Designation: E 555 – 95

Standard Practice for Determining Acute Oral LD50 for Testing Vertebrate Control Agents[1]

This standard is issued under the fixed designation E 555; 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.

INTRODUCTION

Vertebrate animal control as a science is very primitive, lacking many of the research tools and procedures which are well established in other biological areas. Indeed the field still remains more of an art or skill highly dependent upon field experience usually garnered by trial and error. This is particularly true in dealing with the higher forms that are neither domestic nor commensal. All are capable of elementary reason as well as learned behavioral patterns; thus pesticidal work with these forms has been very difficult and in some areas impossible to standardize. However, the committee recognizes that the effort to do so must be made both to improve the science related and to provide some reasonable safeguards for legitimate environmental concerns.

1. Scope

1.1 This practice covers the determination of acute oral LD50 for testing vertebrate control agents. Because the acute oral LD50 functions as a significant criterion for evaluation of vertebrate control agents, general guidelines for performing the tests have been stated. However, since specific modifications may be required for each biological group, this practice represents only a common denominator. Necessary modifications and additions will be cited in the appropriate test documents for each biological group.

2. Referenced Documents

2.1 *ASTM Standards:*

E 758 Test Method for Mammalian Acute Percutaneous Toxicity[2]

E 1055 Test Method for Evaluation of Eye Irritation in Albino Rabbits[2]

3. Statistics

3.1 Two acceptable procedures are described by (*a*) Litchfield and Wilcoxon (1949) **(1)**[3] where calculation of the LD10, LD90, and other LD levels is possible; and (*b*) Thompson (1947) **(2)**, and Thompson and Weil (1952) **(3)** where only the LD50 can be obtained. Other equally reliable methods may be used (Bliss, 1938 **(4)**; and Finney, 1971 **(5)**).

4. Dosage levels

4.1 Graduated dosages in mg of chemical per kg of body weight are used. The starting point should be selected arbitrarily by the investigator based on the available toxicological information concerning the chemical.

4.1.1 A constant geometric factor between doses is not necessary with procedure (*a*) **(1).** Bracketing the suspected LD50 is desirable so that all-effect and no-effect levels are included.

4.1.2 A constant geometric progression between doses must be used for procedure (*b*) **(2,3).**

5. Carrier

5.1 Distilled water should be the carrier of choice. Agents insoluble in water should either be suspended in a 0.5 % aqueous suspension of gum tragacanth or methyl cellulose, or should be dissolved or suspended in propylene glycol. Chemicals may also be administered in gelatin capsules.

6. Volume

6.1 A similar dosage volume per body weight relationship should be maintained for each species used.

6.1.1 The recommended dosage volume per body weight factor should be 0.1 ml/100 g to 1.0 ml/100 g.

6.1.2 The volume per weight relationship should never exceed 3 ml/100 g body weight under any circumstances.

7. Animal Type

7.1 All animals used in LD50 determinations shall be adults unless specified otherwise. Animals knowingly exposed to

[1] This practice is under the jurisdiction of ASTM Committee E-35 on Pesticides and is the direct responsibility of Subcommittee E35.17 on Vertebrate Control Agents.

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[2] *Annual Book of ASTM Standards*, Vol 11.05.

[3] Boldface numbers in parentheses refer to the list of references at the end of the standard.