

Health Questions and Answers for the *Bacillus thuringiensis* (Btk) Insecticidal Product Dipel®

Prepared by the Office of Environmental Health Hazard Assessment, CalEPA



Q: *What is Dipel®?*

A: Dipel® is an insecticidal product containing toxins from *Bacillus thuringiensis kurstaki* (Btk), a naturally-occurring bacterium found in soil and plants. Dipel® is used by the California Department of Food and Agriculture (CDFA) as a biological insecticide to control invasive insects, such as moths. CDFA applies Dipel® using a hydraulic or hand sprayer to vegetables, fruit and the leaves of trees, shrubs, vines, and bedding plants.

Q: *How do the Btk toxins work?*

A: When a caterpillar ingests leaves treated with Dipel®, the Btk toxins become activated in the caterpillar's stomach. The active toxins destroy the caterpillar's digestive tract, resulting in the insect's starvation and death. Humans, fish, birds, adult moths, and most other insects (including honeybees) are not affected if they ingest Btk toxins because they have acidic stomachs that prevent the toxins from becoming active.

Q: *What are the health effects of Btk and toxins?*

A: Laboratory animals and humans who ingested high levels of Btk and its toxins did not show adverse health effects. High levels of Btk formulations, when inhaled or applied to the skin, caused mild skin or respiratory irritation. However, irritation is not expected with CDFA treatments using Dipel® because the level of Btk applied is low.

Q: *How do regulatory agencies classify Btk's health effects and risk?*

A: The US Environmental Protection Agency has evaluated Btk and determined that it is safe to use on all types of food crops. Btk is considered an organic insecticide.

Q: *What is known about the inert ingredients in Dipel®?*

A: The inert ingredients in Dipel® have been approved by the US Environmental Protection Agency for use on crops and by the US Food and Drug Administration to be added to food. Some of the inert ingredients may cause skin or eye irritation at high concentrations. When used according to label instructions, Dipel® is diluted with water, ensuring a very low level of exposure to any one inert ingredient.

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Q: *What precautions should people take when Dipel® is applied to plants in their yard?*

A: As a precaution during treatment, residents should stay indoors, close all windows and doors that open to the outside, and turn off ventilation systems that receive outside air. Inhalation exposure to Btk is expected to be minimal because Btk does not evaporate. Follow all instructions provided by CDFA.

Q: *What precautions should people take after Dipel® is applied to plants in their yard?*

A: Residents should not perform yard work or allow children to play near the treated areas immediately after treatment. Wait until the material has dried before entering the treated area. For those wishing to take extra precaution, wait at least 24 hours after treatment before entering the treated area. If it is necessary to enter before the spray material has dried, wear gloves and clothes to protect the skin from direct contact with the material. Wash skin and clothing if contact occurs. Follow all instructions provided by CDFA.

Q: *Can I eat fruits and vegetables from plants treated with Dipel®?*

A: Treated vegetables and fruits can be picked after spraying; however, as a precaution, OEHHA recommends waiting for at least 24 hours after treatment before picking. Btk is destroyed by sunlight and microbial activity within a few days. Be sure to wash the fruits and vegetables thoroughly.

Q: *Are there other products on the market that contain Btk?*

A: There are several home gardening products containing Btk.

Q: *What should I do if I feel sick after the application of Dipel®?*

A: Call the California Poison Control System hotline at (800) 222-1222 or consult with your physician.

For further information, please contact:

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