Australian Government
Australian Pesticides and Veterinary Medicines Authority

# ADVICE SUMMARY

## APPLICATION FOR REGISTRATION OF A CHEMICAL PRODUCT

**Product name:** AGROCELHONE FE SOIL FUMIGANT
**Applicant:** AGROQUIMICOS DE LEVANTE, S.A.
**Product number:** 65192
**Application number:** 50377

**Purpose of Application and Description of Use:** Registration of a 566 g/kg chloropicrin and 375 g/kg 1,3-dichloropropene liquid product for pre-plant control of plant parasitic nematodes, plant diseases and weed seeds by soil fumigation.

**Active Constituent(s):** 1,3-DICHLOROPROPENE
CHLOROPICRIN

### Regulatory Decision:

To grant the application subject to the following conditions:

### Standard Conditions of Registration/Approval

1. Containers must meet AgVet Code Regulation 18
2. Agricultural products must meet Active Constituents Quality Assurance Requirements
3. Label must contain a Date of Manufacture and Batch Number

For full conditions, refer to Standard Conditions for Applications on the APVMA website.

## ADVICE

### State/External Efficacy Reviewer

The results from overseas trials were presented to demonstrate efficacy of the proposed product, a 566 g/kg (793 g/L) chloropicrin and 375 g/kg (525 g/L) 1,3-dichloropropene liquid product for pre-plant control of plant parasitic nematodes, plant diseases and weeds by soil fumigation. The trials tested efficacy against different pathogens and nematodes by assessing the effect of treatment on the inoculant, root damage, vegetative growth/vigour, productivity/yield, mortality/percentage of plants affected and on weeds in green pepper, strawberry, artichoke and tomato crops grown on the sites after treatment. The formulations tested consisted of various concentrations of the two active constituents, dichloropropene and chloropicrin. The rates tested were 265 kg/ha, 450 kg/ha and 50 g/m$^2$ (≡ 500 kg/ha).

The first set of trials were conducted on greenhouse pepper to determine selectivity and fungicidal efficacy of the proposed product against soil fungi (including *Phytophthora capsici*, *Pythium* sp. and *Rhizoctonia solani*). The proposed product was applied via irrigation at two rates, 265 kg/ha (2.32 kg/200 L water) and 450 kg/ha (3.96 kg/200 L water). Both rates were equally effective in disinfecting the soil and consequently reducing fungal disease in peppers. Both rates improved crop vigour compared with the untreated controls. There was no evidence of phytotoxicity to peppers in the trials.

The second set of trials were conducted on greenhouse pepper to determine selectivity and fungicidal efficacy of the proposed product against soil fungus (*Phytophthora capsici*), nematodes (*Meloidogyne* sp.) and weeds. These trials compared the efficacy of the proposed product against methyl bromide. The proposed product was applied via irrigation at 50 g/m$^2$ (500 kg/ha) and was effective in reducing disease, nematode infection and weeds. Application of the proposed product resulted in greater productivity and greater growth of plants compared with the untreated peppers in the trials. Weed control was equivalent for treatments with the proposed product and methyl bromide.

The third set of trials were conducted on greenhouse pepper to determine selectivity and fungicidal efficacy of the proposed product against soil fungus (*Phytophthora capsici*), nematodes (*Meloidogyne incognita*) and *Fusarium* inoculant, and on artichokes for *Verticillium dahlia* and *Fusarium* inoculant. In both trials, the proposed product was applied via irrigation at 50 g/m$^2$ (500 kg/ha). The pepper trial compared the efficacy of the proposed product applied via drip irrigation against treatment with methyl bromide and an untreated control. The artichoke trial compared the efficacy of the proposed product applied via drip and flood irrigation against an untreated control. In peppers, treatment with the proposed product gave equivalent results to treatment with methyl bromide in reducing fungal inoculant, and increasing plant vigour and crop yield. In artichokes, treatment with the proposed product reduced the fungus inoculant, reduced the number of weeds present, reduced plant mortality and increased plant vigour and crop yield.

The results from the trial data submitted demonstrated that application of the proposed product, at rates up to 500 kg/ha (≡ 50 g/m$^2$), was effective in reducing fungicide inoculant in soil, which resulted in a reduction in disease, nematodes and weeds in following crops. Results also showed that treatment with the proposed product prior to planting resulted in improved crop vigour and yield/productivity, fewer infected plants and lower mortality in following crops. The

APVMA accepts the advice of the efficacy reviewer, and is satisfied that the proposed product should be safe and effective when used according to the proposed label instructions.

