Australian Government

Australian Pesticides and Veterinary Medicines Authority

Public Release Summary

On the evaluation of the new active Broflanilide in the products: Vedira Granular Fly Bait, Vedira Granular Ant Bait, Terinda Foam Termiticide & Insecticide, Vedira Pressurised Bait, Vedira Gel Cockroach Bait, Vedira Gel Ant Bait, Vedira Pressurised Insecticide

APVMA product numbers 86358, 86356, 86361, 86362, 86360, 86359, 86363

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This publication is available from the APVMA website.

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PREFACE

The Australian Pesticides and Veterinary Medicines Authority (APVMA) is the Australian Government regulator responsible for assessing and approving agricultural and veterinary chemical products prior to their sale and use in Australia. Before approving an active constituent and/or registering a product, the APVMA must be satisfied that the statutory criteria, including the safety, efficacy, trade and labelling criteria, have been met. The information and technical data required by the APVMA to assess the statutory criteria of new chemical products, and the methods of assessment, must be consistent with accepted scientific principles and processes. Details are outlined on the APVMA website.

The APVMA has a policy of encouraging transparency in its activities and seeking community involvement in decision making. Part of that process is the publication of public release summaries for products containing new active constituents. This Public Release Summary is intended as a brief overview of the assessment that has been conducted by the APVMA and of the specialist advice received from advisory agencies, including other Australian Government agencies and State departments of primary industries. It has been deliberately presented in a manner that is likely to be informative to the widest possible audience to encourage public comment.

About this document

This Public Release Summary indicates that the APVMA is considering an application for registration of an agricultural or veterinary chemical. It provides a summary of the APVMA's assessment, which may include details of:

- the toxicology of both the active constituent and product
- the residues and trade assessment
- occupational exposure aspects
- environmental fate, toxicity, potential exposure and hazard
- efficacy and target crop or animal safety.

Comment is sought from interested stakeholders on the information contained within this document.

Making a submission

In accordance with sections 12 and 13 of the Agvet Code, the APVMA invites any person to submit a relevant written submission as to whether the application for registration of Vedira Granular Fly Bait, Vedira Granular Ant Bait, Terinda Foam Termiticide & Insecticide, Vedira Pressurised Bait, Vedira Gel Cockroach Bait, Vedira Gel Ant Bait, Vedira Pressurised Insecticide, and the new active constituent, broflanilide should be granted. Submissions should relate only to matters that the APVMA is required, by legislation, to take into account in deciding whether to grant the application. These matters include aspects of public health, occupational health and safety, chemistry and manufacture, residues in food, environmental safety, trade, and efficacy and target crop or animal safety. Submissions should state the grounds on which they are

based. Comments received that address issues outside the relevant matters cannot be considered by the APVMA.

Submissions must be received by the APVMA by close of business on 3 December 2019 and be directed to the contact listed below. All submissions to the APVMA will be acknowledged in writing via email or by post.

Relevant comments will be taken into account by the APVMA in deciding whether the product should be registered and in determining appropriate conditions of registration and product labelling.

When making a submission please include:

- contact name
- company or group name (if relevant)
- email or postal address (if available)
- the date you made the submission.

All personal information, and confidential information judged by the APVMA to be confidential commercial information (CCI)[1] contained in submissions will be treated confidentially. Unless requested by the submitter, the APVMA may release a submission, with any CCI redacted, to the applicant for comment.

Written submissions on the APVMA's proposal to grant the application for registration that relate to the grounds for registration should be addressed in writing to:

Case Management and Administration Unit

Australian Pesticides and Veterinary Medicines Authority

GPO Box 3262

Sydney NSW 2001

Phone: +61 2 6770 2300

Email: enquiries@apvma.gov.au.

Further information

Further information can be obtained via the contact details provided above.

Copies of technical evaluation reports covering chemistry, efficacy and safety, toxicology, occupational health and safety aspects, residues in food and environmental aspects are available from the APVMA on request.

Further information on public release summaries can be found on the APVMA website.

[1] A full definition of "confidential commercial information" is contained in the Agvet Code.

1 INTRODUCTION

This publication includes a summary of the data reviewed and the regulatory considerations undertaken for a suite of urban pest control products which include the novel active, Broflanilide. Broflanalide is presented as an active for use in agricultural chemical products for controlling non-crop pests especially social insects and non-social solitary or gregarious insects, such as, ants, wasps, termites and cockroaches. Broflanilide has a novel mode of action (IRAC Group 30) without known cross-resistance and may provide an alternative treatment in situations where resistance has developed to other chemicals used to control these pests.

1.1 Applicant

BASF Australia Ltd

1.2 Purpose of application

BASF Australia has applied to the APVMA for registration of seven separate products for control of urban pests presented in a range of formulation types for use as; insect baits, spot treatments, crack and crevice application and for application to nests for the control of termites.

1.3 Proposed claims and use pattern

Each of the proposed products has specific presentation and associated claims:

Table 1: Proposed products and specific presentation and associated claims

Product	Formulation	Claims
Vedira Granular Fly Bait	Ready to use bait	For the control of flies in commercial, industrial, agricultural and domestic situations
Vedira Granular Ant Bait	Ready to use bait	For the control of ants in commercial, industrial, agricultural and domestic situations
Vedira Pressurised Bait	Aerosol foam	Spot treatment in the control of flies, cockroaches and house ants in commercial, industrial and agricultural situations
Vedira Gel Cockroach Bait	Ready to use bait	Crevice, crack or spot treatment control of cockroaches in domestic, commercial and public service buildings
Vedira Gel Ant Bait	Ready to use bait	Crevice, crack or spot treatment control of ants in and around domestic, commercial and industrial buildings
Vedira Pressurised Insecticide	Aerosol	For crack and crevice treatment control of ants, cockroaches, stored product pests, bed bugs, silverfish, flies, house crickets, paper wasps and spiders

Product	Formulation	Claims
Terinda Foam Termiticide & Insecticide	Aerosol foam	For control of existing infestations of subterranean termites, drywood termites and carpenter ants in commercial, industrial and public health situations

1.4 Mode of action

Broflanilide is a meta-diamide insecticide with a gaba-gated chloride channel allosteric modulator mode of action. The Insecticide Resistance Action Committee (IRAC), has designated broflanilide as a group 30 insecticide.

1.5 Overseas registrations

This submission has been assessed under a joint review/ workshare arrangement where registrations for the same formulations and uses have been submitted concurrently in Australia, Canada, USA, and Mexico.

Although submissions have been made in other countries, broflanilide is not currently registered anywhere else in the world.

2 CHEMISTRY AND MANUFACTURE

2.1 Active constituent (broflanilide)

The active constituent broflanilide will be manufactured overseas.

Broflanilide is a white crystalline powder at room temperature without discernible odour, and its melting point is 154.0–155.5 °C. It is practically non-volatile. It is not soluble in water but is readily soluble in polar solvents, and slightly to moderately soluble in non-polar solvent (0.096 g/L in *n*-heptane).

Table 2: Nomenclature and structural formula of the active constituent broflanilide

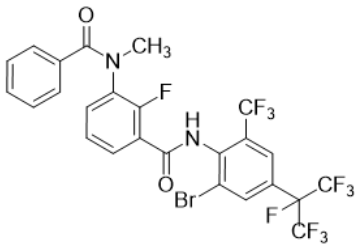
Common name (ISO):	Broflanilide
IUPAC name:	*N*-[2-Bromo-4-(1,1,1,2,3,3,3-heptafluoropropan-2-yl)-6-(trifluoromethyl)phenyl]-2-fluoro-3-(*N*-methylbenzamido)benzamide
Chemical Abstracts Name	3-(Benzoylmethylamino)-*N*-[2-bromo-4-[1,2,2,2-tetrafluoro-1-(trifluoromethyl)ethyl]-6-(trifluoromethyl)phenyl]-2-fluorobenzamide
Manufacturer's Code	MCI-8007 (BAS 450 I)
CAS registry number:	1207727-04-5
Molecular formula:	$C_{25}H_{14}BrF_{11}N_2O_2$
Molecular weight:	663.3
Structural formula:	

Table 3: Key physicochemical properties of the active constituent broflanilide

<table>
<tr><td>Physical form:</td><td>White powder</td></tr>
<tr><td>Odour:</td><td>None discernible</td></tr>
<tr><td>Melting point:</td><td>154.0 to 155.5 °C</td></tr>
<tr><td>Boiling point:</td><td>Not determined; decomposes above ~180 ˚C</td></tr>
<tr><td>Relative density (D_4^{23})</td><td>1.66</td></tr>
<tr><td>Vapour pressure</td><td>9 x 10^{-9} Pa at 25 ˚C</td></tr>
<tr><td>Octanol/water partition coefficient</td><td>At pH 4, $\log_{10}P_{ow}$ = 5.2
At pH 7, $\log_{10}P_{ow}$ = 5.2
At pH 10, $\log_{10}P_{ow}$ = 4.4</td></tr>
<tr><td>Dissociation constant</td><td>pK_a = 8.8</td></tr>
<tr><td>Water solubility at 20 °C:</td><td>0.71 mg/L in purified water</td></tr>
<tr><td>Solvent solubility at 20 °C:</td><td>0.096 g/L in n-heptane;
6.0 g/L in xylene;
7.4 g/L in n-octanol
110 g/L in 1,2-dichloroethane;
> 250 g/L in methanol;
> 250 g/L in acetone;
> 250 g/L in ethyl acetate</td></tr>
<tr><td>Henry’s law constant:</td><td>3.0 × 10^{-6} Pa.m^3.mol^{-1}</td></tr>
<tr><td>Stability</td><td>Broflanilide active is not adversely affected by the presence of metals or metal ions.</td></tr>
<tr><td>Thermal stability</td><td>Stable at room temperature</td></tr>
<tr><td>UV/Vis absorption</td><td>
<table>
<tr><th></th><th>λ_{max} (nm)</th><th>ε (L·mol^{-1}·cm^{-1})</th></tr>
<tr><td rowspan="3">Neutral sol. (purified water)</td><td>239</td><td>17200</td></tr>
<tr><td>274</td><td>5000</td></tr>
<tr><td>282</td><td>4090</td></tr>
<tr><td rowspan="3">Acidic sol. (0.1 M HCl)</td><td>239</td><td>17000</td></tr>
<tr><td>274</td><td>4980</td></tr>
<tr><td>282</td><td>4120</td></tr>
<tr><td rowspan="2">Basic sol. (0.1 M NaOH)</td><td>248</td><td>17600</td></tr>
<tr><td>293</td><td>5560</td></tr>
</table>
</td></tr>
<tr><td>Safety properties</td><td>Not highly flammable. Does not self-ignite below 400 °C. Not explosive, non-oxidising, and not corrosive to the packaging (a polyethylene bag within an outer steel drum).</td></tr>
</table>

The APVMA has evaluated the chemistry aspects of broflanilide active constituent (identification, physico-chemical properties, stability, manufacturing process, quality control procedures, batch analysis results and analytical methods) and found them to be acceptable. On the basis of the chemistry data provided, and the toxicological assessment, it is proposed that the following APVMA Active Constituent Standard be established for broflanilide:

Table 4: APVMA Active Constituent Standard for Broflanilide

CONSTITUENT	SPECIFICATION	LEVEL
Broflanilide	Broflanilide	965 g/kg minimum

2.2 Formulated product

There are seven associated formulated products containing broflanilide as an active constituent. Each will be manufactured overseas and the properties of each is addressed separately below:

Vedira Granular Ant Bait (#86356)

Table 5: Physicochemical properties of the product *Vedira Granular Ant Bait*

Distinguishing name:	Vedira Granular Ant Bait
Formulation type:	Ready to use bait (RB)
Active constituent concentration:	0.05 g/kg of broflanilide
Physical form:	Yellow, oily granular grain bait
PH:	6.52 (1% in pure water); 6.23 (1% in CIPAC water D)
Tap density:	0.46 kg/L (packed)
Safety properties:	Non-explosive. Not auto-flammable. The product does not react with water or reducing agents, but strongly reacts with oxidising agents (such as $KMnO_4$). It is non-hazardous and compactible when in contact with mono-ammonium phosphate (MAP), the firefighting powder in fire extinguishers
Corrosivity	Not corrosive to HDPE containers
Storage stability:	The product should remain within specifications for at least 2 years when stored under normal conditions

Vedira Granular Fly Bait (#86358)

Table 6: Physicochemical properties of the product *Vedira Granular Fly Bait*

Distinguishing name:	Vedira Granular Fly Bait
Formulation type:	Ready to use bait (RB)
Active constituent concentration/s:	0.25 g/kg of broflanilide
Physical form:	Solid blue granules with no noticeable odour
PH:	5.73 (1% in pure water); 5.40 (1% in CIPAC water D)
Tap density:	0.52 kg/L (packed)
Safety properties:	Non-explosive. Not auto-flammable. Does not react with water or reducing agents. Reacted with oxidizing agents (such as $KMnO_4$). It is non-hazardous and compatible when in contact with mono-ammonium phosphate (MAP), the firefighting powder in the fire extinguisher
Corrosivity	Not corrosive to HDPE containers
Storage stability:	The product should remain within specifications for at least 2 years when stored under normal conditions

Vedira Gel Ant Bait (#86359)

