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| **Primary Reviewer:** |  |  | **Date:** |
|  | ***[Name, title, and affi*** | ***liation]*** |  |
| **Secondary Reviewer:** |  |  | **Date:** |
|  | ***[Name, title, and affi*** | ***liation]*** |  |
| **[FOR JOINT REVIEWS ONLY- *otherwise delete*]** |
| **Approved by:** |  |  | **Date:** |
|  | ***[Name, title, and affi*** | ***liation]*** |  |

**DATA EVALUATION RECORD**

***[*NOTE TO REGISTRANT/APPLICANT: PLEASE DISREGARD *the header, footer, and reviewer information; reviewers’ comments in the conclusion section; and study classification statement. These sections are for EPA, PMRA, and OECD data entry only and will be populated upon Agency review.]***

**REQUIREMENT:** Avian Oral, Tier I

#### U.S. EPA OCSPP Guideline: 885.4050 PMRA Data Code: M9.2.1–Avian Oral OECD Data Code: IIM 8.1, IIIM 10.1

**TEST MATERIAL (PURITY):** *[use name of material tested as referred to in the study and include its*

##### *potency, lot no., biological activity or concentration per unit weight or* volume (% active ingredient name in parenthesis)] or [insert TGAI and EP names if a waiver request is made]

**SYNONYMS:** *[other names, code names and acronyms]*

**CITATION:** Author(s). *[Year]*. Study Title. Laboratory name and address. Laboratory report number, full study date. Unpublished *[OR if published, list Journal name, vol.: pages]*. MRID No. *[no hyphen],* PMRA *[number if applicable]*.

##### **SPONSOR:** *[Name and address of Study Sponsor - indicate if different from Applicant]*

**COMPLIANCE:** Signed and dated GLP, Quality Assurance, and Data Confidentiality statements were *[not]* provided. The study was *[not]* conducted in compliance with GLP [40 CFR § 160]. *[Discuss deviations from regulatory requirements]* This DER does *[not]* contain FIFRA CBI.

**EXECUTIVE SUMMARY:** *[Describe the study and its findings.]*

In a *[#]*-day acute oral toxicity and pathogenicity study of *[test material]* to *[#]*-day-old *[common name of species (scientific name), enter the number of birds per treatment]* were exposed to a *[single OR #] [indicate exposure method]* dose of *[indicate doses used, e.g., mg a.i./kg bw and/or CFU/kg bw]* of *[formulation, note its potency, biological activity or concentration per unit weight or volume]* (containing % *a.i. name*). *[Include other pertinent details such as the controls used.]*

##### *[Describe toxicity and/or pathogenicity briefly including mortality, behavioral abnormalities, and other clinical* signs. If there was no toxicity, state that there was no test material-related toxic or pathogenic effect. Describe microbial clearance, if assessed]

The *[#]*-day acute oral LD50 was *[****=, > or <****] [insert LD50 in mg a.i/kg bw and/or CFU/kg bw]*. The *[#]*-day NOEL of *[test material]* to the *[species]*, based on *[endpoint]* was *[****=, > or <****] [insert NOEL in mg a.i./kg bw and/or CFU/kg bw]*.

This *toxicity [or] infectivity/pathogenicity* study is classified as *[acceptable / unacceptable / supplemental.]* This study was *[not]* conducted in accordance with the guideline recommendations for an acute oral toxicity and pathogenicity study for birds (OCSPP 885.4050; PMRA: M9.2.1 and OECD: IIM 8.1, IIIM 10.1) in the *[species]*. *[If it does not satisfy the requirement, concisely list only major deficiencies or refer to deficiency section.]*

## CLASSIFICATION: [ACCEPTABLE / UNACCEPTABLE / SUPPLEMENTAL, but UPGRADEABLE]

***(Use the following template if a study report (i.e. toxicity test) was submitted. If a request for the use of alternative data is submitted in lieu of a new study, delete study template section and proceed to last section of DER template for alternative data requests)***

# *(NOTE: Guidance on populating the DER are reflected as [red italics]- please* replace this text with requested data. Excerpts of study recommendations/criteria are reflected as blue italicized text from the respective OSCPP Guideline and should be deleted upon completion of the DER template. For best preparation of data submission- refer to respective OSCPP Guideline and use both the DER template and guideline criteria. However, the overall structure of the templates should not be altered and data evaluation elements reflected in black *text should* not be deleted (i.e. headings, test parameters, tables, results section). Also- note for data elements of the template that are not applicable- insert “not applicable.” For unavailable information- insert “not available” with a brief explanation for the omission of data.)

## MATERIALS AND METHODS:

1. **GUIDELINE FOLLOWED:** *[Indicate which of the following guidelines were followed most closely in*

##### *testing, and whether the guideline was developed for the toxicity testing* of chemical agents or for the toxicity and infectivity/ pathogenicity [or] toxicity testing of microbial agents. Such as:

*U.S. EPA 885.4050–Avian oral, Tier I1*

*U.S. EPA 850.2100–Avian acute oral toxicity test2 PMRA DIR 2001-02 Part 9.21*

*Environment Canada EPS 1/RM/44 Section 14.11 OECD Guideline 223 (Draft)2]*

*1 Guideline designed to test acute oral infectivity and pathogenicity of microbial agents.*

*2 Guideline designed to test acute oral toxicity of chemical agents. Note: The U.S. EPA OCSPP Guideline 850.2100 guideline is only appropriate for MPCA's under certain circumstances and should not be used in place of 885.4050 guideline without consultation with EPA.*

**Deviations from guideline:** *[Indicate if there were any deviations from the test procedures and reporting requirements stated in guideline(s).This information is usually stated in the Good Laboratory Practices (GLP) and Quality Assurance (QA) statements in the introductory section of the study report. State the reasons for such deviations and its overall effect on the validity of the study.]*

1. **MATERIALS:**
	1. **Test Material:** *[Name of test material as cited in the study report.]*

##### **Description:** *[e.g., Physical-chemical state of the test material.]*

**Lot/Batch #:** *[Insert the test material’s lot or batch number.]*

***[NOTE: Verify that test material is derived from same source (i.e. lot/batch # or certificate of analysis) of MPCA (TGAI, MP or EP) that was previously characterized and data were acceptable]***

##### **Purity:** *[Insert the test material’s nominal potency and/or concentration per unit weight or* volume as indicated by the study sponsor.]

**Storage conditions:** *[Indicate how the test material was maintained, i.e., frozen, refrigerated, maintained in the dark, etc., and indicate whether the MPCA is stable under these conditions.]*

* 1. **Test Organism:**

**Species (common and scientific names):** *[Insert names of species used in test.]*

***U.S. EPA OCSPP 885.4050*** *The use of two avian species is recommended, one insectivorous, and one herbivorous (preferably bobwhite).*

***U.S. EPA OCSPP 850.2100*** *Northern bobwhite quail and mallard duck are the test species.*

***PMRA DIR 2001-02*** *Preferably bobwhite quail (Colinus virginianus) or mallard duck (Anas platyrhynchos). Others acceptable, especially* altricial species, with justification based on susceptibility to the MPCA or ecological considerations.

***Environment Canada EPS 1/RM/44*** *Mallard duck or northern bobwhite quail.*

***OECD 223 (Draft)*** *Bobwhite (Colinus virginianus) or Japanese (Coturnix coturnix japonica (Galliform)) quail. Pigeon (Columba livia* (Collumbiform)), budgerigar (Melopsittacus undulatus (Psittaciform)) and zebra finch (Poephila guttata (Passeriform)) are suitable alternatives. [Proposal B:Mallard (Anas platyrhyncos (Anseriform)) is not preferred; it is prone to regurgitate the dose.]

