

Reg # 1439-157

PM-14

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FEB 17 1994

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TIFA (C.I.) Limited  
c/o Technology Sciences Group Inc.  
1101 17th Street, NW  
Suite 500  
Washington D.C. 2003

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Attention: Robert R. Stewart

SUBJECT: Chem Fish Regular  
EPA Reg. No. 1439-157  
Your submissions of December 13, 1993 and  
January 4, 1994

We have reviewed the acute inhalation study (MRID No. 430473-01) and have found it to be acceptable. In addition, we have reviewed your request to add the **stream use** on your label and have found it acceptable.

The labeling referred to above, submitted in connection with registration under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), as amended, is acceptable provided that you:

1. On the Front Panel, change the statement above the ingredient statement to read:

For Control of Fish in Lakes, Ponds, and Streams

2. Revise your PRECAUTIONARY STATEMENTS as follows:

May be fatal if inhaled or swallowed. Harmful if absorbed through skin. Causes substantial but temporary eye injury. Causes skin irritation. Do not breath spray mist. Do not get in eyes, on skin or on clothing. Wear goggles or safety glasses.

For handling activities during mixing, wear either a respirator with an organic-vapor-removing cartridge with a prefilter approved for pesticides (MSHA/NIOSH approval number prefix TC-23C), or a canister approved for pesticides (MSHA/NIOSH approval number prefix 14G.

For all other exposures, wear a dust/mist filtering respirator (MSHA/NOISH approval number prefix TC-21C).

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A stamped copy of the labeling is enclosed for your records.

Sincerely yours,



Robert A. Forrest  
Product Manager (14)  
Insecticide-Rodenticide Branch  
Registration Division (H7504C)

Enclosures: 1. Stamped Label  
2. A-79 Enclosure

Peacock WP#4:A:1439FEB.157:305-5407,-6600:2/17/94

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# CHEM-SECT BRAND

## CHEM FISH REGULAR

(5% Emulsifiable Concentrate)

**RESTRICTED USE PESTICIDE**  
Due to Aquatic Toxicity

ACCEPTED  
with COMMENTS  
in EPA Letter Dated

**FEB 17 1994**

Under the Federal Insecticide,  
Fungicide, and Rodenticide Act  
as amended, for the pesticide  
registered under EPA Reg. No.

1439-157

For retail sale to, and use only by, Certified Applicators or persons under their direct supervision and only for those uses covered by the Certified Applicator's certification.

(For Control of Fish in Lakes and Ponds)

ACTIVE INGREDIENTS .....	15.0%
Rotenone .....	5.0%
Other Associated Resins .....	10.0%
INERT INGREDIENTS .....	85.0%
TOTAL .....	100.0%

\* This product contains aromatic solvents.

KEEP OUT OF REACH OF CHILDREN

## WARNING

See Left Panel for additional precautionary statements.

### WESTERN HEMISPHERE:

TIFA (CI) LTD.

Tifa Square

Millington, New Jersey 07946

United States of America

Telephone: 908-647-4570

Telex: 178098/178484

Cable: TIFA Millington

Facsimile Nos. 908-647-2517

908-647-7338

EPA EST. NO. 44616-MO-1

EPA REG. NO. 1439-157

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**PRECAUTIONARY STATEMENTS**

**Hazards to Humans and Domestic Animals**

**WARNING:** May be fatal if swallowed. May cause eye injury. Causes skin irritation. Do not get in eyes, on skin or on clothing. Wear protective goggles, face shield, or safety glasses. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash before reuse.

**Statement of Practical Treatment**

**IF SWALLOWED:** Call a physician or Poison Control Center. Do not induce vomiting. This product contains aromatic petroleum solvent. Aspiration may be a hazard. Promptly drink a large quantity of milk, egg white and gelatin solution, or if these are not available, water. Avoid alcohol.

**IF IN EYES:** Flush with plenty of water and get medical attention.

**IF ON SKIN:** Wash with plenty of soap and water. Get medical attention if irritation persists.

**Environmental Hazards**

This pesticide is extremely toxic to fish. Fish kills are expected at recommended rates. Consult your State Fish and Game Agency before applying this product to public waters to determine if a permit is needed for such an application. Do not contaminate untreated water when disposing of equipment washwaters.

**Physical and Chemical Hazards**

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Flammable. Keep away from heat and open flame.  
(Flash point above 20 F to 80 F).

**DO NOT CONTAMINATE WATER, FOOD OR FEED  
BY STORAGE OR DISPOSAL**

**STORAGE:** STORE ONLY IN ORIGINAL CONTAINER, IN A DRY PLACE  
INACCESSIBLE TO CHILDREN AND PETS.

**PESTICIDE DISPOSAL:** WASTES RESULTING FROM THE USE OF THIS  
PRODUCT MAY BE DISPOSED OF ON SITE OR AT AN  
APPROVED WASTE DISPOSAL FACILITY.