Table 7: Physicochemical properties of the product *Vedira Gel Ant Bait*

Distinguishing name:	Vedira Gel Ant Bait
Formulation type:	Ready to use bait (RB)
Active constituent concentration:	0.2 g/kg of broflanilide
Physical form:	Clear gel bait, no distinct odour
PH:	6.45 (1% in pure water); 6.28 (1% in CIPAC water D)
Density:	1.258 g/cm^3
Viscosity at 20 °C:	6.17 m Pa.s at a shear rate of 10 s^{-1} 1.26 m Pa.s at a shear rate of 100 s^{-1} 0.93 m Pa.s at a shear rate of 200 s^{-1}
Safety properties:	Non-explosive. Not flammable. Does not react with water or reducing agents. Reacts moderately with oxidizing agents ($KMnO_4$). It is non-hazardous and it is compatible when in contact with mono-ammonium phosphate (MAP), the firefighting powder in the fire extinguisher
Corrosivity:	Not corrosive to HDPE containers
Storage stability:	The product should remain within specifications for at least 2 years when stored under normal conditions

Vedira Gel Cockroach Bait (#86360)

Table 8: Physicochemical properties of the product *Vedira Gel Cockroach Bait*

Distinguishing name:	Vedira Gel Cockroach Bait
Formulation type:	Ready to use bait (RB)
Active constituent concentration:	2.5 g/kg of broflanilide
Physical form:	A tan coloured gelatine with a starchy smell
PH:	5.25 (1% in pure water); 5.22 (1% in CIPAC water D)
Density:	1.146 g/cm^3 at 22.5 °C
Viscosity at 20°C:	6.8 m Pa.s at a shear rate of 10 s^{-}1 1.9 m Pa.s at a shear rate of 100 s^{-}1 1.3 m Pa.s at a shear rate of 200 s^{-}1
Safety properties:	Non-explosive. Not flammable; Does not react with water, reducing agents, or oxidizing agents (KMnO4). It is non-hazardous and is compatible when in contact with mono-ammonium phosphate (MAP), the firefighting powder in the fire extinguisher
Corrosivity:	Not corrosive to HDPE containers
Storage stability:	The product should remain within specifications for at least 2 years when stored under normal conditions

Terinda Foam Termiticide & Insecticide (#86361)

Table 9: Key aspects of the formulation of the product *Terinda Foam Termiticide & Insecticide*

Distinguishing name:	Terinda Foam Termiticide & Insecticide
Formulation type:	Aerosol (AE)
Active constituent concentration:	0.045 g/kg of broflanilide
Physical form:	White foam with a faint characteristic odour for the blended suspended premix
PH:	6.21 (1% in 1:1 DI water : isopropanol)
Density:	0.998 g/cm^3 at 20 °C
Viscosity at 20°C:	8.4 m Pa.s (8.41 cSt) at 20°C for the blended suspended premix
Safety properties:	Not flammable, non-explosive and no oxidative properties. Compatible with oxidizing agents ($KMnO_4$), reducing agents (iron filings), and mono-ammonium phosphate (MAP), the firefighting powder in the fire extinguisher.
Corrosivity:	Not corrosive to silver aerosol cans
Storage stability:	The product should remain within specifications for at least 2 years when stored under normal conditions

Vedira Pressurised Bait (#86362)

Table 10: Physicochemical properties of the product *Vedira Pressurised Bait*

Distinguishing name:	Vedira Pressurised Bait
Formulation type:	Aerosol (AE)
Active constituent concentration:	1.25 g/kg of broflanilide
Physical form:	Clear colourless liquid with a distinct acetone odour for formulated concentrate
PH:	6.14 (10% v/v in 1:1 DI water : isopropanol)
Density:	0.956 g/cm^3 at 20 °C
Viscosity at 20°C:	1.94 m Pa.s at 20 °C for formulated concentrate
Safety properties:	Flammable with the flashpoint below 0 °C; Non-explosive. No oxidative properties.
Corrosivity:	Not corrosive to aerosol cans
Storage stability:	The product should remain within specifications for at least 2 years when stored under normal conditions

Vedira Pressurised Insecticide (#86363)

Table 11: Physicochemical properties of the product *Vedira Pressurised Insecticide*

Distinguishing name:	Vedira Pressurised Insecticide
Formulation type:	Ready to use aerosol product (AE)
Active constituent concentration:	0.5 g/kg alpha-cypermethrin and 2 g/kg of broflanilide
Physical form:	Clear colourless liquid with a faint acetone odour for the formulated concentrate
PH:	6.41 (1% in 1:1 DI water : isopropanol)
Density:	0.797 g/cm^3 at 20 °C
Viscosity at 20°C:	2.2 m Pa.s (2.8 cSt) at 20 °C for the formulated concentrate
Safety properties:	Flammable with a flashpoint of 17.5 °C; Non-explosive and no oxidative properties
Corrosivity:	Not corrosive to silver aerosol cans
Storage stability:	The product should remain within specifications for at least 2 years when stored under normal conditions

2.3 Recommendations

The APVMA Chemistry section has evaluated the chemistry and manufacture aspects of the active constituent broflanilide and seven associated products containing this active constituent, Vedira Granular Ant Bait, Vedira Granular Fly Bait, Vedira Gel Ant Bait, Vedira Gel Cockroach Bait, Terinda Foam Termiticide & Insecticide, Vedira Pressurised Bait and Vedira Pressurised Insecticide, including the manufacturing process, quality control procedures, stability, batch analysis results and analytical methods, and found them to be acceptable.

The storage stability data provided with the applications indicate that the seven formulated products are expected to remain stable for at least two years when stored under normal conditions.

Approval of the active constituent broflanilide, and registration of the seven end use products are supported from a chemistry perspective.

3 TOXICOLOGICAL ASSESSMENT

The APVMA proposes to determine after consideration of the toxicological profile and likely exposure associated with the use of the formulated products, that the human health risk posed by the proposed products is acceptable according to the criteria stipulated in Section 5A of the *Agricultural and Veterinary Chemicals Code Act (1994)*.

3.1 Evaluation of toxicology

Chemical class

Broflanilide is a meta-diamide pro-pesticide. Its active invertebrate metabolite, desmethyl-broflanilide, acts as a non-competitive, resistant-to-dieldrin (RDL), gamma-aminobutyric acid (GABA) receptor antagonist. In target pest species the binding site of desmethyl-broflanilide is distinct from that of conventional non-competitive GABA antagonists such as fipronil. While the site of action for desmethyl-broflanilide overlaps with that of the macrocyclic lactones, desmethyl-broflanilide acts via a different mode of action at invertebrate GABA receptors. Based on the available data, broflanilide appears to exhibit high levels of selective toxicity towards the insect nervous systems compared to the mammalian nervous systems.

Pharmacokinetics

Broflanilide is moderately absorbed after oral dosing, with maximum plasma concentrations achieved at around four hours after dosing. There was minimal potential for accumulation in body tissues, however there was some evidence of increased retention in red blood cells. Excretion was extensive, with more than 90 per cent excreted by 168 hours after dosing. Dermal absorption of broflanilide was extremely limited.

Acute toxicity (active constituent)

Broflanilide is of very low acute oral (LD_{50}>5000 mg/kg bw) and dermal (LD_{50}> 5000 mg/kg bw) toxicity and low inhalation toxicity (LC_{50} > 2200 mg/m^3), with no deaths observed at the highest exposure levels. It is not irritating to the skin and eyes, and is not a skin sensitiser.

Acute toxicity (product)

Vedira Granular Fly Bait, Vedira Pressurised Bait, Vedira Pressurised Insecticide and Terinda Foam Termiticide & Insecticide are of low toxicity from acute oral, dermal and inhalational administration. Neither product is irritating to the skin and eyes of rabbits and was non-sensitising to skin.

Vedira Granular Ant Bait, Vedira Gel Cockroach Bait, and Vedira Gel Ant Bait are of low acute oral and dermal toxicity. It is not irritating to the skin and eyes of rabbits and is non-sensitising to skin. Given the formulation of these products, an assessment of the inhalational toxicity was not considered necessary.

Repeat-dose toxicity

Following oral dosing, the major target organs were the adrenal glands and ovaries, with vacuolation and lipid and cholesterol deposits observed. In mice, the NOAEL following 28 days oral dosing was 1000 mg/kg bw (the highest dose tested). After 90 days oral dosing, adrenocortical vacuolation was seen in female mice at the highest dose tested (1150 mg/kg bw/day), with a NOAEL of 955 mg/kg bw/day in male mice and 230 mg/kg bw/day in female mice.

In dogs, no abnormal signs were seen after 90 days at 1000 mg/kg bw/day.

Following dermal exposure to rats for 28 days, no effects were seen at doses up to 1000 mg/kg bw/day. Inhalation exposure to rats for four weeks resulted in increased serum cholesterol at the highest dose, regenerative haematotoxicity, hyperplasia of the bronchial epithelium and ovarian interstitial gland vacuolation with concentrations at or above 200 mg/m^3. The NOAEC was 30 mg/m^3.

Chronic toxicity and carcinogenicity

No non-neoplastic adverse effects were seen in a 78 week repeat oral exposure study in mice, with a NOAEL of 745 mg/kg bw/day. No broflanilide-associated carcinogenesis was seen, with all neoplastic lesions observed being considered to be spontaneous, with incidences within the historical control range.

In rats, treatment related effects included increases in serum cholesterol, and increased adrenal weights which was correlated with diffuse adrenal cortex vacuolation, with hypertrophy observed in females, at doses at or above 5.7 mg/kg bw/day in males and 20 mg/kg bw/day in females. While these effects were considered related to treatment, they were not considered adverse. Adaptive liver weight increase and ovarian interstitial gland vacuolation was seen in females at or above 20 mg/kg bw/day. After 12 months, the NOAEL for males was 822 mg/kg bw/day (the highest dose tested), while for females the NOAEL was 7.2 mg/kg bw/day due to the presence of ovarian interstitial gland vacuolation at the next highest dose. After 24 months dosing in rats, effects on the ovary (ovarian cysts at the highest dose, and ovarian interstitial gland vacuolation at all doses), adrenal (increased adrenal weights, correlated with diffuse adrenal cortical vacuolation from 14 mg/kg bw/day and adrenal cortical fatty change with cystic degeneration in males from 709 mg/kg bw/day) and adaptive changes in the liver were seen. The overall LOAEL for the study was 5.9 mg/kg bw/day.

Carcinogenic findings in the rat included an increase in the number of benign ovarian tumours and tumours with sex cord stromal origins at or above 95 mg/kg bw/day. An increase in uterine adenocarcinomas was seen following dosing at 953 mg/kg bw/day, which was correlated with an increase in endometrial hyperplasia at doses at or above 19 m/kg bw/day. The NOAEL for carcinogenesis in females was approximately 6 mg/kg bw/day. A broflanilide associated increase in Leydig cell adenomas was detected in males at 709 mg/kg bw/day. This was considered to have low human relevance based on the mode of action information provided.

Dosing of female dogs for 12 months resulted in a decrease of body weight and reduced body weight gain. A number of non-adverse but treatment related effects, including increased adrenal gland weights at doses at or above 100 mg/kg bw/day, while increased neutrophil and white cell counts were seen at 1000 mg/kg bw/day. The NOAEL for female dogs was 1000 mg/kg bw/day.

Reproductive and developmental toxicity

In a two-generation reproduction study in rats, there were no effects on fertility or reproductive indices or on pup viability. Slight decreases in body weight gain were seen in parent animals and in pups, however pup birthweights were not affected. Effects consistent with those seen in other repeat dose studies, such as vacuolation and hypertrophy in the adrenal cortex and ovarian interstitial gland vacuolation were seen in females at 100 ppm and above in the parents, and at 300 ppm and above in the F1 generation. The NOAEL for fertility and reproductive performance was 1221 mg/kg bw/day, the highest dose tested.

A one generation combined reproductive/developmental study in rats demonstrated no effects on reproductive indices or developmental milestones. In a functional observation battery examination, a statistically significant increase in hind limb grip strength was seen in both sexes on one occasion, which was not considered adverse. Treatment related effects were primarily related to bone marrow, adrenal, ovarian and liver tissues, including increased organ weight. The LOAEL for parental toxicity was the lowest dose tested of 360 mg/kg bw/day, based on haematological effects. The NOAEL for developmental and reproductive toxicity was the highest dose tested of 1300 mg/kg bw/day.

Developmental toxicity tests were conducted in rats and rabbits. In rats, no evidence of toxicological effects were seen, and the NOAEL for parental and developmental toxicity was the highest dose tested of 1000 mg/kg bw/day. In rabbits, no evidence of toxicological effects were seen, and the NOAEL for parental and developmental toxicity was the highest dose tested of 1000 mg/kg bw/day.

Genotoxicity

Broflanilide has low genotoxic potential based on the results of *in vivo* and *in vitro* genotoxicity tests.

Neurotoxicity/immunotoxicity

Broflanilide was not acutely neurotoxic to rats at doses up to 2000 mg/kg bw/day, and was not neurotoxic in repeat dose studies at doses above 1000 mg/kg bw/day. Dosing at up to 1020 mg/kg bw/day did not produce any effects on T-cell-dependent antibody responses in a validated immunotoxicity assay system.

Toxicity of metabolites and/or impurities

Toxicity data on the major mammalian, plant and environmental metabolites of broflanilide were provided. These metabolites were of low acute oral toxicity, and low subacute and sub chronic repeat oral dose toxicity. A plant and rat metabolite of broflanilide (S(PFP-OH)-8007 resulted in adrenocortical and ovarian interstitial gland vacuolation, with a NOAEL of 30 mg/kg bw/day. All metabolites tested were of low genotoxicity potential.

