Designation: D4131 – 19 (Reapproved 2024)

Standard Practice for Sampling Fish with Rotenone[1]

This standard is issued under the fixed designation D4131; 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 covers determination of the quantitative and qualitative species composition of fish in a specified area. The successful use of this technique is dependent on: (*1*) preventing fish from escaping the sample area and (*2*) retrieving all affected fish, which may take up to three days.

1.2 *Advantages:*

1.2.1 Easily detoxified.

1.2.2 All native freshwater fish are susceptible, but it has low toxicity to mammals and birds.

1.2.3 At low concentrations fish toxicity depends on species, age, and size.

1.2.4 The suffocating action is reversible.

1.3 *Limitations:*

1.3.1 It is less effective in cold (below 20 °C) and highly alkaline water.

1.3.2 Smaller fish and those without air bladders usually do not float.

1.3.3 Completely random selection of sample areas is not possible.

1.3.4 Overkill beyond sample area can sometimes occur.

1.3.5 Food web organisms may be eliminated.

1.4 *Applications*—This practice is useful in both short- and long-term studies for management and impact assessment purposes. It is adaptable to both lotic and lentic situations in littoral and limnetic areas.

1.5 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.6 *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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.* For specific hazards, see Section 7.

1.7 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 *ASTM Standards:*[2]

D1129 Terminology Relating to Water

D1193 Specification for Reagent Water

3. Terminology

3.1 *Definitions:*

3.1.1 For definitions of terms used in this standard, refer to Terminology D1129.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *lentic, n*—of or relating to aquatic environment where to standing waters, such as ponds, lakes, or reservoirs.

3.2.2 *limnetic, n*—open deep waters of a body of fresh water.

3.2.3 *littoral, n*—situated or growing on or near the shore of a large body of water.

3.2.4 *lotic, n*—of or relating to aquatic environment where there is fast moving waters.

4. Summary of Practice

4.1 The sample area is blocked off with a small mesh net(s) and the volume of water to be treated is calculated. The required quantity of rotenone is diluted and distributed throughout the water column in the sample area. All fish should be affected and they should be collected for processing (**1**).[3]

5. Apparatus

5.1 *Vessels,* for measuring and mixing rotenone and for collecting fish.

[1] This practice is under the jurisdiction of ASTM Committee D19 on Water and is the direct responsibility of Subcommittee D19.24 on Water Microbiology.

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[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.

[3] The boldface numbers in parentheses refer to a list of references at the end of this standard.