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

MAR 04 1997

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MEMORANDUM

SUBJECT: SECOND RfD/Peer Review Report of Dimethoate [O,O-dimethyl-S-(N-methylcarbamoylmethyl)phosphorothioate].

CASRN: 60-51-5
EPA Chem. Code: 035001
Caswell No.: 358

FROM: George Z. Ghali, Ph.D.
Manager, RfD/QA Peer Review Committee
Health Effects Division (7509C)

THRU: William Burnam
Chairman, RfD/QA Peer Review Committee
Health Effects Division (7509C)

TO: Rober Forrest, PM 14
Insecticide-Rodenticide Branch
Registration Division (7505C)

Chief, Reregistration Branch
Special Review and Reregistration Division (7505C)

The Health Effects Division-RfD/Peer Review Committee met on January 17, 1997 to reassess the Reference Dose (RfD) for Dimethoate and to evaluate an additional dermal toxicity study in rabbits submitted in support of Dimethoate reregistration.

A. Background:

On march 27, 1995, the HED-RfD Peer Review Committee recommended that an RfD for this chemical be established based on a chronic toxicity study in rats with a NOEL of 0.05 mg/kg/day. Brain and red blood cell cholinesterase inhibition was observed at the next higher dose level of 0.25 mg/kg/day. An Uncertainty Factor of 100 was applied to account for both interspecies extrapolation an intraspecies variability. On this basis, the RfD was calculated to be 0.0005 mg/kg/day.

A question was recently brought to the attention of the HED-RfD Peer Review Committee regarding a cholinesterase inhibition study conducted on human volunteers and might have not be considered in the assessment of the RfD for this chemical.

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B. Reconsideration of the RfD:

In this meeting, the HED-RfD Peer Review Committee reaffirmed its position on the RfD for Dimethoate. Therefore, the RfD would remain as 0.0005 mg/kg/day based on the chronic toxicity study in rats with a NOEL of 0.05 mg/kg/day, using a UF of 100.

The Committee also indicated that at one time in the past, the human study was considered in the overall toxicology profile in the process of assessing the RfD for dimethoate. However, it was then determined that the study would be inappropriate for use as a critical study for the purpose of RfD setting for Dimethoate. The human study was an old study and was judged to be deficient with respect to reporting, design and methodology. Therefore, the Committee recommended that the human study be discounted and not to be used for regulatory purposes.

C. Evaluation of the Dermal Toxicity Study in Rabbits:

The Committee considered the 21-dermal toxicity study in rabbits (82-2, 1986, MRID No. 000000) to be unacceptable and the data evaluation record (HED Doc. No. 012126) to be adequate. The Committee cited several technical deficiencies in the conduct of the study including: 1) The Choice of animal species; the rabbit is an inappropriate model for testing this particular chemical, and 2) the choice of solvent; the paraffin oil, used as solvent in this study, is inappropriate because it impaired dermal penetration.

The Committee concluded that, because of these deficiencies in the study, the results of this study were compromised and the dermal toxicity of the test chemical was, thus, significantly underestimated.

D. Individuals in Attendance:

Peer Review Committee members and associates present were William Burnam (Chief, SAB, Chairman, RfD/Peer Review Committee), George Ghali (Manager, RfD/Peer Review Committee), Karl Baetcke (Chief, TB I), Albin Kocialski (Senior Science Advisor, HED), Marion Copley, Nancy McCarroll, Susan Makris, Kit Farwell, Guruva Reddy, William Sette, Henry Spencer, and Rick Whiting. In attendance also was Robert Zendzian of HED as an observer.

Scientific reviewers (Committee or non-committee member(s) responsible for data presentation; signature(s) indicate technical accuracy of panel report):

Paul Chin

Joycelyn Stewart

Respective Branch Chief (Committee member; signature indicates concurrence with the peer review unless otherwise stated)

Karl Baetcke

CC: Stephanie Irene
Albin Kocialski
Karl Baetcke
Joycelyn Stewart
Paul Chin
Beth Doyle
Amal Mahfouz (OW)
RfD File
Caswell File

E. Material Reviewed:

1. Madison, W. (1986). 21-day dermal study with Dimethoate in rabbits. MRID No. 00159759, HED Doc. No. 012126. Classification: Unacceptable. This study does not satisfy data requirement 82-2 of Subpart F of the Pesticide Assessment Guideline for subchronic dermal toxicity study.