



Standard Guide for Conducting Hazard Analysis-Critical Control Point (HACCP) Evaluations¹

This standard is issued under the fixed designation E2590; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reappraisal. A superscript epsilon (ε) indicates an editorial change since the last revision or reappraisal.

1. Scope

1.1 This guide describes a stepwise procedure for using existing information, and if available, supporting field and laboratory data concerning a process, materials, or products potentially linked to adverse effects likely to occur in the environment as a result of an event associated with a process such as the dispersal of a potentially invasive species or the release of material (for example, a chemical) or its derivative products to the environment. Hazard Analysis-Critical Control Point (HACCP) evaluations were historically linked to food safety (Hulebak and Schlosser W. 2002 **(1)**;² Mortimer and Wallace 2013 **(2)**), but the process has increasingly found application in planning processes such as those occurring in health sciences ; Quattrin et al. 2008 **(3)**; Hjarno et al. 2007 **(4)**; Griffith 2006 **(5)** or; Noordhuizen and Welpelo 1996 **(6)**), in natural resource management (US Forest Service 2014 a,b,c **(7, 8, 9)**, (US EPA, 2006 **(10)**); see also

<http://www.fws.gov/fisheries/ans/ANS-HACCP.html>; <http://www.haccp-nrm.org/>; or http://www.waterboards.ca.gov/water_issues/programs/swamp/ais/prevention_planning.shtml (last accessed June 16, 2014)

or in supporting field operations wherein worker health and natural resource management issues intersect (see, for example,

<http://www.haccp-nrm.org/plans/nm/negrito.pdf> related to field operations occurring in areas associated with incidence of hantavirus; (last accessed June 15, 2014)

1.2 HACCP evaluation is a simple linear process or a network of linear processes that represents the structure of any event; the hazard analysis (HA) depends on the data quality and data quantity available for the evaluation process, especially as that relates to critical control points (CCPs) characterized in completing HACCP. Control measures target CCPs and serve as limiting factors or control steps in a process that reduce or eliminate the hazards that initiated the HACCP

evaluation. The main reason for implementing HACCP is to prevent problems associated with a specific process, practice, material, or product.

1.3 This guide assumes that the reader is knowledgeable in specific resource management or engineering practices used as part of the HACCP process. A list of general references is provided for HACCP and implementation of HACCP and similar methods, as those apply to environmental hazard evaluation, natural resource management, and environmental engineering practices **(11-26)**.

1.4 This guide does not describe or reference detailed procedures for specific applications of HACCP, but describes how existing information or other empirical data should be used when assessing the hazards and identifying CCPs potentially of use in minimizing or eliminating specific hazards. Specific applications of HACCP evaluation are included as annexes to this guide, which include implementation of HACCP in resource management practices related to control and mitigation of invasive species or disease agents primarily of concern for managing fish and wildlife.

1.5 HACCP evaluation has a well developed literature in, for example, food science and technology, and in engineering applications (see, for example, **(11, 12, 13, 15, 17)**). As a resource management tool, HACCP is relatively recent in application to the analysis of hazards to aquatic, wetland, and terrestrial habitats and the organisms occupying those habitats. (see, for example, US Forest Service 2014 a,b,c **(7, 8, 9)**; see also <http://www.haccp-nrm.org/> last accessed June 16, 2014). Most of the guidance provided herein is qualitative rather than quantitative, although quantitative methods should be applied to any hazard analysis when possible. Uncertainties associated with the analysis should also be characterized and incorporated into the HACCP evaluation when possible (see, for example, **(11, 27-38)**).

1.6 This standard provides guidance for assessing hazard within a generalized framework that may be extended to specific environmental settings, such as that detailed in **E1023** for aquatic habitats (Guide for Assessing the Hazard of a Material to Aquatic Organisms and Their Uses). This standard

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 **E50.47** on Biological Effects and Environmental Fate.

Current edition approved Jan. 1, 2015. Published April 2015. Originally approved in 2008. Last previous edition approved in 2009 as E2590-09. DOI: 10.1520/E2590-15.

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