CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY
DEPARTMENT OF PESTICIDE REGULATION
HUMAN HEALTH ASSESSMENT BRANCH

SUMMARY OF TOXICOLOGY DATA
Bacillus subtilis strain IAB/BS03

Chemical Code # 6165, Document Processing Number (DPN) # 53260
5/30/2014, 1/19/16

DATA GAP STATUS

NOTE: This page normally summarizes data gap status for several long-term and medium-term laboratory animal studies and for mutagenicity studies which are normally required for conventional (usually synthetic) pesticides. Such studies are not required for Tier 1 data evaluation for microbial pesticides.

Toxicology one-liners are attached.

All record numbers for the required study types through Record No. 287853 (Document No. 53260-0013) were examined.
In the 1-liners below:
indicates an acceptable study.
Bold face indicates a possible adverse effect.

File name: T160119
Revised by Green, 1/19/16.

NOTE: The following symbols may be used in the Table of Contents which follows:
** = data adequately address FIFRA requirement
† = study(ies) flagged as "possible adverse effect"
(N/A) = study type not currently required

This record contains summaries of studies. Individual worksheets may be useful for detailed assessment.

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GUIDELINE ACUTE STUDIES ON ACTIVE INGREDIENT

Acute oral toxicity, rat ** (Tox Category III)

**53260-0009 276762 Richeux, F. "*Bacillus subtilis* IAB/BS/03 Technical Powder evaluation of acute oral toxicity in rats," Phycher Bio Développement, Cestas, France, 9/14/2011. Laboratory Project ID: TAO423-PH-11/0245. Six female Sprague-Dawley rats were dosed once by gavage with Technical product *Bacillus subtilis* strain IAB/BS03, Batch UBBS1101011, at 2000 mg/kg in an acute oral toxicity study. Treatment did not elicit clinical signs or deaths. Body weight gains were normal. Necropsy did not find treatment effects. LD_{50} > 2000 mg/kg. Toxicity category: III. Study is acceptable. Aldous, 5/5/2014.

Acute dermal toxicity ** (Tox Category III)

**53260-0009 276763 Richeux, F., "*Bacillus subtilis* IAB/BS/03 Technical Powder evaluation of acute dermal toxicity in rats," Phycher Bio Développement, Cestas, France, 9/14/11. Laboratory Project ID: TAD-PH-11/0245. Five Sprague-Dawley rats per sex were dosed for 24 hours on clipped dorsal surface (under gauze dressing) with 10 ml of 20% w/v of *Bacillus subtilis* strain IAB/BS03 (technical), Batch UBBS1101011, hence 2000 mg/kg. Rats were

sacrificed after 2 weeks of observation. There were no adverse clinical signs or body weight or necropsy findings. LD_{50} > 2000 mg/kg. Tox Category = III. Acceptable. Aldous, 5/29/14.

Acute inhalation toxicity, rat (N/A for technical, but required for end-use products)

Acute inhalation data are not routinely required for the technical microbial pesticide material.

Primary eye irritation, rabbit ** (Tox Category III)

**53260-0009 276764 Richeux, F., "*Bacillus subtilis* IAB/BS/03 Technical Powder evaluation of acute eye irritation," Phycher Bio Développement, Cestas, France, 9/14/11. Laboratory Project ID: IO-OCDE-PH-11/0245. Three male NZW rabbits were instilled once with 0.1 g Technical product *Bacillus subtilis* strain IAB/BS03, Batch UBBS1101011 into the conjunctival sac of one eye, with observations for at least 72 hours or until clearing. Conjunctival signs at 1 hour did not exceed the following: chemosis (grade 1), discharge (grade 3), and redness (grade 2). There was no change in iris or cornea at this time or subsequently. Subsequent observations were limited to conjunctival redness of grade one, persisting through 24 hours in two rabbits, and until 72 hours on one rabbit (clearing in that animal by day 4). Toxicity category: III. Acceptable study. Aldous, 5/29/14.