**CONTAINER DISPOSAL:** TRIPLE RINSE (OR EQUIVALENT). THEN OFFER FOR  
RECYCLING OR RECONDITIONING OR PUNCTURE AND  
DISPOSE OF IN A SANITARY LANDFILL OR BY OTHER  
PROCEDURES APPROVED BY STATE AND LOCAL  
AUTHORITIES.

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## DIRECTIONS FOR USE

It is a violation of Federal Law to use this product in a manner inconsistent with its labeling.

### USE RESTRICTIONS:

Use against fish in lakes, ponds, and streams.

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 State and Federal fish and wildlife agencies. Rates must be within the range specified in the labeling.

Do not use water treated with rotenone to irrigate crops or release within 1/2 mile upstream of a potable water or irrigation water intake in a standing body of water, such as a lake, pond, or reservoir.

Properly dispose of dead fish and unused product. Do not use dead fish as food or feed

### APPLICATION DIRECTIONS:

#### To Survey Fish Populations

This product may be used to survey fish populations in fresh or salt water, provided that there is no intent to control such populations. Before using rotenone in such a manner, determine if applications are subject to other Federal, State, and Local laws and regulations or if permits are required.

#### To Control Fish Populations

##### Treatment of Lakes and Ponds

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#### 1. Application Rates and Concentrations of Rotenone.

The actual application rates and concentrations of rotenone needed to control fish will vary widely, depending on the type of use (e.g., selective treatment, normal pond treatment, etc.) and the factors listed above. The table below is a general guide for the proper rates and concentrations.

#### 2. Total Amount of Product Needed for Treatment

To determine the total number of gallons needed for treatment, divide the number of acre-feet covered by one gallon for a specific type of use (e.g., selective treatment, etc.), as indicated in the table below, into the number of acre-feet in the body of water.

CHEM FISH REGULAR should be mixed with water before application, rather than applying at full strength. A wash tub or garbage can make a convenient container for mixing. Liquid CHEM FISH REGULAR mixes readily with water. In some types of water, CHEM FISH REGULAR does not penetrate deeper parts of the pond (20 to 25 feet or more) when applied on the surface. The deeper parts are usually treated by pumping the mixture through a weighted garden hose with a perforated section at the end.

**General Guide to the Application Rates and Concentrations of Rotenone Needed to Control Fish in Lakes and Ponds\* (5% Emulsifiable Concentrate Product)**

<u>Type of Use</u>	<u>No. of Acre Feet Covered by One Gallon</u>	<u>Parts Per Million</u>	
		<u>Active Rotenone</u>	<u>5.0% Product</u>
Selective Treatment	30 to 24	0.005-0.007	0.10-1.3
Normal Pond Use	6.0 to 3.0	0.025-0.050	0.5-1.0
Remove Bullheads or Carp	3.0 to 1.5	0.050-0.100	1.0-2.0
Remove Bullheads or Carp in Rich Organic Ponds	1.5 to .75	0.100-0.200	2.0-4.0
Pre-impoundment Treatment Above Dam	1.0 to .60	0.150-0.250	3.0-5.0

\* Adapted from Kinney, Edward. 1965. Rotenone in Fish Pond Management. USD. Washington, D.C. Leaflet FL-576.

Computation of acre-feet for lake or pond: An acre-foot is a unit of water volume having a surface area of one acre and depth of one foot. Make a series of transects across the surface, taking depths with a measured pole or weighted line. Add the measurements and divide by the number made to determine the average depth. To compute total acre feet, multiply this average depth by the number of surface acres, which can be determined from an aerial photograph or plot drawn to scale.

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### 3. Method of Application and Exposure Time

**Pre-Mixing and Method of Application:** Pre-mix with water at a rate of one gallon CHEM FISH REGULAR to 10 gallons of water. Uniformly apply over water surface or bubble through underwater lines.

**Detoxification:** CHEM FISH REGULAR treated waters detoxify under natural conditions within 1 week to 1 month, depending upon temperatures, alkalinity, etc. Rapid detoxification can be accomplished by adding chlorine or potassium permanganate to the water at the same rates as CHEM FISH REGULAR in parts per million plus enough additional to meet the chlorine demand of the untreated water.

### 4. Removal of Taste and Odor

CHEM FISH REGULAR treated waters do not retain a detectable taste or odor for more than a few days to a maximum of one month. Taste and odor can be removed immediately by treatment with activated charcoal at a rate of 30 ppm to each 1 ppm CHEM FISH REGULAR remaining. (Note: As CHEM FISH REGULAR detoxifies, less charcoal is required.)