## Data relied on to provide the advice

| Data No | Data Source* | Author(s) | Title | Date# | Data Type | Data Sub-type | Name and address of Authorising Party | Inherited Application No. |
|---|---|---|---|---|---|---|---|---|
| 60549 | S | A L Plasencia et al | INIA Project SC97-130-C3. Alternatives to the conventional use of methyl bromide which respect the environment and are economically feasible. Greenhouse Pepper cultivation. Report of the results obtained in the tests with Agrocelhone NE and Agrocelhone FE | April 2002 | Efficacy and safety | Efficacy | AGROQUIMICOS DE LEVANTE, S.A. : POLIGONO INDUSTRIAL CASTILLA VIAL NO. 5, S/N 463 | |
| 60548 | S | I J Colomer de la Oliva and A G Buendia | Fungicidal efficacy tests AL2a99, AL2b99 and AL2c99 of the compound E53CL37DD in pepper crops | September 2002 | Efficacy and safety | Efficacy | AGROQUIMICOS DE LEVANTE, S.A. : POLIGONO INDUSTRIAL CASTILLA VIAL NO. 5, S/N 463 | |
| 60551 | S | V Cebolla | Report of the effect of two formulations of 1,3-dichloropropene and chloropicrin; Agrocelhone NE and Agrocelhone FE on artichoke and pepper crops. | 2 July 2010 | Efficacy and safety | Efficacy | AGROQUIMICOS DE LEVANTE, S.A. : POLIGONO INDUSTRIAL CASTILLA VIAL NO. 5, S/N 463 | |

### Australian Government Department of Health, Office of Chemical Safety

Agroquimicos de levante, S.A. have submitted a data package seeking approval to register a soil fumigant, Agrocelhone FE Soil Fumigant (Agrocelhone FE), which is to be used for field and greenhouse drip (tarped) irrigation fumigation (chemigation) of bare soil, prior to planting of fruit and nut crops including strawberries, vegetables, field crops and nursery crops.

Agrocelhone FE contains 570 g/kg (798 g/L or 57% w/v, nominal 994 g/kg) chloropicrin and 380 g/kg (532 g/L or 38% w/v, nominal 988 g/kg) 1,3-dichloropropene formulated as a liquid (LD) fumigant. The product is intended for the control of a wide range of soil borne pests including nematodes, insects (wireworms, symphylans), diseases caused by certain fungal and bacterial species and the suppression of weeds.

The ADI for chloropicrin was established at 0.001 mg/kg bw/day in 2014 based on a NOEL of 0.1 mg/kg bw/day from a 1-year dog oral (gelatin capsule) and a 2-year SD rat oral (gavage) carcinogenicity study and applying a default safety factor of 100 to account for potential inter- and intra- species variation. The

LOEL was 1.0 mg/kg bw/day in both studies based on emesis in dogs (both sexes), hyperkeratosis in the nonglandular stomach in rats (both sexes) and decreased body weight and body weight gain in male rats. An ARfD for chloropicrin has not been established and data were not provided to enable an ARfD to be set. An ARfD for chloropicrin is not required due to the proposed use in a soil fumigant formulation prior to crop plantation.

An ADI or ARfD has not been established for 1,3-dichloropropene. An ADI and ARfD for 1,3-dichloropropene are not required due to the proposed use in a soil fumigant formulation prior to crop plantation.

Chloropicrin and 1,3-dichloropropene are both included in Schedule 7 of the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP). These active constituents are also included in Appendix J of the SUSMP with the condition *'not to be available except to authorised or licensed persons'*. Chloropicrin has a cut-off to Schedule 6 when in preparations containing 5% or less of chloropicrin. There are no cut-offs or exceptions for 1,3-dichloropropene in the SUSMP. The product contains 57 per cent chloropicrin and 38 per cent 1,3-dichloropropene and is therefore a Schedule 7 poison. Based on the acute toxicity profile of the product (inhalational toxicity 80 – 180 mg/m$^3$) and severe toxic effects following repeat inhalation exposures to chloropicrin (increase mortality rate) following repeat inhalation exposures from 13-week and 107-week studies in rats, this classification is considered appropriate.

The data package provided in the present submission comprised six acute toxicology studies on the product for which Australian registration is sought. The acute toxicology studies have been conducted in accordance with contemporary test guidelines and considered to be adequate for the assessment of the acute toxicology profile of the product. The acute toxicology data evaluated in this assessment, along with previously evaluated information on the repeat-dose toxicology of the active constituent(s) were relied on by the OCS to establish a hazard profile for the proposed product.

Based on the findings of the acute toxicological studies, the product has moderate acute oral toxicity, low acute dermal toxicity and high acute inhalation toxicity in rats. It is a slight-irritant to the skin of rabbits and is moderately irritating to the eyes of rabbits. The product is a skin sensitiser in guinea pigs. Due to the presence of chloropicrin (57%), the product is expected to be irritating to the respiratory tract.

