Date Out: EFB: JUN 18 1981

To: Product Manager 41 Stubbs
   TS-767

From: Dr. Willa Garner
   Chief, Review Section No. 1
   Environmental Fate Branch

Attached please find the environmental fate review of:

Reg./File No.: 81-DO-01

Chemical: 2,4-D (butoxyethanol ester)

Type Product: Herbicide

Product Name: AQUA-KLEEN

Company Name: State of Washington (Amchem)

Submission Purpose: use on Eurasian water milfoil

ZBB Code: Sec. 18

ACTION CODE: 510

Date in: 6/12/81

EFB #: 869

Date Completed: JUN 18 1981

TAIS (level II) Days

Deferrals To:

--- Ecological Effects Branch

--- Residue Chemistry Branch

--- Toxicology Branch

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1.0 Introduction

Chemical Name and Type Pesticide: 2,4-D (2,4-dichlorophenoxyacetic acid, butoxyethanol ester), 29.0% a.i., aquatic herbicide

Trade Name: AQUA-KLEEN

Chemical Structure:

C l

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This submission is a request, under Section 18 (emergency exemption) of FIFRA, to treat Eurasian water milfoil with the aquatic herbicide, 2,4-D in Osoyoos Lake and the Okanogan Arm of the Columbia River (Lake Pateros), Okanogan County, Washington. Amount of herbicide used would be 20,800 lbs maximum (4,160 lbs. acid equivalent) to be applied within two-days during the critical mid to late summer period. The actual amount will probably be much less.

2.0 Directions for Use

See attached page.

3.0 Discussion of Data

None submitted.

4.0 Recommendations

EFB concurs with the proposed use of AQUA-KLEEN to treat Eurasian water milfoil in Washington under the provisions of Section 18 (emergency exemption) for the following reasons:

1. AQUA-KLEEN has been approved by the EPA for use on milfoil by the Tennessee Valley Authority.

2. Treatment will be done in two days, only to those areas containing milfoil plants, and at the critical plant-growth time to make it most effective. Treatment areas will be closed to swimming and fishing and downstream irrigation will be suspended until monitoring indicates safe 2,4-D levels.

3. Failure of the prevention program would have a large adverse economic impact in the state.

Herbert L. Manning, Ph.D.
Review Section #1
Environmental Fate Branch
Hazard Evaluation Division
For use in Eurasian Water Milfoil Control

GENERAL INFORMATION
For Eurasian water milfoil control in programs conducted by the
Tennessee Valley Authority in dams and reservoirs of the T.V.A.,
AQUA-KLEEN contains 20% by weight of 2,4-D and equivalent as
the low-volatile butoxyethanol ester. This has been formulated on
special heat treated attachy granules that resist rapid
decomposition in water. AQUA-KLEEN sinks quickly to the bottom
and releases the weed killing chemical in the critical root zone area.

NOTICE TO APPLICATORS
Fish Toxicity—Oxygen Ratio
Fish breathe oxygen in the water and a water-oxygen ratio must be
maintained. Decaying weeds use up oxygen. To avoid fish kill from
decaying plant material do not treat more than one half the lake or
pond at one time. For large bodies of weed infested waters leave
buffer strips of at least 100 feet wide and delay treatment of these
strips for 4-5 weeks or until the dead vegetation has decomposed.

Water pH
Lake water that is extremely acid or alkaline may influence the
effectiveness of AQUA-KLEEN. A pH on the acid side (pH 6.0 or
below) generally favors the action of the chemical while a pH on the
alkaline side (pH 8.0 or above) may reduce the action. If regrowth
occurs within a period of 6 to 8 weeks, a second application may be
needed.

Open Water Areas
To reduce contamination and prevent undue exposure to fish and
other aquatic organisms, do not treat water areas unless they are
infested with aquatic weeds.

DIRECTIONS FOR USE
AQUA-KLEEN will kill water milfoil with surface or air applications.

Amounts to Use
Apply 100 to 200 pounds AQUA-KLEEN per surface acre. Use the
higher rate in areas where there is a large exchange of water. These
areas may require a repeat application.

When to Apply
For best results, spread AQUA-KLEEN in the spring and early
summer during the time weeds start to grow. If desired, this timing
can be checked by sampling the lake bottom in areas heavily
infested by weeds the year before. If treatments are delayed until
weeds form a dense mat or reach the surface, two treatments may
be necessary. Make the second treatment when weeds show signs of
recovery, but no later than mid-August. Occasionally, a second
application will be necessary if heavy regrowth occurs or weeds
move in from untreated areas.

How to Apply
For large areas, use a fertilizer spreader or mechanical seeder such
as the GetSet or Gandy. Before spreading any chemical, calibrate
your method of application to be sure of spreading the proper
amount. When using boats and power equipment, you must
determine the proper combination of (1) boat speed (2) rate of
delivery from the spreader and (3) width of swath covered by the
granules. Shoreward swaths should be applied at lower rates to
compensate for shallow margins. It is not necessary to apply
granules up to the actual shoreline in most cases, since the
butoxyethanol ester of 2,4-D leaches from the applied granules and
migrates shoreward through the action of current and diffusion.

For small areas—around docks or isolated patches of weeds—use a
portable spreader such as the Cyclone spreader. Estimate or measure
out the area you want to treat. Weigh out the amount of material
needed and spread this uniformly over the area. More uniform
coverage is obtained by dividing the required amount in two and
covering the area twice, applying the second half at right angles to
the first. Use the following formula to calculate your spreader's
delivery in pounds of AQUA-KLEEN per minute.

\[
\text{pounds per hour} \times \text{spread rate} \times \text{pounds per acre} = \text{pounds per minute}
\]

Example: to apply 100 pounds of AQUA-KLEEN per acre using a
spinner that covers a 20-foot swath from a boat traveling at 4 miles
per hour, set the spreader to deliver 16 pounds of AQUA-KLEEN
granules per minute.

\[
4 \text{ mph} \times 20 \text{ feet} \times 100 \text{ lbs./A} \times 16 \text{ lb./min.} = 495
\]

When spreading AQUA-KLEEN from a boat, we suggest setting out
guide posts at frequent intervals marking out the area. This helps to
steer a straight course. Buffer lanes should be 50 to 100 feet wide.
Treated lanes should be as wide as the buffer strips. Do not treat
within 1/2 mile of potable water intake.

Air Application
Apply the recommended amount of AQUA-KLEEN through standard
granular spreader systems or the Amchem SPRED-A-DISK®.

CAUTION
Fish and other aquatic organisms may be killed at application rates
recommended on this label. Do not apply when weather conditions
favor drift from target areas. Do not contaminate by cleaning of
equipment or disposal of wastes.

Avoid contact with skin, eyes, or clothing.

Do not store near fertilizers, seeds, insecticides or fungicides. Do not
use in or near a greenhouse. Clean spreader equipment thoroughly
before using it for any other purpose. Vapors from this product may injure
susceptible plants in the immediate vicinity.

Do not apply to waters used for irrigation, agricultural sprays,
watering dairy animals, or domestic water supplies.

Avoid drift of dust to susceptible plants.

Do not reuse empty bag. Destroy by burying in a safe place.

Do not burn.

Do not use this product for purposes other than those recommended on the label.