**Age at study initiation:** *[Insert the ages (mean and range) of birds used in the test.]*

***U.S. EPA OCSPP 885.4050*** *Birds should be 14 to 24 days old at time of testing, and as near the same age as possible.*

***U.S. EPA OCSPP 850.2100*** *Birds should be young adults, not yet mated, and at least 16 weeks old at time dosing. A less preferred alternative* is for the use of first-year birds which may have been mated, as long as birds are brought completely out of production through reduced light cycles. All birds should be the same age ±1 week.

***PMRA DIR 2001-02*** *Young birds of approximately 14 days of age are recommended at the beginning of the test. Within a given test, all birds* should be as near the same age as possible.

***Environment Canada EPS 1/RM/44*** *Young birds, 14–28 days old at start of test. Birds should be as similar in age as possible.*

***OECD 223 (Draft)*** *Birds should be in mature plumage, but not in breeding condition. Cage-reared birds should be of approximately the same* age.

**Number of test species /Sex:** *[Insert the number of test animals used per sex.]*

***U.S. EPA OCSPP 885.4050*** *No specific recommendations.*

***U.S. EPA OCSPP 850.2100*** *No specific recommendations.*

***PMRA DIR 2001-02*** *No specific recommendations.*

***Environment Canada EPS 1/RM/44*** *No specific recommendations.*

***OECD 223 (Draft)*** *Birds should be drawn from a group comprising a single sex. Either sex could be used. If it is not possible to separate sexes* by plumage, birds can be drawn at random from the whole population.

**Weight at study initiation:** *[Insert weight (mean and range) of birds used in the test.]*

***U.S. EPA OCSPP 885.4050*** *Must be reported, but no specific recommendations given.*

***U.S. EPA OCSPP 850.2100*** *Birds should be uniform in size and weight. The recommended body weights are ≥180 g for bobwhite or ≥900 g for* mallard, with the range ≤10% of the mean.

***PMRA DIR 2001-02*** *No specific recommendations.*

***Environment Canada EPS 1/RM/44*** *Birds should be as similar in weight as possible.*

***OECD 223 (Draft)*** *No specific recommendations.*

##### **Strain/Source:** *[Identify the strain, supplier, and/or describe the source of birds used in testing.]*

***U.S. EPA OCSPP 885.4050*** *Must be reported, but no specific recommendations given.*

***U.S. EPA OCSPP 850.2100*** *Birds may be reared in the laboratory or by a breeder. All should be from the same source and breeding* population. Birds should be phenotypically indistinguishable (except for size) from wild birds. Source flocks should be outbred periodically to maintain a genetic composition that approximates the natural heterogeneity of the species.

***PMRA DIR 2001-02*** *No specific recommendations.*

***Environment Canada EPS 1/RM/44*** *No specific recommendations.*

***OECD 223 (Draft)*** *Captive-bred species should be used. If this is not possible, species that are easily caught, abundant and acclimatize well to* test conditions may be used. Wild phenotypes are preferred when possible. Captive-bred birds should be from the same source and breeding population, and breeding history should demonstrate periodic out-breeding to maintain genetic heterogeneity.

##### **Rationale:** *[Insert rationale for using this test organism, if applicable.]*

1. **STUDY DESIGN AND METHODS:**

*[Briefly describe the experimental design.]*

***U.S. EPA OCSPP 885.4050*** *A single concentration test is done in 30 birds at the maximum hazard dose or multi-concentration test is done in* 10 birds per concentration. The dose is administered by oral gavage daily for 5 consecutive days. Birds are observed for 30 days for mortality and clinical or behavioral signs of toxicity or pathogenicity.

***U.S. EPA OCSPP 850.2100*** *For test substances of low toxicity, a single dose limit test of 2000 mg/kg bw in 10 birds is done. If any mortalities* are recorded, a minimum of five geometrically spaced dosage levels must be tested. A range finding test may be required to determine appropriate doses. The test substance is administered as a single oral dose by gavage or capsule. Birds are closely monitored for 60–120 minutes after dosing and then observed regularly for mortality and clinical or behavioral signs of intoxication for at least 14 days after dosing. Individual body weights and feed consumption are recorded weekly. Necropsies are done on all dead birds.

***PMRA DIR 2001-02*** *The maximum challenge concentration is administered by gavage to each test bird daily for five successive days. Birds are* observed for approximately 30 days for mortality and clinical or behavioral signs of toxicity or pathogenicity.

***Environment Canada EPS 1/RM/44*** *A single-concentration test is done in 30 birds at the maximum hazard dose or multi-concentration test of* at least 5 concentrations of the test substance is done in 10 birds per concentration. The dose is administered by oral gavage daily for 5 consecutive days. Birds are observed for 30 days for mortality and clinical or behavioral signs of toxicity or pathogenicity.

***OECD 223 (Draft)*** *The test is divided into a number of discrete stages. At each stage a number of birds are simultaneously given a single dose* of the test substance into the crop or proventriculus. The recommended strategy for testing materials that are unlikely to present a significant hazard is to perform a test with multiple birds dosed at the limit dose. If toxicity is expected the recommended strategy is to use non-replicated doses in the first two stages and to use replicates of only two doses at the third and later stages. In the first stage, the range of doses is based on the best available estimate of the LD50. Doses for subsequent stages are determined based on the mortalities observed in all previous stages, so that the estimates of the LD50 and the slope of the dose-response curve are optimized at the same time (D-optimality). Since mortality is the primary endpoint and background mortality is presumed to be negligible, no controls are used. After dosing, birds are observed for a 14-day period, or longer if delayed effects are expected. For acutely toxic substances, mortality observed after only three days may be used to determine doses for the following stage.

## Experimental Methods and Conditions:

**Acclimation:**

#### Duration: Conditions: Feeding: Water: Temperature:

Health *(any mortality observed?)*:

##### *[Insert acclimation conditions. Were they the same as those reported during testing?]*

***U.S. EPA OCSPP 885.4050*** *Acclimation conditions should be reported, but no specific recommendations are given.*

***U.S. EPA OCSPP 850.2100*** *Birds should be acclimated to the test facilities, pens and basal diet for at least 14 days. Birds should not be used if*

*≥5% die during acclimation.*

***PMRA DIR 2001-02*** *No specific recommendations.*

***Environment Canada EPS 1/RM/44*** *Acclimation to test chambers and test conditions for ≥7 days before start of test.*

***OECD 223 (Draft)*** *Acclimatization to the test conditions and diet prior to dosing should be at least 14 days for cage-reared birds and longer* (≥30 days) for wild-caught birds. Medication should be avoided within 14 days prior to dosing, during dosing and during the observation period. All birds must be in healthy condition and should not be used if greater than 5% of cage-reared and greater than 10% of wild test birds die during the acclimation period.

## Pen size and construction materials:

##### *[Insert details of pen size and construction]*

***U.S. EPA OCSPP 885.4050*** *Should be reported, but no specific size or construction material is recommended.*

***U.S. EPA OCSPP 850.2100*** *Tests should be conducted indoors, with birds maintained in commercial breeder or similar pens constructed of* galvanized metal, stainless steel or perfluorocarbon plastics. Wire mesh should be used for floors and external walls, and solid sheeting for common walls and ceilings. Mesh floors should be large enough to allow feces to fall through, but small enough that bird movement is not impaired. Floor area should be ≥500 cm2/bird for bobwhite and ≥1000 cm2/bird for mallard, and the ceiling height should be 24 cm for bobwhite and 32 cm for mallard.

