



GUIDELINES FOR PESTICIDE REGISTRATION

CONTROL OF PLANTS ACT, CHAPTER 57A. Control of Plants (Registration of Pesticides) Rules.

- (A) All pesticides used in the cultivation of plants must be registered with the Director-General, Agri-Food and Veterinary Services. Pesticides for industrial, public hygiene and household uses do not need to be registered under the Control of Plants (Registration of Pesticides) Rules.
- (B) Any person who manufactures, imports, distributes, supplies or sells any pesticide and is carrying on business in Singapore which is registered under the Business Registration Act, or any company incorporated under the Companies Act, may apply for the registration of pesticide for use in the cultivation of plants in Singapore.
- (C) Applicant is required to get approval from the Pollution Control Department (PCD) of the National Environment Agency (NEA) for use of the pesticide in Singapore before applying for registration of pesticide for use in the cultivation of plants.
- (D) If applicant is dealing with pesticides that are listed in the Environmental Protection and Management Act (EPMA), a copy of the Hazardous Substances Licence issued by the PCD/NEA must accompany the application.
- (E) Applicant is required to complete an application form that is available at AVA website: <http://www.ava.gov.sg/>. Each application form is for the registration of one pesticide product only. Separate forms should be submitted for each additional application.
- (F) The applicant can submit softcopy registration dossier together with the application form to 5 Maxwell Road #18-00 Tower block MND Complex.
- (G) The registration fee is \$465 per product (non-refundable). Applicant can make payment via AXS, GIRO or electronically via the AVA website. Please visit the website: <http://www.ava.gov.sg/Services/GIROAndPayment/> for more information on the modes of payment
- (H) The applicant should call personally at the above office to submit the registration dossier and to produce his/her Identity Card or Passport for the purpose of verifying the particulars in SECTION I of the application form. If the applicant is unable to do so, he/she can authorise, in writing, a representative from the company to submit the application form on his/her behalf together with the applicant's Identity Card or Passport.
- (I) Applicant must supply the following in the registration dossier: -
 - 1) A copy of the applicant's NRIC/Passport (for new applicant only)
 - 2) A copy of the Business/Company Registration Certificate and an up-to-date "Instant Information (Business Profile)" printout from the Registry of Company and Business (not required if same as previous application)

- 3) A copy of the Hazardous Substances Licence (if applicable)
- 4) A proposed dual languages pesticide product label containing the following information: -
 - a) the trade name or the brand name under which the pesticide product is to be sold or supplied
 - b) the composition of the pesticide product and the chemical name of every constituent, whether active or inert
 - c) the type of formulation of the pesticide product
 - d) the type of crop in the cultivation of which the pesticide product may be used or applied
 - e) the directions for the use of the pesticide product together with the safety measures to be taken when applying the product
 - f) the re-entry periods into the area after spraying
 - g) in the case of a pesticide to be used on food crops, the recommended interval before the last application of the pesticide product and the harvest of the crop
 - h) the relevant hazard and caution statements and graphic symbols recommended by the WHO/FAO Hazard Classification Code
 - i) the antidote to the pesticide, if any, and first aid instructions in case of poisoning by the pesticide
 - j) the storage conditions of pesticide products
 - k) the disposal method for the formulation and its containers
 - l) the net weight and volume of the pesticide product in the container in which it is sold or supplied
 - m) the name and address of the Singapore company that has registered the pesticide product with AVA.
- 5) For data requirements on:
 - Chemical pesticides- refer to [Annex 1](#)
 - Microbial pesticides - refer to [Annex 2](#)
 - Biochemical pesticides- refer to [Annex 3](#)
- 6) Please note that experimental tests carried out to support the registration of a pesticide product must be done in ISO/GLP accredited laboratories or institutions, and in accordance to the principles of good experimental practice and international standards. Published report or data must be properly referenced in the submission and submitted when required.
- 7) You are also required to ensure that your pesticide products are conformed to relevant FAO or WHO specifications.