3.2 Health-based guidance values and poisons scheduling

Poisons standard

A delegate to the Secretary of the Department of Health has made an interim decision to amend the Poisons Standard in relation to broflanilide as follows:

> A new entry will be made to Schedule 6 to include BROFLANILIDE except when included in Schedule 5. A new entry will be made to Schedule 5 to include BROFLANILIDE in preparations containing 0.3 per cent or less of broflanilide. If the above scheduling recommendations are adopted as final, all of the proposed end-use-products in the application would be captured by the Schedule 5 entry.

The final decision of the scheduling delegate is to be published on 28 November 2019.

Health-based guidance values

Acceptable Daily Intake (ADI)

As the products are not proposed for food-producing uses, no ADI has been established at this time.

Acute Reference Dose (ARfD)

As the products are not proposed for food-producing uses, no ARfD has been established at this time.

3.3 Recommendations

There are no objections on human health grounds to the registration of the products Vedira Granular Fly Bait, Vedira Granular Ant Bait, Terinda Foam Termiticide & Insecticide, Vedira Pressurised Bait, Vedira Gel Cockroach Bait, Vedira Gel Ant Bait and Vedira Pressurised Insecticide.

4 RESIDUES ASSESSMENT

The use of the proposed products: Vedira Granular Fly Bait, Vedira Granular Ant Bait, Terinda Foam Termiticide & Insecticide, Vedira Pressurised Bait, Vedira Gel Cockroach Bait, Vedira Gel Ant Bait, Vedira Pressurised Insecticide, including broflanilide at up to 2.5 g/kg are not proposed for use in food crops or in food-producing animals and are therefore not expected to present an undue hazard to the safety of people exposed to residues of the products.

5 OVERSEAS TRADE ASPECTS OF RESIDUES IN FOOD

The use of the new products: Vedira Granular Fly Bait, Vedira Granular Ant Bait, Terinda Foam Termiticide & Insecticide, Vedira Pressurised Bait, Vedira Gel Cockroach Bait, Vedira Gel Ant Bait, Vedira Pressurised Insecticide, including broflanilide at up to 2.5 g/kg are not proposed for use in food producing crops or animals and the use of these products is not expected to result in detectable residues in any major Australian export commodities. Therefore the use of the products as proposed, is not expected to adversely affect trade between Australia and places outside Australia.

6 WORK HEALTH AND SAFETY ASSESSMENT

6.1 Health hazards

Broflanilide and the seven proposed end use products have low acute oral, dermal and inhalational hazard, and are not skin or eye irritants or skin sensitisers. Chronic hazards associated with exposure to broflanilide are associated with effects on the ovaries, with a LOAEL established at 5.9 mg/kg bw/day.

6.2 Occupational exposure

Exposure during use

The seven products proposed for registration are to be used both in domestic and commercial situations. The products may be used on a year-round basis, and may be used by professional pest-control operators, as well as by members of the public.

Vedira Granular Fly Bait is a ready-to-use granular bait containing 0.25 g/kg broflanilide for non-crop pest-control of flies, for outdoor and indoor control of flies in domestic, commercial, industrial and agricultural (including food handling) situations. Vedira Granular Fly Bait will be scattered using a gloved hand, in bait stations or will be mixed to a paste with water and spot painted onto surfaces where flies rest.

Vedira Granular Ant Bait is a ready-to-use granular bait containing 0.05 g/kg broflanilide for non-crop pest-control of ants in domestic, commercial and industrial situations. Vedira Granular Ant Bait will be scattered using a gloved hand or in bait stations.

Terinda Foam Termiticide & Insecticide is a ready-to-use aerosol foam containing 0.045 g/kg broflanilide for non-crop pest control of termites and ants. When dispensed, the formulation rapidly expands generating a dry foam with an expansion ratio of approximately 30:1, with 30 g of product being dispensed in approximately five seconds producing about one litre of foam.

Vedira Pressurised Bait is a ready-to-use aerosol bait containing 1.25 g/kg broflanilide for non-crop pest control of various insect species for indoor and outdoor aerosol residual bait to control flies, cockroaches and ants in a range of domestic, commercial, industrial and agricultural situations. Vedira Pressurised Bait will be applied as a spot, crack and crevice treatment including insect harbourages, nests and open areas.

Vedira Gel Cockroach Bait is a ready-to-use bait containing 2.5 g/kg broflanilide for non-crop pest control of cockroaches. It will be supplied in a range of syringe dispensers as ready-to-use gel bait to control cockroaches in a range of domestic and commercial situations, including public service buildings as a residual spot, crack or crevice treatment.

Vedira Gel Ant Bait is a ready-to-use bait containing 0.2 g/kg broflanilide for non-crop pest control of ants, in syringe dispensers in a range of domestic and commercial situations, including public service buildings. Vedira Gel Ant Bait will be applied on surfaces or in bait stations around nests and ant trails at a rate of 0.5 g per m^2.

Vedira Pressurised Insecticide is a ready-to-use aerosol containing 2.0 g/kg broflanilide and 0.5 g/kg alpha-cypermethrin for non-crop pest control, of various insect species in a range of domestic, industrial and public health situations; indoors and outdoors. It will be applied directly from the can or using the 'System III Pressurised dispenser unit'; a purpose-built, belt mounted adaptor system with a long, coiled hose for precision application.

As pest control operators may be exposed to the product on a daily basis, chronic studies were used to determine whether acceptable margins of safety (MOEs) could be established. Calculations of the anticipated maximum work rate resulted in very low estimated exposure for each of the products, and the margins of exposure were high.

Post application exposure for occupational users is likely to be minimal, given the intended use for nests, cracks/crevices or as a pressurised spray directly to insect pests.

6.3 Public exposure

The products are intended to be used by the public, and may be used in areas accessible to the public including indoor areas for residual control in the case of Vedira Pressurised Insecticide and Vedira Pressurised Bait. The APVMA has considered the toxicological profile of all seven products and determined that they do not pose a concern for either acute or chronic poisoning. Exposure to broflanilide from treated surfaces is also likely to be minimal, given the intended use of the products.

6.4 Recommendations

The following first aid instructions, safety directions and precautionary (warning) statements are recommended for the product label.

First aid instructions

ALL Products: If poisoning occurs, contact a doctor or Poisons Information Centre. Phone Australia 131 126; New Zealand 0800 764 766.

Safety directions

Vedira Gel Cockroach Bait, Vedira Gel Ant Bait, Terinda Foam Termiticide & Insecticide, Vedira Pressurised Bait and Vedira Pressurised Insecticide:

- wash hands after use.

Vedira Granular Ant Bait and Vedira Granular Fly Bait:

- if applying by hand, wear rubber gloves. Wash hands after use.

7 ENVIRONMENTAL ASSESSMENT

7.1 Fate and behaviour in the environment

Soil

From a laboratory aerobic soil metabolism study of broflanilide performed with three radiolabeled test substances, multiple soil metabolites were observed, but none of them exceeded 10 per cent TAR. Mineralization was observed with levels of $^{14}CO_2$ reaching a maximum value of approximately 1.2 per cent TAR from the fluorophenyl ^{14}C-U-label and 5.3 per cent TAR from the benzoyl ^{14}C-U- label after 365 days of incubation, demonstrating further degradation of the primary degradation products. Bound residues reached maximum levels of 6.4 to 16 per cent TAR at 365 DAT. Broflanilide degraded slowly in soil under laboratory conditions, with a calculated DT_{50} value of 596 days based on data through 120 days after treatment (DAT). Prolonging the incubation period from a standard 120 DAT to 365 DAT increased the DT_{50} value to 1126 days with no metabolites found at levels >10 per cent TAR.

An additional aerobic soil study was conducted in three soils to compare broflanilide degradation in normally processed soils (ie sieved and homogenized) versus intact soil cores under laboratory conditions. Processing soils prior to dosing lead to slower degradation. Calculated DT_{50} values for intact cores averaged 336 days compared to 900 days following processing (based on data through 120 days of incubation), suggesting broflanilide degradation is sensitive to soil conditions that are inherently altered by processing (eg, compromised structure, altered microbial patterns, etc.), which is not representative of in situ field conditions. There was no major (>10 per cent TAR) metabolite, but multiple minor degradation products were observed, similar to those from the route of degradation study. Mineralization was observed with levels of CO_2 reaching a maximum value of approximately 4 per cent TAR (from the fluorophenyl ^{14}C-U-label) after 365 days of incubation, demonstrating further degradation of the primary degradation products. Bound residues reached maximum levels of 8.2 to 16 per cent TAR in processed soils and 12 to 47 per cent TAR in intact soil cores at 365 DAT.

In soils dosed with ^{14}C-broflanilide and incubated for 30 days aerobically, then flooded and purged with nitrogen to facilitate anaerobic, reducing conditions, the DT_{50} values of broflanilide from four soils ranged from 157 to 2354 days, with an average of 1188 days, based on data from the time of flooding onward. There was one major metabolite (>10 per cent TAR) observed, DC-8007[2], which ranged from 7.3 to 74.1 per cent TAR from fluorophenyl ^{14}C-U-label and trifluoromethylphenyl ^{14}C-U-Label across the soils. All other metabolite levels were <5 per cent TAR. Mineralization was observed with levels of CO_2 reaching maximum values of ~2.0 per cent TAR after 333 days of anaerobic incubation.

Photolytic degradation of broflanilide in soil did not result in additional unique metabolites (photoproducts), nor did the influence of light appear to be an important dissipation pathway in/on soil. The DT_{50} of broflanilide in soil was 389 days under irradiated conditions and 777 days in the dark control.

An outdoor soil metabolism study was conducted for broflanilide at field sites in the United States. Fluorophenyl ^{14}C-labeled and trifluoromethylphenyl ^{14}C-labeled broflanilide was applied to the in situ bare soil surface at both field sites. The observed DT_{50} values were 26 and 182 days, more rapid than those

[2] *N*-[2-bromo-4-(perfluoropropan-2-yl)-6-(trifluoromethyl)phenyl]-2-fluoro-3-(methylamino)benzamide

observed in the laboratory studies. The major broflanilide soil degradation sink was the formation of non-extractable residues. At test completion (181 DAA), non-extractable residues in 0-5 cm depth ranged from 17 to 66 per cent total radioactive residues (TRR) across two soils and ^{14}C labels, and averaged 40 per cent TRR. In one study, DM-8007[3] was the only metabolite observed >5 per cent TAR, which was 5.3 to 5.9 per cent from 5 to 90 DAA, and decreased to 1.1 per cent by 181 DAA. In the second study, DM-8007 was also the highest forming metabolite, however maximum formation observed throughout the study was 4.6 per cent TAR at 7 DAA.

Under terrestrial field dissipation conditions at five trial sites, broflanilide dissipated quickly with DT_{50} values of 3.3 to 18 days. Degradation of broflanilide under field conditions did occur and formation of the metabolites expected from the laboratory studies was observed. All metabolites observed were minor metabolites with maximum amounts less than 10 per cent TAR in both the field dissipation and the aerobic soil laboratory study, but the four highest minor metabolites were included in the analytical method.

Broflanilide is metabolized mainly bydemethylation to form metabolite DM-8007. Broflanilide also appears to be metabolized through either the oxidative defluorination (substitution of a fluorine with hydroxyl) to form S(PFP-OH)-8007[4] or the hydrolysis of the amide bond to form DC-8007. Both DM-8007 and DC-8007 were subsequently metabolized to DC-DM-8007[5] via hydrolysis of the amide bond or demethylation, respectively. The metabolites formed generally underwent further degradation including mineralization to CO_2 and incorporation into bound residues.

Surface Water

Broflanilide was stable to hydrolysis under neutral (pH 7) to acidic (pH 4), and basic (pH 9) conditions.

Under aqueous conditions, broflanilide was susceptible to photolysis. In sterile buffers DT_{50} values of broflanilide were calculated to be 15–22 days (40°N) in pH 5; 79–123 days in pH 7, and 4–7 days in pH 9. No degradation was observed in dark controls. Four photoproducts accounted for maximum levels >10 per cent TAR were S(Br-OH)-8007[6] (maximum 15 per cent TAR), AB-oxa[7] (maximum 28 per cent TAR), MFBA[8] (maximum 17 per cent TAR), and benzoic acid (maximum 44 per cent TAR).

In aerobic aquatic (water/sediment) systems, broflanilide redistributed from the water to the sediment phase (water phase dissipation DT_{50} of 10.8–25.7 days). Degradation of broflanilide occurred with total system DT_{50} values of 884–1110 days. There was one major metabolite (>10 per cent TAR) observed, DC-8007, with a maximum level of 12 per cent TAR from fluorophenyl ^{14}C-U-label and trifluoromethylphenyl ^{14}C-U-Label across the soils. All other metabolite levels were <5 per cent TAR. Mineralization was observed with levels of CO_2 reaching maximum values of ~15 per cent TAR after 365 days of incubation.