***PMRA DIR 2001-02*** *No specific recommendations.*

***Environment Canada EPS 1/RM/44*** *Cages (e.g., commercial brooder pens) with a floor area of ≥800 cm2/bird if ducks, or ≥600 cm2/bird if quail.*

***OECD 223 (Draft)*** *Individual caging is preferred, but group caging may be used for social species. Floor areas should be 3000 cm2 for pigeon,* 2000 cm2 for mallard, 1000 cm2 for quail and 500 cm2 for budgerigar and zebra finch. Perches are required for pigeon budgerigar and zebra finch. Mesh floors should be large enough to allow feces to fall through, but small enough that bird movement is not restricted.

## Method of administration:

##### *[Describe the dosing regimen and method of dose administration]*

***U.S. EPA OCSPP 885.4050*** *Daily oral doses for 5 days. The method of dosing is not specified, but must be reported.*

***U.S. EPA OCSPP 850.2100*** *Dosing by gavage is preferred. Where gavage is not feasible, gelatin capsules may be used. Dosing should be done* in the early morning hours. The dosing volume should be constant for all birds with respect to individual body weights.

***PMRA DIR 2001-02*** *Daily oral doses for 5 consecutive days by oral gavage.*

***Environment Canada EPS 1/RM/44*** *Daily oral doses for 5 days by oral gavage.*

***OECD 223 (Draft)*** *Birds are given a single oral dose of the test substance into the crop or proventriculus or by capsule.*

## Dose levels:

#### Nominal:

Measured: *[from confirmation of dose viability]*

##### *[List doses used, and insert calculation of maximum hazard dose, where applicable]*

***U.S. EPA OCSPP 885.4050*** *A single group of birds is given 5 mL/kg bw of undiluted TGAI daily for five consecutive days (MHD = [MPCA] in* TGAI × 5 mL/kg bw × weight of test bird in kg). If toxicity or pathogenicity is observed, sequentially lower doses should be tested to establish an LD50 or ID50.

***U.S. EPA OCSPP 850.2100*** *EPA requires a minimum of 5 treatment levels unless LD50 is demonstrated to be ≥2000 mg/kg bw (the limit dose).* These levels should be spaced geometrically. The recommended spacing is for each level to be at least 60% of the next higher level (less than

*1.67 times the next lower level). Ideally, dosage levels should be spaced so that at least three levels result in mortality between but not including* 0% and 100%; and at least one level should kill more than 50%, and at least one level should kill less that 50%. Dosing should not exceed 5 mL/kg bw. For liquids of low purity where a larger dosing volume may be required, a volume up to 8 mL/kg bw may be used but the test species should be bobwhite, or steps should be taken to ensure that mallards do not regurgitate the dose.

***PMRA DIR 2001-02*** *Oral maximum challenge dose is 5 mL/kg body weight of the TGAI (or equivalent concentration of the MPCA.).* ***Environment Canada EPS 1/RM/44*** *Single-concentration test at the maximum hazard dose (MHD; i.e., [MPCA] in test substance × 5 mL/kg* bw × weight of bird), or multi-concentration test using ≥5 doses, one being the MHD.

***OECD 223 (Draft)*** *The limit test should be used unless available information indicates that the LD50 is <2000 mg/kg bw.*

## Dose preparation:

##### *[Briefly describe methods for dose preparation.]*

***U.S. EPA OCSPP 885.4050*** *Methods must be reported. The actual form of the material to be regarded as the test substance is discussed in OCSPP Guideline: 885.0001- under section (g)(1)(i-vi).* ***From U.S. EPA OCSPP 885.4000 Background for Nontarget Organism Testing of Microbial Pesticide Control Agents*** *Testing the technical grade of the active ingredient (TGAI) applies in all tests except the simulated and actual field testing (OPPTS 885.4900), where the use of the formulated product applies in order to simulate or reproduce actual field use. In some cases the technical grade of the active ingredient and the formulated product may be identical.*

***U.S. EPA OCSPP 850.2100*** *Doses may be diluted in a carrier. The dosing volume (including carrier) should be constant for all birds with* respect to individual body weights and should not exceed 5 mL/kg bw. For liquids of low purity where a larger dosing volume may be required, a volume up to 8 mL/kg bw may be used but the test species should be bobwhite, or steps should be taken to ensure that mallards do not regurgitate the dose.

***PMRA DIR 2001-02*** *The dose must be prepared such that the dosing volume is 5 mL/kg bw.*

***Environment Canada EPS 1/RM/44*** *Doses should be prepared such that the dosing volume should not exceed 5 mL/kg bw, although up to 10* mL/kg bw may be used if necessary to achieve MHD.

***OECD 223 (Draft)*** *The test substance should be dissolved or suspended in a suitable vehicle or administered in a capsule. The dose should be* prepared based on body weight measured within 24 hours of dosing.

**Solvent/vehicle:** *[if used]*

##### *[Describe any solvent or carrier used in dose administration.]*

***U.S. EPA OCSPP 885.4050*** *If used, must be reported, but no recommendations are given.*

***U.S. EPA OCSPP 850.2100*** *If possible, no vehicle or carrier should be used. If a carrier is used, distilled or deionized water is preferred unless* the test substance is known to hydrolyze readily. Other acceptable carriers include corn oil, propylene glycol, 1% carboxymethylcellulose and gum acacia. Materials with known toxic or emetic properties should not be used.

***PMRA DIR 2001-02*** *No specific recommendations.*

***Environment Canada EPS 1/RM/44*** *If the test material is a liquid suspension, the dose may be administered directly by gavage. If the test* material is a solid, the desired quantity of the test material to achieve the test doses should be suspended in water or in gelatin capsules. A solvent other than deionized water should not be used, but in some cases corn oil and carboxymethylcellulose may be used for hydrophobic test materials.

***OECD 223 (Draft)*** *Whenever possible an aqueous suspension should be considered first, followed by suspension or emulsion in oil (e.g., corn* oil). The toxicity of the vehicle must be known and should not cause vomiting..

## Confirmation of MPCA viability:

##### *[Describe methods used to confirm the concentration and/or viability of the MPCA in the dosing* suspensions.]

***U.S. EPA OCSPP 885.4050*** *No specific recommendations. The actual form of the material to be regarded as the test substance is discussed in OCSPP 885.0001.* ***From U.S. EPA OCSPP 885.4000 Background for Nontarget Organism Testing of Microbial Pesticide Control Agents*** *The concentration of MPCA in the water or food must be monitored to ensure that the test organisms are exposed to a sufficient MPCA level throughout the test period.*

***U.S. EPA OCSPP 850.2100*** *No specific recommendations (guideline designed for chemical toxicity testing).*

***PMRA DIR 2001-02*** *Viability or potency of the MPCA in the dosing suspension should be confirmed. No specific methods are recommended.*

***Environment Canada EPS 1/RM/44*** *Analytical techniques permitting, the concentration of the MPCA in the test suspension administered to* each treatment (including controls) should be determined daily for five days.