Annex 1: Data Requirements for Chemical Pesticides

1) Information on the active ingredient(s)

- Chemical name
- Common name
- Other name (if any)
- Empirical and structural formula
- Molecular weight
- Physical properties
 - melting point
 - boiling point
 - specific gravity
 - refractive index
 - vapour pressure (mmHg at 20 °C)
 - other volatility data
 - solubility of active ingredient(s) and technical product in water
 - solubility of active ingredient(s) and technical product in other solvents
 - partition coefficient between water and an immiscible organic solvent
 - others
- Chemical properties
 - stability (in air, in water, photo-stability, thermal degradation, stability in organic solvent used in the formulation) and the breakdown product
 - corrosiveness
 - flammability and flash point
 - others
- Method of analysis of active ingredient(s)/ technical material
- Known contaminant(s) or impurity(ies) associated with the active ingredient(s) in the manufacturing process

2) Information on the technical grade active ingredient(s) added to product

- Source; name and address of manufacturer
- Appearance (physical state, colour and odour)
- The minimum (and maximum) active ingredient content in g/kg
- Complete manufacturing process, including all raw materials, reagents and solvents
- Identity and amount of isomers, impurities and other by-products, together with information on their possible range expressed as g/kg
- Maximum limits for impurities present in the technical material at 1g/kg or greater

3) Information on the formulated product

- Manufacturer's name and address
- Complete composition including chemical identities of inert ingredients
- Physical condition and nature of the formulation
- Stability and shelf life of the formulation
- Corrosiveness towards packing materials and application equipment
- Flammability under storage and application conditions
- Method of analysis of the formulation
- Method of analysis of residue in plant and foodstuff
- Incompatibility with other pesticides
- Decontamination/ neutralising agent
- Disposal method for the formulation and its containers
- Known contaminant(s) or impurity(ies) associated with the active ingredient(s) in the formulation

- 4) Information on the usage
 - The control efficacy of the pesticide, including details of efficacy studies, its designated use against the target pest(s) and disease(s) in relation to crops
 - Instruction for use, recommended dosage and application method
 - Mode of action
 - Phyto-toxicity on plants
 - Compatibility with other pesticides
 - Precautionary measures
 - For pesticide used on food crops
 - pre-harvest interval
 - maximum residue level and acceptable daily intake in other countries where the same pesticide has been registered should be included
- 5) Residue data in agricultural produce
- 6) Information on the toxicity in mammals
 - Acute oral (LD₅₀)
 - Acute dermal (LD₅₀)
 - Inhalation toxicity (LC₅₀)
 - Degree of irritation to eye
 - Degree of skin irritation and sensitization
 - Chronic toxicity of active ingredient
 - No observable effect level of active ingredient
 - Supplementary studies of toxicity (long/short term studies) of active ingredient(s)
 - Carcinogenicity
 - Reproductive toxicity including teratogenicity
 - Mutagenicity
 - Neurotoxicity
 - Persistence and metabolic breakdown pathway of the active ingredient
 - Endocrine disrupting properties that may be of toxicological significance in humans
- 7) Information on environmental effects and ecotoxicity
 - Toxicity to beneficial insects, non-target pests, avian and fish
 - Endocrine disrupting properties that may be of toxicological significance on non-target organisms
 - Impact on soil ecology
 - Residual effect in soil
 - Leaching, degradation of product in the soil and possibility of accumulation
- 8) Information on measures to be taken in case of poisoning
 - Antidote(s) for the active ingredient/formulation
 - First aid treatment for active ingredient/formulation
- 9) A copy of the analysis report of the pesticide product stating the composition of the constituents particularly the active ingredient(s).
- 10) Other technical literature, data, and supporting documents related to the pesticide product must be enclosed with this application form.
- 11) Registration status in other countries (Copies of registration documents should be attached)
- 12) Approval from relevant local and overseas authorities for manufacture, import, distribution, sale, supply, transport, storage and usage of the pesticide product

Annex 2: Data Requirements for Microbial Pesticides

1) Information on the active substances(s)

- Common name (including alternative and superseded names)
- Taxonomic name and strain indicating whether it is a stock or a mutant strain; for viruses, taxonomic designation of the agent, serotype, strain or mutant
- Methods, procedures and criteria used to establish the presence and identity of the organism (eg. morphology, biochemistry, serology, etc)
- Biological properties of the organism
 - History of the organism and its uses including as far as is known its general history and, if relevant, its geographical distribution
 - Relationship to existing pathogens of vertebrates, plants or other organisms
 - Effects on target organism. Pathogenicity or kind of antagonism to the host. Details of host specificity range should be included
 - Transmissibility, infective dose and mode of action including information on presence, absence or production of toxins with, if appropriate, information on their nature, identity, chemical structure and stability and potency
 - Possible effects on non-target organisms closely related to the target organism including infectivity, pathogenicity and transmissibility
 - Transmissibility to other non-target organisms
 - Any other biological effects on non-target organism when properly used
 - Infectivity and physical stability when properly used
 - Genetic stability under environmental conditions of proposed use
 - Any pathogenicity and infectivity to man and animals under conditions of immunosuppression
 - Any allergic reactions to human/mammals
 - Pathogenicity and infectivity for known parasites/predators of the target species
- Physical properties
 - melting point
 - boiling point
 - specific gravity
 - refractive index
 - vapour pressure (mmHg at 20 °C)
 - other volatility data
 - solubility of active ingredient(s) and technical product in water
 - solubility of active ingredient(s) and technical product in other solvents
 - partition coefficient between water and an immiscible organic solvent
 - others
- Chemical properties
 - stability (in air, in water, photo-stability, thermal degradation, stability in organic solvent used in the formulation) and the breakdown product
 - corrosiveness
 - flammability and flash point
 - others

