

NOXFISH® FISH TOXICANT II

LIQUID EMULSIFIABLE
RESTRICTED

ACTIVE INGREDIENT: Rotenone..... 5.0%

This product contains aromatic solvents and petroleum distillates.

REGISTRATION NO. 33247 PEST CONTROL PRODUCTS ACT

DANGER



POISON
FLAMMABLE

EYE AND SKIN IRRITANT

READ THE LABEL BEFORE USING

NET CONTENTS _____ LITRES

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IMPORTANT GUIDANCE ON THE EFFECTIVE USE OF THIS PRODUCT IS PROVIDED
IN THE ROTENONE SOP MANUAL AVAILABLE FROM THE REGISTRANT OR THE
AMERICAN FISHERIES SOCIETY AT <https://units.fisheries.org/rotenone-stewardship>

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FIRST AID:

IF SWALLOWED: Call a poison control centre or doctor immediately for treatment advice. Do not induce vomiting unless told to do so by a poison control centre or doctor. Do not give **any** liquid to the person. Do not give anything by mouth to an unconscious person.

IF ON SKIN OR CLOTHING: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15–20 minutes. Call a poison control centre or doctor for treatment advice.

IF INHALED: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible. Call a poison control centre or doctor for further treatment advice.

IF IN EYES: Hold eye open and rinse slowly and gently with water for 15–20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control centre or doctor for treatment advice.

Take container, label or product name and PCP Registration Number with you when seeking medical attention.

TOXICOLOGICAL INFORMATION:

Contains petroleum distillate - vomiting may cause aspiration pneumonia. Treat symptomatically.

PRECAUTIONS:

KEEP OUT OF REACH OF CHILDREN. Fatal or poisonous if swallowed. May be harmful if absorbed through skin. Fatal if inhaled. Causes eye and skin irritation. DO NOT inhale sprays or vapours. Do not get in eyes, on skin or on clothing. In case of contact, wash immediately with soap and water. Wash all contaminated clothing with soap and hot water before reuse. Avoid contamination of feed and foodstuffs. Apply this product only as specified on this label. Do not contaminate water by cleaning of equipment or disposal of wastes.

Wear chemical-resistant coveralls over long-sleeved shirt and long pants, chemical-resistant gloves, socks and chemical-resistant footwear, goggles or face shield, and either a respirator with a NIOSH-organic-vapour-removing cartridge with a prefilter approved for pesticides or a NIOSH-approved canister approved for pesticides during mixing, loading, application (except for aerial application), clean-up and repair.

For application using aerial equipment: Wear a long-sleeved shirt, long pants, chemical-resistant gloves, socks and shoes. Pilot must be in an enclosed cockpit.

It is desirable that the pilot have communication capabilities at each treatment site at the time of application.

All personnel on the job site must wash hands and face thoroughly before eating and drinking. Protective clothing, aircraft cockpit and vehicle cabs must be decontaminated regularly.

Engineering Controls for Mixing/Loading:

Mixers and loaders (except mixing/loading to support backpack sprayers) must use a closed system that is designed by the manufacturer to remove the product from the shipping container

and transfer the product into mixing tanks and/or application equipment. At any disconnect point, the system must be equipped with a dry disconnect or dry couple shut-off device that will limit drippage to no more than 2 ml per disconnect. The closed mixing/loading system must function properly and be used and maintained in accordance with the manufacturer's written operating instructions, if applicable, and otherwise, be in a state of good repair. For mixing/loading backpack and other sprayers, drip stations and peristaltic pumps from 113.6 L drums, use a drum pump (see SOP 10.1 Rotenone SOP Manual). Noxfish II from smaller 9.5- and 18.9 L product containers can be poured directly into application equipment.

Apply only when the potential for drift beyond the area to be treated is minimal. Take into consideration wind speed, wind direction, temperature inversions, application equipment, and sprayer settings.

Re-entering the Treatment Area: For applications that result in concentrations greater than 0.09 ppm active rotenone (when applying at a rate of > 1.8 ppm of 5% rotenone formulation), handlers re-entering treated water, must wear, at a minimum, the following PPE: (1) chemical-resistant coveralls over long-sleeved shirt and long pants; (2) chemical-resistant gloves; and (3) chemical-resistant footwear plus socks. Duration of PPE requirements for handlers re-entering treated water corresponds to duration of placarding requirements (e.g., PPE requirements end when placards are removed; see Placarding of Treatment Areas section of this labeling). Exception: waterproof waders may be worn in place of chemical-resistant coveralls and chemical-resistant footwear.

