

Flonicamid

N-(cyanomethyl)-4-(trifluoromethyl)-3-pyridinecarboxamide

Flonicamid is a nicotinoid insecticide used on cotton, alfalfa, and a variety of fruits and vegetables. U.S. EPA has set regulatory limits for fruits, vegetables, meat products, milk and eggs. In 2009, 13,288 pounds were used in California. Top uses included cotton (9487 pounds) and alfalfa (1937 pounds). Exposures may occur to agricultural workers and consumers of foods with residues.

Flonicamid 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 diet studies
 - 24-month studies in male and female Wistar rats: U.S. EPA (2005, pp 1-2)
 - *Increase in nasolacrimal duct squamous cell carcinoma in female rats (by trend; considered a rare tumor in female rats; high dose incidence above historic control range)*
 - 78-week studies in male and female CD-1 mice (1st study): U.S. EPA (2005, pp 2-3)
 - *Increase in alveolar/bronchiolar adenoma, carcinoma, or combined adenoma and carcinoma (by pairwise comparison and trend) in male and female mice*
 - 78-week studies in male and female CD-1 mice (2nd study): U.S. EPA (2005, pp 3-4)
 - *Increase in alveolar/bronchiolar adenoma, or adenoma and carcinoma combined (by pairwise comparison and trend) for male mice*
 - *Increase in alveolar/bronchiolar adenoma and carcinoma combined (by pairwise comparison and trend) in female mice*

Other relevant data

- Genotoxicity: U.S. EPA (2005, pp. 39-42)
 - Mutagenicity in Ames test with tester strains *Salmonella typhimurium* TA1535, TA1537, TA98, TA100 (*negative*)
 - Mutagenicity in *Escherichia coli* (*negative*)
 - Mouse lymphoma test (*negative*)
 - *In vivo* mouse micronucleus test (*negative*)
 - Chromosome aberration in Chinese hamster lung cells (*negative*)
 - DNA breakage in mammalian cells (Comet assay) (*negative*)
 - *In vivo* rat hepatocyte unscheduled DNA synthesis (*negative*)
- Structure activity considerations: U.S. EPA (2005, p. 43)
 - Structural similarities to pyridine, a listed Proposition 65 carcinogen.
- Other mechanistic considerations:
 - Mitogenic response indicated by BrdU labeling: U.S. EPA (2005, pp 48-59)

References¹

U.S. EPA (2005). Memorandum. Report of the Cancer Assessment Review Committee. PC code 128016. Office of Prevention, Pesticides, and Toxic Substances, Health Effects Division, Washington DC, 81 pages.

¹ Excerpts or the complete publication have been provided to members of the Carcinogen Identification Committee, in the order in which they are discussed in this document.