2) Information on the technical grade active ingredient(s) added to product

- Source, name and address of manufacturer including location of plants
- Occurrence in nature or otherwise
- Isolation methods for organism or active strain
- Culture methods

- Production methods including details of containment and procedure to maintain quality and ensure a uniform source of active organism. For mutant strains, detailed information should be provided on production and isolation, together with all known differences between the mutant strains and parent occurring strains
- Composition of the final active organism material i.e. nature, purity, identity, properties, content of any impurities and extraneous organisms
- Methods to prevent contamination of seed stock and loss of virulence of seed stock
- Procedure for waste management

3) Information on the formulated product

- Manufacturer's name and address
- Detailed quantitative and qualitative information on the composition (active organism, inert ingredients, extraneous organisms, etc)
- Concentration of active organism in material used
- Known contaminant(s) or impurity(ies) associated with the active ingredient(s)/organism in the formulation
- Physical condition and nature of the formulation
- Stability and shelf life of the formulation
- Corrosiveness towards packing materials and application equipment
- Flammability under storage and application conditions
- Methods of detection and identification:
 - Methods for establishing the presence and identity of the organism
 - Methods for establishing the identity and purity of seed stock from which batches are produced and results obtained, including information on variability
 - Methods to show the microbiological purity of the final product and showing that contaminants have been controlled to an acceptable level, the results obtained and information on variability
 - Methods used to show that there are no human or other mammalian pathogens as contaminants in the active agent, including in the case of protozoa and fungi, the effects of temperature (35°C and other relevant temperatures)
 - Methods to determine viable and non-viable (eg. toxins) residues in or on treated products, foodstuffs, feeding stuffs, animal and human body fluids and tissues, soil, water and air, where relevant
- Incompatibility with other pesticides
- Recommended methods and precautions concerning handling, storage, transport and use
- Any circumstances or environmental conditions under which the active organism should not be used
- The possibility of rendering the active organism non-infective and any method for doing so
- Decontamination/ neutralising agent for the product and its packaging
- Disposal method for the formulation and its containers
- Consequences of the contamination of air, soil and water, particularly drinking water
- Possibility of destruction or decontamination following release in or into the following: air, water, soil, others if appropriate.

4) Information on the usage

- The control efficacy of the pesticide, including details of efficacy studies, its designated use against the target pest(s) and disease(s) in relation to crops
- Instruction for use, recommended dosage and application method
- Mode of action

- Phyto-toxicity on plants
- Compatibility with other pesticides
- Precautionary measures
- For pesticide used on food crops
 - pre-harvest interval
 - maximum residue level and acceptable daily intake in other countries where the same pesticide has been registered should be included

5) Residue data in agricultural produce

6) Information on the toxicity in mammals

- Acute oral (LD₅₀)
- Acute dermal (LD₅₀)
- Inhalation toxicity (LC₅₀)
- Degree of irritation to eye
- Degree of skin irritation and sensitization
- Chronic toxicity of active ingredient
- No observable effect level of active ingredient
- Supplementary studies of toxicity (long/short term studies) of active ingredient(s)
 - Carcinogenicity
 - Reproductive toxicity including teratogenicity
 - Mutagenicity
 - Neurotoxicity
 - Immunotoxicity studies (eg. allergenicity)
- Persistence and metabolic breakdown pathway of the active ingredient

7) Information on environmental effects and ecotoxicity

- Toxicity to beneficial insects, non-target pests, avian and fish
- Impact on soil ecology
- Residual effect in soil
- Leaching, degradation of product in the soil and possibility of accumulation

8) Information on measures to be taken in case of poisoning

- Antidote(s) for the active ingredient/formulation
- First aid treatment for active ingredient/formulation

9) A copy of the analysis report of the pesticide product stating the composition of the constituents particularly the active ingredient(s).

10) Other technical literature, data, and supporting documents related to the pesticide product must be enclosed with this application form.