***OECD 223 (Draft)*** *No specific recommendations (guideline designed for chemical toxicity testing).*

## Number of feed withholding days before dosing:

***U.S. EPA OCSPP 885.4050*** *No specific recommendations.*

***U.S. EPA OCSPP 850.2100*** *Food should be withheld for at least 15 hours prior to dosing.*

***PMRA DIR 2001-02*** *No specific recommendations.* ***Environment Canada EPS 1/RM/44*** *None recommended.* ***OECD 223 (Draft)*** *None recommended.*

## Positive control / reference material: *[if used]*

##### *[Insert a description of the reference material, with the number of birds treated and frequency of testing* (if not concurrent).]

***U.S. EPA OCSPP 885.4050*** *Any substances used to enhance virulence should be tested along with the test substance.* ***From U.S. EPA OCSPP* 885.0001 Overview for Microbial Pest Control Agents** *Positive controls generally are not required unless to serve as internal quality controls,* demonstrate known test organism sensitivity and respond to known toxic or infective agents, and/or to ascertain if a strain or species reacts similarly to another strain or species when exposed to the same known or standard toxicant or infective agent.

***U.S. EPA OCSPP 850.2100*** *A concurrent positive control with a substance of known toxicity is not required. However, a quarterly or semi-* annual test with a laboratory standard (reference toxicant) is recommended a s a means of detecting possible interlaboratory or temporal variation. A laboratory standard is also recommended when there is any significant change in food, housing or source of birds.

***PMRA DIR 2001-02*** *No reference toxicant substance is required, but for all tests, the activity level of the MPCA should be related to its* pesticidal capability by running parallel studies in which target pests or hosts are exposed to the MPCA. Alternatively, the activity of the MPCA, in terms of viability can be assessed by another technique, e.g., culturing on a synthetic medium. In either case, the activity of the MPCA used in the test must be equal to or greater than the activity of the MPCA in the EP to be registered.

***Environment Canada EPS 1/RM/44*** *The inclusion of a positive microbial control is not required and is not recommended for most* applications. In instances where a suitable pathogen is available (i.e., genetically related with known toxic/pathogenic effects), a positive microbial control might be warranted. A positive chemical control is not required.

***OECD 223 (Draft)*** *No specific recommendations.*

## Other controls:

##### *[Insert description of each control group included in the test.]*

***U.S. EPA OCSPP 885.4050*** *A negative, nondosed control group should be performed. An infectivity control group should be treated with the* MPCA inactivated in such a way as to retain the structural integrity of the cell. A control group in which the birds are dosed with sterile filtrate from production cultures should be performed concurrently with the test groups. ***From U.S. EPA OCSPP 885.0001 Overview for Microbial Pest* Control Agents** *All controls shall, to the extent possible, be from the same source, be of the same age, receive the same care, and receive the* same nutrients as the animals or plants receiving the test substance. To prevent bias, a method to assign organisms to treatment and control groups randomly is required and must be referenced in the report.

***U.S. EPA OCSPP 850.2100*** *A concurrent sham-dosed control is required for every test.*

***PMRA DIR 2001-02*** *A negative, no-dosed control group of the non-target organism should also be run concurrently with the test group. A* concurrent control group is required consisting of the active ingredient that has been inactivated in such a way as to preserve cellular integrity. ***Environment Canada EPS 1/RM/44*** *Each test must include a negative control. A non-infectious control is strongly recommended. A sterile* filtrate control is optional but recommended.

***OECD 223 (Draft)*** *Controls are required to monitor the health and husbandry of test birds.*

## Number of birds per group/treatment:

#### For negative control:

For solvent/vehicle control: For non-infective control: For sterile filtrate control: For treated birds:

***U.S. EPA OCSPP 885.4050*** *For multiple-dose testing, 10 birds per treatment group and 10 birds for each control and vehicle group are* required. For single-dose testing, at least 30 birds for the treated group.

***U.S. EPA OCSPP 850.2100*** *A minimum of 10 birds should be used for each dosage level of the test substance and the control. Equal numbers* should be used for each dosage level.

***PMRA DIR 2001-02*** *A sufficient number of test organisms must be treated to allow for adequate controls, statistical analysis, interpretation of* data and for interim sacrifice, if applicable. The number in each test group will depend on the species to be tested, the expected duration of the study, whether single or multiple groups are to be treated.

***Environment Canada EPS 1/RM/44*** *For a single-concentration test, 30 birds should be treated. For a multi-concentration test, 10 birds should* be treated per dose level.

***OECD 223 (Draft)*** *In initial testing, five animals are tested at the limit dose. If no deaths occur, the LD50 is > the limit dose. If one death occurs,* but there are no signs of toxicity in other birds, a second group of five animals is tested. If there are no deaths in the second group, the LD50 is > the limit dose. If there are deaths in the second group of five animals, or if more than one animal died in the initial test, further testing is required using the D-optimal dosing. See the guideline for details.

## Recovery of MPCA from tissues:

##### *[Describe methods used to recover the MPCA from collected tissues.]*

***U.S. EPA OCSPP 885.4050*** *Attempts should be made, using appropriate techniques, to re-isolate the MPCA from examined tissues at* necropsy.

***U.S. EPA OCSPP 850.2100*** *No specific recommendations (guideline designed for chemical toxicity testing).*

***PMRA DIR 2001-02*** *Required for MPCAs that are pathogens. Various methods for detection may be employed to detect the MPCA but it* should be appropriate for both the organism (e.g., bacterium) and the mode of action of the MPCA.

***Environment Canada EPS 1/RM/44*** *Analytical techniques permitting, the recovery of the MPCA in selected organs (e.g., heart, brain, kidney,* liver), tissues, or body fluids (e.g., blood or urine) of birds from each treatment is required at test end. The recovery of the MPCA is optional during the test.

***OECD 223 (Draft)*** *No specific recommendations (guideline designed for chemical toxicity testing).*

## Feeding:

##### *[Describe the feeding regime used during the experiment.]*

***U.S. EPA OCSPP 885.4050*** *No specific recommendations but total feed consumption must be reported for each test and control group at* weekly intervals.

***U.S. EPA OCSPP 850.2100*** *A standard commercial game bird (for bobwhite) or duck (for mallard) feed or the nutritional equivalent, should be* used as the diet. Feed should not be used past its normal shelf life. Antibiotics or other medication should not be used in the diet during the acclimation period or the test. It may not be possible to obtain feed that is completely free of pesticides, heavy metals, and other contaminants; however, diets should be analyzed periodically, and selected to be as free from contaminants as possible.

***PMRA DIR 2001-02*** *No specific recommendations.*

***Environment Canada EPS 1/RM/44*** *Birds should be fed commercial feed of a suitable size, ad libitum.*

***OECD 223 (Draft)*** *Fresh food should be provided ad libitum. Commercial gamebird diets can be used, but they must be nutritionally* appropriate for the species involved. Medication should be avoided within 14 days of dosing or during the observation period. Diets should be periodically analyzed to check for impurities.

## Test conditions:

##### *[Describe the test conditions.]*

Temperature:

Ventilation:

Relative humidity:

Lighting:

Photoperiod:

***U.S. EPA OCSPP 885.4050*** *Test conditions must be reported, but no recommendations are given.*

***U.S. EPA OCSPP 850.2100*** *Temperatures for adult birds should be maintained at normal indoor temperatures, preferably between 15*̊*C and*

*27 . Ventilation should be sufficient to supply 10 to 15 air exchanges per hour. The test room should be maintained at a relative humidity of 45%*

*to 70%. Higher humidities are appropriate for waterfowl. A 10 h light/14 h dark photo-period (incandescent or fluorescent) is recommended.*

***PMRA DIR 2001-02*** *No specific recommendations.*

***Environment Canada EPS 1/RM/44*** *Daily mean temperature 25 ± 5 °C, relative humidity 45 to 70%, lighting may be incandescent or* fluorescent, 500 to 1000 lux, with a photoperiod of 14 ± 1 h light/10 ± 1 h dark (gradual transition from light to dark and dark to light.

