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and

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Ludington Biological Station
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and

Department of Fisheries and Oceans
Sea Lamprey Control Centre
1219 Queen Street East
Sault Ste. Marie, Ontario P6A 2E5
Canada

TECHNICAL OPERATING PROCEDURE

PROCEDURE TITLE:

Procedure for Application of Bayluscide 3.2% Granular Sea Lamprey Larvicide for assessment or control applications

APPLICABILITY:

Procedures apply to applications of Bayluscide 3.2% Granular Sea Lamprey Larvicide (granular Bayluscide) conducted alone in lentic areas or in conjunction with applications of TFM or the combination of TFM and Bayluscide to streams.. Typically assessment plots are ≤ 520 m²; however physical properties of the water body may warrant smaller or slightly larger areas.

PRINCIPLE:

Granular Bayluscide is a restricted use lampricide (EPA Registration Number 6704-91, Health Canada Pest Product Control Number 25563).

SAMPLE COLLECTION AND PRESERVATION:

Biological specimens are collected by scap net and if retained, are either preserved in 10% formalin or 95% ethanol solution or are frozen.

EQUIPMENT REQUIRED:

Personal protective equipment (refer to Personal Safety in the SAFETY section)

Where applicable:

- Range-finding or distance-measuring device
- GPS
- Air blast blower or rotary spreader
- Pre-calibrated measuring device
- Marker buoys and/or flagging tape
- Thermometer
- Depth finder
- Dissolved Oxygen Meter

POTENTIAL INTERFERENCES:

Aquatic vegetation may interfere with the dispersal of granules or with the dispersion of active ingredient in the water. Aquatic vegetation is often present in desirable sea lamprey habitat; however, if vegetation is considered too dense the supervisor or their designee may defer application. Water current, wind, rain, water depth may affect the application and efficacy of the granules. Other interferences include commercial/recreational boat traffic and overhead structures (bridges/grain elevators) which may block satellite connectivity. Personnel will make reasonable effort not to disturb bottom sediments during and after application.

SAFETY:

I. Environmental Hazards

When applied as directed, Bayluscide 3.2% Granular Sea Lamprey Larvicide is not likely to harm fish that may be present in treated waters. Applications may kill freshwater clams and mussels and may affect fish species that are physiologically bound to the stream bottom.

II. Personal Safety

Bayluscide 3.2% Granular Sea Lamprey Larvicide is a restricted use pesticide. See precautionary statements on pesticide label.

A Safety Data Sheet (SDS) for granular Bayluscide, a copy of the pesticide label, and a contingency plan for countering spills of lampricides which include emergency telephone numbers are supplied to workers (Appendix D). Applicators are required to read and become familiar with, and to comply with all listed restrictions, safeguards, and procedures.

All employees are provided with and are required to wear personal protective equipment (PPE) when measuring, transferring, or applying the granular Bayluscide, and when cleaning application equipment and granular Bayluscide containers. Safety kits are available and are stored in work vehicles. Personal protective equipment (PPE) required when handling granular Bayluscide is listed on the pesticide label.

Additional available equipment:

1. Emergency eyewash bottle
2. Soap
3. Replacement respirator filters, gloves, and goggles
4. Tyvek protective suits, hood, and air flow respirator

A special container is designated for storage and transport of all items used to weigh, measure, or transfer granular Bayluscide. Employees remove outer garments and thoroughly wash their hands and face with soap and water before preparing food or eating.

III. Pre-application safeguards

- A. Protection of the public and the environment is a critical consideration before, during, and after any application of granular Bayluscide. The area proposed for application is examined before an application begins. If a question or doubt exists an alternate location is found or the application is postponed to avoid unwanted exposures.
- B. The purpose of applications is explained to bystanders who are kept a safe distance from treatment or survey activities. Municipalities and agricultural irrigators that use streams requiring treatment as potable water or irrigation must be notified of the impending treatment at least 24 hours prior to application.
- C. High winds increase the chance of airborne drift of granular Bayluscide. Applications are postponed if winds may cause significant drift. Applications are conducted so operators and observers are always upwind of the application.
- D. All applications of granular Bayluscide follow specific procedural guidelines that cover the methods of site preparation, methods of application, post-application measures which safeguard the public and the environment, and emergency procedures for spill containment and clean-up.
- E. Granular Bayluscide is not applied if nontarget organisms are seen congregated in the application area or if movement from the area is restricted.

IV. Post-application safeguards

- A. The area of application is monitored for one hour by assessment personnel and may be monitored longer at their discretion.
- B. If bystanders or landowners are present, they are cautioned about the recent application of granular Bayluscide.