Placarding of Treatment Areas: The Certified Applicator in charge of the application must placard all access areas to the treatment area. Detailed instructions for placarding are presented in the Rotenone SOP Manual (SOP 1.1, Procedure II). Placards must be placed every 75 m along the shoreline of the treated area OR, at public access points (e.g., trailheads, roads and trails). Public access points must be posted 1 day prior to treatment and application sites must be posted at time of application. Placards must contain the following information: (1) DANGER; (2) DO NOT ENTER WATER / INTERDIT D'ENTRER DANS CETTE EAU; Pesticide Application; (3) Noxfish Fish Toxicant II; (4) the purpose of the application; (5) the start date and time of application; (6) end date and time of application; (7) "Recreational access (e.g., wading, swimming, boating, fishing etc) within the treatment area is prohibited while rotenone is being applied"; (8) "Do not swim or wade in treated water while placard is displayed"; (9) "Do not consume dead fish from treated water"; and (10) the name, address, and telephone number of the responsible agency or entity performing the application.

Signs must remain legible during the entire posting period. For lotic (flowing water) and lentic (standing water) applications of < 0.09 ppm active rotenone (< 1.8 ppm 5% formulation), signs can be removed once application is complete. For lotic applications > 0.09 ppm active rotenone (>1.8 ppm 5% rotenone formulation), signs can be removed following 24-hour bioassay demonstrating survival of bioassay sentinel fish, when analytical chemistry shows ≤ 0.09 ppm rotenone or 72 hours after the application is complete, whichever is less. For lentic applications > 0.09 ppm active rotenone (>1.8 ppm 5% rotenone formulation), signs can be removed following 24-hour bioassay demonstrating survival of bioassay sentinel fish, when analytical chemistry shows ≤ 0.09 ppm rotenone or 14 days, whichever is less.

Monitoring and Notification Requirements for Water

Drinking water: For applications in waters with drinking water intakes or hydrologic connections to wells, 7 to 14 days prior to application, the Certified Applicator in charge of the application must provide notification to the party responsible for the public water supply or individual private water users against the consumption of treated water until active rotenone is < 0.003 ppm as determined by analytical chemistry. See Rotenone SOP Manual (SOP 16.1, Procedure A.1 and A.2) for guidance on chemical analysis techniques.

ENVIRONMENTAL PRECAUTIONS:

Toxic to aquatic organisms.

STORAGE

To prevent contamination store this product away from food or feed.

DISPOSAL

1. Triple-or pressure-rinse the empty container. Add the rinsings to the spray mixture in the tank.
2. Follow provincial instruction for any required additional cleaning of the container prior to its disposal.
3. Make the empty container unsuitable for further use.
4. Dispose of the container in accordance with provincial requirements.
5. For information on disposal of unused, unwanted product, contact the manufacturer or the provincial regulatory agency. Contact the manufacturer and the provincial regulatory agency in case of a spill, and for clean-up of spills.

GENERAL INFORMATION:

NOXFISH FISH TOXICANT II is a specially formulated product containing rotenone to be used in fisheries management for the removal of fish from lakes, ponds, reservoirs, streams, canals and rivers. NOXFISH FISH TOXICANT II is stable for a minimum of one year when stored in sealed drums at 21°C.

NOTICE TO USER:

This pest control product is to be used only in accordance with the directions on the label. It is an offense under the *Pest Control Products Act* to use this product in a way that is inconsistent with the directions on the label.

NATURE OF RESTRICTION:

NOXFISH FISH TOXICANT II is registered for use by or under permit from and after consultation with Provincial and Federal Fish and Wildlife Agencies.

This is a restricted product that must be used in the manner authorized. This product is only to be used by individuals holding an appropriate pesticide applicator certificate or license recognized by the provincial/territorial pesticide regulatory authority where the pesticide application is to occur. This registration is granted under the *Pest Control Products Act* and does not exempt the user from any other legislative requirements. Use of this product in or immediately adjacent to water bodies must be appropriately authorized and used in accordance with the *Aquatic Invasive Species Regulations under the Fisheries Act*. Use of this product must also be in accordance with any other required provincial authorizations. Consult with provincial regulatory authorities on any authorizations required prior to use of this product.