***OECD 223 (Draft)*** *Temperatures of 15–27 °C are suitable for quail and duck, with ventilation of at least 10 air changes per hour. The* photoperiod for quail and mallard should be 8 h light/16 h dark. Other species may require a light period of 10 h.

## Duration of study:

##### *[Specify the test duration, and comment on any observations that necessitated the extension of the test* period]

***U.S. EPA OCSPP 885.4050*** *Observation period of at least 30 days after dosing initiation. If symptomatology or toxic signs are manifested at* the 30th day, observation should continue until recovery, mortality, or unequivocal moribundity is established.

***U.S. EPA OCSPP 850.2100*** *Observation period of at least 14 days. If mortality occurs during the last 3 days of the 14-day period, or if signs of* toxicity are not clearly in remission, or if the test substance is expected to have delayed effects, then the observation period should be extended for at least 21 days or until mortality or signs of intoxication are not observed for 72 hours.

***PMRA DIR 2001-02*** *The duration of the observation period depends on the mode of pesticidal action. In general a duration of 30 days permits* time for incubation, infection and manifestation of adverse effects in the test organism. For infectivity testing, the study should continue until a pattern of microbial clearance from tissues is shown.

***Environment Canada EPS 1/RM/44*** *The test duration is 30 days.*

***OECD 223 (Draft)*** *After dosing, the birds are observed for a 14-day period in order to measure mortality. It may be necessary to extend the* observation period depending on evidence of delayed effects. For acutely toxic substances, mortality after 3 days may be sufficient to determine doses for the following stage of testing.

## Other methods or conditions, if any:

1. **Observations:**

**Parameters measured including sublethal effects/toxicity symptoms:**

##### *[List the parameters measured during the experiment, e.g., survival, abnormal behavior or appearance,* temperature, relative humidity, individual body weights, concentration of the MPCA in the dosing suspension. Provide references to data summary tables, if used.]

***U.S. EPA OCSPP 885.4050*** *Measurements of body weight, ambient temperature, and ambient humidity are required. Observations for signs of* intoxication, abnormal behavior and regurgitation, pathogenic symptomatology or pathological changes.

***U.S. EPA OCSPP 850.2100*** *Measurements of approximate room temperature, humidity, ventilation rate, light intensity, body weights, and feed* consumption are required. All signs of intoxication, other abnormal behavior, and mortality should be reported. Among survivors, remission of signs of intoxication and cessation of abnormal behavior should be recorded by dosage level and by day.

***PMRA DIR 2001-02*** *Regular observations are required to record mortalities and note any behavioral, pathogenic or toxic adverse effects.* ***Environment Canada EPS 1/RM/44*** *Measurement of the temperature and relative humidity in the test facility, individual body weights of birds,* and concentration of the MPCA in each dosing suspension is required. Observations for survival, abnormal behavior (e.g., lethargy, excessive aggression) and appearance (including external lesions) of birds in each test cage.

***OECD 223 (Draft)*** *Measurements of temperature, humidity, light intensity, food consumption, and body weights are required. Observations on* individual birds should include regurgitation, signs of intoxication and remission, abnormal behavior, mortality and time to death.

## Observation/measurement intervals:

##### *[List time points at which observations or measurements were made.]*

***U.S. EPA OCSPP 885.4050*** *Total feed consumption for each test and control group must be determined at weekly intervals.* ***From U.S. EPA OCSPP 885.0001 Overview for Microbial Pest Control Agents*** *Method, frequency, and duration of observations made during the study are to be reported.*

***U.S. EPA OCSPP 850.2100*** *No recommendations are given for environmental parameters such as temperature, humidity, and intensity.* Individual body weights of all birds should be reported weekly. An extra weighing the 3rd day after dosing may provide useful information, especially on anorexia. Feed consumption should be recorded at least weekly throughout the test, with an estimate of waste; valuable additional information can be obtained by monitoring food consumption daily, especially for the first few days following dosing. All signs of intoxication, other abnormal behavior, and mortality should be reported by dosage level, by sex and by day. Among survivors, remission of signs of intoxication and cessation of abnormal behavior should be recorded by dosage level and by day. Birds should be monitored closely for the first 60 to 120 minutes after dosing. Additional observations of test birds should be made, at minimum, 3 times on the day of dosing and at least daily throughout the remainder of the test period. Where feasible, twice daily observations are recommended.

***PMRA DIR 2001-02*** *Regular observation intervals are required to record mortalities and note any behavioral, pathogenic or toxic adverse* effects.

***Environment Canada EPS 1/RM/44*** *Temperature measured daily (min/max) or continuously; relative humidity measured weekly, body weight* measured weekly and concentration of the MPCA in dosing suspension daily for 5 days. Birds should also be observed daily for survival, appearance and behavior.

***OECD 223 (Draft)*** *No recommendations are given for environmental parameters such as temperature or humidity. Birds are observed* individually during the first 2 hours after dosing, on at least 3 evenly-spread additional occasions during the first 24 hours and at least daily thereafter for a total of 14 days.

## Indicate if the test material was regurgitated:

##### *[NOTE: Regurgitation is an indication that the dose was rejected, and is a feature of acute oral toxicity* testing in birds, especially mallards. The frequency of regurgitation may be reduced by lowering the dose volume or by changing carriers].

**Testing for infectivity:**

*[Briefly describe how infectivity was tested, and list the organs, tissues or fluids tested, if applicable]*

***U.S. EPA OCSPP 885.4050*** *Infectivity testing should be performed, using appropriate techniques, to re-isolate the MPCA from examined* tissues at necropsy.

***U.S. EPA OCSPP 850.2100*** *No specific recommendations (guideline designed for chemical toxicity testing).*

***PMRA DIR 2001-02*** *For MPCAs that are pathogens, pathogenicity testing should be performed. The specific test method used should match the* infectivity requirements of the pathogen and host and should be capable of detecting both infection and disease symptoms. When the MPCA is not a pathogen, applicants can rely on standard toxicity test methods.

***Environment Canada EPS 1/RM/44*** *Infectivity testing is required at test end based on measured concentrations of new microbial substance in* selected organs, tissues and body fluids. Infectivity testing is optional during the test.

***OECD 223 (Draft)*** *No specific recommendations (guideline designed for chemical toxicity testing).*

## Necropsy:

##### *[Indicate on which groups necropsies were performed, and list observations made at necropsy (gross* lesions, histological examination).]

***U.S. EPA OCSPP 885.4050*** *Gross necropsy and histopathology on enough birds to characterize any gross lesions.*

***U.S. EPA OCSPP 850.2100*** *Gross pathology examinations should be conducted on at least two or three birds dying at each dosage level and* on all control birds that dies. Gross pathological examinations of survivors are optional, but may provide valuable information, especially for lesions associated with sublethal effects.

***PMRA DIR 2001-02*** *Gross necropsy and histopathological examination should be performed on exposure site tissues and other organs or* tissues showing anatomical or physiological abnormalities in adversely affected test organisms. In cases where tissue preferences are known or suspected, the tissues should be examined whether or not gross anatomical or physiological changes are seen.

***Environment Canada EPS 1/RM/44*** *Necropsies should be performed on each bird dying during test as well as those surviving until the end of* the test period; animals examined for lesions evident grossly, and selected tissues collected for processing and future microscopic examination where deemed necessary.

