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Registration Decision

Flucarbazone-sodium

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Overview

Registration Decision for Flucarbazone-sodium

Health Canada's Pest Management Regulatory Agency (PMRA), under the authority of the *Pest Control Products Act*, and Regulations, is granting conversion from conditional to full registration for the sale and use of Everest Technical Herbicide and the end-use products Everest 70 WDG Herbicide and Everest Solupak 70 DF Herbicide containing the technical grade active ingredient flucarbazone-sodium to control wild oats, green foxtail and selected broadleaf weeds in spring wheat and durum wheat.

An evaluation of available scientific information found that, under the approved conditions of use, the product has value and does not present an unacceptable risk to human health or the environment.

Products containing flucarbazone-sodium were first proposed for registration in the consultation document[1] Proposed Registration Decision PRD2008-13, *Flucarbazone-sodium*. This Registration Decision[2] describes this stage of the PMRA's regulatory process for the conversion from conditional to full registration of flucarbazone-sodium and summarizes the Agency's decision and the reasons for it. The PMRA received no comments on PRD2008-13. This decision is consistent with the proposed registration decision stated in PRD2008-13.

For more details on the information presented in this Registration Decision, please refer to Proposed Registration Decision PRD2008-13, *Flucarbazone-sodium*, as it contains a detailed evaluation of the information submitted in support of this registration.

What Does Health Canada Consider When Making a Registration Decision?

The key objective of the *Pest Control Products Act* is to prevent unacceptable risks to people and the environment from the use of pest control products. Health or environmental risk is considered acceptable[3] if there is reasonable certainty that no harm to human health, future generations or the environment will result from use or exposure to the product under its conditions of registration. The Act also requires that products have value[4] when used according

[1] "Consultation statement" as required by subsection 28(2) of the *Pest Control Products Act.*

[2] "Decision statement" as required by subsection 28(5) of the *Pest Control Products Act.*

[3] "Acceptable risks" as defined by subsection 2(2) of *Pest Control Products Act.*

[4] "Value" as defined by subsection 2(1) of *Pest Control Products Act*"...the product's actual or potential contribution to pest management, taking into account its conditions or proposed conditions of registration, and includes the product's (a) efficacy; (b) effect on host organisms in connection with which it is intended to be used; and (c) health, safety and environmental benefits and social and economic impact."

to label directions. Conditions of registration may include special precautionary measures on the product label to further reduce risk.

To reach its decisions, the PMRA applies modern, rigorous risk-assessment methods and policies. These methods consider the unique characteristics of sensitive subpopulations in humans (e.g. children) as well as organisms in the environment (e.g. those most sensitive to environmental contaminants). These methods and policies also consider the nature of the effects observed and the uncertainties when predicting the impact of pesticides. For more information on how the PMRA regulates pesticides the assessment process and risk-reduction programs, please visit the PMRA's website at www.healthcanada.gc.ca/pmra.

What is Flucarbazone-sodium?

Flucarbazone-sodium is the technical grade active ingredient in the end-use products Everest 70 WDG Herbicide and Everest Solupak 70 DF Herbicide, which are postemergence herbicides used to control wild oats, green foxtail and selected broadleaf weeds in spring wheat and durum wheat.

Health Considerations

Can Approved Uses of Flucarbazone-sodium Affect Human Health?

Flucarbazone-sodium is unlikely to affect your health when used according to label directions.

Potential exposure to flucarbazone-sodium may occur through diet (food and water) or when handling and applying products containing the active ingredient. When assessing health risks, two key factors are considered: the levels at which no health effects occur and the levels to which people may be exposed. The dose levels used to assess risks are established to protect the most sensitive human population (e.g. children and nursing mothers). Only uses for which the exposure is well below levels that cause no effects in animal testing are considered acceptable for registration.

Toxicology studies in laboratory animals describe potential health effects from varying levels of exposure to a chemical and identify the dose where no effects are observed. The health effects noted in animals occur at doses more than 100 times higher (and often much higher) than levels to which humans are normally exposed when flucarbazone-sodium products are used according to label directions.

The active ingredient Everest Technical Herbicide and the two end-use products Everest 70 WDG Herbicide and Everest Solupak 70 DF Herbicide have low acute toxicity hazards. Flucarbazone did not cause cancer in animals and was not genotoxic. There was no indication that flucarbazone caused damage to the nervous system, nor did it affect reproduction. There was also no indication that

the fetus was more sensitive than the adult animal to flucarbazone. Toxicity following repeated dosing at very high doses included stomach and liver effects, decreased body weight, increased or decreased food consumption and discoloured feces. Some sporadic evidence of immunotoxicity was revealed during the standard testing regime. However, a directed and thorough immunotoxicity study revealed no effects. The risk assessment was conducted to ensure that the level of human exposure is well below the lowest dose at which these effects occurred in animal tests.