RESTRICTED USES

USE LIMITATIONS:

Since such factors as pH, temperature, depth, and turbidity will change effectiveness, use this product only at locations, rates and times authorized and approved by appropriate Provincial and Federal agencies. The applicator must conduct a bioassay using site water (or water of similar quality) and target species (or surrogate species of similar sensitivity) to refine the treatment rate (see SOP 5.1 Rotenone SOP Manual). Rates must be within the range specified in the labeling. Properly dispose of dead fish and unused product.

DO NOT use dead fish for food or feed.

DO NOT use water treated with rotenone to irrigate crops.

DO NOT release within ½ km upstream of a potable water or irrigation water intake in a standing body of water, such as a lake, pond, or reservoir or within ½ km upstream of an active potable water or irrigation water intake on a stream, river or canal (see Directions for Use in Streams, Rivers and Canals).

DIRECTIONS FOR USE:

In ponds/lakes/reservoirs/rivers/streams/canals, do not apply this product in a way that will result in active rotenone concentrations > 200 parts per billion/0.2 ppm (>4.0 ppm 5% rotenone formulation).

FOR USE IN PONDS, LAKES, AND RESERVOIRS

Under appropriate circumstances application can be made from shore, by boat, jet boat, helicopter or fixed-wing airplane.

Application of product by backpack should be limited to areas not treatable by other methods. When applying by boat, product must be released below the water's surface.

Avoid contamination downstream/downlake of the treatment area, through release of rotenone-treated water, during or after treatment. Treated water that is still toxic to fish should not move off treatment site. See KMnO₄ Deactivation Section of this label under Directions for Use in Streams, Rivers and Canals and SOP 7.1 Rotenone SOP Manual).

SPECIAL INSTRUCTIONS: Water alkalinity, temperature and turbidity are usually different in each type of water. Because these factors change the effectiveness of pesticides, consult your Provincial Game & Fish representative before use to determine the correct concentration of this product needed for the type of kill desired. NOXFISH FISH TOXICANT II disperses readily in water both laterally and vertically, and will penetrate below the thermocline in thermally stratified bodies of water.

COMPUTATION OF CUBIC METRES: To determine the number of cubic metres in a given body of water, make a series of transects across the water surface taking depth measurements with calibrated pole or weighted line. Add the soundings and divide by the number of measurements made to determine the average depth. Multiply this average depth by the total surface area to find the number of cubic metres to be treated. If the surface area is unknown, contact your local Soil Conservation Service, which can determine this from aerial photographs.

AMOUNT OF NOXFISH FISH TOXICANT II NEEDED FOR SPECIFIC USES: To determine the appropriate number of litres of NOXFISH FISH TOXICANT II (5% Rotenone) needed, find your "Type of Use" in the first column of the table below and then divide the corresponding numbers in the third column, "Number of Cubic Metres Covered by One Litre" into the number of cubic metres in the body of water being treated.

Type of Use	Parts Per Million of NOXFISH FISH TOXICANT II	Number of Cubic Metres Covered by One Litre
Selective treatment	0.10 to 0.13	9,777 to 7,821
Normal pond use	0.5 to 1.0	1,955 to 978
Remove bullheads or carp	1.0 to 2.0	978 to 489
Remove bullheads or carp in rich organic ponds	2.0 to 4.0	489 to 244
Preimpoundment treatment above dam	3.0 to 4.0	333 to 244

Note: The maximum application rate for ponds, lakes and reservoirs is not to exceed 0.2 ppm rotenone.

PRE-MIXING AND METHOD OF APPLICATION: Pre-mix with water at a rate of one litre NOXFISH FISH TOXICANT II to 10 litres of water. Uniformly apply over water surface or bubble through underwater lines.

DETOXIFICATION/DEACTIVATION: NOXFISH FISH TOXICANT II treated waters detoxify under natural conditions within 1 week to 1 month, depending upon temperatures, alkalinity, etc. Rapid detoxification can be accomplished by potassium permanganate to the water at the same rate as NOXFISH FISH TOXICANT II in parts per million, plus enough additional to meet the organic demand of the untreated water.

REMOVAL OF TASTE AND ODOUR: NOXFISH FISH TOXICANT II treated waters do not retain a detectable taste or odour for more than a few days to a maximum of one month. Taste

and odour can be removed immediately by treatment with activated charcoal at a rate of 30 ppm for each 1 ppm NOXFISH FISH TOXICANT II remaining. (Note: As NOXFISH FISH TOXICANT II detoxifies, less charcoal is required.)