***OECD 223 (Draft)*** *Gross pathology should be undertaken on all birds from each treatment group to help identify incidental mortalities and the* obvious symptoms of toxicity.

## Were raw data included?

##### *[Comment on the acceptability of the raw data provided.]*

**Other observations, if any:**

1. **RESULTS:**
2. **VIABILITY OF DOSING SUSPENSIONS:** *[Summarize the dose verification data and indicate if the tested sample was still viable.]*

**TABLE *[#]*.** Viability and potency of *[test substance]* in *[dosing suspension/diet]* administered to *[test organism]* over *[#]* days.

|  |  |  |  |
| --- | --- | --- | --- |
| **Dose Group** | **Dosing Day** | **Nominal Dose *[count or potency]*****(*insert units*)** | **Measured Dose *[count or potency]*****(*insert units*)** |
| Negative control | 1 |  |  |
| 2 |  |  |
| 3 |  |  |
| 4 |  |  |
| 5 |  |  |
| *Test dose 1* | 1 |  |  |
| 2 |  |  |
| 3 |  |  |
| 4 |  |  |
| 5 |  |  |
| *Test dose 2* | 1 |  |  |
| 2 |  |  |
| 3 |  |  |
| 4 |  |  |
| 5 |  |  |
| *Test dose n* | 1 |  |  |
| 2 |  |  |
| 3 |  |  |
| 4 |  |  |
| 5 |  |  |

##### *[Table suitable for microbial infectivity/pathogenicity (MHD) testing. Modify as appropriate to accommodate* differences in experimental design.]

1. **MORTALITY:** *[Briefly [Briefly summarize mortality results (if any). If values for LD50, LC50, LT50, NOEL, NOEC are greater than the MHD level, use* ***<*** *symbol. Comment on dose response relationship; Slope of response, if provided. Compare the mortality with control treatment and/or the reference chemical. Data may be summarized in a table such as those presented below. Modify table to accommodate differences in experimental design.]*

***From U.S. EPA OCSPP 885.0001 Overview for Microbial Pest Control Agents*** *The Agency realizes that it would be very difficult to establish* specific LC50, ED50, or LD50 values (e.g. LD50 = 1,000 mg/kg) and 95 percent confidence limits for most MPCAs whose mechanism of action is pathogenicity, because test data are not likely to exhibit a log-probit dose-response relationship that is typical of chemical pesticides. Therefore,

*data that establishes an LC50, ED50, or LD50 that is greater than the maximum hazard dosage level (e.g. LD50 >1,000 mg/kg) would often be* adequate for the purposes of hazard assessment and reporting in this section.

**TABLE *[#]***. Effect of *[test substance]* on mortality of *[test organism]* exposed by *[dosing method]* over *[#]*

days.

|  |  |
| --- | --- |
| **Treatment** | **Cumulative Mortality/Total Number of Birds** |
| **Negative Control** | **Killed *[test substance]* Control** | ***[Test substance]*** |
| Cumulative mortality | *Day 0* |  |  |  |
| *Day x1* |  |  |  |
| *Day x2* |  |  |  |
| *Day n* |  |  |  |
| *LD50**[insert [***>***] if greater than]* |  |  |  |
| *NOEL**[insert [***>***] if greater than]* |  |  |  |

##### *[Table suitable for microbial infectivity/pathogenicity and toxicity (maximum hazard dose testing). Modify as* appropriate to accommodate differences in experimental design or delete if acute toxicity test is used.]

**TABLE *[#]***. Effect of *[test material]* on mortality of *[test organism]* exposed by *[dosing method]* over *[#]*

#### days.

|  |  |  |
| --- | --- | --- |
| **Treatment (mg a.i./kg bw)** | **No. of Birds** | **Cumulative Mortality** |
| ***Day 0*** | ***Day x1*** | ***Day x2*** | ***Day x3*** | ***Day n*** |
| Negative control |  |  |  |  |  |  |
| *Test dose 1* |  |  |  |  |  |  |
| *Test dose 2* |  |  |  |  |  |  |
| *Test dose 3* |  |  |  |  |  |  |
| *Test dose n* |  |  |  |  |  |  |
| LD50 | *[insert [***>***] if greater than]* |
| NOEL | *[insert [***>***] if greater than]* |

##### *[Table suitable for chemical acute toxicity (multiple-dose) testing (e.g., U.S. EPA guideline OCSPP 850.2100).* Modify as appropriate to accommodate differences in experimental design, or delete if infectivity/pathogenicity and toxicity test used.]

1. **SUBLETHAL TOXICITY ENDPOINTS:** *[Include if any sublethal effects are observed- Briefly summarize behavioral abnormalities or other signs of toxicity (body weight loss, decreased food consumption, organ effects, etc.). Indicate effects that were related to the test-material. Compare sub- lethal effects with control treatment and/or the reference chemical. Data may be summarized in a table such as those presented below. Modify tables to accommodate differences in experimental design. For acute oral and dietary, provide information about palatability of the treated diet, rate of consumption of diet in treated and untreated groups.]*

**TABLE *[#]*.** Mean body weight for control and *[test material]*-treated *[test organism]* measured *[frequency of weighing]*.

|  |  |  |  |
| --- | --- | --- | --- |
| **Day** | **Negative Control** | **Killed *[test substance]*****Control** | ***[Test substance]*** |
| **Mean Body Weight (g)** | **Mortality***(% or No.)* | **Mean Body Weight (g)** | **Mortality***(% or No.)* | **Mean Body Weight (g)** | **Mortality***(% or No.)* |
| *Initiation* |  |  |  |  |  |  |
| *Day 7* |  |  |  |  |  |  |
| *Day 14* |  |  |  |  |  |  |
| *Day 21* |  |  |  |  |  |  |
| *Day 28* |  |  |  |  |  |  |
| Termination |  |  |  |  |  |  |
| LD50*[insert [***>***] if greater than]* |  |  |  |
| NOEL*[insert [***>***] if greater than]* |  |  |  |

##### *[Table suitable for microbial infectivity/pathogenicity and toxicity (maximum hazard dose) testing. Modify as* appropriate to accommodate differences in experimental design or delete if acute toxicity test is used.]

*[a Use superscript and footnote to indicate values that are statistically significantly different from control.]*

**TABLE *[#]*.** Mean daily food consumption of control and *[test material]*-treated *[test organism]* measured

##### *[frequency of measurement]*.

|  |  |
| --- | --- |
| **Day** | **Food Consumption (g/duck/day)** |
| **Negative Control** | **Killed *[test substance]*****Control** | ***[test substance]*** |
| *Initiation* |  |  |  |
| *Day 7* |  |  |  |
| *Day 14* |  |  |  |

|  |  |
| --- | --- |
| **Day** | **Food Consumption (g/duck/day)** |
| **Negative Control** | **Killed *[test substance]*****Control** | ***[test substance]*** |
| *Day 21* |  |  |  |
| *Day 28* |  |  |  |
| Termination |  |  |  |

*[Table suitable for microbial infectivity/pathogenicity and toxicity (MHD) testing. Modify as appropriate to accommodate differences in experimental design or delete if acute toxicity test is used.]*

**TABLE *[#]*.** Microbiological analysis of tissue samples from *[test organism]* challenged by *[dosing method]*

of *[test material]*.

|  |  |  |  |
| --- | --- | --- | --- |
| **Tissue** | **Negative Control** | **Killed *[test substance]* Control** | ***[test substance]*** |
| ***Dose x1*** | ***Dose x2*** | ***Dose x3*** | ***Dose n*** |
| Blood |  |  |  |  |  |  |
| Brain |  |  |  |  |  |  |
| Lung |  |  |  |  |  |  |
| Liver |  |  |  |  |  |  |
| Spleen |  |  |  |  |  |  |
| Kidney |  |  |  |  |  |  |
| GI tract |  |  |  |  |  |  |
| *[other tissues]* |  |  |  |  |  |  |

##### *[Table suitable for microbial infectivity/pathogenicity (MHD) testing. Modify as appropriate to accommodate* differences in experimental design or delete if acute toxicity test is used.]