11) Registration status in other countries (Copies of registration documents should be attached)

12) Approval from relevant local and overseas authorities for manufacture, import, distribution, sale, supply, transport, storage and usage of the pesticide product

Annex 3: Data Requirements for Biochemical Pesticides

- 1) A biochemical pesticide is a pesticide that is a naturally-occurring substance or structurally-similar and functionally identical to a naturally-occurring substance.
- 2) Examples include, but are not limited to:
 - a. Semiochemicals (insect pheromones and kairomones)
 - b. Natural plant and insect regulators
 - c. Naturally-occurring repellents and attractants
 - d. Enzymes
- 3) AVA may review, on a case-by-case basis, submission of biochemical pesticides registration that does not clearly meet the above-mentioned descriptions.
- 4) Information on the active ingredient(s)
 - Chemical name
 - Common name
 - Other name (if any)
 - Empirical and structural formula
 - Molecular weight
 - Physical properties
 - melting point
 - boiling point
 - specific gravity
 - refractive index
 - vapour pressure (mmHg at 20 °C)
 - other volatility data
 - solubility of active ingredient(s) and technical product in water/ other solvents
 - partition coefficient between water and an immiscible organic solvent
 - others
 - Chemical properties
 - stability (in air, in water, photo-stability, thermal degradation, stability in organic solvent used in the formulation) and the breakdown product
 - corrosiveness
 - flammability and flash point
 - others
 - Method of analysis of active ingredient(s)/ technical material
 - Known contaminant(s) or impurity(ies) associated with the active ingredient(s) in the manufacturing process
- 5) Information on the technical grade active ingredient(s) added to product
 - Source; name and address of manufacturer
 - Appearance (physical state, colour and odour)
 - The minimum (and maximum) active ingredient content in g/kg
 - Complete manufacturing process, including all raw materials, reagents and solvents
 - Identity and amount of isomers, impurities and other by-products, together with information on their possible range expressed as g/kg
 - Maximum limits for impurities present in the technical material at 1g/kg or greater

- 6) Information on the formulated product
- Manufacturer's name and address
 - Complete composition including chemical identities of inert ingredients
 - Physical condition and nature of the formulation
 - Stability and shelf life of the formulation
 - Corrosiveness towards packing materials and application equipment
 - Flammability under storage and application conditions
 - Method of analysis of the formulation
 - Method of analysis of residue in plant and foodstuff
 - Incompatibility with other pesticides
 - Decontamination/ neutralising agent
 - Disposal method for the formulation and its containers
 - Known contaminant(s) or impurity(ies) associated with the active ingredient(s) in the formulation
- 7) Information on the usage
- The control efficacy of the pesticide, including details of efficacy studies, its designated use against the target pest(s) and disease(s) in relation to crops
 - Instruction for use, recommended dosage and application method
 - Mode of action
 - Phyto-toxicity on plants
 - Compatibility with other pesticides
 - Precautionary measures
 - For pesticide used on food crops
 - pre-harvest interval
 - maximum residue level and acceptable daily intake in other countries where the same pesticide has been registered should be included
- 8) Residue data in agricultural produce
- 9) Information on the toxicity in mammals
- Acute oral (LD₅₀)
 - Acute dermal (LD₅₀)
 - Inhalation toxicity (LC₅₀)
 - Degree of irritation to eye
 - Degree of skin irritation and sensitization
 - Chronic toxicity of active ingredient (*required if there is evidence of a potential adverse effects*).
 - No observable effect level of active ingredient
 - Supplementary studies of toxicity (long/short term studies) of active ingredient(s) (*required if the use is likely to result in significant human exposure or the active ingredient/its metabolites is structurally related to a known mutagen/belongs to any class of compounds containing a known mutagen or there is evidence of adverse health effects as a result of use*)
 - Carcinogenicity
 - Reproductive toxicity including teratogenicity
 - Mutagenicity
 - Neurotoxicity
 - Persistence and metabolic breakdown pathway of the active ingredient

- 10) Information on environmental effects and ecotoxicity
 - Toxicity to beneficial insects, non-target pests, avian and fish
 - *The following is required on a case-by-case basis if available data shows an adverse effects:*
 - Impact on soil ecology
 - Residual effect in soil
 - Leaching, degradation of product in the soil and possibility of accumulation
- 11) Information on measures to be taken in case of poisoning
 - Antidote(s) for the active ingredient/formulation
 - First aid treatment for active ingredient/formulation
- 12) A copy of the analysis report of the pesticide product stating the composition of the constituents particularly the active ingredient(s).
- 13) Other technical literature, data, and supporting documents related to the pesticide product must be enclosed with this application form.
- 14) Registration status in other countries (Copies of registration documents should be attached)
- 15) Approval from relevant local and overseas authorities for manufacture, import, distribution, sale, supply, transport, storage and usage of the pesticide product

All information attached with the application will be treated in strictest confidence.

(updated on 27 Oct 11)