



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

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SCIENTIFIC DATA REVIEWS
EPA SERIES 361**

OFFICE OF
PREVENTION, PESTICIDES
AND TOXIC SUBSTANCES

June 24, 2002

MEMORANDUM

SUBJECT: Chlorpropham (CIPC) [018301], Response to SRRD Request to Determine Residue Data Requirements for Thermal Decomposition Product. DP Barcode 283865 (No MRID).

From: Danette Drew, Chemist *Danette Drew*
Reregistration Branch 3
Health Effects Division [7509C]

Through: Catherine Eiden, Branch Senior Scientist *Catherine Eiden*
Reregistration Branch 3
Health Effects Division [7509C]

To: Gary Mullins, CRM
Reregistration Branch 3
Special Review and Reregistration Division [7508C]

Executive Summary

Special Review and Reregistration Division (SRRD) has requested that the Health Effects Division (HED) determine what, if any, residue data are required for the potential chlorpropham (CIPC) thermal decomposition product chlorophenyl isocyanate. A literature source suggests that CIPC decomposes at temperatures of about 250°C to form chlorophenyl isocyanate and isopropyl alcohol (Analytical Methods for Pesticides, Plant Growth Regulators, and Food Additives; edited by G. Zweig, 1964, Vol.IV, p.52). The Ready-To-Use CIPC formulations¹ use an aerosol generator to treat stored potatoes. The application apparatus heats the CIPC to temperatures ranging from about 300°C to 580°C to generate the aerosol. So there is some concern that the isocyanate may be formed during aerosol application to potatoes, potentially resulting in residues in/on treated potatoes. However, another source indicates that the intermediary isocyanate (5-chloro-2-hydroxyphenyl isocyanate) formed during pyrolysis of CIPC is unstable and rapidly degrades to form 5-chloro-2-benzoxazolinone and nonvolatile polymeric materials (Herbicides: Chemistry, Degradation, and Mode of Action; Second Edition, edited by P.C. Kearney and D.D. Kaufman, 1975, Vol 2, p. 621).

The potato metabolism study (MRID 42085601) was performed by coating the potatoes directly with a CIPC emulsion so the results of that study would not include potential degradates formed during thermal decomposition. Based on the literature citations and the submitted metabolism study, HED cannot determine whether or not the chlorophenyl isocyanate, or other thermal degradates, are produced during aerosol treatment. Therefore, the registrant should propose a small-scale study that would determine the residues on stored potatoes as a result of aerosol treatments and should include the range of temperatures typically used by the generators. The study should determine the presence and amount of any isocyanates, in particular chlorophenyl isocyanate, and 5-chloro-2-benzoxazolinone. The protocol for the study should be submitted to HED for approval prior to initiating the study.

At this time, for the chlorpropham Tolerance Reassessment Eligibility Decision, HED is only addressing dietary (food and water) considerations. In regard to any decisions for the requirement of additional inhalation or dermal exposure data on potential thermal degradates, or for occupational Personal Protective Equipment requirements, such as an organic vapor respirator, HED defers to SRRD.

cc: D. Drew, RF. List (Reg) File, G. Mullins (SRRD)
RDI: C. Eiden (6/24/02)

¹ EPA Reg. Nos. 2749-517, 2749-520, 2792-41, 2792-69, 2792-70, 34704-614, 65726-3.