**TABLE *[#]*.** Sublethal effect of *[test material]* on *[test organism]* exposed by *[dosing method]* over *[#]* days.

|  |  |
| --- | --- |
| **Treatment (mg a.i./kg bw)** | **Percent Affected by *[sublethal effect observed, (e.g., lethargy)]*** |
| ***Day 0*** | ***Day x1*** | ***Day x2*** | ***Day x3*** | ***Day x4*** | ***Day x5*** | ***Day n*** |
| Negative control |  |  |  |  |  |  |  |
| *Test dose 1* |  |  |  |  |  |  |  |
| *Test dose 2* |  |  |  |  |  |  |  |
| *Test dose 3* |  |  |  |  |  |  |  |
| *Test dose n* |  |  |  |  |  |  |  |

|  |  |
| --- | --- |
| **Treatment (mg a.i./kg bw)** | **Percent Affected by *[sublethal effect observed, (e.g., lethargy)]*** |
| ***Day 0*** | ***Day x1*** | ***Day x2*** | ***Day x3*** | ***Day x4*** | ***Day x5*** | ***Day n*** |
| ED50 | *[insert [***>***] if greater than]* |
| NOEL | *[insert [***>***] if greater than]* |

##### *[Table suitable for chemical acute toxicity (multiple-dose) testing (e.g., U.S. EPA guideline OCSPP 850.2100).* Modify as appropriate to accommodate differences in experimental design, or delete if infectivity/pathogenicity test used.]

1. **REPORTED STATISTICS:** *[If applicable- List the parameters that were analyzed and the statistical tests that were performed.*

***U.S. EPA OCSPP 885.4340*** *LD50 or ID50 in appropriate units with 95% confidence limits, if obtained, methods used, and slope of the dose-* response line, if obtained. ***From U.S. EPA OCSPP 885.0001-*** *Appropriate statistical methods are to be used to summarize experimental data, to* express trends, and to evaluate the significance of differences in data obtained from different test group and methods used shall reflect the current state-of-the art. All data averages or means must be accompanied by standard deviations and the standard errors of the means should also be calculated; however, notations of statistically significant differences accompanied by the confidence level or probability should also be used in place of standard error determinations. Other methods of expressing data dispersion may also be used when appropriate.

***U.S. OCSPP 870.2100*** *Describe transformations, calculations or operations performed on the data, a summary and analysis of the data, and a* statement of the conclusions drawn from the analysis. Analysis should include the calculated LD50 value, 95% confidence limits, slope of the transformed dose-response line and the results of goodness-of-fit test (e.g. χ2)

***PMRA DIR 2001-02*** *All relevant analyses of results must be provided. NOTE: May attach a copy of the statistical methods from the study with* a statement that the reviewer has no objections to the analyses used.

***Environment Canada EPS 1/RM/44*** *Single concentration test: percent survival and percentage of surviving birds showing atypical* appearance (necropsy) or behavior at test end, comparing MHD to controls; Multiple concentration test: percent survival and percentage of surviving birds showing atypical appearance (necropsy) or behavior at test end, comparing each test chamber and treatment. Data permitting, calculation of 30-day LD50, 30-day ED50 for atypical appearance and/or behavior, NOED/LOED.

***OECD 223 (Draft)*** *Refer to guideline for recommended method of calculating LD50, and statistical reporting requirements.*

## VERIFICATION OF STATISTICAL RESULTS BY THE REVIEWER:

##### *[If applicable- Report the statistical methods used by the reviewer to verify the applicant’s results: ; If* values for LD50, LC50, LT50, NOEL, NOEC are greater than the MHD level, use ***<*** *symbol.]*

Statistical Method:

|  |  |  |
| --- | --- | --- |
|  | LD50: NOEL: | 95% C.I.: |
| **III.** | Probit Slope:**CONCLUSION:** | 95% C.I.: |
| **A.** | **STUDY AUTHOR CONCLUSION:** | *[Summarize the study author’s conclusions- Provide the major* |

*conclusions e.g., values for LD50, ID50 LC50, NOEL, NOEC]*

1. **REVIEWER’S COMMENTS:** The reviewer agrees *[does not agree]* with the study author’s conclusion. *[Provide additional comments that do not appear under other sections of the template. Discuss the specific methods/ results/findings that may affect the validity of the study and overall acceptability of the study.]* The study was *[not]* conducted in accordance with the guideline recommendations for an acute oral *toxicity [or] infectivity/pathogenicity* study for birds (OCSPP 885.4050; PMRA: M9.2.1 and OECD: IIM 8.1, IIIM 10.1) in the *[species].*

##### **DEFICIENCIES:** *[List each deficiency with the required data to resolve the deficiency or if no data* can be provided to satisfy the deficiency.]

***U.S. EPA OCSPP 885.4050*** *No specific validity criteria.*

***U.S. OCSPP 870.2100*** *The test is not acceptable if more than 10% of control birds die during test.*

***PMRA DIR 2001-02*** *No specific validity criteria.*

***Environment Canada EPS 1/RM/44*** *The test is invalid if <90% survival in negative control at test end.*

***OECD 223 (Draft)*** *No specific validity criteria.*

## CLASSIFICATION: [ACCEPTABLE / UNACCEPTABLE / SUPPLEMENTAL, but UPGRADEABLE]

##### **IV. REFERENCES:** *[Provide full citations of references that were cited in the study report: methods,* SOPs protocols, references to other relevant study reports in the submission or other studies conducted by the applicant.

[***NOTE: If methods/protocols contain specific methodology that is not reported in detail in study report as requested in DER- include specific literature of method/SOP/protocol attached as an appendix and attached to the study report for the reviewer’s reference and verification of rationale. If no extra references were used, state “No references were cited.”].***

***(This section of the DER represent the format for submitting alternative data for satisfying data requirement and supporting scientific rationale to justify the use of alternative data Alternative data include: waiver request(s), published study, and/or mini-literature review.***

***(Formatting instructions: Use cover page (first page of template) and include a brief executive summary of the waiver request/published study/OR mini- literature review (see example below) and its classification. Delete study template and proceed to the following sections)***

**EXECUTIVE SUMMARY *[FOR EXAMPLE]:*** *[Applicant]* is submitting a justification for a data waiver from avian oral *toxicity [or] infectivity/pathogenicity* study (OCSPP 885.4050). The waiver request is based on the rationale that *[name of active ingredient]* is a naturally-occurring *[soil/water/plant-surface. etc.]* colonizer,

whose level in the environment will not significantly increase with the use of *[product name]* and that an extensive literature search yielded no *[or no significant]* reports of adverse effects in birds.

