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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

JUL 8 1985

MEMORANDUM

OFFICE OF
PESTICIDES AND TOXIC SUBSTANCES

SUBJECT: EPA File No AZ-790010. Endothall. Protocol for Sampling and Analysis of Hydrothol 191 in Irrigation Canals and Laterals. Related Accession Number 243741. RCB No 945.

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THRU: Andrew Rathman, Section Head
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The Office of State Chemist, State of Arizona, has proposed a protocol for the sampling and analysis of Hydrothol 191 following its application to irrigation canals and laterals. Hydrothol 191 contains the active ingredient endothall [mono-(N,N-dimethylalkylamine) salt of 7-oxabicyclo[2.2.1]heptane-2,3-dicarboxylic acid in which the alkyl groups are derived from coconut oil]. As a condition for extension of SLN AZ-790010 until December 31, 1988, the Pesticide Advisory Committee has required the State of Arizona to supply sampling data showing endothall residue levels in treated water for a period of three years. RCB has been requested to review this protocol along with material in Accession number 243741.

An interim tolerance of 0.2 ppm is in effect for residues of endothall in potable water from the use of its potassium, sodium, di-N,N-dimethylalkylamine, and mono-N,N-dimethylalkylamine salts as algicides or herbicides to control aquatic plants [21CFR§193.180]. A 3 ppm tolerance for water has not been approved for toxicological reasons (see PP1F1105).

The protocol proposes sample collection between April to October. One water sample is to be collected from each of the following four locations: (1) ca one mile downstream from the point of pesticide injection; (2) at the water intake to the Tempe

Water Treatment Plant approximately 6-7 hours after injection; (3) Treatment Plant filter effluent and (4) Treatment Plant reservoir effluent. Location and timing for samples (3) and (4) are to be determined. Four samples of water (one liter or more) will be collected each day for four consecutive days at roughly 10-day intervals.

All samples will immediately be refrigerated in clean, plastic containers with teflon lined or polyseal closures. Samples will be divided into two volumes (each not less than 500 ml) with one set of water samples being marked for the Tempe Water Department laboratory and the other marked for the Pennwalt Laboratory. The Pennwalt samples must be frozen and when all sixteen samples (in four consecutive days) have been acquired, they will be packed in dry ice and shipped to the Pennwalt laboratory in Tacoma, WA by air express. The Tempe Water Department samples must be maintained at 1°C or below until completion of analysis.

The protocol proposes sample analysis be completed prior to the next sample set acquisition date. Results obtained at the Pennwalt laboratory must be reported by telephone to the City of Tempe Water Division followed by a written report as soon as possible. The report should identify the method used, type of detector, detection limits and any problems during analysis.

Our Comments

Amounts of Hydrothol injected each time and treatment concentrations in terms of endothall acid equivalents should be recorded. We do not understand why an interval of 6-7 hours for collection of sample (2) is proposed. A sample or samples should be taken when maximum residues at the intake are expected based upon the distance from the treatment site to the intake and the speed of the water. The type of filter used and its "gallonage" should also be noted. We suggest either the N-methoxyimide or diallyl ester derivative method be used since anaylsis for dimethylcocoamine may not be specific enough (PP1F1105, A. Smith, 2/4/71). Remarks on fish population including dead fish if any should be recorded.

Summary of Submitted Information

The attached package (Accession number 243741) contains several reports and memos regarding the Salt River Project (Eastern Canal) conducted between June to September and Maricopa Water District canal intake at Lake Pleasant conducted between August 28 to September 1 of 1979 in Arizona. Both concern field studies with Hydrothol 191 under Arizona EPA SLN No 790010. Most reports discussed the effectiveness, advantages and costs of this pesticide relative to acrolein. One memo included residue data as functions of time after application and distance from point of injection. Data on Eastern Canal show decrease of residue as a result of increase in time (0.2 to 0.08 ppm after four days) or distance

(0.2 to 0.07 ppm 14.5 miles downstream on first day) after one application. Data on Maricopa show 0.19-0.25 ppm residue regardless of distance from injection point (2.5, 8 or 20 miles downstream) one or two days after one treatment but dropped to non-detectable on the third day (less than 0.01 ppm). The analytical method used was not specified. Application concentration of Hydrothol 191 was at 0.2 ppm. We are unable to comment on the residue data resulting from the third application (Eastern Canal) due to pump failure, undated booster application(s) and possible date mix-up. The report also mentioned numerous fish including mosquito fish, catfish, bass, and others died after the first application due to proximity to site of treatment. Fish in another cage at an unspecified distance from point of injection survived for at least 48 hours and 1-2 inch fish fry were observed 11-14 miles downstream two weeks later.

One memo concluded that after four applications of Hydrothol 191 at 0.2 ppm concentration, water can be used for potable water and small fish were seen after the last application. Since the results obtained with these treatments were inconsistent, more trials were required with this chemical.

cc:Circ, RF, Endothall SF, Section 24(c) F, Cheng, PMSD/ISB
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