Residues in Water and Food

Aggregate dietary intake estimates (food and water) revealed that the general population and infants, the population group that would ingest the most flucarbazone-sodium relative to body weight, are expected to be exposed to less than 1% of the acceptable daily intake. Based on these estimates, the chronic dietary risk from flucarbazone-sodium is not of concern for all population groups. The results of the cancer studies were negative; therefore, a chronic cancer dietary risk assessment was not required.

Animal studies revealed no acute health effects. Therefore, an acute dietary risk assessment was not required.

The *Food and Drugs Act* prohibits the sale of adulterated food, that is, food containing a pesticide residue that exceeds the established maximum residue limit (MRL). Pesticide MRLs are established for *Food and Drugs Act* purposes through the evaluation of scientific data under the *Pest Control Products Act.* Food containing a pesticide residue that does not exceed the established MRL does not pose an unacceptable health risk.

Residue trials conducted throughout Canada and the United States using flucarbazone-sodium on wheat were acceptable. The MRLs for this active ingredient can be found in the Science Evaluation of this consultation document.

Occupational Risks From Handling Flucarbazone-sodium

Occupational risks are not of concern when flucarbazone-sodium is used according to label directions, which include protective measures.

Farmers and pesticide applicators mixing, loading or applying Everest 70 WDG Herbicide or Everest Solupak 70 DF Herbicide and field workers entering freshly treated fields can come in direct contact with flucarbazone-sodium on the skin. For this reason, the label specifies that anyone mixing or loading Everest 70 WDG Herbicide or Everest Solupak 70 DF Herbicide must wear a long-sleeved shirt, long pants and chemical-resistant gloves. Taking into consideration these protective measures and the fact that occupational exposure is expected to be

limited to one application per year, risk to farmers, applicators and workers is not a concern.

For bystanders, exposure is expected to be much less than that of field workers and is considered negligible. Therefore, risks to bystanders are not a concern.

Environmental Considerations

What Happens When Flucarbazone-sodium Is Introduced Into the Environment?

Flucarbazone-sodium is slightly persistent in soils under field conditions. Aerobic biotransformation of flucarbazone in soil is a principal route of transformation in the terrestrial environment. The major transformation products detected in soils were sulfonamide, sulfonic acid, *O*-desmethyl MKH 6562 and *N*-methyltriazolinone. The parent compound and transformation products have a low potential to leach and contaminate groundwater under field conditions.

Flucarbazone-sodium is persistent and moderately persistent in water under aerobic and anaerobic conditions, respectively. Sulfonamide, *N*-methyltriazolinone and *N,O*-dimethyl triazolinone were the major transformation products detected in water. Low values of vapour pressure and Henry's law constant indicate that flucarbazone-sodium is essentially non-volatile; therefore, no significant volatilization is expected. Flucarbazone-sodium has a negligible potential for bioconcentration/bioaccumulation in organisms.

The active ingredient, flucarbazone-sodium, is relatively non-toxic to honeybees and earthworms. It is also practically non-toxic to bobwhite quail on an acute basis and slightly toxic on a dietary basis. It is detrimental to reproductive performance of mallard ducks, but is non-toxic to rats on an acute basis and on a dietary basis up to 250 mg a.i./kg diet. On an acute basis, flucarbazone-sodium is practically non-toxic to fish and other aquatic invertebrates but is toxic to freshwater algae. Flucarbazone-sodium is also very phytotoxic to non-target terrestrial and aquatic plants.

The parent compound, flucarbazone-sodium, and its transformation products do not meet the Toxic Substances Management Policy (TSMP) criteria for Track 1 substances. In addition, flucarbazone-sodium does not contain any byproducts or microcontaminants that meet the TSMP Track 1 criteria.

Conversion from temporary to full registration does not result in unacceptable risks to the environment. Environmental concerns are mitigated with the existing label.

Value Considerations

What Is the Value of Everest 70 WDG and Everest Solupak 70 DF Herbicides?

A single application of Everest 70 WDG Herbicide or Everest Solupak 70 DF Herbicide, hereafter referred to as Everest, provides effective control of wild oats, green foxtail and selected broadleaf weeds in spring wheat and durum wheat. Everest is compatible with integrated weed management practices and with conventional crop production systems. Given that Everest is applied after weeds have emerged, farmers can better assess whether the herbicide is necessary or suitable for particular weed species.