### 5. Restocking

Waters treated with this product detoxify within 3-5 days, depending on pH, temperature, water hardness, and depth. To determine if detoxification has occurred, place live boxes containing samples of fish to be stocked in the treated waters. More rapid detoxification can be accomplished by adding potassium permanganate at the same dosage in parts per million as rotenone was used for the reclamation treatment.

### 6. Treatment of Streams Immediately Above Lakes and Ponds

Chem Fish Regular can be used in streams immediately above lakes and ponds to improve the effectiveness of lake and pond treatments. The term "immediately" means the first available site above the lake or pond where treatment is practical.

In order to treat immediately above a lake or pond, select a concentration of active rotenone from the General Guide above, and using the instructions for stream treatment below, compute the flow rate of the stream, calculate the application rate, select an exposure time, estimate the amount of product needed, and follow the method of application for streams.

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## Treatment of Streams

### For use In Streams and Rivers

Only state or federal Fish and Wildlife personnel or professional fisheries biologists under the authorization of state or federal Fish and Wildlife Agencies are permitted to make applications of Chem Fish Regular for control of fish in streams and rivers. Informal consultation with Fish and Wildlife personnel regarding the potential occurrence of endangered species in areas to be treated should take place. Applicators must reference Tifa Ltd's Chem Fish Regular Monograph for Use in Streams and Rivers before making any application to streams or rivers.

### Application Rates and Concentration of Rotenone

**Slow Moving Rivers:** In slow moving rivers and streams with little or no water exchange, use instructions for ponds, lakes and reservoirs.

**Flowing streams and rivers:** Apply rotenone as a drip for 4 to 8 hours to the flowing portion of the stream. Multiple Applications sites are used along the length of the treated stream, spaced approximately 1/2 to 2 miles apart depending on the water flow travel time between sites. Multiple sites are used because rotenone is diluted and detoxified with distance. Application sites are spaced at no more than 2 hours. A non-toxic dye such as Rhodamine-WT® or fluorescein can be used to determine travel time. Cages containing live fish placed immediately upstream of the downstream application sites can be use as sentinels to assure that lethal conditions exist between sites.

Apply rotenone at each application site at a concentration of 0.25 to 1.0 part per million of Chem Fish Regular. The amount of Chem Fish Regular needed at each site is dependent on stream flow (See Computation of Flow Rate for Stream).

### Application of Undiluted Material

Chem Fish Regular can drain directly into the center of the streams at a rate of 0.85 to 3.4 cc per minute for each cubic foot per second of stream flow. Flow of undiluted Chem Fish Regular into the stream should be checked at least hourly. This is equivalent to from 0.5 to 2.0 ppm Chem Fish Regular, or from 0.025 to 0.10 ppm rotenone. Back-water, stagnant and spring areas of streams should be sprayed by hand with a 10% v/v solution of Chem Fish Regular in water to assure complete coverage.

Calculation of Application Rate:

$$X = F (1.69 B)$$

X = cc per minute of Chem Fish Regular applied to the stream, F = the flow rate (cu ft. / sec) see Computation of Flow Rate for Stream section of the label, B = parts per million desired concentration of Chem Fish Regular.

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Total Amount of Product Needed for Treatment: Streams should be treated for 4 to 8 hours in order to clear the treated section of stream of fish. To determine the total amount of Chem Fish Regular required use the following equation:

$$Y = X (0.0158 C)$$

Y = Gallons of Chem Fish Regular required for the stream treatment, X = cc/min of Chem Fish Regular applied to the stream, C = time in hours of the treatment.

#### Application of Diluted Material

Alternatively, for stream flows up to 25 cubic feet per minute, continuous drip of diluted Chem Fish Regular at 80 cc per minute can be used. Flow of diluted Chem Fish Regular into the stream should be checked at least hourly. Use a 5 gallon reservoir over a 4 hour period, a 7.5 gallon reservoir for 6 hours, or a 10 gallon reservoir for 8 hours. The volume of the reservoir can be determined from the equation:

$$R = H \times 1.25$$

Where R = the Volume of the reservoir in gallons, and H = the duration of the application in hours.

The volume of the Chem Fish Regular diluted with water in the reservoir is determined from the equation:

$$X = Y (102 F) H$$

Where X = the cc of the Chem Fish Regular diluted in the reservoir, Y = parts per million desired concentration of Chem Fish Regular, F = the flow rate (Cubic feet/second), H = the duration of the application (hours).

For flow over 25 cubic feet per minute, additional reservoirs can be used concurrently. Back-water, stagnant and spring areas of streams should be sprayed by hand with a 10% v/v solution of Chem Fish Regular in water to assure a complete coverage.

