

information, data, and arguments in support of their pesticide petition. This summary was prepared by Valent BioSciences Corporation and EPA has not fully evaluated the merits of the pesticide petition. The summary may have been edited by EPA if the terminology used was unclear, the summary contained extraneous material, or the summary unintentionally made the reader conclude that the findings reflected EPA's position and not the position of the petitioner.

A. Product Name and Proposed Use Practices

6-Benzyladenine is a naturally occurring plant growth regulator used on certain fruit trees and certain ornamental lily tubers. In January 1990, the Agency classified 6-BA as a biochemical pesticide because it resembles natural plant regulators and it displays a nontoxic mode of action. The new use being proposed for 6-BA is as an effective stand-alone fruitlet thinner when applied to apples in the post-bloom period at an application rate not to exceed 182 grams of active ingredient per acre per season (gram per active ingredient per acre per season). 6-Benzyladenine has also been shown to directly increase cell division of treated fruit, resulting in improvements in fruit size over what would be expected from the normal thinning effect. The frequency and timing of application will vary according to the specific growing conditions being treated. The second proposed new use is to reduce alternate bearing in pistachio and thus increase cumulative yield. The proposed maximum application rate for pistachio is 60 grams of active ingredient per acre per season.

B. Product Identity/Chemistry

1. *Identity of the pesticide and corresponding residues.* 6-Benzyladenine (*N*-(phenylmethyl)-1H-purin-6-amine) has been tested and residue data generated has been provided to EPA by Valent BioSciences Corporation.

2. *Magnitude of residue at the time of harvest and method used to determine the residue.* Trials conducted in various states (New York, Pennsylvania, Virginia, Missouri, Oregon, and Washington) and on various apple cultivars, support the proposed tolerance exemption. This data has been further supported by numerous trials carried out internationally. Residue levels following the maximum number (4) of applications on apple were very close to the limit of quantitation (LOQ) of 5 parts per billion (ppb) at normal

harvest, which averaged 80 days after the last application. Trials indicate rapid degradation of 6-BA residues among all the apple varieties and geographies evaluated.

The analytical methods for detection of 6-BA in apple raw agricultural and processed commodities are comprised of extraction, cleanup on a strong cation exchange (SCX) solid-phase extraction cartridge, derivatization and quantitation by gas chromatography (GC). These were developed by Valent BioSciences Corporation and submitted to EPA, constituting a practical analytical method for detecting and measuring levels of 6-BA in or on commodities, with a LOQ of 0.005 part per million (ppm) that allows for monitoring of food, with the residues at or above the LOQ.

Residue data on 6-BA use on pistachio has been provided to EPA by Valent BioSciences Corporation. Trials were conducted in locations representing the major pistachio production area in the United States. No residues were detected following the maximum number (2) of applications at normal harvest, which averaged 60 days after the last application.

An analytical method based on extraction, clean up and derivatization of 6-BA followed by quantitation by GC was submitted to EPA for residue determination on pistachio. This GC method is adequate for determining residues in or on pistachios with a LOQ of 0.05 ppm.

3. *Why an analytical method for detecting and measuring the levels of the pesticide residue are not needed.* Usually, a request for an exemption from the requirement of a tolerance is not accompanied by residue data and an analytical method. Valent BioSciences Corporation has provided this information to the Agency in this case. The information demonstrates that any residue is detected at levels very close to the LOQ. Although a numeric tolerance could be established, it would be very difficult to enforce, as demonstrated by the risk characterization. Valent BioSciences Corporation proposes that the submitted residue data and analytical method support their conclusion that there is a reasonable certainty that no harm to humans or the environment will result from the use of 6-BA on apples and pistachios.

C. Mammalian Toxicological Profile

1. *Acute toxicity.* The oral LD₅₀ of 6-BA is estimated by probit analysis at 1.3 gram/kilogram (g/kg) in the rat. The dermal LD₅₀ in the rabbit is >5.0 g/kg. The acute inhalation LC₅₀ in the rat is

5.2 milligrams/Liter (mg/L)/hour. A primary eye irritation study in the rabbit showed moderate conjunctival effects which cleared within 7 days. A dermal irritation study in the rabbit showed slight dermal irritation, which lasted for 5 days. Sensitization potential has been examined, and 6-BA (99% pure) was demonstrated not to be a dermal sensitizer in guinea pigs under conditions of the study.

2. *Genotoxicity.* Mutagenicity studies including Ames test, mouse micronucleus assay, and unscheduled DNA synthesis (UDS) assay in rat were negative for mutagenic effects.

3. *Developmental toxicity.* Developmental toxicity in rats fed 6-BA (99% pure) was manifested as significantly decreased fetal body weight, increased incidence of hydrocephalus and unossified sternbrae, incompletely ossified phalanges, and malaligned sternbrae at 175 milligrams/kilogram body weight/day (mg/kg bwt/day).

Maternal toxicity was also observed at 175 mg/kg bwt/day, which was manifested as significantly decreased body weight, weight gain, and food consumption. Thus the no observed adverse effect level (NOAEL) and lowest observed adverse effect level (LOAEL) for maternal and developmental toxicity was 50 and 175 mg/kg bwt/day, respectively.

4. *Subchronic toxicity.* 6-Benzyladenine (99% pure) fed to rats for 13 weeks produced decreased weight gain at 1,500 and 5,000 ppm (121 and 322 mg/kg bwt/day) in females, and 5,000 ppm (295 mg/kg bwt/day) in males. This decreased weight gain appeared to be related to decreased food consumption. Serum alkaline phosphatase activity and blood urea nitrogen levels were increased in both sexes receiving 5,000 ppm; thus the NOAEL was 1,500 ppm (approximately 111 mg/kg bwt/day in both sexes combined) and the LOAEL was 5,000 ppm (approximately 304 mg/kg bwt/day in both sexes), based on the decreased body weight gain, food consumption, increased blood urea nitrogen, and minimal histological changes in the kidneys.

D. Aggregate Exposure

1. *Dietary exposure—i. Food.* In conducting this exposure assessment, Valent BioSciences Corporation used very conservative assumptions, 100% of all commodities were assumed to be treated, and those residues would be at twice the LOQ -- which result in a large overestimate of human exposure. The analysis assumes that all residues have the same magnitude, and the treated