



Massachusetts
Department
of
ENVIRONMENTAL
PROTECTION

technical update

Assessment Endpoints for Benthic Invertebrates

Interim Technical Update

Valid through 2006

Update to: Section 9.3.2.1 of *Guidance for Disposal Site Risk Characterization – In Support of the Massachusetts Contingency Plan* (1996)

Introduction

ORS has adopted the practice of publishing “Technical Updates” as a way of revising specific parts of the *Guidance for Disposal Site Risk Characterization* (DEP 1996). This Technical Update supersedes Section 9.3.2.1 of the 1996 guidance. It advocates evaluating the risk of harm to benthic invertebrates through the formulation of a benthic invertebrate assessment endpoint in any risk assessment involving contaminated sediment in a freshwater system.

EPA has defined assessment endpoints as “specific entities and their attributes that are at risk and that are expressions of a management goal” (EPA 2003). In the 1996 *Guidance for Site Risk Characterization*, MassDEP defined assessment endpoints as “specific effects that will be evaluated in the risk assessment” and recommended describing an assessment endpoint as an effect on a receptor. Regardless of how assessment endpoints are formulated, they should represent the entities to be evaluated in the risk assessment and protected by risk management decisions.

Recommended Guideline

When a site includes a potentially significant freshwater pathway, the risk assessment should formulate and evaluate an assessment endpoint focusing on the direct effects of contamination on benthic invertebrates and their habitat. The risk assessment may also evaluate indirect effects of sediment contamination on predators due to a depletion of their invertebrate prey base. MassDEP does not consider such an evaluation of indirect effects on predators sufficient to address the effects of contaminants on the invertebrate community.

MassDEP recommends the assessment endpoint “survival, fecundity and growth of invertebrates” for MCP risk assessments that evaluate the risk of harm to the environment from exposure to sediment contamination. This is an organism-level assessment endpoint consistent with that offered in EPA’s *Generic Ecological Assessment Endpoints (GEAEs) for Ecological Risk Assessment* (EPA 2003). The formulation of assessment endpoints for evaluating the effects of sediment contamination on benthic invertebrates is discussed in more detail in a separate MassDEP Technical Update titled *Assessing Risk of Harm to Benthic Invertebrates*.

This guideline supersedes the language in Section 9.3.2.1 of the *Guidance for Disposal Site Risk Characterization*, where the sub-section titled “Identification of Assessment Endpoints” encourages risk assessors to focus on the adequacy of the prey-base function of invertebrates, rather than on the invertebrate habitat or community itself.

Questions about this document should be directed to:

Nancy Bettinger at (617)556-1159 or nancy.bettinger@state.ma.us

Thomas Angus at (617)292-5513 or thomas.angus@state.ma.us

References:

EPA 2003. *Generic Ecological Assessment Endpoints (GAEs) for Ecological Risk Assessment*. Risk Assessment Forum, U.S. Environmental Protection Agency, Washington D.C. EPA/30/P-02/004F. October 2003.

DEP 1996. *Guidance for Disposal Site Risk Characterization in Support of the Massachusetts Contingency Plan*. Chapter 9, Method 3 Environmental Risk Characterization.

Massachusetts Department of
Environmental Protection
One Winter Street
Boston, MA 02108-4746

Commonwealth of
Massachusetts
Mitt Romney
Governor

Executive Office of
Environmental Affairs
Stephen R. Pritchard
Secretary

Department of
Environmental Protection
Robert W. Gollege, Jr.
Commissioner

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