Under anaerobic aquatic conditions, broflanilide also redistributed from the water phase to sediment (water phase DT_{50} 18–25 days). Degradation of broflanilide occurred with total system DT_{50} values of 647–1410

[3] 3-benzamido-N-[2-bromo-4-(perfluoropropan-2-yl)-6-(trifluoromethyl)phenyl]-2-fluorobenzamide

[4] *N*-[2-bromo-4-(1,1,1,3,3,3-hexafluoro-2-hydroxypropan-2-yl)-6-(trifluoromethyl)phenyl]-2-fluoro-3-(N-methylbenzamido)benzamide

[5] 3-amino-*N*-[2-bromo-4-(perfluoropropan-2-yl)-6-(trifluoromethyl)phenyl]-2-fluorobenzamide

[6] 2-fluoro-*N*-[4-(1,1,1,2,3,3,3-heptafluoropropan-2-yl)-2-hydroxy-6-(trifluoromethyl)phenyl]-3-(*N*-methylbenzamido) benzamide

[7] *N*-{2-fluoro-3-[6-(perfluoropropan-2-yl)-4-(trifluoromethyl)-1,3-benzooxazol-2-yl]phenyl}-*N*-methylbenzamide

[8] 2-fluoro-3-(N-methylbenzamido)benzoic acid

days. Metabolite DC-8007 was observed above 10 per cent TAR in the sediment phase at a maximum of 18 per cent.

Sediment

Following dosing to the water phase, ^{14}C-broflanilide redistributed into the sediment phase with maximum levels of 77–99 per cent TAR at 181 days in the aerobic aquatic study and 74–83 per cent TAR in 182–272 days in the anaerobic aquatic study. The broflanilide dissipation DT_{50} values in the sediment (fitting from peak sediment level onward) were 1540–2110 days in the aerobic aquatic sediment study and 472–1040 days in the anaerobic aquatic sediment study.

One metabolite, DC-8007, exceeded 10 per cent TAR in the aerobic aquatic study and reached a maximum of 12 per cent TAR at 273 days. In anaerobic aquatic sediment, DC-8007 reached a maximum of 17 per cent TAR at 365 days.

Ground water

No metabolites exceeding 10 per cent of the applied radioactivity from ^{14}C-broflanilide were detected in aerobic soil metabolism studies. The four highest minor metabolites, S(PFP-OH)-8007, DC-8007, DM-8007, and DC-DM-8007 were the only metabolites identified.

Soil sorption results for these minor aerobic soil metabolites indicated moderate to strong adsorption. The median (n=6) organic carbon corrected adsorption distribution coefficient, $K_F$oc, were 3163 mL/g for DC-8007 and 1150 mL/g for DC-DM8007. The adsorption coefficient (K_{oc}) of metabolites S(PFP-OH)-8007 and DM-8007 were calculated to be 1815 and 3580 mL/g in purified water. Each of these minor aerobic soil laboratory metabolites were assessed under field conditions at five terrestrial field sites. Each was observed to form from broflanilide applied at the field sites, as expected. As a percent of the total target applied broflanilide at each site, 50 g ac/ha, the maximum metabolite formation represented 3.3 per cent for DM-8007, 1.0 per cent for S(PFP-OH)-8007, and 0.1 per cent for both DC-DM-8007 and DC-8007 on a parent equivalent mass basis. DT_{50} values of DM-8007 ranged from 7.8 to 91 days, with an average of 35 days and median of 21 days. Levels of the other metabolites were too low and/or variable for robust kinetic determination, so no kinetic endpoints were derived for S(PFP-OH)-8007, DC-DM-8007, and DC-8007. Further, broflanilide and metabolites showed quite limited leaching mobility. The average (n=3) residue of broflanilide and metabolites did not exceed the LOD (0.0002 mg/kg) in sample segments below 0-5 cm in North Carolina, 5–10 cm in Florida, Washington, and North Dakota, and 10–15 cm in California. At all sampling events after the first application, there was one or more sample segments without detectable (0.0002 mg/kg) broflanilide or metabolite residue in the deepest core segment analysed.

Air

No risk of air contamination following applications of broflanilide is expected due to its low vapour pressure (9×10^{-9} Pa at 25° C) and Henry's Law constant ($<3.08 \times 10^{-6}$ Pa m^3/mol at 20°C) resulting in a low potential for volatization. Furthermore, the half-life of broflanilide in air (Atkinson method) was calculated to be rapid, 2.5 days, due to reaction with hydroxyl radicals.

7.2 Effects and associated risks to non-target species

Terrestrial vertebrates

Broflanilide is not considered to be toxic to mammals (LD_{50} >5000 mg ac/kg bw, *Rattus norvegicus*) or birds (LD_{50} >2000 mg ac/kg bw, three species tested). Following long-term dietary exposure in reproduction tests, reduced growth in F0 and F1 mammals was observed at doses as low as 127 mg ac/kg bw/d (NOAEL 26 mg ac/kg bw, *Rattus norvegicus*), and reduced egg production and 14 day old survivors as a percentage of hatchlings was observed at doses as low as 35 mg ac/kg bw/d (NOEL 13 mg ac/kg bw/d, *Anas plathyrhynchos*).

Three exposure scenarios for terrestrial vertebrates were considered that are relevant to the granular baits: (1) accidental ingestion as part of soil ingestion, (2) ingestion with/as grit, and (3) intentional ingestion with granules being mistaken for seeds. Risks to terrestrial vertebrates were determined to be acceptable for all three scenarios for **Vedira Granular Fly Bait** and **Vedira Granular Ant Bait**. A standard protection statement to remove spillages is required to minimise opportunity of uptake of the granular baits by terrestrial vertebrates.

For the remaining broflanilide products, risks to terrestrial vertebrates were considered to be acceptable on the basis of negligible exposure given the majority of aerosol products and gel bait applications are anticipated to be indoors. Those applied outdoors will be targeting areas of insect activity, such as insect nests and as such are unlikely to result in exposure to terrestrial vertebrates. **Terinda Foam Termiticide & Insecticide** is injected into enclosed spaces and not accessible by wildlife. Therefore, no specific protection statements are required on the labels.

Aquatic species

Broflanilide is very toxic to fish (lowest LC_{50} 0.25 mg ac/L, *Lepomis macrochirus*), aquatic invertebrates (freshwater EC_{50} >0.33 mg ac/L, *Daphnia magna*; marine LC_{50} 0.000024 mg ac/L, *Americamysis bahia*) and sediment dwellers (lowest LC_{50} 0.010 mg ac/kg dry sediment, *Chironomus riparius*). Marine invertebrates are considerably more sensitive than freshwater species. Algae and aquatic plants are not considered to be sensitive to broflanilide at the limit of water solubility (E_rC_{50} >0.33 mg ac/L, four algal species tested; E_rC_{50} >0.63 mg ac/L, *Lemna gibba*). Based on the high toxicity of broflanilide to aquatic species, the following protection statement is required on all product labels:

> *Very toxic to aquatic life. DO NOT contaminate wetlands or watercourses with this product or used containers.*

Following long-term exposure of fish in the early life stages, reduced post-hatch survival of freshwater species (EC_{10} 0.14 mg ac/L, *Pimephales promelas*) and growth inhibition of marine species (EC_{10} 0.016 mg ac/L, *Cyprinodon variegatus*) were observed in a dose-dependent manner. Following long-term exposure of aquatic invertebrates, delayed reproduction and body length was observed in freshwater species at concentrations as low as 0.011 mg ac/L (NOEC 0.0058 mg ac/L, *Daphnia magna*), reduced survival and body length was observed in marine species at concentrations as low as 0.000013 mg ac/L (NOEC 0.0000063 mg ac/L, *Americamysis bahia*), and reduced survival was observed in sediment dwellers at concentrations as low as 0.0058 mg ac/kg dry sediment (NOEC 0.0015 mg ac/kg dry sediment, *Chironomus*

dilutus). The lipid-normalised steady-state BCF in fish was determined to range 189–234 with a rapid rate of depuration (CT_{50} 0.50–0.60 d).

Runoff risks of broflanilide were determined to be acceptable for **Vedira Granular Ant Bait** under realistic worst-case scenarios. A refined runoff assessment for **Vedira Granular Fly Bait** concluded acceptable risks when considering the small treatment area (the maximum area able to be treated by the maximum pack size of 5 kg is 0.096 ha) and dilution by a receiving water body. To minimise risks of runoff, it is recommended that the granular products are not applied in situations of high runoff risk, such as application to impermeable surfaces. It is also recommended that **Vedira Granular Fly Bait** is not applied if heavy rains or storms are forecast within three days.

For the remaining broflanilide products, risks to soil organisms were considered to be acceptable on the basis of negligible exposure due to the use patterns (injection treatments and ready-to-use spot applications).

Bees

Broflanilide is considered to be highly toxic to adult bees by contact exposure (lowest LD_{50} 0.010 µg ac/bee, *Apis mellifera*) and oral exposure (lowest LD_{50} 0.015 µg ac/bee, *Apis mellifera*). When applied to foliage at 25 g ac/ha, less than 25 per cent mortality was observed after aging residues for 3 hours (RT_{25} <3 h). Bee larvae were less sensitive following oral exposure (LD_{50} >0.030 µg ac/bee, *Apis mellifera*). Following long-term oral exposure to doses as low as 0.0011 µg ac/bee, significant mortality was observed in adult bees (NOEL 0.00062 µg ac/bee/day, *Apis mellifera*) and bee larvae (NOEL 0.00037 µg ac/bee). A protection statement for bees is required to identify the high toxicity of broflanilide on all product labels.

Studies on uptake and translocation demonstrate that broflanilide is not a systemic insecticide. Therefore, there is no exposure to bees from translocation of residues into bee relevant matrices such as nectar and pollen.

For **Vedira Granular Fly Bait** and **Vedira Granular Ant Bait**, application is intended in areas where flies and ants are attracted, such as, abattoirs, animal housing, domestic dwellings, garbage containers, food processing plants and other industrial and commercial areas. It is not anticipated that bees would be attracted to areas where the granular baits are intended for use and therefore, risks to bees are considered to be acceptable for both products. As a precautionary measure, the products must not be applied in the vicinity of blooming plants or bee hives in order to minimise any potential attraction or exposure to the products.

For the remaining broflanilide products (gel baits and aerosol products), risks to bees were considered to be acceptable on the basis of negligible exposure due to the majority of applications anticipated to be indoors. Those applied outdoors will be targeting areas of insect activity, such as insect nests and as such are unlikely to result in exposure to bees.

Other non-target arthropods

No information on toxicity of broflanilide to other beneficial (parasitic and predatory) arthropods was available.

For **Vedira Granular Fly Bait** and **Vedira Granular Ant Bait**, application is intended in areas where flies and ants are attracted, such as, abattoirs, animal housing, domestic dwellings, garbage containers, food processing plants and other industrial and commercial areas. It is not anticipated that non-target arthropods would be attracted to areas where the granular baits are intended for use and therefore, the risks of both granular products to other beneficial arthropods are considered to be acceptable.

Similarly for the remaining broflanilide products, risks to other non-target arthropods were considered to be acceptable on the basis of negligible exposure due to the use patterns (injection treatments and ready-to-use spot applications).

Soil organisms

Broflanilide is not considered to be acutely toxic to soil macro-organisms such as earthworms (LC_{50corr} >500 mg ac/kg dry soil, *Eisenia fetida*). However, following long-term exposure, reduced reproduction was observed at uncorrected soil concentrations as low as 56 mg ac/kg dry soil ($NOEC_{corr}$ 15 mg ac/kg dry soil, *Eisenia fetida*). Broflanilide does not adversely affect soil processes such as nitrogen and mineralisation at exaggerated soil concentrations (NOEC 1.4 mg ac/kg dry soil).

For **Vedira Granular Fly Bait** and **Vedira Granular Ant Bait**, risks of broflanilide to soil organisms were determined to be acceptable for a realistic worst-case scenario (direct exposure within the treatment area at the maximum rate).

For the remaining broflanilide products, risks to soil organisms were considered to be acceptable on the basis of negligible exposure due to the use patterns (injection treatments and ready-to-use spot applications).

Non-target terrestrial plants

Broflanilide is not considered to be phytotoxic. In pre- and post-emergent exposure testing of ten crop species (onion, ryegrass, wheat, corn, sugarbeet, oilseed rape, cabbage, soybean, lettuce and tomato), all ER_{25} and ER_{50} values were determined to be greater than 100 g ac/ha. Therefore, risks were considered to be acceptable for all products without further assessment, and no specific protection statements are required on the labels.

7.3 Recommendations

The registration of Vedira Granular Fly Bait, Vedira Granular Ant Bait, Terinda Foam Termiticide & Insecticide, Vedira Pressurised Bait, Vedira Gel Cockroach Bait, Vedira Gel Ant Bait, Vedira Pressurised Insecticide, containing broflanilide for the control of various insects in domestic, commercial, industrial, public service and agricultural situations, would not be likely to have an unintended effect that is harmful to animals, plants, or things or to the environment when used according the instructions on the product labels.

8 EFFICACY AND SAFETY ASSESSMENT

Efficacy of each of the seven products is addressed separately below:

8.1 Proposed product use pattern

Vedira Granular Fly Bait

The applicant presented data from five overseas laboratory studies, two Australian laboratory studies and a single Australian field study in support of the claims against nuisance flies. The fly species in the efficacy studies included: adult houseflies (Musca domestica), blue bottle fly (Calliphora vomitora), red fruit fly (Drosophilia melanogaster) and Australian sheep blowfly (Lucilia cuprina). Vedira Granular Fly Bait was trialled as a standalone product or in comparison to other registered granular fly baits.

The product is proposed to be applied under three different use patterns and each was assessed separately although the data from each trial lends support to each of the other proposed use patterns.

