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StandardTerminology Relating to Biological Effects and Environmental Fate[1]

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1. Scope

1.1 This terminology document defines terms commonly used in standards developed by ASTM Committee E47 on Biological Effects and Environmental Fate. This terminology document is intended to be consistent with the use of terms in ASTM standards related to this field and, to the extent possible, with use by other organizations.

1.1.1 If a specific Committee E47 standard uses one of these terms in a different context, then the term must be defined in that standard. A term used only in a specific ASTM standard need not be included in this terminology document.

2. Terminology

2.1 *Definitions:*

acute test—a comparative study in which organisms, that are subjected to different treatments, are observed for a short period usually not constituting a substantial portion of their life span.

DISCUSSION—There is no specific test duration that represents a distinct boundary between acute and chronic test durations for any species. Although acute or chronic test procedures may specify standard duration(s), these durations have not been intended to define an acute:chronic boundary.

Acute tests often utilize mortality as the only measure of effect; chronic tests usually include additional measures of effect such as growth or reproduction.

attraction—a response towards or to facilitate contact with a material or condition.

avoidance—a response away from or to limit contact with a material or condition.

BAF (bioaccumulation factor), *n*—the quotient obtained by dividing the concentration of a substance in an organism (or specified tissue) by its concentration in a specified exposure medium, for example, air, food, sediment, soil, water, when several media are possible sources (see **bioaccumalation**).

behavior, *n*—observable, recordable, or measurable actions or activity of an organism.

DISCUSSION—This definition conveys the idea of motion whether motility is involved or not, and excludes physiological responses, death, and so forth, from the concept. It avoids the issue of internal versus external stimuli.

bioaccumulation—the net accumulation of a substance by an organism as a result of uptake from all environmental sources.

bioassay—an experiment that uses living whole organisms, tissues or cells to measure the presence, the concentration, or the relative potency of one or more chemicals.

DISCUSSION—A bioassay must include the appropriate controls(s). There is no intended stipulation of endpoint for such a test; the response may be positive of negative. This term defines a subset of the protocols (methods) referred by the term "biological assay" (Finney, 1947)

bioconcentration—the net accumulation of a substance by an aquatic organism as a result of uptake directly from aqueous solution.

biomagnification—the increase in tissue concentration of poorly depurated materials in organisms along a series of predator-prey associations, primarily through the mechanism of dietary accumulation.

biomarker, *n*—a biological measure (within organisms) of exposure to, effects of, or susceptibility to, environmental stress using molecular, genetic, biochemical, histological, or physiological techniques.

biomarker assay—an experiment that uses a molecular, genetic, biochemical, histological, anatomical, or physiological technique to assess exposure, response, or susceptibility of an organisms tissue or cells to environmental stress.

chronic test—a comparative study in which organisms that are subjected to different treatments are observed for a long period or a substantial portion of their life span.

DISCUSSION—There is no specific test duration that represents a distinct boundary between acute and chronic test durations for any species. Although acute or chronic test procedures may specify standard duration(s), these durations have not been intended to define an acute:chronic boundary.

Acute tests often utilize mortality as the only measure of effect; chronic tests usually include additional measures of effect such as growth or reproduction.

[1] This terminology 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.

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