



Standard Practice for Estimating the Environmental Load of Residential Wastewater¹

This standard is issued under the fixed designation E2717; 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 reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This practice provides a set of instructions for estimating the environmental load of residential water, as it is discharged from a residence. The environmental load is calculated based on the number and type of fixtures in the home, the common household chemicals used, and the number of people in the home. While the format is broadly applied internationally, the parameters stated herein reflect North American averages and would need to be modified if used elsewhere.

1.1.1 *Averages Method*—The Averages Method provides an estimate of the annual environmental load for the average U.S. single-family home based on 2000 U.S. Census and 2007 U.S. Census Data and U.S. EPA/625/R-00/008 characterization of residential wastewater flows.

1.1.2 *Unique Product Parameters Method*—The Unique Product Parameters Method provides an estimate of the annual environmental load, where the home/product parameter values are the same as those used for the Averages Method except for estimated amounts of chemical contaminants listed in [Table 1](#) or average total annual use of products as listed in [Table 1](#), or both.

1.1.3 *Adjusted Averages Method*—The Adjusted Averages Method provides an estimate of the annual environmental load, where home/product parameter values differ from those used for the Averages Method, except that chemical contaminants associated with products do not vary. ([Table 1](#) remains the same for: Typical Water Contaminants, Estimated Amount of Contaminant in Product (%), and the Percent Waste.)

1.1.4 *Additional/Alternative Chemicals Method*—The Additional/Alternative Chemicals Method provides an estimate of the annual environmental load, of chemicals used that are not listed in [Table 1](#).

1.1.5 The Unique Product Parameters Method, Adjusted Averages Method, and Additional Chemicals Method may be used in combination with each other.

1.2 Instructions are provided for a single-family home. Estimates may be expanded to an aggregate number of single-family homes by assuming an average home size and multiplying by the number of homes. Estimates may be adapted to multi-unit residential buildings by factoring the home parameters for size, occupancy, and fixtures as necessary.

1.3 For the purpose of this practice, *environmental load* refers to chemical contaminants that may be dissolved or suspended in water.

1.3.1 Estimates of environmental load do not include organic matter common for urine, feces, and vomit.

1.3.2 Estimates of environmental load do not include bulk food waste such as kitchen scraps.

1.3.3 Estimates of environmental load do not include bulk cellulose waste such as toilet paper.

1.3.4 Actual environmental load may vary depending on types and amounts of chemicals used in a specific home and the number of people in the home.

1.4 The values stated in inch-pound units are to be regarded as standard. No other units of measurement are included in this standard.

1.5 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:²

¹ This practice is under the jurisdiction of ASTM Committee E60 on Sustainability and is the direct responsibility of Subcommittee E60.07 on Water Use and Conservation.

Current edition approved Jan. 1, 2011. Published January 2011. DOI: 10.1520/E2717-11.

² 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.