Scatter bait

The product is proposed to be used at the rate of 2–5 g/m^2 scattered over level surfaces. This was trialled in two laboratory trials against adult houseflies (*Musca domestica*). The results of the trials supported that the use of the product as proposed would achieve up to 90 per cent mortality of house flies over 10 days of exposure compared to a mortality of up to 9.3 per cent in the controls.

Bait station

The product is proposed for use in bait stations at the rate of 10–25g per bait station scattered in a shallow tray at the same rate of 2–5 g/m^2 as the scatter bait. The use of bait stations was trialled in laboratory situations against adult houseflies (*Musca domestica*). In the laboratory, the efficacy of the bait stations was comparable to the same rate of application of scatter bait and supported control of adult houseflies (*Musca domestica*) and Australian sheep blowfly (*Lucilia cuprina*).

Paint on

It is proposed that the product can be mixed in a ratio of 5 g to 5 mL of water and applied by brush to surfaces where flies rest or to hessian or cardboard strips that can be hung in areas frequented by flies. This use pattern was assessed by applying the mixed product to plastic panels, tiles or ply wood surfaces which were allowed to dry prior to assessment. In total four laboratory trials which included adult houseflies (*Musca domestica*), blue bottle fly *(Calliphora vomitora)*, red fruit fly (*Drosophilia melanogaster)* and Australian sheep blowfly *(Lucilia cuprina)* were undertaken. Each supported that the use of the product as a “paint-on bait” would be effective as claimed.

The relevance of the bait station and paint on trials were confirmed in a single field trial in stables and dairies in Australia. The trial assessed the population control of adult houseflies (*Musca domestica*) and other nuisance flies as a comparison between a registered comparator product, the product used as a paint on application and the product used in bait stations. In the trial, the mean percentage efficacy was calculated

using the Henderson-Tilton's formula applied to fly spot counts. The highest efficacy was observed seven days post application and was superior to the comparator product used in the trials.

Vedira Granular Ant Bait

The applicant presented results from two overseas laboratory studies, three Australian laboratory studies and two Australian field studies in support of the claims against ants. The ant species in the laboratory studies included both protein and sugar feeders: Red Imported Fire Ant (*Solenopsis invicta*), Carpenter Ants (*Camponotus floridanus*), Argentine Ants (*Linepithema humile*), Odorous House Ant (*Tapinoma sessile*), Acrobat Ant (*Crematogaster ashmeadi*), Black house ant (*Ochetellus glaber*) and Greenhead ant (*Rhytidoponera metallica*). Field studies were conducted on Greenhead ant (*Rhytidoponera metallica*) and Coastal brown ant (*Pheidole megacephala*). Vedira Granular Ant Bait was trialled as a standalone product or in conjunction with registered granular ant baits. Efficacy was reported as ant mortality and speed of mortality.

Laboratory Studies

Vedira Granular Ant Bait was applied at 0.25 g per test arena (266 mL SOLO cup) resulting in a much higher application rate than the recommended label rate of 0.25 g/m^2 in two laboratory trials resulting in 100 per cent mortality within eight (8) days after treatment.

The recommended label rate of 0.25 g/m^2 was used in three other laboratory trials where Vedira Granular Ant Bait was compared to the performance of registered comparator products. The Vedira Granular Ant Bait achieved higher ant mortality than the registered comparator products with at least 89.5 per cent of ants dead within 48 hours after treatment.

Field Studies

In two separate field trials, where the product was applied at the recommended label rate, 100 per cent control of Greenhead ant nests and coastal brown ant nests was observed at eight weeks post-treatment which was equivalent to control achieved by two registered comparator products.

Terinda Foam Termiticide & Insecticide

The applicant provided five overseas laboratory studies investigating the efficacy of Terinda Foam Termiticide & Insecticide on Western black carpenter ants (*Camponotus modoc*); and four Subterranean termite species: Eastern subterranean termite (*Reticulitermes flavipes*), Southern subterranean termites (*Reticulitermes virginicus*) and Formosan subterranean termites (*Coptotermes formosanus*). In addition, three Australian laboratory studies and one field study were provided using Terinda Foam Termiticide & Insecticide on the two most significant subterranean termite species in Australia *Coptotermes acinaciformis* and *Mastotermes darwiniensis*.

Laboratory Studies

Terinda Foam Termiticide & Insecticide was applied to a variety of porous and non-porous surfaces and allowed to dry before exposing various termite and ant species to the treated surfaces. Alternatively, Terinda

Foam Termiticide & Insecticide was applied directly into a container holding the ants and termites or the ants and termites were dipped into the residue of a freshly sprayed sample. Terinda Foam Termiticide & Insecticide was trialled as a standalone product or against a standard registered foam product and found to be effective in the control of all species of ants and termites included in the laboratory studies with no statistically significant difference when compared to the registered comparator product.

In one laboratory study investigating transfer from 'donors (treated ants/termites)' to 'recipients' (untreated ants/termites), Terinda Foam Termiticide & Insecticide achieved control of the nest population following treatment of one in ten donors. The level of control was statistically similar to the registered comparator product in both species of termite evaluated: *Coptotermes acinaciformis* and *Mastotermes darwiniensis*.

Field Study

Terinda Foam Termiticide & Insecticide was sprayed for 30 seconds in holes drilled into the side of termite (*Coptotermes acinaciformis*) mounds and a piece of dowel inserted for monitoring purposes. Terinda Foam Termiticide & Insecticide resulted in control of the termite colonies within six weeks after treatment with equivalent control reported in the registered comparator product.

Only one ant species was included in the studies provided by the applicant: the Western black carpenter ant—*Camponotus modoc*, which is of a genus relevant to, although not present in Australia. Therefore, label claims are limited to carpenter ants.

Vedira Pressurised Bait

The applicant provided three overseas laboratory studies investigating the efficacy of Vedira Pressurised Bait on House Fly (*Musca domestica*), Blue Bottle Fly (*Calliphora vomitoria*), Flesh Fly (*Sarcophaga bullata*), Red Fruit Fly (*Drosophila melanogaster*) and House Fly Larvae (*Musca domestica*). In addition, one Australian laboratory study was provided using Vedira Pressurised Bait on House Fly (*Musca domestica*), Australian Sheep Blowfly (*Lucilia cuprina*), American Cockroach (*Periplaneta Americana*), German Cockroach (*Blattella germanica*), Black House Ant (*Ochetellus glaber*), and the Whitefooted House Ant (*Technomyrmex albipes*).

The laboratory studies submitted investigated the efficacy of Vedira Pressurised Bait when applied to porous or non-porous surfaces or sprayed directly into a chamber housing the pests evaluated. The application rate was equivalent to the proposed label rate (spray surface to the point of run-off).

Vedira Pressurised Bait was found to be effective in controlling all five species of fly with the level of control at least the equivalent to that reported for the registered comparator products.

Vedira Pressurised Bait was found to be effective in controlling German cockroaches and American cockroaches with the level of control equivalent to one registered comparator product but statistically lower than another registered comparator product in American cockroaches; and equivalent or better than the registered comparator products in German cockroaches. Residual assessment found Vedira Pressurised Bait to not provide control in American cockroaches; but equivalent or better control than the registered comparator products in German cockroaches.

Vedira Pressurised Bait was found to be effective in controlling Flies, House Ants and German Cockroaches. Vedira Gel Cockroach Bait

The applicant provided one overseas and one Australian laboratory study on German cockroaches (*Blattella germanica*) using Vedira Gel Cockroach Bait.

Vedira Gel Cockroach Bait was applied to the floor of test enclosures equivalent to the proposed label rate (1–3 spots (0.5–1.0 g ea.) per m^2) and knockdown and mortality reported for fresh baits and baits aged six weeks and 12 weeks.

Vedira Gel Cockroach Bait was found to be effective in the control of German cockroaches and equally or more effective than registered comparator products on fresh baits, baits aged six weeks and 12 weeks.

Overall, the studies provided supported the claims for control of German cockroaches.

Vedira Gel Ant Bait

The applicant provided three overseas laboratory studies on Vedira Gel Ant Bait on both sugar and protein feeding ant species including: Black carpenter ants (*Camponotus pennsylvanicus*), Argentine ants (*Linepithema humile*) and Odorous house ants (*Tapinoma sessile*).

Vedira Gel Ant Bait was applied to the floor of test enclosures equivalent to the proposed label rate (0.5 g per spot per m^2) and knockdown and mortality reported. No registered comparator products were used in the trials.

Vedira Gel Ant Bait was found to be effective in the control of all ant species evaluated.

Overall, the studies provided supported the claims for control of ants.

Vedira Pressurised Insecticide

The applicant provided three overseas laboratory studies, one Australian laboratory study and one Australian field study on House Fly (*Musca domestica*), German cockroach (*Blattella germanica*), American cockroach (*Periplaneta americana*), Bed Bug (*Cimex lectularius*), Brown Recluse Spider (*Loxosceles reclusa*), Black Widow Spider (*Latrodectus mactans*), Paper Wasp (*Polistes exclamans*), Stable Fly (*Stomoxys calcitrans*), Argentine ants (*Linepithema humile*), Odorous house ant (*Tapinoma sessile*), Black house ant (*Ochetellus glaber*), House cricket (*Acheta domestic*), Indian Meal Moth (*Plodia interpunctella*), Millipede (*Parajulus spp*.), Red Flour Beetle (*Tribolium castaneum*), Rice weevils (*Sitophilus oryzae*), Sawtoothed Grain Beetle (*Oryzaephilus surinamensis*) and Silverfish (*Ctenolepisma longicaudata*). Of the 17 species examined, 12 are present in Australia. Two of the species examined Paper Wasp (*Polistes exclamans*) and Black Widow Spider (*Latrodectus mactans*) are closely related to Australian species paper wasp and spider species. The only genus not present in Australia is the Millipede (*Parajulus spp.*).

Vedira Pressurised Insecticide was applied either as a spray directly into the test enclosure or onto a porous or non-porous surface (or a mattress to investigate efficacy against bed bugs) with the exception of one field study in paper wasps which evaluated direct spray into the nests. Efficacy was evaluated against registered comparator products and assessed for knockdown and mortality.

Vedira Pressurised Insecticide was found to be effective in the control of all pest species tested (in both fresh and aged samples) with similar or superior levels of control to registered comparator products as follows:

Bed Bugs

Control was reported against bed bugs. Residual claims for the control of bed bugs supported up to 30 days.

Cockroaches, ants and spiders

Trials demonstrated efficacy (100 per cent mortality against all species of cockroaches, spiders and ants subject to trials) with residual effects proven up to eight weeks.

Silverfish

Trials demonstrated efficacy against one silverfish species following direct and surface spray application.

Flies

Trial data demonstrated efficacy for the control of flies as a direct spray application and residual challenge also achieved control against flies.

Stored Product Pests

Trials demonstrated efficacy against stored product pests following direct and surface spray application for up to eight weeks.

House crickets

Trials demonstrated efficacy against house crickets supporting the claim on the proposed label for use as a spot treatment for the control of crickets.

Paper Wasps

A single trial on Paper Wasp (*Polistes exclamans*) demonstrated efficacy following direct spray to a nest sufficient to support claims against paper wasps.

Resistance management

Broflanilide is a new meta-diamide pro-pesticide, classified as a benzamide, with a gamma-aminobutyric acid (GABA)-gated Cl- channel allosteric modulator mechanism. It is effective against pests with resistance to cyclodienes and fipronil. The Insecticide Resistance Action Committee (IRAC) recently approved the classification of Broflanilide as a compound with a new mode of action in Group 30: GABA-gated Cl- channel allosteric modulators.

8.2 Recommendations

Vedira Suite of products

There are no objections on the grounds of efficacy, or safety to non-target animals, to the registration of the product Vedira suite of products, containing broflanilide, for the control of various insects in domestic, commercial, industrial, public service and agricultural situations as per the label directions.

9 LABELLING REQUIREMENTS

CAUTION

KEEP OUT OF REACH OF CHILDREN
READ SAFETY DIRECTIONS BEFORE OPENING OR USING

VEDIRA® GRANULAR FLY BAIT

ACTIVE CONSTITUENT: 0.25 g/kg BROFLANILIDE

GROUP	**30**	INSECTICIDE

For the control of flies in domestic, commercial, industrial and agricultural situations as specified in the Directions for Use Table.

IMPORTANT: READ THE LEAFLET BEFORE USING THIS PRODUCT

NET CONTENTS: 100 g, 200 g, 300 g, 400 g, 450 g, 454 g, 500 g, 680 g, 700 g 800 g, 900 g, 1 kg, 2 kg, 5 kg

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RESTRAINTS
DO NOT apply if heavy rains or storms are forecast within 3 days.
DO NOT apply on impermeable surfaces such as asphalt, concrete, cobblestones, and other situations with a high risk of run-off.
DO NOT apply directly to food, food packaging or food contact surfaces.

DIRECTIONS FOR USE

SITUATION	PEST	RATE	CRITICAL COMMENTS
Outside: Abattoirs, animal housing, domestic dwellings, garbage containers, food processing plants and other industrial and commercial areas. **Around:** Industrial sites, feedlot manure heaps, garbage dumps, poultry farms and animal housing **Inside:** Commercial and industrial facilities and animal houses.	Nuisance flies	2-5 g/m^2	SCATTER BAIT: Use the higher rate for heavy fly infestations. Scatter bait using a gloved hand onto dry level surfaces. Avoid extremely dusty surfaces
		10-25 g/bait station	BAIT STATIONS: Position one bait station for every 5 to 10 m^2 in areas frequented by flies. Ensure stations are out of reach of animals or livestock and away from feed troughs, storage or mixing areas.
		5 g/5 mL water	PAINT ON: Prepare a bait paste by mixing 5 g of bait with 5 mL of water. 10-15 minutes after mixing the bait can be applied with a brush to spots where flies rest. Bait may also be painted onto hessian bags and or cardboard and hung in areas frequented by flies.

