmental stressors, which may include point and nonpoint source pollution and habitat alteration or destruction. How the biological communities respond to and integrate these impacts are often difficult to interpret. However, biological assessment methods exist which are designed to evaluate and characterize biological integrity and to identify possible causes of the biological impacts. One of these is an EPA method known as Rapid Bioassessment Protocols (RBPs). RBPs include standardized procedures to assess the biological status and habitat condition of streams, in comparison with minimally impacted streams of the same type. Habitat assessments are conducted to determine if habitat degradation is a cause of biological impairment, alone or in combination with water quality problems.

Case Studies

Two case studies were carried out in Ohio and New York, both of which have well-established biological monitoring and assessment programs and which use methods similar in approach to RBPs. The availability of historic data allowed comparison of results between studies. The report also explores whether changes in level of effort, such as smaller sample sizes or a lower level of detail in organism identification, affect assessment results.

This document is intended to provide information on potential applications of RBPs and biological assessments. The document is aimed at State and local biologists and managers looking for tools to assess the biological effects of CSOs and to help prioritize limited resources. Biological assessments have applications in other watershed protection approaches such as stormwater monitoring, development of biological criteria, the Total Maximum Daily Load (TMDL) process, and waterbody status reports. Biological assessments are useful screen tools for identifying and prioritizing impaired waters. Depending upon how much data are available, biological assessments may provide an indication of causal relationships between biological impairment and specific environmental stresses, such as habitat degradation, toxic loading, and organic enrichment. Finally, they may be useful in assessing how effective pollution control measures are in protecting aquatic life and biological integrity.

Additional Information

Requests for this document should be sent to the U. S. Environmental Protection Agency, National Center for Environmental Publications and Information, 11029 Denwick Road, Building 5 Cincinnati,

Ohio 45242 (513-489-8190), or by e-mail (Waterpubs@epamail.epa.gov). Please refer to the EPA document number (EPA 823-R-96-002). For more information call Marjorie Coombs at 202-260-9821 (or via the Internet: coombs.marjorie@epamail.epa.gov).

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