



Most German cockroaches enter a facility when an egg case each egg case can contain up to 10 eggs is introduced in shipped materials, beverage cases, or produce packaging. They are often hidden deep in the folds of corrugate cardboard.

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Pesticide Profile: Indoxacarb

Indoxacarb is a very common chemical used in many products designed for killing insects, such as roaches and ants. Some pest management technicians consider it a least-toxic pesticide. However, due to its toxicity and volatility, **indoxacarb is not a least-toxic** and should not be used in an IPM program.

What is Indoxacarb?

Indoxarb is a broad spectrum insecticide used to kill many insects. It is found in several formulations, including tablets, granules, water dispersible, and gel. Indoxacarb has been promoted by the industry as “reduced-risk,” but serious health risks have been associated with exposure to this chemical. It works by interfering with the flow of sodium ions into nerve cells. This flow of sodium ions is essential to nervous system function. This disruption can cause tremors, cessation of feeding, paralysis and death in insects.

Toxicity

Studies suggest that indoxacarb is associated with both acute and chronic toxicity. EPA has classified indoxacarb as a moderate dermal irritant (acute toxic category III), due to its ability to cause skin sensitization after contact. If ingested orally, it is classified as toxicity category II, and is extensively metabolized by the liver. There is evidence of lung damage in acute inhalation studies which indicate the development of acute lung injury and high permeability pulmonary edema. This is attributed to an oxidant generated during indoxacarb metabolism.

Indoxacarb also shows some signs of neurotoxicity after acute exposure in rats; causing a decrease in motor activity and decreased forelimb grip strength.

Chronic exposure can cause a reduction in the number of red blood cells and a depletion of blood-forming elements in the bone marrow and lymphoid organs. Chronic exposure can also cause neurotoxic symptoms similar to acute symptoms: weakness, abnormal mobility, and inability to stand.



Volatility and Alternatives to Indoxacarb

Indoxarb has a low vapor pressure, which contributes to the occasional misuse of this chemical as a least-toxic pesticide. However, despite its *low volatility*, it is volatile and will evaporate poisonous vapors into the ambient air. In sealed buildings, such as health care facilities, pesticide residues present a greater risk to air supply.

With an effective IPM plan in place, non-toxic strategies are implemented first to prevent and combat pests, such as ants and roaches, instead of using pesticide products containing indoxacarb. These strategies include caulking and sealing small openings, cracks, and holes, removing habitat, such as cardboard, storing food in sealed containers, repairing leaks and removing standing water, and maintaining dietary areas free of grease and other potential food sources for pests.

As a last resort, a least-toxic pesticide can be used. Products like boric acid, diatomaceous earth, and silica gels are completely non-volatile and are thus considered least-toxic in an IPM program.