NOT TO BE USED FOR ANY PURPOSE, OR IN ANY MANNER, CONTRARY TO THIS LABEL UNLESS AUTHORISED UNDER APPROPRIATE LEGISLATION.

GENERAL INSTRUCTIONS
VEDIRA® GRANULAR FLY BAIT can be applied in many locations. Avoid cool or windy locations because flies prefer warm sites for resting. For best results, time applications to begin at the start of the season before fly populations have reached their peak.
Fly control should be considered part of an integrated strategy which incorporates good sanitation, appropriate management of breeding sites (eg manure and other decaying organic matter) and exclusion measures for preventing access of flies into internal areas.

INSECTICIDE RESISTANCE WARNING | **GROUP** | **30** | **INSECTICIDE**
For insecticide resistance management VEDIRA GRANULAR FLY BAIT is a Group 30 insecticide. Some naturally occurring insect biotypes resistant to VEDIRA GRANULAR FLY BAIT and other Group 30 insecticides may exist through normal genetic variability in any insect population. The resistant individuals can eventually dominate the insect population if VEDIRA GRANULAR FLY BAIT or other Group 30 insecticides are used repeatedly. The effectiveness of VEDIRA GRANULAR FLY BAIT on resistant individuals could be significantly reduced. Since occurrence of resistant individuals is difficult to detect prior to use, BASF Australia Ltd accepts no liability for any losses that may result from failure of VEDIRA GRANULAR FLY BAIT to control resistant insects. For further information on managing insecticide resistance contact your local supplier or BASF Australia Ltd representative.

PRECAUTIONS
DO NOT apply to surfaces within the reach of livestock and children.
DO NOT allow contact with raw or processed food, utensils or packaging.

PROTECTION OF WILDLIFE, FISH, CRUSTACEANS AND ENVIRONMENT
To protect birds and wild mammals, remove spillages. Very toxic to aquatic life. DO NOT contaminate streams, rivers or waterways with the chemical or used containers.
PROTECTION OF HONEY BEES AND OTHER INSECT POLLINATORS
Highly toxic to bees. DO NOT apply product in the vicinity of blooming plants or bee hives.
PROTECTION OF LIVESTOCK AND OTHERS
DO NOT apply this product in any areas easily accessible to children or animals.

STORAGE & DISPOSAL
Keep out of reach of children.
Store in the closed, original container in a dry, cool, well-ventilated area out of direct sunlight.
Triple-rinse containers before disposal. Dispose of rinsate or any undiluted chemical according to state/territory legislative requirements. If recycling, replace cap and return clean containers to recycler or designated collection point. If not recycling, break, crush or puncture and deliver empty packaging to an approved waste management facility. If an approved waste management facility is not available, bury the empty packaging 500 mm below the surface in a disposal pit specifically marked and set up for this purpose, clear of waterways, desirable vegetation and tree roots, in compliance with relevant local, state or territory government regulations. Do not burn empty containers or product.

SAFETY DIRECTIONS
If applying by hand, wear rubber gloves.
Wash hands after use.

FIRST AID INSTRUCTIONS
If poisoning occurs, contact a doctor or Poisons Information Centre. Phone Australia 13 11 26. New Zealand 0800 764 766.
SAFETY DATA SHEET
Additional information is listed in the Safety Data Sheet.

CONDITIONS OF SALE
All conditions and warranties rights and remedies implied by law or arising in contract or tort whether due to the negligence of BASF Australia Ltd or otherwise are hereby expressly excluded so far as the same may legally be done provided however that any rights of the Buyer pursuant to non-excludable conditions or warranties of the Competition and Consumer Act 2010 or any relevant legislation of any State are expressly preserved but the liability of BASF Australia Ltd or any intermediate Seller pursuant thereto shall be limited if so permitted by the said legislation to the replacement of the goods sold or the supply of equivalent goods and all liability for indirect or consequential loss or damage of whatsoever nature is expressly excluded. This product must be used or applied strictly in accordance with the instructions appearing hereon. This product is solely sold for use in Australia and must not be exported without the prior written consent of BASF Australia Ltd.

APVMA Approval Number:

Batch No:
Date of Manufacture:

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Southbank VICTORIA 3006

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CAUTION

KEEP OUT OF REACH OF CHILDREN

READ SAFETY DIRECTIONS BEFORE OPENING OR USING

VEDIRA® GRANULAR ANT BAIT

ACTIVE CONSTITUENT: 0.05 g/kg BROFLANILIDE

GROUP	30	INSECTICIDE

For the control of ants as specified in the Directions for Use Table.

IMPORTANT: READ THE LEAFLET BEFORE USING THIS PRODUCT

NET CONTENTS: 100g, 200g, 300g, 400g, 450 g, 454g, 500g, 680g, 1kg, 5kg, 11.34 kg

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APVMA Approval Number:

RESTRAINTS
DO NOT apply on impermeable surfaces such as asphalt, concrete, cobblestones, and other situations with a high risk of run-off.

DIRECTION FOR USE

SITUATION	PEST	RATE	CRITICAL COMMENTS
In and around, Domestic, Commercial and Industrial buildings, and non-crop land.	Ants	0.25 g per m^2 or 5 g per 20 m^2	External: Evenly distribute granules over infested area using a hand held rotary granule spreader or equivalent applicator or gloved hand. Apply in early morning or later afternoon when ants are most active. Mounds: Apply directly around mound entrances. Internal: apply along cracks and crevices or within an ant bait station. Re-treat when ant activity becomes troublesome again.

NOT TO BE USED FOR ANY PURPOSE, OR IN ANY MANNER, CONTRARY TO THIS LABEL UNLESS AUTHORISED UNDER APPROPRIATE LEGISLATION.

GENERAL INSTRUCTIONS
VEDIRA Granular Ant Bait is a slow-acting insecticide which is designed to be collected by ants and carried back to the nest as food for the colony. The bait is eaten and passed along to the queen and other nest-mates. Typically, in 1-4 weeks, the queen and a number of ants are killed and a visible reduction in activity results.

APPLICATION
Apply granules using a hand held rotary granule spreader or equivalent spinning disk type applicator which ensures uniform distribution. For small areas, granules may be uniformly sprinkled by hand.
Where nest entrances or foraging trails are easily identified, a more concentrated sprinkling of granules in these areas will lead to faster control.
DO NOT use in conjunction with contact insecticide aerosol sprays or any other ant remedy that will repel foraging ants in the areas to be treated.

EQUIPMENT CLEAN-UP
Thoroughly empty equipment of all granules before use with other pesticides. DO NOT contaminate water bodies when disposing of equipment wash waters.

COMPATIBILITY
DO NOT apply in a mixture with any other product eg granular fertilisers, as this can cause uneven distribution and variable ant control.

INSECTICIDE RESISTANCE WARNING | **GROUP** | **30** | **INSECTICIDE**

For insecticide resistance management VEDIRA GRANULAR ANT BAIT is a Group 30 insecticide. Some naturally occurring insect biotypes resistant to VEDIRA GRANULAR ANT BAIT and other Group 30 insecticides may exist through normal genetic variability in any insect population. The resistant individuals can eventually dominate the insect population if VEDIRA GRANULAR ANT BAIT or other Group 30 insecticides are used repeatedly. The effectiveness of VEDIRA GRANULAR ANT BAIT on resistant individuals could be significantly reduced. Since occurrence of resistant individuals is difficult to detect prior to use, BASF Australia Ltd accepts no liability for any losses that may result from failure of VEDIRA GRANULAR ANT BAIT to control resistant insects. For further information on managing insecticide resistance contact your local supplier or BASF Australia Ltd representative.

PROTECTION OF WILDLIFE, FISH, CRUSTACEANS AND ENVIRONMENT

Very toxic to aquatic life: DO NOT contaminate streams, rivers or waterways with the chemical or used containers.

PROTECTION OF HONEY BEES AND OTHER INSECT POLLINATORS

Highly toxic to bees. DO NOT apply product in the vicinity of blooming plants or bee hives.

PROTECTION OF LIVESTOCK AND OTHERS

DO NOT apply this product in any areas easily accessible to children or animals.

STORAGE & DISPOSAL

Keep out of reach of children.

Store in a cool, dry, secure place away from children, animals, food and fodder, and keep container tightly closed after use. VEDIRA GRANULAR ANT BAIT is formulated in an oil bait and prolonged exposure to air may turn oil rancid and reduce the attractiveness of the bait. For best results, use within 3 months of opening although correctly stored product should provide control beyond this time.

Triple-rinse containers before disposal. Dispose of rinsate or any undiluted chemical according to state/territory legislative requirements. If recycling, replace cap and return clean containers to recycler or designated collection point. If not recycling, break, crush, or puncture and deliver empty packaging to an approved waste management facility. If an approved waste management facility is not available bury the empty packaging 500 mm below the surface in a disposal pit specifically marked and set up for this purpose clear of waterways, desirable vegetation and tree roots, in compliance with relevant Local, State or Territory government regulations. DO NOT burn empty containers or product.

SAFETY DIRECTIONS

If applying by hand, wear rubber gloves. Wash hands after use.

FIRST AID INSTRUCTIONS

If poisoning occurs, contact a doctor or Poisons Information Centre. Phone Australia 13 11 26. New Zealand 0800 764 766.

SAFETY DATA SHEET

Additional information is listed in the Safety Data Sheet.

CONDITIONS OF SALE

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CAUTION

KEEP OUT OF REACH OF CHILDREN

READ SAFETY DIRECTIONS BEFORE OPENING OR USING

TERINDA® FOAM
TERMITICIDE & INSECTICIDE

ACTIVE CONSTITUENT: 0.045 g/kg BROFLANILIDE

GROUP	**30**	INSECTICIDE

For control of subterranean termites and ants as specified in the Directions for Use Table.

NET CONTENTS: 454 g, 500 g, 567 g

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DIRECTION FOR USE
SHAKE WELL BEFORE USE

PEST	SITUATION	RATE	CRITICAL COMMENTS
Subterranean termites	Termite nests in trees, stumps, posts, power poles, mounds and wall cavities. Termite activity when nest cannot be located. eg active workings in timber, wall cavities, bait stations and boxes	This product is a ready-to-use insecticide formulation. When dispensed, the formulation rapidly expands generating a dry foam with an expansion ratio of approximately 30:1, with 30 g of product being dispensed in approximately 5 seconds producing about 1 litre of foam.	Shake well before using. Remove the outer cap and snap the actuator into place. Remove the finger pad cover. After using, replace the finger pad cover. Apply for approximately 5-15 seconds or until foam back flows per injection point. After application, hold the injector tip in place for approximately 5 sec to allow the product within the injector tube to dispense into the treatment area. Drilling hole(s) may be required to gain access to the known or suspected gallery, harbourage or void. Care should be taken not to drill holes too close together or foam will emerge from other holes. It is recommended that drill holes be taped over when not in use.
Carpenter ants (*Camponotus spp*.)	Ant nests and enclosed harbourages		Shake well before using. Remove the outer cap and snap the actuator into place. Remove the finger pad cover. After using, replace the finger pad cover. Apply for approximately 5-10 seconds or until foam back flows. After application, hold the injector tip in place for approximately 5 sec to allow the product within the injector tube to dispense into the treatment area. Drilling hole(s) may be required to gain access to the known or suspected harbourage or void. Care should be taken not to drill holes too close together or foam will emerge from other holes. It is recommended that drill holes be taped over when not in use.

NOT TO BE USED FOR ANY PURPOSE, OR IN ANY MANNER, CONTRARY TO THIS LABEL UNLESS AUTHORISED UNDER APPROPRIATE LEGISLATION.

GENERAL INSTRUCTIONS

TERMITE CONTROL
To optimise colony decline, treat termites each time significant activity is found. Aggregation containers such as bait boxes and bait stations can be useful in increasing the number of termites that can be treated.
Cessation of termite activity does not guarantee that a structure is protected from attack by other colonies in the area. Termite foaming is not designed as a stand-alone treatment and should not be used as such. Therefore, a continuous chemical treatment such as Termidor HE should be installed immediately following successful eradication of termite activity in the structure. It is important that a licensed Pest Control Operator carry out regular inspections at least annually.

ANT CONTROL
To optimise colony decline, apply Terinda Foam wherever significant ant activity is found. Terinda Foam can be applied internally to known or suspected harbourages or voids. For longer term protection from future ant invasion, an external application of a residual liquid such as Termidor Termiticide & Insecticide is recommended.

PRECAUTIONS

DO NOT spray directly onto humans, pets, exposed foods, food utensils or food preparation surfaces.
DO NOT apply this product in any areas easily accessible to children or animals.

PROTECTION OF WILDLIFE, FISH, CRUSTACEANS AND ENVIRONMENT
Very toxic to aquatic life: DO NOT contaminate streams, rivers or waterways with the chemical or used containers.
PROTECTION OF HONEY BEES AND OTHER INSECT POLLINATORS
Highly toxic to bees. However, the use of this product as directed is not expected to have adverse effects on bees.
STORAGE & DISPOSAL
Keep out of reach of children.
Keep in a cool place out of the sun. Do not incinerate or puncture can, even when empty. Dispose of can by putting in garbage, or leaving it at an appropriate metal recycling collection point.

