

concerning the cumulative effects of a particular pesticide's residues and "other substances that have a common mechanism of toxicity."

EPA performs a number of analyses to determine the risks from aggregate exposure to pesticide residues. First, EPA determines the toxicity of pesticides. Second, EPA examines exposure to the pesticide through food, drinking water, and through other exposures that occur as a result of pesticide use in residential settings.

IV. Toxicological Profile

Consistent with section 408(b)(2)(D) of the FFDCA, EPA has reviewed the available scientific data and other relevant information in support of this action and considered its validity, completeness, and reliability and the relationship of this information to human risk. EPA has also considered available information concerning the variability of the sensitivities of major identifiable subgroups of consumers, including infants and children.

The *Bacillus pumilus* species was first described by Meyer and Gottheil in 1901. This naturally occurring species is one of the most numerous *Bacillus* sp. found on plant surfaces. The strain *Bacillus pumilus* GB 34 is a naturally occurring soil colonizer. The mode of action of the strain, an anti fungal agent, is to colonize the developing root system of the plant it is to protect, in this case the developing root system of the soybean plant. The organism *Bacillus pumilus* GB 34 then suppresses by competition, by the formation of a physical barrier, the continued formation of spores of the fungal diseases such as *Rhizoctonia* and *Fusarium*. Subsequently GB 34 colonizes the remaining fungal disease spores themselves, thereby destroying them. On the basis of Acute injection toxicity/Pathogenicity tests on rats, *Bacillus pumilus* GB 34 does not appear to be toxic, infective, and/or pathogenic in those mammals.

Toxicity studies submitted in support of this tolerance petition are summarized below. More detailed analyses of these studies may be found in the specific Agency reviews of the studies. Waivers requested and granted are, as well, noted.

Toxicity studies relating to the GB 34 Concentrate (End Use Product) and GB 34 Technical (Technical Grade Active Ingredient) are as follows:

1. *Acute oral toxicity*—i. *GB 34 Concentrate*. (Submitted to determine the adequacy of data to support an EUP, GB 34 Concentrate, and here, bridged to support a section 3 registration of the microbial product) (OPPTS 870.1100;

OPP 152.30; Master record identification number (MRID) 452940–01). Five male and five female young adult Sprague-Dawley rats each received a single 5,000 milligrams/kilogram (mg/kg) gavage dose of GB 34 Concentrate, previously diluted to a 40% weight/weight (w/w) solution with distilled water at a dosing volume of 1 milliliter (mL)/100 grams (g). The rats were observed for morbidity, moribundity, and behavioral changes 1 and 3 hours after dosing and at least daily thereafter for 14 days. They were weighed on days 0, 7, and 14. At the end of the study, the rats were euthanized by CO₂ inhalation and necropsied. No morbidity, moribundity, or effects on body weight were found following treatment of rats with 5,000 mg/kg test material.

Therefore, the Sprague Dawley rat oral lethal dose (LD)₅₀ of GB 34 Concentrate for male, female, and male and female combined is >5,000 mg/kg, placing the test material in Toxicity Category IV.

ii. *Acute oral toxicity*—*GB 34 Technical*. (OPPTS 870.1100; OPP 152.30; MRID 454335–01 corrected as MRID 457225–01). Five male and five female Sprague-Dawley rats each received a single 5,000 mg/kg gavage dose of the GB 34 Technical, previously diluted to a 40% w/w solution with distilled water, at a dosing volume of 1 mL/100 g. The rats were observed for morbidity, moribundity, and behavioral changes 1 and 3 hours after dosing and at least daily thereafter for 14 days. They were weighed on days 0, 7, and 14. At the end of the study, the rats were euthanized by CO₂ inhalation and necropsied. No morbidity, moribundity, or effects on body weight were found following treatment of rats with 5,000 mg/kg test material. Therefore, the Sprague Dawley rat oral LD₅₀ of GB 34 Technical for male, female, and male and female combined is >5000 mg/kg, placing the test material in Toxicity Category IV.

2. *Acute dermal toxicity*—*GB 34 Concentrate and GB 34 Technical*. ((OPPTS 870.1200 and OPPTS 885. 3100 (Acute dermal toxicity/ Pathogenicity); OPP 152.31; waiver request, no MRID)). A waiver was requested and granted for a seed treatment use. The rationale for the waiver is that the rate of application of the product is 0.1 ounce (oz.) per 100 pounds (lbs.) of seed. The seed treatment is to take place in a commercial seed treatment facility in which there is no exposure to the general population. After germination of the treated seed, the habit of the bacterium is to inhabit the root system of the plant. There is expected to be minimal, if any, dermal exposure for the

general population in a seed treatment use of the microbial pesticide.

3. *Acute inhalation toxicity*—*GB 34 Concentrate and GB 34 Technical*. ((OPPTS 870.1300 and OPPTS 885. 3150 (Acute pulmonary toxicity/ Pathogenicity); OPP 152.32; waiver request, no MRID)). A waiver was requested and granted for a seed treatment use. The use of GB 34 is to be limited to that of a seed treatment which is to take place in a commercial seed treatment facility in which there is no potential inhalation exposure to the general population. The rate of application of the pesticide is 0.1 oz. per 100 lbs. of seed. The habit of the bacterium is to gravitate to the root system of the developing plant. For a seed treatment use of GB 34 there will most likely be a negligible, if any inhalation exposure.

4. *Acute oral toxicity/Pathogenicity*—*GB 34 Technical and GB 34 Concentrate*. (OPPTS 885.3050). A waiver was requested and granted for a seed treatment use. The rationales such as are the minimal increase of human oral exposure expected due to the low rate of application (0.1 oz. per 100 lbs. of seed), the minimal exposure to the general population since the seed treatment will take place in a commercial seed treating facility with mechanical treating equipment, and the results of the toxicity tests submitted to date (see item 1.ii.) which do not indicate that this strain is toxic or infective. Moreover the results would suggest that the GB 34 strain does not express the 6,500 molecular weight toxin discussed in two papers. See item 7 below. In addition, the habit of the bacterium to gravitate to the root system of the developing plant makes it unlikely that any would be present in the above ground parts of the mature plant, thus minimizing the potential for oral exposure for humans.

5. *Primary eye irritation*—i. *GB 34 Concentrate*. ((Submitted to determine the adequacy of data to support an EUP, GB 34 Concentrate, and here, bridged to support a section 3 registration of the microbial product) (OPPTS 870.2400; OPP 152.35; MRID 452940–02)). Three male and three female young adult New Zealand white rabbits were used in the experiment. Prior to test material instillation, both eyes were treated with 2% fluorescein and examined under ultraviolet (UV) light for ocular abnormalities. The test material, 0.1 mL (equivalent to 0.05–0.07 g), was instilled into the everted lower lid of the right eye and the upper and lower lids held closed for 1 second. The contralateral eye served as control. The eyes were examined and scored according to the