In addition, the applicant provided a non-GLP or test guideline compliant air monitoring study and a soil sampling study (both carried out overseas) measuring the concentrations of chloropicrin and 1,3-dichloropropene (in air and soil) from tarped field fumigation (to assess potential worker and bystander exposure, and re-handling activities). An exposure assessment was conducted, and in conjunction with the hazard profile, used to determine whether the proposed use of the product would be an undue health hazard to humans.

The risk assessment concluded that exposure to the product during tarped fumigation activities as well as post fumigation activities were acceptable with the use of appropriate personal protective equipment, including respiratory protection. First Aid Instructions and Safety Directions have been recommended for

inclusion on the product label, in addition to re-entry intervals for field and greenhouse applications and appropriate buffer zones for the protection of bystanders.

After consideration of the hazards associated with the proposed product, together with the exposure and risks associated with the intended use of the proposed product, it was considered that the proposed use of “Agrocelhone FE Soil Fumigant” will not be an undue health hazard to humans according to the criteria stipulated in Section 14 of the Ag/Vet Code Act of 1994, if used according to the label instructions and the risk management measures recommended in this report.

## Data relied on to provide the advice

| Data No | Data Source* | Author(s) | Title | Date# | Data Type | Data Sub-type | Name and address of Authorising Party | Inherited Application No. |
|---|---|---|---|---|---|---|---|---|
| 60546 | S | V Cebolla | Report on air content of 1,3-dichloropropene and chloropicrin after a treatment with Agrocelhone FE | October 2011 | OH and S | Air monitoring | AGROQUIMICOS DE LEVANTE, S.A. : POLIGONO INDUSTRIAL CASTILLA VIAL NO. 5, S/N 463 | |
| 60547 | S | A Carrera | AQL Application and safety requirements and risks | 8 October 2010 | OH and S | Worker exposure | AGROQUIMICOS DE LEVANTE, S.A. : POLIGONO INDUSTRIAL CASTILLA VIAL NO. 5, S/N 463 | |
| 60541 | S | A D Lucini | Acute dermal toxicity of Agrocelhone FE to rats (*Rattus norvegicus*) OECD Testing Guideline 402 | 18 July 2006 | Toxicology | Acute dermal studies, product | AGROQUIMICOS DE LEVANTE, S.A. : POLIGONO INDUSTRIAL CASTILLA VIAL NO. 5, S/N 463 | |
| 60545 | S | A D Lucini | Acute eye irritation/corrosion effects on rabbits (*Oryctolagus cuniculus*) of Agrocelhone FE OECD Testing Guideline 405 | 24 July 2006 | Toxicology | Acute eye irritation studies, product | AGROQUIMICOS DE LEVANTE, S.A. : POLIGONO INDUSTRIAL CASTILLA VIAL NO. 5, S/N 463 | |
| 60542 | S | A D Lucini | Acute inhalation toxicity of Agrocelhone FE to rats (*Rattus norvegicus*) OECD Testing Guideline 403 | 17 July 2006 | Toxicology | Acute inhalation studies, product | AGROQUIMICOS DE LEVANTE, S.A. : POLIGONO INDUSTRIAL CASTILLA VIAL NO. 5, S/N 463 | |
| 60540 | S | A D Lucini | Acute oral toxicity of Agrocelhone FE to rats (*Rattus norvegicus*) of OECD Testing Guideline 423 | 18 July 2006 | Toxicology | Acute oral studies, product | AGROQUIMICOS DE LEVANTE, S.A. : POLIGONO INDUSTRIAL CASTILLA VIAL NO. 5, S/N 463 | |

| Data No | Data Source* | Author(s) | Title | Date[#] | Data Type | Data Sub-type | Name and address of Authorising Party | Inherited Application No. |
|---|---|---|---|---|---|---|---|---|
| 60544 | S | A D Lucini | Acute dermal irritation/corrosion effects on rabbits (*Oryctolagus cuniculus*) of Agrocelhone FE OECD Testing Guideline 404 | 11 July 2006 | Toxicology | Acute skin irritation studies, product | AGROQUIMICOS DE LEVANTE, S.A. : POLIGONO INDUSTRIAL CASTILLA VIAL NO. 5, S/N 463 | |
| 60543 | S | A D Lucini | Skin Sensitization on albino guinea pigs (*Cavia porcellus*) of Agrocelhone FE Buehler Test OECD Testing Guideline 406 | 10 August 2006 | Toxicology | Acute skin sensitisation studies, product | AGROQUIMICOS DE LEVANTE, S.A. : POLIGONO INDUSTRIAL CASTILLA VIAL NO. 5, S/N 463 | |

** S = Data submitted with the application*