

US EPA ARCHIVE DOCUMENT

EEE BRANCH REVIEW

DATE: IN 4/25/79 OUT 3/14/80 IN _____ OUT _____ IN _____ OUT _____
FISH & WILDLIFE ENVIRONMENTAL CHEMISTRY EFFICACY

FILE OR REG. NO. 241-ELA

PETITION OR (EXP. PERMIT NO.) _____

DATE DIV. RECEIVED 4/11/79

DATE OF SUBMISSION 4/11/79

DATE SUBMISSION ACCEPTED _____

TYPE PRODUCT(S): I, D, H, F, N, R, S Plant Growth Regulant

DATA ACCESSION NO(S). _____

PRODUCT MGR. NO. 25, R. Taylor

PRODUCT NAME(S) Cycocel

COMPANY NAME Cyanamid

SUBMISSION PURPOSE Registration

CHEMICAL FORMULATION (2-chloroethyl) trimethyl ammonium

Chloride.....	63%
Inerts.....	37%
	<u>100%</u>

Chlormequat chloride

100. Pesticide Label Information

100.1 Pesticide Use

For the formulation of CYCOCEL
plant growth regulants.

100.2 Formulation Information

Chlormequat chloride.....63% solution
Inert Ingredients.....37%

100.3 Application Methods, Directions, Rates

Not applicable, this product is for formulation purposes only.

100.4 Target Organism(s)

Not applicable, this product is for formulation purposes only.

100.5 Precautionary Labeling

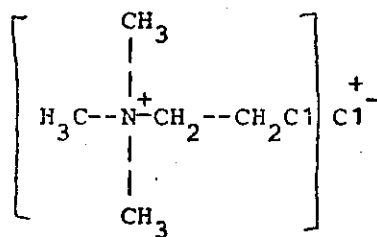
This product is toxic to wildlife. Keep out of lakes streams and
ponds. Do not contaminate water by disposal of wastes or by
cleaning of equipment.

101. Physical and Chemical Properties

101.1 Chemical name

2-chloroethyl trimethyl
ammonium chloride

101.2 Structural Formula



101.3 Common Name

Chlormequat chloride

101.4 Trade Name

Cycocel or CCC

101.5 Molecular Weight

158.07

101.6 Physical State

Color and State - White crystalline solid

Odor - Typically amine (fish-like)

101.7 Solubility

Water soluble: 74% @ 20°C; Soluble in lower alcohols such as methanol; insoluble in ether and hydrocarbons.

102. Behavior in the Environment

Cycocel[®] plant growth regulant residues in soil undergo rapid degradation when exposed to a soil environment. In the laboratory it was shown that 14C-chlorocholine chloride degraded to 14C-carbon dioxide, with the peak rate of evolution occurring between 3 and 5 weeks after initial exposure. Soil residues in the field have a half-life of between 3 and 6 weeks. Although carbon dioxide has been identified as a degradation product of chlorocholine chloride, no other degradation product was found. However, choline chloride and betaine could be transient intermediate products in very low concentrations. Residues of chlorocholine are tightly adsorbed to the soil particles and therefore remain at the soil's surface. Little, if any, leaching is found, even in the sandy soil. (from American Cyanamid Co., submission Acc. No. 238011)

103. Toxicological Properties

See previous review by J. Akerman - 1/25/74.

104. Hazard Assessment

The product, Cycocel[®] Plant Growth Regulant 63% Solution, will be used in the formulation of Cycocel[®] Plant Growth Regulant -- 11.8%, Reg. No. 241-74. No uses other than reformulation into the 63% product are claimed on the label. Therefore, no exposure to fish and wildlife is expected.

104.4 Adequacy of Toxicity Data

It should be noted that in previous reviews where outdoor uses were expected both an avian acute oral LD₅₀ and a 48-hour LC₅₀ for an aquatic invertebrate were required. In addition, marine toxicity testing (shrimp, crab, oysters) was required. None of these has been submitted to the branch for review.

107.

Conclusions

Ecological Effects Branch concurs with the proposed conditional registration of Cycocel for formulation uses only. Note, however, prior to consideration of registration of outdoor crops (beyond those registered) the following studies will be required:

1. Avian single-dose oral LD₅₀ on either wild waterfowl (preferably the mallard) or an upland game bird (preferably the bobwhite quail).
2. Avian dietary LC₅₀ on one species of wild waterfowl (preferably the mallard) and one species of upland gamebird (preferably the bobwhite quail).
3. Fish acute LC₅₀ on one coldwater fish species (preferably the rainbow trout), and one warm-water species (preferably the bluegill).
4. Aquatic invertebrate LC₅₀, (preferably Daphnia magna).

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