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Standard Guide for Risk-Based Corrective Action for Protection of Ecological Resources¹

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INTRODUCTION

This guide for risk-based corrective action for the protection of ecological resources (Eco-RBCA) provides a flexible framework for a tiered approach to ecological risk assessment (ERA) and risk management decision-making at chemical release sites. The framework of the Eco-RBCA guide parallels the framework in Guide E2081 with respect to the tiered approach for data gathering, evaluation and decision-making, and should, when possible, be conducted concurrent with the broader RBCA process activities. The Eco-RBCA guide directs the user to Guide E2081 for development and implementation of a corrective action program. This guide supplements Guide E2081 and was developed after careful consideration of the peer-reviewed published literature and existing federal, regional, and state ecological risk-assessment guidance. The user of this guide, as defined in 3.1.45, needs to be familiar with Guide E2081 and the overall RBCA process. The RBCA process provides a flexible, technically defensible framework for corrective action that has applicability to a wide range of sites and chemicals of concern.

ASTM guides are not federal or state regulations; rather, they are consensus standards that can be followed voluntarily. It is not within the scope of this standard to provide the details of specific regulatory requirements. Collectively, the Eco-RBCA and RBCA guides provide an integrated framework to corrective action. Eco-RBCA is intended to complement rather than replace the decision-making structures of regulatory programs. In addition, Eco-RBCA is intended to provide a framework for sites not covered under regulatory programs, for sites under regulatory programs that lack guidance, or for sites under programs with guidance that lack detail. Eco-RBCA may also provide a useful framework to help merge an approach when multiple regulatory programs apply. Even when a site is not currently governed by a regulatory program, consultation with the appropriate regulatory agency(ies) will ensure regulatory compliance and provide technical guidance.

The Eco-RBCA process is intended to accommodate a diversity of sites and conditions by providing a framework that can address site-specific needs. The appendixes provide useful technical details and case study examples, although the application of this guide does not require their use. Eco-RBCA is a process for evaluating ecological risk and decision making. To facilitate the implementation of Eco-RBCA, the framework is organized into ten steps and three risk assessment tiers that begin with relatively simple analyses and progress to more complex assessments as site conditions warrant (see Fig. 1). Although organized into steps and tiers, the user should recognize that Eco-RBCA progresses conceptually in a linear manner, but may not be implemented in a linear manner. The objective should be to conduct the evaluation in the manner that most appropriately meets the needs and goals of the assessment. Each tier includes five types of activities that increase in complexity and level of effort as the evaluation progresses through the RBCA process. These activities are (1) planning and scoping, (2) data and information acquisition, (3) analysis and evaluation, (4) decision making, and (5) remedial actions. The details of the activities and how they are implemented can vary, depending on the nature and complexity of the site and the tier level. Early in the Eco-RBCA process, assumptions are biased toward being overly protective (that is, “conservative”) because of uncertainties inherent in non-site-specific data. Typically, as the site progresses through the tiered evaluation, more site-specific information is collected and uncertainty decreases; therefore, less-conservative assumptions can be used in the evaluation.

NOTE 1—This is a consequence of the screening process since the primary purpose is to quickly refine the lists of chemicals of concern to understand which ones are the primary risk drivers. Commensurate with this reduced

uncertainty, the user can employ more site-specific and less conservative estimates and assumptions of exposure and effects due to refinement of the list of chemicals of concern. As understanding of site conditions improves, confidence in the conclusions and decision should also increase. The progression of the evaluation through the tiered process is accompanied by an increasing degree of formalization that could include the documentation of a screening-level assessment or the use of formal ecological risk assessment (ERA) methods. The manner in which uncertainty, conservatism, data quality, and other technical aspects are addressed is by technical policy decisions.

Technical policy decisions (TPDs) are an important part of the Eco-RBCA process, and while it is not within the scope of this standard to identify the TPDs appropriate for a specific site, [Appendix X2](#) and [Guide E2081](#) provide additional insight into their identification, understanding, and development. Technical policy decisions generally fall into three categories: (1) those that are identified as existing prior to the Eco-RBCA assessment and will not change (that is, prescribed and without flexibility such as regulations or policy), (2) those that are identified as existing prior to the Eco-RBCA assessment but may change or be modified based on site-specific information (for example, sampling protocols, selection of fate and transport models or other tools, data quality objectives, or corrective-action goals), and (3) those that are developed specifically for the Eco-RBCA assessment (for example, development of a site-specific model). Technical policy decisions are typically identified, negotiated (if appropriate), and documented in the initial site assessment (see [7.1](#)). It is the responsibility of the user of the Eco-RBCA guide to identify and consider the TPDs and appropriate stakeholders for a site. These TPDs may need to be reevaluated each time the Eco-RBCA evaluation proceeds through an iteration or progresses to a new tier. Both the RBCA and Eco-RBCA processes encourage user-led initiatives and appropriate stakeholder involvement in identifying TPDs and developing the Eco-RBCA program. Laws and regulations may require coordination with federal, state, and natural resource trustees.

This guide serves to complement existing guidance for hazardous-waste sites and facilities and to provide guidance for sites not under regulatory programs. This guide does not substitute for applicable federal, regional, state, local, or other regulatory requirements. This guide is not a regulation itself and may not apply to a particular situation, based on the circumstances.

This guide is not intended to replace professional judgment or to recommend a specific course of action. All aspects of this guide might not be applicable in all circumstances. This guide is not intended to represent or replace the standard of care by which the adequacy of a given professional service is judged, nor should this document be applied without consideration of a project's many unique aspects. The word "Standard" in the title of this document means only that the document has been approved through the ASTM consensus process.

¹ This guide is under the jurisdiction of ASTM Committee [E50](#) on Environmental Assessment, Risk Management and Corrective Action and is the direct responsibility of Subcommittee [E50.04](#) on Corrective Action.

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