When these Everest herbicides were granted conditional registration, one of the conditions was to provide additional efficacy data to support an application rate of 21.5 g/L Everest (15 g a.i./ha flucarbazone-sodium) for the control of green foxtail in spring wheat and durum wheat. The registrant has submitted adequate data to support the claim of green foxtail control at an application rate of 15 g a.i./ha flucarbazone-sodium and the conditional registration requirement has now been adequately addressed from a value perspective. No further data are required.

Measures to Minimize Risk

Registered pesticide product labels include specific instructions for use. Directions include risk-reduction measures to protect human and environmental health. These directions must be followed by law.

Key Risk-Reduction Measures

The key risk-reduction measures on the label of flucarbazone-sodium to address the potential risks identified in this assessment are as follows.

Human Health

Given that there is a concern with users coming into direct skin contact with flucarbazone-sodium, anyone mixing or loading Everest 70 WDG Herbicide or Everest Solupak 70 DF Herbicide must wear a long-sleeved shirt, long pants and chemical-resistant gloves. Anyone applying the product must wear a long-sleeved shirt and long pants.

Label Recommendations

All three labels currently recommend vomiting and/or the use of syrup of ipecac if swallowed. The PMRA has published new labelling guidance under Regulatory Directive DIR2007-01, *First Aid Labelling Statements.* Labels must be updated to reflect this guidance.

If the applicant wishes to retain the previous recommendations (as they appear on the draft label), please confirm with an emergency medicine professional on the appropriateness of the use of syrup of ipecac and inducing vomiting in the event that these products are swallowed.

Other Information

The relevant test data on which the decision is based (as referenced in this document) are available for public inspection, upon application, in the PMRA's Reading Room (located in Ottawa). For more information, please contact the PMRA's Pest Management Information Service.

References

A. List of Studies/Information Submitted by Registrant

1.0 Methods of Analysis

PMRA # 1074947. Manufacturing Process, DACO: 2.11.3

PMRA # 1074949. Flucarbazone in Flucarbazone Technical: Analytical Method Validation by High Performance Liquid Chromatography., 04-0250-G1, DACO: 2.13.1

PMRA # 1074950. Impurities in Flucarbazone Technical: Analytical Method Validation by High Performance Liquid Chromatography., 04-0250-G2, DACO: 2.13.1

PMRA # 1074951. Hydrazine in Flucarbazone Technical: Analytical Method Validation by Gas Chromatography., 04-0252-G17, DACO: 2.13.1

PMRA # 1074952. 5-Batch Analysis for Impurities and Flucarbazonesodium in Fucarbazone Technical (Production Batches)., 05-02489-G1, DACO: 2.13.3

PMRA #: 1070402. 2002, Bayer CropScience, Extraction Efficiency of the Analytical Method for the Determination of MKH 6562 in Animal Tissue and Milk., M2220201, DACO: 7.2.1

PMRA#: 1070403. 2002, Independent Laboratory Validation of Analytical Method for the Determination of MKH 6562 in Animal Tissues and Milk., AG020021, DACO: 7.2.3

PMRA#: 1070404. 2003, The Freezer Stability of [Phenyl-UL-14C] MKH 6562 Residues in Rotational Crop Matrices Addendum 2 to The Confined Accumulation of [Phenyl-UL-14C] MKH 6562 in Rotational Crops., M2051601, DACO: 7.3

PMRA#: 1070405. 2005, Frozen Storage Stability of MKH 6562 and Ndesmethyl MKH 6562 in Wheat Grain and Mustard Greens., RAMJY002, DACO: 7.3

PMRA#: 1070406. 2002, Analytical Method for the Determination of MKH6562 in Animal Tissues and Milk., M2110202, DACO: 7.2.1

2.0 Value

PMRA#: 868767. Efficacy: Operational Trials Herbicides, Plant Growth Regulators and Adjuvants, DACO: 10.2.3.4

PMRA#: 868772. Efficacy: Operational Trials Herbicides, Plant Growth Regulators and Adjuvants, DACO: 10.2.3.4

PMRA#: 868779. Efficacy Data Tables for Everest (Excel Document), DACO: 10.2.3.4

PMRA#: 868780. Efficacy Data Tables for Everest (Excel Document), DACO: 10.2.3.4

PMRA#: 901030. Efficacy Tables for Everest (Excel Document), DACO: 10.2.3.1

PMRA#: 901031. Efficacy Tables for Everest (Excel Document), DACO: 10.2.3.1