RESTOCKING AFTER TREATMENT: Wait 2 to 4 weeks after treatment. Place a sample of fish to be stocked in wire cages in the coolest part of the treated waters. If the fish are not killed within 24 hours, the water may be restocked.

**DIRECTIONS FOR USE:
 FOR USE IN STREAMS, RIVERS AND CANALS:**

DO NOT use on active irrigation canals.

The following use directions are to provide guidance on how to make applications of NOXFISH FISH TOXICANT II to streams, rivers and canals.

Before application can be made to streams, rivers and canals, authorization must be obtained from Provincial or Federal Fish and Wildlife Agencies. Since local environmental conditions will vary, consult with the Fish and Wildlife Agency to ensure the method and rate of application are appropriate for that site. As with use in impoundments, the applicator must conduct a bioassay using site water (or water of similar quality) and target species (or surrogate species of similar sensitivity) to refine the treatment rate (see SOP 5.1 Rotenone SOP Manual). Rates must be within the range specified in the labeling.

Contact the local Water Department to determine if any water intakes are within ½ km downstream of the section of stream, river or canal to be treated. If so, coordinate the application with the water department to have the intakes closed during treatment and deactivation.

In order to treat streams, rivers and canals you must: (1) Use the concentration of active rotenone up to 0.200 ppm; (2) Compute the flow rate of the stream; (3) Select an exposure time; (4) Select dilution of product and calculation of application rate; (5) Estimate the amount of product needed; (6) Follow the method of application; and (7) Deactivate the rotenone with KMnO₄ at the end of the application area.

For practicality, flows > 0.708 m³/s should be treated with undiluted product, and flows < 0.708 m³/s should be treated with diluted product. For streams associated with a treatment of an impoundment, to prevent movement of fish from the pond, lake, or reservoir, the stream treatment should begin before and continue throughout treatment of the pond, lake or reservoir until mixing has occurred. See Rotenone SOP Manual (SOP 5.1) for more information on treatment rates and strategies and deactivation techniques (SOP 7.1).

AMOUNT OF NOXFISH FISH TOXICANT II NEEDED FOR SPECIFIC USES:

To determine the appropriate number of litres of NOXFISH FISH TOXICANT II (5% Rotenone) needed for a 4 and 8-hour treatment find your Type of Use in the first column of the table below and then divide the corresponding numbers in the third or fourth column “m³/s per Litre Product Covered” for a 4-h and 8-h treatment into the number of m³ flow of the stream, river or canal treated

Type of Use	Product	Active	m ³ /s per Litre	m ³ /s per Litre
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	(5% Rotenone) (ppm)	Rotenone (ppm)	Product Covered (4-h)	Product Covered (8-h)
Normal	0.5 – 1.0	0.025 – 0.05	0.138 to 0.069	0.069 to 0.034
Tolerant Species	1.0 – 3.0	0.05 – 0.15	0.069 to 0.024	0.034 to 0.013
Tolerant Species Organic Waters	2.0 – 4.0	0.10 – 0.20	0.034 to 0.018	0.018 to 0.008

Note: the maximum application for streams, rivers and canals is not to exceed 0.2 ppm rotenone.

Measurement of Flow Rate for Stream

Select a cross section of the stream where the banks and bottom are relatively smooth and free of obstacles and the flow appears laminar. Best discharge measurements are achieved with an electronic flow meter and use of the United States Geological Survey Weighted Area Method.

Rotenone Exposure Time and Spacing

Apply rotenone as a drip or spray for 4 to 8 hours to the flowing portion of the stream, river or canal. Multiple application sites are used along the length of the treated stream, river or canal spaced approximately 0.8 to 3.2 km apart depending on sunlight, water depth and the water travel time between sites. Multiple sites are used because rotenone is diluted and detoxified with distance. Application sites are generally spaced at no more than 2-h or at no less than 1-h travel time intervals. This assures that the treated stream remains lethal to fish for a minimum of 2 hours. A non-toxic dye such as Rhodamine-WT or fluorescein can be used to determine travel times. Cages containing live fish placed immediately upstream of the downstream application sites can be used as sentinels to assure that lethal conditions exist between sites.

