



Standard Guide for Estimating Wildlife Exposure Using Measures of Habitat Quality¹

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1. Scope

1.1 Ecological Risk Assessments (EcoRAs) typically focus on valued wildlife populations. Regulatory authority for conducting EcoRAs derives from various federal laws [for example, Comprehensive Environmental Response, Compensation and Liability Act 1981, (CERCLA), Resource Conservation and Recovery Act (RCRA), and Federal Insecticide, Fungicide, and Rodenticide Act, (FIFRA)]. Certain procedures for conducting EcoRAs (**1-4**)² have been standardized [**E1689-95**(2003) Standard Guide for Developing Conceptual Site Models for Contaminated Sites; **E1848-96**(2003) Standard Guide for Selecting and Using Ecological Endpoints for Contaminated Sites; **E2020-99a** Standard Guide for Data and Information Options for Conducting an Ecological Risk Assessment at Contaminated Sites; **E2205/E2205M-02** Standard Guide for Risk-Based Corrective Action for Protection of Ecological resources; **E1739-95**(2002) Standard Guide for Risk-Based Corrective Action Applied at Petroleum Release Sites]. Specialized cases for reporting data have also been standardized [**E1849-96**(2002) Standard Guide for Fish and Wildlife Incident Monitoring and Reporting] as have sampling procedures to characterize vegetation [**E1923-97**(2003) Standard Guide for Sampling Terrestrial and Wetlands Vegetation].

1.2 Most states have enacted laws modeled after the federal acts and follow similar procedures. Typically, estimates of likely exposure levels to constituents of potential concern (CoPC) are compared to toxicity benchmark values or concentration-response profiles to establish the magnitude of risk posed by the CoPC and to inform risk managers considering potential mitigation/remediation options. The likelihood of exposure is influenced greatly by the foraging behavior and residence time of the animals of interest in the areas containing significant concentrations of the CoPC. Foraging behavior and residence time of the animals are related to landscape features

(vegetation and physiognomy) that comprise suitable habitat for the species. This guide presents a framework for incorporating habitat quality into the calculation of exposure levels for use in EcoRAs.

1.3 This guide is intended only as a framework for using measures of habitat quality in species specific habitat suitability models to assist with the calculation of exposure levels in EcoRA. Information from published Habitat Suitability Index (HSI) models (**5**) is used in this guide. The user should become familiar with the strengths and limitations of any particular HSI model used in order to characterize uncertainty in the exposure assessment (**5-7**). For species that do not have published habitat suitability models, the user may elect to develop broad categorical descriptions of habitat quality for use in estimating exposure.

2. Referenced Documents

2.1 ASTM Standards:³

- E1689** Guide for Developing Conceptual Site Models for Contaminated Sites
- E1739** Guide for Risk-Based Corrective Action Applied at Petroleum Release Sites
- E1848** Guide for Selecting and Using Ecological Endpoints for Contaminated Sites
- E1849** Guide for Fish and Wildlife Incident Monitoring and Reporting
- E1923** Guide for Sampling Terrestrial and Wetlands Vegetation (Withdrawn 2013)⁴
- E2020** Guide for Data and Information Options for Conducting an Ecological Risk Assessment at Contaminated Sites
- E2205/E2205M** Guide for Risk-Based Corrective Action for Protection of Ecological Resources

3. Terminology

3.1 The words “must,” “should,” “may,” “can,” and “might” have specific meanings in this guide. “Must” is used to express

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² The boldface numbers in parentheses refer to the list of references at the end of this standard.

³ For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

⁴ The last approved version of this historical standard is referenced on www.astm.org.