The proposed uses of *[product name]* on *[identify use sites/crops]* is not expected to result in increased exposure or adverse effects to birds. *[If environmental concentration will show a substantial increase, give the rate of environmental reduction to background levels in days/weeks/months].* Therefore, additional testing is not considered necessary to assess the risks of the *[product name]* to avian wildlife. The *[applicant]* requests a waiver of avian oral *toxicity [or] infectivity/pathogenicity* testing.

# *(For a waiver request, otherwise delete)*

##### **WAIVER RATIONALE:** *[Summarize the information and/or data presented by the author* justifying why the required data element should be waived for the MPCA, TGAI, MP, or EP.]

The waiver request is based on the following rationales:

* 1. **Increased environmental exposure to *[name of active ingredient]*, due to use of the end-use product *[product name]*, will be minimal.** *[Applicant should provide further elaboration: Describe the natural habitat of the MPCA. Is it ubiquitous in nature (give geographical distribution); Has the MPCA, and/or phylogenetically close species/strains, been isolated from soil/streams/ponds/lakes and a variety of plant surfaces including (identify) crops/vegetables/fruits? Provide the known natural concentration of the MPCA in CFU/(weight-volume-surface area) in these environmental niches.]*

##### Use of *[product name]* will be limited to *[soil, seed, foliar, greenhouse, etc.]* applications *[by spray, dip,* soil incorporation, aerial, etc.] on *[name crops/use sites]*, thus minimizing direct exposure to birds. *[Does timing of application preclude direct exposure? Discuss crop use sites and application methods* and its effects on limiting runoff, if applicable. Provide the rate in environmental reduction of the MPCA to background levels in days/weeks/months, if available.]

* 1. **No evidence of adverse effects.** A literature search of the *[e.g., AGRICOLA, TOXLINE, BIOLOGICAL ABSTRACTS, CHEMTOX (Hazardous and Regulated Chemicals Database),* PUBMED, (or OTHER)] databases for the period *[year range]* was conducted. In this literature search, *[name of MPCA]* and other phylogenetically close species/strains in the *[family/genus/species-group, etc., as appropriate]*, as well as synonyms *[name of synonyms of MPCA, if any]* were used as the search words. The searches were also used to ascertain the known production of *[genotoxic, carcinogenic, allergenic, mutagenic, toxic]* metabolites, antibiotics, mycotoxins, mycocins, pathogenicity, environmental fate and interactions with birds. *[Identify the metabolites found to be produced - does the MPCA strain also produce these or other metabolites? Have natural populations of the MPCA or its metabolites been associated with adverse effects in avian species?]*

##### *[Discuss whether runoff or overspray would result in effects not seen from the naturally occurring MPCA* levels. Discuss whether the MPCA does/does not grow at avian body temperatures. Does the MPCA appear on any authoritative list of avian pathogens? Identify the lists examined.]

**[*NOTE: All statements used as justification to support the scientific rationale for the waiver rationale should be individually supported by a reference (i.e. studies in the open literature, references to other study reports in the submission and/ or other studies conducted by the registrant/applicant). Include specific details and/or excerpts of relevant data/information from individual references. Supporting data include: background information of MPCA (e.g. previously reported characterization data related to its identity, mode of action, its nature, prevalence and/or interactions in the environment), supporting evidence/rationale for lack of adverse effects and lack (or minimal) environmental exposure to nontarget species, history of safe use, and/or significant similarities to other microbial strains.*]**

1. **CONCLUSION**
2. **STUDY AUTHOR CONCLUSION:** *[Summarize the study author’s conclusions]*
3. **REVIEWER’S COMMENTS:** *[Note if in agreement with study authors.]*

##### **DEFICIENCIES:** *[List each deficiency with the required data to resolve the deficiency or if no data* can be provided to satisfy the deficiency.]

1. **CLASSIFICATION: [ACCEPTABLE / UNACCEPTABLE / SUPPLEMENTAL, but UPGRADEABLE]**
2. **REFERENCES:** *List references that were cited in the study report]*

***[NOTE: Depending on the level of relevance- copies of published literature and any other supporting literature that support the use of alternative data/waiver rationale (including other studies reporting similar findings) should be provided as an appendix and attached to the study report for the reviewer’s reference and verification of rationale.]***

***(For a published study, otherwise delete)***

1. **PURPOSE:** *[Indicate the purpose of the study]*

##### **METHOD:** *[Describe the experimental procedure]*

1. **RESULTS:** *[Summarize the results using appropriate headers e.g.,* ***A. GENERAL OBSERVATIONS:***

***B. DETECTABLE LEVELS OF MPCA IN TISSUES, ORGANS:]***

1. **CONCLUSION**
2. **STUDY AUTHOR CONCLUSION:** *[Summarize the study author’s conclusions]*
3. **REVIEWER’S COMMENTS:** *[Note if in agreement with study authors.]*

##### **DEFICIENCIES:** *[List each deficiency with the required data to resolve the deficiency or if no data* can be provided to satisfy the deficiency.]

1. **CLASSIFICATION: [ACCEPTABLE / UNACCEPTABLE / SUPPLEMENTAL, but UPGRADEABLE]**
2. **REFERENCES:** *[Provide references that were cited in the study report: methods, studies in the open literature, references to other study reports in the submission or other studies conducted by the applicant.].*

**[*NOTE: Include a copy of the published study and/or previously conducted unpublished study in the study report as an appendix attached to the study report for the reviewer’s reference and verification of study details. Any additional statements used as justification to support the use of alternative data should be individually cited- including the specific background information, details and/or excerpts of relevant data/information from individual references. Depending on the level of relevance- copies of published literature and any other supporting literature that support the use of a published study or previously conducted study as alternative data (including other studies reporting similar findings) should also be provided in the appendix.*]**

***(For a mini literature review, otherwise delete)***

1. **REVIEW OF PUBLISHED LITERATURE:** *[Summarize the background information and published studies covered in this mini literature review. Grouping related papers for discussion under specific subheadings may be useful.*

*e.g., MPCA-based products are widely used in forest management to control forest pests in Canada and the United States ... As noted by Linnaeus (1758), three approaches have been used in Canada to examine the effects of this MPCA on birds. These include acute toxicity testing, dietary toxicity testing, and field testing.*

* 1. *.,* ***A. ACUTE TOXICITY TESTING:***
		1. ***Article 1:*** *(summarize and report findings)*
		2. ***Article 2:*** *(summarize and report findings)*

### *DIETARY TOXICITY TESTING:*

* + 1. ***Article 1:*** *(summarize and report findings)*
		2. ***Article 2:*** *(summarize and report findings)*

### *FIELD TESTING:*

* + 1. ***Article 1:*** *(summarize and report findings)*

***2 Article 2:*** *(summarize and report findings)]*

1. **CONCLUSION**
2. **LITERATURE REVIEW CONCLUSION:** *[Summarize the study author’s conclusions]*
3. **REVIEWER’S COMMENTS:** *[Note if in agreement with study authors.]*

##### **DEFICIENCIES:** *[List each deficiency with the required data to resolve the deficiency or if no data* can be provided to satisfy the deficiency.]

1. **CLASSIFICATION: [ACCEPTABLE / UNACCEPTABLE / SUPPLEMENTAL, but UPGRADEABLE]**
2. **REFERENCES:** *[Provide references that were cited in the study report: methods, studies in the open literature, references to other study reports in the submission or other studies conducted by the applicant.].*

**[*NOTE: Depending on the level of relevance- copies of published literature, previously conducted unpublished study and any other background literature that support the use of a literature review as alternative data (including other studies reporting similar findings) should be provided as an appendix attached to the study report for the reviewer’s reference and verification of study details.*]**