

US EPA ARCHIVE DOCUMENT

8-30-81

000935

MEMORANDUM

DATE:

SUBJECT: Chlordane and heptachlor review of mutagenicity studies.  
CASWELL # 174-474  
Identification Number: 876-273, 280, 281, 283, 284, 286, 288.

FROM: Alex Arce *AA*  
Review Section #3  
Toxicology Branch/HED (TS-769) *72*

TO: George LaRoca, PM #15  
Registration Division (TS-767)

THRU: William Burnam, Acting Chief *W/B*  
Toxicology Branch/HED (TS-769)

Registrant: Velsicol Chemical Corporation  
341 East Ohio Street  
Chicago, Illinois 60611

Action Requested:

To review the following studies:

a) Heptachlor EPA Reg. Nos. 876 - 283, 284, 286, 288.

Mutagenicity report on Technical heptachlor.

b) Technical Chlordane EPA Reg. No. 876 - 273, 280, 281

Mutagenicity Test reports on Technical Chlordane, alpha - chlordane,  
gamma - chlordane and gamma - chlordene. (Isomers of Technical Chlordane)

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c) Technical Chlordane EPA Reg. Nos. 876 - 273, 280, 281.

Technical Heptachlor EPA Reg. Nos. 876 -283, 284, 286, 288.

Mutagenicity report on trans-nonachlor. Trans-nonachlor is a component of both Chlordane and Heptachlor.

Conclusion:

The submitted Mutagenicity tests (a, b and c) followed accepted procedures. The results indicate that Heptachlor; the isomers alpha chlordane, gamma chlordane and gamma chlordene; and Trans-nonachlor (a component of both chlordane and heptachlor) are negative for mutagenic activity to salmonella typhimurium strains TA98 and TA100, both with and without metabolic activation. Technical chlordane however was positive for mutagenic activity. The results of the test showed more than double revertant colonies per plate in the test material than the ones in the control plates (262/124).

Review of Submitted Data:

A. Test Substance

1. Name: Heptachlor
2. Identity: 1,4,5,6,7,8,8-heptachloro- 3a,4,7,7a-Tetrahydro - 4,7-methanoindene.
3. Organism: Histidine - deficient strains of Salmonella typhimurium, TA98 and TA100.
4. Experimental Procedure:  
Salmonella mutagenesis assay mammalian microsome plate incorporation.
5. Results:

There were no significant increase in the number of revertant colonies per plate in the test samples as compare to the controls. The increase in the revertant colonies in the positive control was in all cases larger. No dose response was detected.

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B.1. Test Substance

1. Name: Technical Chlordane
2. Identity: 2,3,4,5,6,7,8, 8-octachlora 4,7-endomethylene 1,1'2,3,9,10-haxahydroindane and related compound.
3. Organism: Histidine - deficient strain of Salmonella typhimurium TA98 and TA100.
4. Experimental Procedure:  
Salmonella mutagenesis assay mamalian microsome plate incorporation.
5. Results:  
Significant increase in the number of revertant colonies per plate was detected in the technical chlordane sample to Samonella Typhimuruim strain TA100 but not to TA98. This response is meaningfull since the amount of revertants of the 5000 concentration was 262 and the control was only 124.

B.2. Test Substance

1. Name: Gama - Chlordone
2. Identity: 2,3,3a,4,5,8-hexachloro-3a,6,7,7a tetrahydro - 1, 6-methano 1H-indene.
3. Organism: Histidine - deficient strain of Salmonella typhimurium TA98 and TA100.
4. Experimental Procedure:  
Salmonella mutagenesis assay mamalian microsome plate incorporation.
5. Results:  
There were no significant increase in the number of revertant colonies per plate in the test samples as compare to the controls. The increase in the revertant colonies in the positive control was in all cases larger. No dose response was detected.

B.3. Test Substance

1. Name: Gama - Chlordane
2. Identity: 2,3,4,5,6,7,8,8'-octachloro 4,7-endomethylene  
1,1',2,3,9,10 Hexahydroindane (Trans).
3. Organism:  
2 Histidine - deficient strains of Salmonella typhimurium  
TA98 and TA100.
4. Experimental Procedure:  
Salmonella mutagenesis assay mamalian microsome plate incorporation.
5. Results:  
There were no significant increases in the number of revertant colonies per plate in the test samples as compare to the controls. The increase in the revertant colonies in the positive control was in all cases larger. No dose response was detected.

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B.4. Test Substance

1. Name: Alpha Chlordane
2. Identity: 2,3,4,5,6,7,8,8' octachloro - 4, 7-endomethylen - 1,1',2,3,9,10 - hexahydroindane (cis)
3. Organism: 2 histidine - deficient strains of Salmonella typhimurium; TA98 and TA100.
4. Experimental Procedure:  
Salmonella mutagenesis assay mamalian microsome plate incorporation.
5. Results:  
there were no significant increase in the number of revertant colonies per plate in the test samples as compare to the controls. The increase in the revertant colonies in the positive control was in all cases larger. No dose response was detected.

C. Test Substance

1. Name: Trans - nonachlor
2. Identity: 1,2,3,4,5,6,7,8,8 - nonachloro-4,7, methano - 3a,4,7,7a - Tetrahydroindane.
3. Organism:  
2 histidine - deficient strains of Salmonella typhimurium; TA98 and TA100.
4. Experimental Procedure:  
Salmonella mutagensis assay mammalian - microsome plate incorporation.
5. Results:  
No significant increase in the number of revertant colonies per plate as compare to the controls. The increment in revertrants in the positive control plates was in all cases, larger than the ones in the test plates. No dose response was detected.

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