SAFETY DIRECTIONS
Wash hand after use.

FIRST AID INSTRUCTIONS
If poisoning occurs, contact a doctor or Poisons Information Centre. Phone Australia 13 11 26. New Zealand 0800 764 766.

SAFETY DATA SHEET
Additional information is listed in the Safety Data Sheet.

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CAUTION

KEEP OUT OF REACH OF CHILDREN

READ SAFETY DIRECTIONS BEFORE OPENING OR USING

VEDIRA® PRESSURISED BAIT

ACTIVE CONSTITUENT: 1.25 g/kg BROFLANILIDE

GROUP	30	INSECTICIDE

For the control of flies, German cockroaches and house ants in domestic, commercial, industrial and agricultural situations as specified in the Directions for Use Table.

IMPORTANT: READ THE LEAFLET BEFORE USING THIS PRODUCT

NET CONTENTS: 400g, 454 g, 500g, 567g, 600g

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RESTRAINTS

DO NOT apply directly to food, food packaging or food contact surfaces.
DO NOT apply onto material which birds are likely to feed on directly (ie edible refuse).
DO NOT apply in a manner which may cause contamination of animal feed.

DIRECTIONS FOR USE

PEST	CRITICAL COMMENTS
This product is not a conventional residual spray and therefore does not work by pests simply contacting a sprayed surface. The attractants within this bait mean that pests will be attracted to and subsequently attempt to feed on treated surfaces; they will then pick up a lethal dose. Because of this bait function, only portions of surfaces need to be treated.	
German cockroaches, House ants	Apply onto surfaces and into cracks and crevices where insects may be travelling, harbouring, living, breeding or feeding.
Flies	Spray to areas where flies rest. **Area Treatment:** Point can toward target area from a distance no further than 30 cm and press down actuator. Make a light application at a rate of 60 cm/sec and avoid run off or dripping from targeted area. Area treatments are effective where flies congregate, roost and feed, which may include garbage receptacles and lids, refuse containers, under tables and benches, recycling bins, dumpsters, behind vending machines, plant/flower pots, under bars, eave areas, walls and/or areas where flies like to congregate or infest. DO NOT apply bait in areas that are frequently cleaned. This product will not adhere to surfaces that are dusty or greasy. Reapply when re-infestation occurs. **Band Treatment:** Spray from a distance of no further away from targeted area than 15 cm to create a band application at a rate of 60 cm/sec. Band applications may be made to areas such as beam edges, receptacle edges, table or bench edges, around windows and window frames, under narrow eaves and other areas where there is a narrow area where flies land, roost and/or are likely to infest. Reapply when re-infestation occurs. See also Note on Application below.

NOT TO BE USED FOR ANY PURPOSE, OR IN ANY MANNER, CONTRARY TO THIS LABEL UNLESS AUTHORISED UNDER APPROPRIATE LEGISLATION.

GENERAL INSTRUCTIONS

VEDIRA® PRESSURISED BAIT can be applied in many locations.
Fly Control: Avoid cool or windy locations because flies prefer warm sites for resting. For best results, time applications to begin at the start of the season before fly populations have reached their peak.
Fly control should be considered part of an integrated strategy which incorporates good sanitation, appropriate management of breeding sites (eg manure and other decaying organic matter) and exclusion measures for preventing access of flies into internal areas.
Cockroaches and Ants:
Pay particular attention to harbourages and cracks and crevices. VEDIRA PRESSURISED BAIT will control insects on contact and ingestion. Surfaces should have a small hidden area sprayed and checked for any discoloration before widespread use. Avoid contact with food, food utensils and food preparation surfaces. These items should be removed or covered prior to application where a risk of contamination exists.
Notes on Application:
Avoid applying this product to dusty/dirty surfaces. DO NOT spray the moving parts of any machinery, electric motors or switchgear with the water-based product. To avoid unwanted staining of interior and exterior surfaces, a small hidden area should be sprayed and checked for any discolouration before widespread use.
Re-baiting:
Re-apply bait when insects are no longer visibly affected in areas where the product has been applied (usually after about 4 to 6 weeks). For season-long control, monthly applications may be required, depending on the situation and duration of the pest season.

INSECTICIDE RESISTANCE WARNING

GROUP	30	INSECTICIDE

For insecticide resistance management VEDIRA PRESSURISED BAIT is a Group 30 insecticide. Some naturally occurring insect biotypes resistant to VEDIRA PRESSURISED BAIT and other Group 30 insecticides may exist through normal genetic variability in any insect population. The resistant individuals can eventually dominate the insect population if VEDIRA PRESSURISED BAIT or other Group 30 insecticides are used repeatedly. The effectiveness of VEDIRA PRESSURISED BAIT on resistant individuals could be significantly reduced. Since occurrence of resistant individuals is difficult to detect prior to use, BASF Australia Ltd accepts no liability for any losses that may result from failure of VEDIRA PRESSURISED BAIT to control resistant insects. For further information on managing insecticide resistance contact your local supplier or BASF Australia Ltd representative.

PRECAUTIONS

DO NOT use as a space (aerosol) spray.
DO NOT apply to surfaces within the reach of livestock and children.
DO NOT apply past the point of run-off.
BEWARE: Deliberately sniffing or inhaling concentrated spray can be harmful or fatal.
DO NOT spray directly on animals, feed or drinking supplies, or on milking equipment.
DO NOT allow contact with raw or processed food, utensils or packaging.

PROTECTION OF WILDLIFE, FISH, CRUSTACEANS AND ENVIRONMENT

Very toxic to aquatic life: DO NOT contaminate streams, rivers or waterways with the chemical or used containers.

PROTECTION OF HONEY BEES AND OTHER INSECT POLLINATORS

Highly toxic to bees. However, the use of this product as directed is not expected to have adverse effects on bees.

PROTECTION OF LIVESTOCK AND OTHERS

DO NOT apply this product in any areas easily accessible to children or animals.

STORAGE & DISPOSAL

Keep out of reach of children.
Keep in a cool place out of the sun. Do not incinerate or puncture can, even when empty. Dispose of can by putting in garbage, or leaving it at an appropriate metal recycling collection point.

SAFETY DIRECTIONS

Wash hands after use.

FIRST AID INSTRUCTIONS

If poisoning occurs, contact a doctor or Poisons Information Centre. Phone Australia 13 11 26. New Zealand 0800 764 766.

SAFETY DATA SHEET

Additional information is listed in the Safety Data Sheet.

CONDITIONS OF SALE

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CAUTION

KEEP OUT OF REACH OF CHILDREN

READ SAFETY DIRECTIONS BEFORE OPENING OR USING

VEDIRA® GEL COCKROACH BAIT

ACTIVE CONSTITUENT: 2.5 g/kg BROFLANILIDE

GROUP	**30**	INSECTICIDE

A crevice, crack or spot treatment for the control of German cockroaches as specified in the Directions for Use Table.

THE DISPENSER MUST NOT BE SOLD SEPARATELY. DO NOT DESTROY BOX WHILE PRODUCT STILL REMAINS.

NET CONTENTS: 1 x 20 g, 1 x 25 g, 1 x 30 g, 1 x 35 g, 2 x 20 g, 2 x 25 g, 2 x 30 g, 2 x 35 g, 4 x 20 g, 4 x 25 g, 4 x 30 g, 4 x 35 g

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RESTRAINTS
DO NOT apply directly to food, food packaging or food contact surfaces.

DO NOT place in areas that are routinely washed.

DIRECTIONS FOR USE

SITUATION	PEST	RATE	CRITICAL COMMENTS
Domestic, commercial and public service buildings	German cockroaches	Apply 1-3 spots per m^2. Recommended spot size is 0.5 - 1 g. Increase the number of spots (up to 3) and spot size depending upon severity of infestation.	Gel placement should be at or near areas where cockroaches gather, such as in cracks and crevices.

NOT TO BE USED FOR ANY PURPOSE, OR IN ANY MANNER, CONTRARY TO THIS LABEL UNLESS AUTHORISED UNDER APPROPRIATE LEGISLATION.

GENERAL INSTRUCTIONS

To apply the gel, remove the cap on the nozzle and touch the tip to the surface to be treated and depress plunger slightly. Recap the dispenser after treatment is completed and return cartridge to the outer pack. Re-apply according to remaining level of infestation, when bait is no longer visibly present. A visual inspection of gel placements is recommended one month after initial treatment. VEDIRA® GEL COCKROACH BAIT is ideally suited for use in combination with non-repellent insecticides, such as SECLIRA® WSG INSECTICIDE, SECLIRA® PRESSURISED INSECTICIDE or PHANTOM PRESSURISED INSECTICIDE.

INSECTICIDE RESISTANCE WARNING | **GROUP** | **30** | **INSECTICIDE**

For insecticide resistance management VEDIRA GEL COCKROACH BAIT is a Group 30 insecticide. Some naturally occurring insect biotypes resistant to VEDIRA GEL COCKROACH BAIT and other Group 30 insecticides may exist through normal genetic variability in any insect population. The resistant individuals can eventually dominate the insect population if VEDIRA GEL COCKROACH BAIT or other Group 30 insecticides are used repeatedly. The effectiveness of VEDIRA GEL COCKROACH BAIT on resistant individuals could be significantly reduced. Since occurrence of resistant individuals is difficult to detect prior to use, BASF Australia Ltd accepts no liability for any losses that may result from failure of VEDIRA GEL COCKROACH BAIT to control resistant insects. For further information on managing insecticide resistance contact your local supplier or BASF Australia Ltd representative.

PROTECTION OF WILDLIFE, FISH, CRUSTACEANS AND ENVIRONMENT

Very toxic to aquatic life: DO NOT contaminate streams, rivers or waterways with the chemical or used containers.

PROTECTION OF HONEY BEES AND OTHER INSECT POLLINATORS

Highly toxic to bees. However, the use of this product as directed is not expected to have adverse effects on bees.

PROTECTION OF LIVESTOCK AND OTHERS

DO NOT apply this product in any areas easily accessible to children or animals.

STORAGE & DISPOSAL

Keep out of reach of children.

Store in the closed, original container in a cool, well ventilated locked place out of the reach of children. DO NOT store in direct sunlight.

Dispose of empty container by wrapping in paper, placing in plastic bag and putting in the garbage.

SAFETY DIRECTIONS

Wash hands after use.

FIRST AID INSTRUCTIONS

If poisoning occurs, contact a doctor or Poisons Information Centre. Phone Australia 13 11 26. New Zealand 0800 764 766.

SAFETY DATA SHEET

Additional information is listed in the Safety Data Sheet.

CONDITIONS OF SALE
All conditions and warranties rights and remedies implied by law or arising in contract or tort whether due to the negligence of BASF Australia Ltd or otherwise are hereby expressly excluded so far as the same may legally be done provided however that any rights of the Buyer pursuant to non-excludable conditions or warranties of the Competition and Consumer Act 2010 or any relevant legislation of any State are expressly preserved but the liability of BASF Australia Ltd or any intermediate Seller pursuant thereto shall be limited if so permitted by the said legislation to the replacement of the goods sold or the supply of equivalent goods and all liability for indirect or consequential loss or damage of whatsoever nature is expressly excluded. This product must be used or applied strictly in accordance with the instructions appearing hereon. This product is solely sold for use in Australia and must not be exported without the prior written consent of BASF Australia Ltd.

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CAUTION

KEEP OUT OF REACH OF CHILDREN

READ SAFETY DIRECTIONS BEFORE OPENING OR USING

VEDIRA® GEL ANT BAIT

ACTIVE CONSTITUENT: 0.2 g/kg BROFLANILIDE

GROUP	**30**	INSECTICIDE

Ready to use, insecticidal gel bait for the control of ants as specified in the Directions for Use Table.

BEFORE USING THIS PRODUCT, READ ALL THE DIRECTIONS ON THE OUTER PACK.
SALE OF THIS DISPENSER EXCEPT IN OUTER PACK IS ILLEGAL.
DO NOT DESTROY OUTER PACK WHILE PRODUCT REMAINS.

IMPORTANT: PLEASE READ ATTACHED LEAFLET BEFORE USE

Net Contents: 20g, 25g, 30g, 35g, 2 x 20g, 2 x 25g, 2 x 30g, 2 x 35g, 4 x 20g, 4 x 25g, 4 x 30g, 4 x 35g

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RESTRAINTS

DO NOT apply directly to food, food packaging or food contact surfaces.
DO NOT place in areas that are routinely washed.

DIRECTIONS FOR USE

SITUATION	PEST	RATE	CRITICAL COMMENTS
In and around domestic, commercial and industrial buildings: (eg hospitals, aged care facilities, aeroplanes, schools, food processing areas, backpackers and hotels, trains, offices, shops, motels, barracks, ships)	Ants	Apply as spots of 0.5 g (approximately 5 mm in diameter) per m^2 around the nest entrance, along ant trails or where ants are most active. Use sufficient number of baiting points to maximize bait uptake.	Place bait on surfaces or in bait stations at intervals along ant trails and/or where ants are seen. Place in areas where bait will not be flooded or from which the bait can be removed by normal cleaning. Do not spray any repellent insecticides on or around the bait and do not apply where such products have recently been used. The use of non-repellent insecticides such as Seclira, Phantom and Termidor range of products is acceptable to use in close proximity to the bait placements. Use sufficient number of baiting points to maximise bait uptake. The greater the number of baiting points the greater the chance of control since more ants will be able to access the bait. Refer to General Instructions for additional information.

