Designation: D4211 – 82 (Reapproved 2012)

Classification for Fish Sampling[1]

This standard is issued under the fixed designation D4211; 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 classification covers rotenone and antimycin which are used to collect or eradicate fish; numerous chemicals have been used but presently only rotenone and antimycin are EPA approved for this use.

2. Referenced Document

2.1 *ASTM Standards:*[2]

D4131 Practice for Sampling Fish with Rotenone

3. Significance and Use

3.1 The significance of using chemical fish toxicants is that more complete population analyses or total eradication, or both, can be accomplished. Target species can be selectively eradicated by varying concentrations. This provides a very effective tool in fisheries investigations and management programs. Water conditions (that is, pH, temperature, alkalinity, and so forth) and morphology can be limiting factors.

3.2 *Rotenone*—Rotenone used as a fish toxicant is highly versatile and can be used effectively to collect fish samples; to eradicate fish; and to selectively remove certain fish species.

3.2.1 Its effectiveness is reduced in cold <20°C, and dosage required increases with alkalinities. It may also eliminate food web organisms. Fish may be repulsed from treated areas.

3.3 *Antimycin*—Antimycin is versatile in the selective removal of scalefish or even more selectively against certain centrarchids (sunfish) and minnows.

3.3.1 Its effectiveness is reduced in water with pH above 8.5.

4. Basis of Classification

4.1 *EPA-Approved Fish Toxicants.*

4.1.1 *Rotenone*—This fish toxicant is also known as derris or cube and is derived from roots of several plants of the family *Leguminosae*. Its action mode as a powerful respiratory inhibitor in fish starts with entrance into the blood stream via the gills and then by translocation to vital organs. Formulations are in the following general forms: a liquid containing 5 % rotenone, liquid with 2.5 % rotenone and synergists, and wettable powder. Persistence in the environment is seldom more than two weeks although it may remain longer in very cold, soft water.

4.1.2 *Antimycin*—This fish-toxicant is an antibiotic produced by Streptomyces and is known as Fintrol 5®, Fintrol 15®, and Fintrol-Concentrate®. The Fintrol 5® and 15® are coated sand-like grains for use in waters 5 to 15 ft (1.52 to 4.57 m) deep. The Fintrol-Concentrate® is a liquid for use in streams or shallow waters. Antimycin is effective in small concentrations (5 ppb) and enters fish through the gills to irreversibly block cellular respiration. It is nonpersistent in the environment.

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

Current edition approved Dec. 1, 2012. Published December 2012. Originally approved in 1982. Last previous edition approved in 2004 as D4211 – 82 (2004). DOI: 10.1520/D4211-82R12.

[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.