Primary dermal irritation

53260-0009 276765 Richeux, F., "*Bacillus subtilis* IAB/BS/03 Technical Powder assessment of acute dermal irritation," Phycher Bio Développement, Cestas, France, 9/14/11. Laboratory Project ID: IC-OCDE-PH-11/0245. Three male New Zealand White rabbits were treated for 4 hours (dermal application to shaved dorso-lateral skin about 6 cm^2 per patch) with Technical product *Bacillus subtilis* strain IAB/BS03, Batch UBBS1101011 "as supplied." Skin was examined at1 hr, then at 24, 48, and 72 hrs after dosing. One of the three rabbits displayed slight erythema at 1 hr and at 24 hrs. No other rabbits showed signs at any time, and the affected rabbit was clear of signs by 48 hrs. Toxicity category: Not determined. Report is not acceptable as written. Test material was applied "as is." Although not specifically required in FIFRA guidelines, most investigators apply dry powders in a way to optimize exposure, which is usually facilitated by wetting the test article. Registrant is requested to indicate why test article was presented dry. Aldous, 5/5/2014. **NOTE**: this study type is not required for registration of microbial TGAIs; however, since the same type of additional information is required to upgrade the primary dermal irritation study in support of the formulated product (record 276771 in volume 53260) and, since both studies were performed by the same laboratory, concomitant submission should be convenient and would add to the data base.

Dermal sensitization (N/A)

This classification is not routinely required for microbial pesticides in Tier 1 testing.

ADDITIONAL TIER 1 STUDIES REQUIRED FOR MICROBIAL PESTICIDES

Acute oral toxicity/pathology (N/A)

DPR reviewer (Aldous) recommends that this study type be waived, based on availability of a standard acute oral toxicity study and the acute intravenous toxicity study (below).

Acute pulmonary toxicity/pathology

DPR reviewer (Aldous) recommends that the normal requirement for this study type still stands. No combination of studies received as of this time addresses toxicity by this route.

Acute intravenous toxicity/pathology, rat

53260-0009, 0013 276761, 287853 Doig, A., "Technical product *Bacillus subtilis* strain IAB/BS03: Acute intravenous toxicity/pathogenicity study in rats," Stillmeadow, Inc., Sugar Land, TX, 2/27/13 (amended). Laboratory Study ID: 16801-12. This microbial pest control agent (MCPA) was a white powder stated to be 2 x 10^{10} CFU/g. Evidently 1.4 x 10^{7} CFU was injected iv (tail vein) per rat in 3 rats/sex at day 0, 3, 7, 14, or 21 prior to sacrifice and collection of key tissues. Additionally, there were 5/sex dosed with autoclaved MCPA which rats were sacrificed after 21 days, and 5/sex naïve rats. All rats were normal with respect to body weight gain, clinical signs, organ weights, and necropsy evaluations. There was inexplicably no MCPA in any blood sample from among the six rats sampled immediately after iv dosing, nor at subsequent sacrifices. Concentrations in brain, lungs, and kidney never reached high levels, and were gone or below quantification levels by the end of the study. Spleen content was high at day 3, with systematic clearance thereafter. Liver content was relatively high at day 3, with a slow reduction through day 14, and evidently a much more rapid clearance by day 21. Cecum contents were just over limits of quantification on day 3, then quite high through the rest of the study. Coprophagy of feces in which the bacterium is actively propagating could explain the latter pattern. **No adverse effects were indicated. Originally reviewed as not acceptable**,** as written, but possibly upgradeable. Aldous, 4/21/14. The study was re-reviewed after submission by Beth E. Mileson of Technology Sciences Group Inc. of discussion points and 2 journal articles. Dose delivery to the animals and clearance from the animals was clarified. The study is upgraded to acceptable. Toxicity and pathogenicity were not indicated. (Green, 1/19/16).