

## Boric Acid Insecticides

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How does boric acid work? Insects die by ingesting boric acid and borate salts. Borate salts are abrasive to the insect exoskeleton. Boron is an essential plant micronutrient, and some boric acid products are used to correct boron deficiencies in plants (1, 3). Plants require small amounts of boron but high concentrations are toxic (3). At high levels, boric acid is an herbicide that disrupts photosynthesis and causes plant desiccation. As a fungicide, boric acid inhibits the maturation of fungi by preventing spore formation. The mechanism of toxicity in animals is not known. How toxic is boric acid? Animals Boric acid is very low to low in toxicity when ingested. The acute oral LD50 in mice is 3450 mg/kg and for rats ranges from 2660-5140 mg/kg (2). See boxes on Laboratory Testing, LD50/LC50, and Toxicity Category. LD50/LC50: A common measure of acute toxicity is the lethal dose (LD50) or lethal concentration (LC50) that causes death (resulting from a single or limited exposure) in 50 percent of the treated animals. LD50 is generally expressed as the dose in milligrams (mg) of chemical per kilogram (kg) of body weight. LC50 is often expressed as mg of chemical per volume (e.g., liter (L)) of medium (i.e., air or water) the organism is exposed to. Chemicals are considered highly toxic when the LD50/LC50 is small and practically non-toxic when the value is large. However, the LD50/LC50 does not reflect any effects from long-term exposure (i.e., cancer, birth defects, or reproductive toxicity) that may occur at levels below those that cause death. For a complete report please use: <http://npic.orst.edu/factsheets/borictech.pdf>