Amount of Product and Calculation of Application Rate of Undiluted Product:

[1] ml/min NOXFISH FISH TOXICANT II = stream flow (m³/s) x 1.2 x ppb rotenone (up to 200)

[2] total ml NOXFISH FISH TOXICANT II per application site = [1] x treatment min (up to 480)

Amount of Product and Calculation of Application Rate of Diluted Product:

[3] ml of undiluted NOXFISH FISH TOXICANT II [2] plus water to volume in reservoir Z (ml)

[4] ml/min diluted NOXFISH FISH TOXICANT II = volume (ml) reservoir Z/treatment min (up to 480)

Method of Rotenone Application:

Rotenone Application to Streams, Rivers and Canals – Rivers, streams and canals should be treated for 4 to 8 hours in order to clear the treated section of unwanted fish. NOXFISH FISH TOXICANT II is applied diluted or undiluted above the flowing water’s surface by drip from a drip station or spray or drip from a peristaltic pump directly into the flow of the stream, river or canal which provides for rapid mixing. See Rotenone SOP Manual (SOP 11.1) for instructions on drip stations and peristaltic pumps. Discharge rate should be checked at least hourly. Apply rotenone as a drip with multiple application sites along the length of the stream, river or canal

spaced roughly 0.8 to 3.2 km apart depending on environmental conditions and water travel time between sites (SOP 5.1).

Rotenone Application to Backwater, Seep and Spring Areas of Ponds, Lakes, Reservoirs, Streams, Rivers and Canals – If safely accessible, these areas should be sprayed by hand with a backpack sprayer (Rotenone SOP Manual SOP 12.1) or if inaccessible, sprayed by other methods such as with aerial application equipment or by boat (Rotenone SOP Manual SOP 8.1) to ensure complete coverage. Use a 1 to 2% solution of NOXFISH FISH TOXICANT II as spray. Some of these areas may require special treatment using the inert media Vectocarb 30-OM as specified in the Rotenone SOP Manual (SOP 13.1).

AERIAL APPLICATIONS:

Apply by fixed-wing or rotary aircraft equipment, which has been functionally and operationally calibrated for the atmospheric conditions of the area and the application rates and conditions of this label. Apply at the rate determined above for the specific "Type of Use". Apply only when meteorological conditions at the treatment site allow for complete and even coverage. Apply only under conditions of good practice specific to aerial applications, as outlined in the *National Aerial Pesticide Application Manual*, developed by the Federal/Provincial/Territorial Committee on Pest Management and Pesticides. Avoid drifting of spray onto land or other non-target areas. Coarse sprays are less likely to drift, therefore, avoid combinations of pressure and nozzle type that will result in fine particles (mist). Do not apply during periods of dead calm or when wind velocity and direction pose a risk of spray drift. Do not spray when the wind is blowing towards nearby sensitive crops, terrestrial habitats or non-target aquatic habitats.

KMnO₄ DEACTIVATION:

To minimize rotenone exposure outside of the treatment area, rotenone must be deactivated using potassium permanganate at the downstream extent of the treatment area in the river, stream, canal, pond, lake or reservoir. See Rotenone SOP Manual (SOP 7.1) for detailed guidance for deactivating with KMnO₄.

Within 1 to 2 hours travel time from the furthest downstream rotenone application site, the rotenone is deactivated with KMnO₄ solution or granules at a resultant stream concentration of roughly 2 to 4 ppm (up to 8 ppm) depending on rotenone concentration and organic demand of the water. A 2.5% (25 g KMnO₄ in one liter of water) permanganate solution is dripped in at a continuous rate using the equation:

$$[5] \text{ ml/min } 2.5\% \text{ KMnO}_4 \text{ solution} = \text{ppm KMnO}_4 \times 2,472 \times \text{m}^3/\text{s stream flow}$$

Or granular KMnO₄ is applied at a continuous rate using the equation:

$$[6] \text{ g/min granular KMnO}_4 = \text{ppm KMnO}_4 \times 60.02 \times \text{m}^3/\text{s stream flow}$$

Flow of permanganate should be checked at least hourly. Live fish in cages placed immediately above the permanganate application site will show signs of stress signaling the need for beginning deactivation. Deactivation can be terminated when replenished fish survive and show no signs of stress for at least 4 h. Deactivation of rotenone by permanganate requires between 15

to 30 min contact time (travel time). Cages containing live fish can be placed at these downstream intervals to judge the effectiveness of deactivation. At water temperatures less than 10°C, deactivation may be retarded, requiring a longer contact time.