#### Detoxification

To limit effects downstream, detoxification with potassium permanganate can be used at the downstream limit of the treated area. Within 1/2 to 2 miles of the furthest downstream Chem Fish Regular application site, rotenone can be detoxified with a potassium permanganate solution at a resultant stream concentration of 2 to 4 parts per million, depending on rotenone concentration and permanganate demand of the water. A 2.5% (10 pounds potassium permanganate to 50 gallons of water) permanganate solution is dripped in at a continuous rate using the equation:

$$X = Y (70F)$$

Where X = cc of 2.5% permanganate solution per minute, Y = ppm of desired permanganate concentration, and F = cubic feet per second of stream flow.

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Flow of permanganate should be checked at least hourly. Live fish in cages placed immediately above the permanganate site will show signs of stress signaling the need for beginning detoxification. Detoxification can be terminated when replenished fish survive and show no signs of stress for at least four hours.

Detoxification of rotenone by permanganate requires between 15 to 30 minutes contact time (travel time). Cages containing live fish can be placed at these downstream intervals to judge the effectiveness of detoxification. At water temperature of less than 50 F detoxification may be retarded, requiring a longer contact time.

**Chem Fish Regular**  
**MONOGRAPH FOR USE IN STREAMS AND RIVERS**

The following use directions are to provide guidance on how to make applications of Chem Fish Regular to streams and rivers. The unique nature of every application site could require minor adjustments to the method and rate of application. Should these unique conditions require major deviation from the use directions, a special local need 24 (c) registration should be obtained from the state.

Before applications of Chem Fish Regular can be made to streams and rivers, authorization must be obtained from state or federal Fish and Wildlife agencies. Since local environmental conditions will vary, consult with the state Fish and Wildlife agency to ensure the method and rate of application are appropriate for the site.

Contact the local Water Department to determine if any water intakes are within one mile down flow of the section of stream, river or canal to be treated. If so, coordinate the application with the Water Department to make sure the intakes are closed during treatment and detoxification.

1. Concentration of Active Rotenone:

Select an appropriate concentration of rotenone based on the types of fish for which control is required, the organic matter content of the stream, and the rate of flow of the stream. The General Guide for Applications to Ponds and Lakes can be used as a guide to the selection of rates.

2. Computation of Flow Rate for Stream:

Select a cross section of the stream where the banks and bottom are relatively smooth and free of obstacles. Divide the surface width into 3 equal sections and determine the water depth and surface velocity at the center of each section. In slowly moving streams, determine the velocity by dropping a float attached to 5 feet of loose, monofilament fishing line. Measure the time required for the float to move 5 feet. For fast moving streams, use a longer distance. Take at least three readings at each point. To calculate the flow rate from the information obtained above, use the following formula:

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$$F = \frac{WS \times D \times L \times C}{T}$$

where F = flow rate (cu. ft./sec.), WS = surface width (ft.), D = mean depth (ft.), L = mean distance traveled by float (ft.), C = constant (0.8 for rough bottoms and 0.9 for smooth bottoms), and T = mean time for float (sec.).

For example, after using the above formula, you might have computed the stream's flow rate to be "10 cu ft per sec".

### 3. Calculation of Application Rate

In order to calculate the application rate (expressed as "gallon per sec"), you convert the rate in the table (expressed as "gallon per acre-foot"), to "gallon per cu feet" and multiply by the flow rate (expressed as cu ft per sec"). Depending on the size of the stream and the type of equipment, the rate could be expressed in other units, such as "ounces per hr".

The application rate for the stream above is calculated as follows:

$$R_s = R_p \times C \times F$$

where  $R_s$  = Application Rate for Stream (gal/sec),  $R_p$  = Application Rate for Pond (gal/acre feet), C = 1 acre foot/43560 cu ft, and F = Flow Rate (cu ft/sec).

In the example, the application Rate for Stream would be:

$$R_s = .000076 \text{ gal/sec or } 35 \text{ oz/hr}$$
$$R_p = 1 \text{ gal/3 acre-foot} \times 1 \text{ acre-foot/43560 cu ft} \times 10 \text{ cu ft/sec.}$$

### Exposure Time

The "Exposure Time" would be the period of time (expressed in hours or seconds) during which target fish should not enter the lake or pond under treatment. In the example, this period of time could be 4 hours.

### Amount of Product

Calculate the "Amount of Product" for a stream by multiplying the "Application Rate for Stream" by the "Exposure Time". In the example, the "Amount of Product" would be 140 oz (35 oz/hr x 4 hr) or 1.09 gal.

### Re-Entry Statement

Do not allow swimming in rotenone-treated water until the application has been completed and all pesticide has been thoroughly mixed into the water according to label instructions.

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