V. Storage

See AOP:008.x

VI. Transport

See AOP:008.x and Appendix R

VII. Spills

See Appendix D

DISPOSAL:

Empty containers are triple-rinsed (or equivalent) on site. The empty containers are disposed of according to label instructions.

REAGENTS:

None

PROCEDURES:

Bayluscide 3.2% Granular Sea Lamprey Larvicide is applied as an assessment tool in deep or turbid water and as a control tool in areas where standard application techniques and other formulations of lampricide are less effective or efficient. The granules are spread over the water surface at 156 pounds/acre (175 kilograms/hectare), settle to the bottom, dissolve, and cause lampreys to emerge from their burrows. Some larvae swim to the surface where they may be captured with scap nets before they die. Proposed application sites are identified and reported to the states annually.

Procedures for applying granular Bayluscide to areas larger than 520 m² and including the use of application boats are in TOP:017.xA.

I. Preparations

A. Site

1. Determine specific target area for application.
2. Place markers (buoys in lentic areas, flagging tape in streams) to delineate the perimeter of the plot.
 - a. Survey the area for obstructions that may conflict with the safe, uniform application of granules. Clear the area of obstructions or select an alternate area.
 - b. Survey the area from the land side outward into the body of water when non-target organisms are present. This may encourage nontarget organisms to leave the area.

B. Calculations

1. Compute the total surface area of the plot (length * width).
2. Determine the weight of Bayluscide 3.2% Granular Sea Lamprey Larvicide required for the size of the plot.
 - a. Consult the conversion chart (Attachment 1) to find the weight of granules corresponding to the area of the plot.
 - b. If the approximate size of the plot is not listed on the chart
 - (1) Adjust the size of the plot, or
 - (2) Compute the weight of granules to be applied by multiplying square meters X 0.03864 pounds, or square meters by 0.0175 kilograms (per pesticide label instructions).

II. Application procedures

A. Prepare and use all required protective equipment.

B. Weigh or measure the desired amount of granular Bayluscide while utilizing available spill containment. The pre-calibrated measuring device is used to measure the

appropriate amount. Never transfer the granules by hand.

- C. Carefully transfer the measured amount of granular Bayluscide to the hopper of the application equipment according to all applicable methods of application.
- D. Replace the lid of the container. Mark the container with the weight of unused granules. Triple-rinse the container when empty. Replace the lid and return the container to a secure area.
- E. Apply the granular Bayluscide evenly over the entire plot.
 - 1. Apply the granules in a downwind direction from the applicator.
 - 2. If the wind is favorable apply the Bayluscide from the land side of the plot into the body of water.
 - 3. Do not spray outside of the defined application area.
- F. After the application secure the blower or spreader, remove personal protection equipment, and patrol the plot for sea lampreys and nontarget organisms.
 - 1. Observe biological activity at the site for at least one hour.
 - 2. Collect swimming sea lampreys by scap net and place them in collection containers.
 - 3. If distressed fish or other organisms are observed, remove them from the plot by scap net and place them into a container of fresh water.
 - a. Observe the recovery of nontarget organisms and note mortalities on the Larval Assessment Form (Appendix K).
 - b. To comply with FIFRA Section 6(a)(2) (AOP:007.x/US) requirements, identify dead fish and invertebrates to species. If the specimen cannot be identified to species, properly preserve the specimen and save it for further identification by an expert.
 - 4. If dead lampreys and nontarget organisms are retained, preserve them in either 10% formalin, 95% ethanol solution, or freeze them.
 - 5. Complete a Larval Assessment Form and a Bayluscide Application Data Form (Appendix M) if the application is considered a treatment.
- G. Clean the blower or spreader and safety equipment, and return all equipment to a storage area. Police the area and dispose of lampricide containers (see **DISPOSAL** section).

III. Procedures for secondary applications

- A. During a lampricide stream treatment, small areas may be treated with granular Bayluscide. .
- B. Documentation
 - 1. Stream observations and lampricide use are recorded on the Secondary Application Data Form (U.S.) or the Secondary Application of Lampricide and Stream Observation Form (Canada).

2. New features (e.g. beaver dams, backwaters, tributaries) are recorded on a Geographic Features Form (U.S.).

REFERENCES:

Operating manuals for the air blast blowers or rotary spreaders
Operating manuals for range-finding equipment and global positioning system devices
Job Hazard Analysis in Marquette and Ludington Station Safety Plans
Task Hazard Analysis in SLCC safety manuals
Granular Bayluscide Label/SDS

This procedure has been reviewed and approved by the undersigned representatives of the U.S. Fish and Wildlife Service and Fisheries and Oceans Canada.

REVIEWED/APPROVED _____ DATE _____
Field Supervisor (U.S.)

REVIEWED/APPROVED Mike Spivak DATE 05 MAR 2020
Program Manager (Canada)