NOT TO BE USED FOR ANY PURPOSE, OR IN ANY MANNER, CONTRARY TO THIS LABEL UNLESS AUTHORISED UNDER APPROPRIATE LEGISLATION.

GENERAL INSTRUCTIONS

Ants are attracted by the sugary bait. They ingest the bait with the active substance and take it back to the nest to feed their brood. An effect on the ant population can be expected within 7 days. It is advisable to check treated areas 1-2 weeks after the initial application. If complete bait consumption and continued ant activity indicates a particularly large or challenging infestation, a second application may be required. VEDIRA® GEL ANT BAIT is formulated as a sugary honeydew which may not be attractive to all species of ants. If ants are not attracted to the bait, a granular bait such as VEDIRA Granular Ant Bait should be used or an alternative management technique such as the Seclira and Termidor range of products may be required. Care should be taken before the treatment that alternative sources of food (specifically sugar sources, food remainders, etc.) for ants are removed. Food and food waste that is left lying around distracts the foraging worker ants. For maximum stability and effectiveness bait drops should be placed on non-absorbent surfaces with external applications protected from rainfall in bait stations or with suitable coverings wherever possible. VEDIRA GEL ANT BAIT can be wiped off from areas that have been treated unintentionally using a moist paper tissue, which can be added to the domestic garbage. Clean this area thoroughly. For treatments in food processing areas or kitchens, bait stations are recommended.

INSECTICIDE RESISTANCE WARNING

GROUP	30	INSECTICIDE

For insecticide resistance management VEDIRA GEL ANT BAIT is a Group 30 insecticide. Some naturally occurring insect biotypes resistant to VEDIRA GEL ANT BAIT and other Group 30 insecticides may exist through normal genetic variability in any insect population. The resistant individuals can eventually dominate the insect population if VEDIRA GEL ANT BAIT or other Group 30 insecticides are used repeatedly. The effectiveness of VEDIRA GEL ANT BAIT on resistant individuals could be significantly reduced. Since occurrence of resistant individuals is difficult to detect prior to use, BASF Australia Ltd accepts no liability for any losses that may result from the failure of VEDIRA GEL ANT BAIT to control resistant insects. VEDIRA GEL ANT BAIT may be subject to specific resistance management strategies. For further information contact your local supplier or BASF Australia Ltd representative.

PRECAUTIONS

DO NOT allow contact with food, food utensils, or places where food is prepared or stored.

PROTECTION OF WILDLIFE, FISH, CRUSTACEANS AND ENVIRONMENT
Very toxic to aquatic life: DO NOT contaminate streams, rivers or waterways with the chemical or used containers.
PROTECTION OF HONEY BEES AND OTHER INSECT POLLINATORS
Highly toxic to bees. However, the use of this product as directed is not expected to have adverse effects on bees.
PROTECTION OF LIVESTOCK AND OTHERS
DO NOT apply this product in any areas easily accessible to children or animals.

STORAGE & DISPOSAL
Keep out of reach of children.
Store in the closed, original container in a cool, well ventilated locked place out of the reach of children.
DO NOT store in direct sunlight. Dispose of empty container by wrapping in paper, placing in plastic bag and putting in the garbage.

SAFETY DIRECTIONS
Wash hands after use.

FIRST AID INSTRUCTIONS
If poisoning occurs, contact a doctor or Poisons Information Centre. Phone Australia 13 11 26. New Zealand 0800 764 766.

SAFETY DATA SHEET
Additional information is listed in the Safety Data Sheet.

CONDITIONS OF SALE
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CAUTION

KEEP OUT OF REACH OF CHILDREN

READ SAFETY DIRECTIONS BEFORE OPENING OR USING

VEDIRA® PRESSURISED INSECTICIDE

ACTIVE CONSTITUENT: 2 g/kg BROFLANILIDE and
0.5 g/kg ALPHA CYPERMETHRIN

GROUP	30	3A	INSECTICIDE

For the control of ants, cockroaches, stored product pests, bed bugs, flies, house crickets, silverfish, spiders and paper wasps in domestic, commercial, industrial and public health situations as specified in the Directions for Use Table.

NET CONTENTS: 400 g, 454 g, 500 g, 567 g, 600 g

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RESTRAINTS
DO NOT apply directly to food, food packaging or food contact surfaces.

DIRECTION FOR USE

PEST	CRITICAL COMMENTS
Cockroaches, Ants, Spiders	Apply onto surfaces and into cracks and crevices where insects may be harbouring, living and breeding. Apply as a surface application up to but not exceeding the point of run off. Use crack and crevice nozzle to direct spray into cracks, crevices and other hard to reach places. VEDIRA PRESSURISED INSECTICDE can also be applied directly as a spot treatment.
Silverfish	Apply directly onto Silverfish as a spot treatment.
Bed Bugs	Apply onto surfaces and into cracks and crevices where bed bugs may be harbouring, living or breeding. Use crack and crevice nozzle to direct spray into cracks, crevices and other hard to reach places. VEDIRA PRESSURISED INSECTICDE can also be applied directly as a spot treatment. Consideration should also be given to appropriate non-chemical methods of control in areas where insecticide application is not possible. An IPM approach should be followed for the control of bed bugs. For more information refer to the Code of Practice for the Control of Bed Bug Infestations in Australia.
Flies	Apply to surfaces where flies are likely to rest. For outdoor fly control, apply to surfaces where flies tend to be a nuisance. VEDIRA PRESSURISED INSECTICIDE can also be applied directly as a spot treatment.
Stored Product Pests	Apply onto surfaces and into cracks and crevices where insects may be harbouring, living and breeding. Use crack and crevice nozzle to direct spray into cracks, crevices and other hard to reach places. VEDIRA PRESSURISED INSECTICDE can also be applied directly as a spot treatment.
House crickets	Apply directly onto house crickets as a spot treatment.
Paper wasps	Apply directly to nests.

NOT TO BE USED FOR ANY PURPOSE, OR IN ANY MANNER, CONTRARY TO THIS LABEL UNLESS AUTHORISED UNDER APPROPRIATE LEGISLATION.

GENERAL INSTRUCTIONS

APPLICATION
This product is ideally suited to be used with the System III Pressurised dispenser unit. If using without System III, hold container upright whilst spraying. After use with the System III Pressurised Dispenser, ensure that the valve is closed and that the hose line is drained to avoid leaking. VEDIRA PRESSURISED INSECTICIDE is a dual active insecticide providing rapid knockdown and long residual control. Spray from a distance of 20-30 cm directly onto insects or spray onto surfaces for residual protection as per the Directions for Use table. Pay particular attention to harbourages and cracks and crevices. VEDIRA PRESSURISED INSECTICIDE will control insects within a few days of application. Surfaces should have a small hidden area sprayed and checked for any discoloration before widespread use. Avoid contact with food, food utensils and food preparation surfaces. These items should be removed or covered prior to application where a risk of contamination exists. Do not spray moving parts of any machinery, electric motors or switchgear.

INSECTICIDE RESISTANCE WARNING | **GROUP** | **30** | **3A** | **INSECTICIDE**

For insecticide resistance management VEDIRA PRESSURISED INSECTICIDE is both a Group 30 and a Group 3A insecticide. Some naturally occurring insect biotypes resistant to VEDIRA PRESSURISED INSECTICIDE and other Group 30 and Group 3A insecticides may exist through normal genetic variability in any insect population. The resistant individuals can eventually dominate the insect population if VEDIRA

PRESSURISED INSECTICIDE or other Group 30 and Group 3A insecticides are used repeatedly. The effectiveness of VEDIRA PRESSURISED INSECTICIDE on resistant individuals could be significantly reduced. Since occurrence of resistant individuals is difficult to detect prior to use, BASF Australia Ltd accepts no liability for any losses that may result from failure of VEDIRA PRESSURISED INSECTICIDE to control resistant insects. For further information on managing insecticide resistance contact your local supplier or BASF Australia Ltd representative.

PRECAUTIONS

DO NOT apply as a space (aerosol) spray.
DO NOT apply directly to food, food packaging or food contact surfaces.
DO NOT spray pet food and water bowls and containers.
BEWARE: Deliberately sniffing or inhaling concentrated spray can be harmful or fatal.

PROTECTION OF WILDLIFE, FISH, CRUSTACEANS AND ENVIRONMENT

Very toxic to aquatic life: DO NOT contaminate streams, rivers or waterways with the chemical or used containers.

PROTECTION OF HONEY BEES AND OTHER INSECT POLLINATORS

Highly toxic to bees. However, the use of this product as directed is not expected to have adverse effects on bees.

PROTECTION OF LIVESTOCK AND OTHERS

DO NOT apply this product in any areas easily accessible to children or animals.

STORAGE & DISPOSAL

Keep out of reach of children.
Keep in a cool place out of the sun. Do not puncture or incinerate can, even when empty. Do not incinerate or puncture this can, even when empty. Dispose of can by putting in garbage, or leaving it at an appropriate metal recycling collection point.

SAFETY DIRECTIONS

Wash hands after use.

FIRST AID INSTRUCTIONS

If poisoning occurs, contact a doctor or Poisons Information Centre. Phone Australia 13 11 26. New Zealand 0800 764 766.

SAFETY DATA SHEET

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ABBREVIATIONS

ACCS/ACMS	Advisory Committee for Chemicals Scheduling/Advisory Committee for Medicines Scheduling
ac	active constituent
ADI	Acceptable Daily Intake (for humans)
AHMAC	Australian Health Ministers Advisory Council
ai	active ingredient
AR	Applied Radioactivity
ARfD	Acute Reference Dose
BBA	Biologische Bundesanalstalt fur Land—und forstwirschaft
bw	bodyweight
d	day
DAT	Days After Treatment
DT_{50}	Time taken for 50% of the concentration to dissipate
EA	Environment Australia
E_bC_{50}	concentration at which the biomass of 50% of the test population is impacted
EC_{50}	concentration at which 50% of the test population are immobilised
EEC	Estimated Environmental Concentration
E_rC_{50}	concentration at which the rate of growth of 50% of the test population is impacted
EI	Export Interval
EGI	Export Grazing Interval
ESI	Export Slaughter Interval
EUP	End Use Product
F_0	original parent generation
g	gram
GAP	Good Agricultural Practice
GCP	Good Clinical Practice
GLP	Good Laboratory Practice

GVP	Good Veterinary Practice
h	hour
ha	hectare
Hct	Heamatocrit
Hb	Haemoglobin
HPLC	High Pressure Liquid Chromatography *or* High Performance Liquid Chromatography
id	intradermal
im	intramuscular
ip	intraperitoneal
IPM	Integrated Pest Management
iv	intravenous
in vitro	outside the living body and in an artificial environment
in vivo	inside the living body of a plant or animal
kg	kilogram
K_{OC}	Organic carbon partitioning coefficient
L	Litre
LC_{50}	concentration that kills 50% of the test population of organisms
LD_{50}	dosage of chemical that kills 50% of the test population of organisms
LOD	Limit of Detection—level at which residues can be detected
Log K_{OW}	Log to base 10 of octanol water partitioning co-efficient, synonym P_{OW}
LOQ	Limit of Quantitation—level at which residues can be quantified
mg	milligram
mL	millilitre
MRL	Maximum Residue Limit
MSDS	Material Safety Data Sheet
NEDI	National Estimated Daily Intake
NESTI	National Estimated Short Term Intake

ng	nanogram
NHMRC	National Health and Medical Research Council
NOEC/NOEL	No Observable Effect Concentration Level
NOAEL	No Observed Adverse Effect Level
OC	Organic Carbon
OM	Organic Matter
po	oral
ppb	parts per billion
PPE	Personal Protective Equipment
ppm	parts per million
Q-value	Quotient-value
RBC	Red Blood Cell Count
REI	Re-Entry Interval
s	second
sc	subcutaneous
SC	Suspension Concentrate
SUSMP	Standard for the Uniform Scheduling of Medicines and Poisons
TGA	Therapeutic Goods Administration
TGAC	Technical grade active constituent
TRR	Total Radioactive Residues
µg	microgram
vmd	volume median diameter
WG	Water Dispersible Granule
WHP	Withholding Period

GLOSSARY

Active constituent	The substance that is primarily responsible for the effect produced by a chemical product
Acute	Having rapid onset and of short duration
Carcinogenicity	The ability to cause cancer
Chronic	Of long duration
Codex MRL	Internationally published standard maximum residue limit
Desorption	Removal of a material from or through a surface
Efficacy	Production of the desired effect
Formulation	A combination of both active and inactive constituents to form the end use product
Genotoxicity	The ability to damage genetic material
Hydrophobic	Repels water
Leaching	Removal of a compound by use of a solvent
Metabolism	The chemical processes that maintain living organisms
Photodegradation	Breakdown of chemicals due to the action of light
Photolysis	Breakdown of chemicals due to the action of light
Subcutaneous	Under the skin
Toxicokinetics	The study of the movement of toxins through the body
Toxicology	The study of the nature and effects of poisons

REFERENCES

APVMA 2015, *Data Guidelines,* Australian Pesticides and Veterinary Medicines Authority, Canberra, available at apvma.gov.au/registrations-and-permits/data-guidelines.

Matthews, GA 1992, *Pesticide Application Methods,* 2nd edn, Longman, London.