

Thiamethoxam

3-(2-chloro-thiazol-5-ylmethyl)-5-methyl-[1,3,5]-oxadiazinan-4-ylidene-N-nitroamine

Thiamethoxam is a broad-spectrum insecticide that interferes with nicotinic acetyl choline receptors of the insect nervous system. Thiamethoxam belongs to the neonicotinoid class of compounds. It is used on a wide variety of crops in the field, including cotton, tomatoes, strawberries, cherries, melons, artichokes and bell peppers, as well as for fumigation of harvested produce. It is also used on greenhouse plants and flowers, and for structural pest control. Because of the wide range of uses for this chemical, one might expect exposures to both workers and consumers of crops treated with thiamethoxam.

Thiamethoxam passed the animal data screen, underwent a preliminary toxicological evaluation, and is being brought to the Carcinogen Identification Committee for consultation. This is a compilation of the relevant studies identified during the preliminary toxicological evaluation.

Epidemiological data

No cancer epidemiology studies were identified.

Animal carcinogenicity data

- Long-term feed studies
 - 18-month studies in male and female Tif:MAGf(SPF) mice: as reviewed by U.S. EPA (2000, pp. 4-10)
 - Two-year studies in male and female Sprague-Dawley rats: as reviewed by U.S. EPA (2000, pp. 2-4)

Other Relevant Data

- Genotoxicity: as reviewed by U.S. EPA (2000, pp. 11-12)
- Mechanistic studies
 - In mice: as reviewed by U.S. EPA (2000, pp. 20-23), Green *et al.* (2005a), Pastoor *et al.* (2005)
 - In rats: Green *et al.* (2005b)

Reviews

- U.S. EPA (2000)
- U.S. EPA (2007) (Cancer classification updated)

References¹

Green T, Toghil A, Lee R, Waechter F, Weber E, Noakes J (2005a). Thiamethoxam induced mouse liver tumors and their relevance to humans. Part 1: mode of action studies in the mouse. *Toxicol Sci* **86**, 36-47.

Green T, Toghil A, Lee R, Waechter F, Weber E, Peffer R, Noakes J, Robinson M (2005b). Thiamethoxam induced mouse liver tumors and their relevance to humans. Part 2: species differences in response. *Toxicol Sci* **86**, 48-55.

Pastoor T, Rose P, Lloyd S, Peffer R, Green T (2005). Case study: weight of evidence evaluation of the human health relevance of thiamethoxam-related mouse liver tumors. *Toxicol Sci* **86**, 56-60.

U.S. Environmental Protection Agency (U.S. EPA, 2000). Evaluation of the cancer potential of thiamethoxam P.C. Code: 60109. Final Report. Cancer Assessment Review Committee. Health Effects Division, Office of Pesticide Programs, U.S. EPA.

U.S. Environmental Protection Agency (U.S. EPA, 2007). Memo: Chemicals Evaluated for Carcinogenic Potential by the Office of Pesticide Programs, September 2007, Pages 1 and 25.

¹ Copies of these listed references, as either the abstract, the relevant sections of the publication, or the complete publication, have been provided to members of the Carcinogen Identification Committee. These references have been provided in the order in which they are discussed in this document.