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Proposed Special Review Decision

PSRD2026-03

Ethalfuralin Products Intended for Blending with Fertilizers

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Proposed special review decision for ethalfluralin products intended for blending with fertilizers

Under the authority of the *Pest Control Products Act*, pesticides are regulated by Health Canada on behalf of the Minister of Health. The *Pest Control Products Act* prescribes both the pre-market and post-market assessment (re-evaluations and special reviews) of pesticides to determine the acceptability or continued acceptability of human health and environmental risks, and, acceptable value of a pesticide in Canada. Unlike a re-evaluation, a special review is triggered only under certain circumstances, as described in section 17 of the *Pest Control Products Act*, and the intent of a special review is to address specifically the identified aspects of concern. The special review approach is described in the PMRA Guidance Document, *Approach to Special Reviews of Pesticides*.

Health Canada evaluates the aspects of concern that prompted the special review in accordance with subsection 18(4) of the *Pest Control Products Act*. The internationally accepted science-based approach is used for the assessment of the aspects of concern, similar to all other scientific assessments (for example, new product registrations, re-evaluations).

Pursuant to subsection 17(1) of the *Pest Control Products Act*, Health Canada initiated a special review of registered pest control products containing the active ingredient ethalfluralin that are intended for blending with fertilizers. The identified aspects of concern for this special review are related to:

- Potential cancer risks from occupational exposure to ethalfluralin products intended for blending with fertilizers for:
 - operators who are mixing and loading granular fertilizers with ethalfluralin products in commercial blending facilities; and
 - custom applicators (in field) of the liquid-fertilizer blends.

Pursuant to subsection 18(4) of the *Pest Control Products Act*, Health Canada has evaluated the aspects of concern that prompted the special review, which are relevant to human health.

Ethalfluralin is a selective preplant soil-incorporated herbicide used for the pre-emergent control of weeds in labelled oilseed and fibre crops, and terrestrial food and feed crops.

This special review focuses on the two currently registered manufacturing concentrate products containing ethalfluralin, which are used exclusively in the manufacture of blended fertilizers. These blended fertilizers are manufactured on a just-in-time basis at commercial blending facilities, and are then transported to the farm for custom application. The two ethalfluralin manufacturing concentrate products subject to the special review are listed in Appendix I.

This document presents the proposed special review decision for the ethalfluralin products intended for blending with fertilizers, including the proposed amendments (risk mitigation measures) to protect human health, as well as the science evaluation on which the proposed

decision is based. This document is subject to a 45-day public consultation period,¹ during which the public (including the pesticide manufacturers and stakeholders) may submit written comments and additional information to Pesticides Publication Section. The final special review decision will be published after taking into consideration the comments received during the consultation period that are directly related to the assessment of the aspects of concern for this proposed special review decision.

Proposed special review decision for ethalfluralin products intended for blending with fertilizers

Health Canada, under the authority of the *Pest Control Products Act*, has conducted an evaluation of available relevant scientific information related to the aspects of concern for human health in accordance with subsection 18(4) of the *Pest Control Products Act*. Based on the evaluation of the aspects of concern, Health Canada is proposing for public consultation, pursuant to section 28 of the *Pest Control Products Act*, the continued registration of ethalfluralin products intended for blending with fertilizers registered for sale and use in Canada under section 21 of the *Pest Control Products Act*.

The assessment of the aspects of concern from this special review indicates that risk to human health for ethalfluralin products intended for blending with fertilizers are considered to be acceptable provided that the proposed risk mitigation measures and label improvements noted below are implemented. Additionally, it is proposed that these ethalfluralin products be re-classified from manufacturing concentrates to commercial-class end use products to align with their intended use. Normally manufacturing concentrates are used only in the manufacture of pesticide end-use products. The commercial-class designation accurately reflects their intended use in the manufacturer of blended fertilizers.

The proposed additional mitigation measures are summarized below, and details are outlined in Appendix IV.

Risk mitigation measures and label improvements

Registered pesticide product labels include specific directions for use. Directions include risk mitigation measures to protect human health, the environment and ensure the product has acceptable value which must be followed by law. The proposed label amendments including revised/updated label statements and/or mitigation measures, as a result of the special review of ethalfluralin products intended for blending with fertilizers, are summarized below.

¹ “Consultation statement” as required by subsection 28(2) of the *Pest Control Products Act*.

Human health

Risk mitigation:

- To protect workers in commercial fertilizer blending facilities when applying ethalfluralin to dry² fertilizer, the following additional risk-reduction measures are proposed:
 - Wear chemical-resistant coveralls over single layer (long-sleeved shirt, long pants) and chemical-resistant gloves when loading ethalfluralin, mixing/blending dry fertilizer, and repairing equipment.
 - Use a closed loading system.
- To protect custom applicators when applying liquid blends of ethalfluralin and fertilizer to the field, the following additional risk-reduction measures are proposed:
 - Wear coveralls over single layer and use a closed cab when applying more than 110 kg a.i./day.
 - Limit the amount of blended fertilizer that can be applied per person per day (260 kg a.i., which is equivalent to 180 ha/day or 20 580 L of blended fertilizer/day).

Label improvements to meet current standards:

- Amendments to the container label, blending booklet label, and applicator and grower booklet label are required. Refer to Appendix IV for details.
- Re-classification from manufacturing concentrates to commercial-class products.

Next steps

Health Canada will accept written comments on this proposal up to 45 days from the date of publication of this document (“consultation period”). Comments on the proposed decision can be submitted during the consultation period to Health Canada through Pesticides Publications Section, or the Public Engagement Portal (Public Engagement Forms - Consultation Comment). For more information or if you have questions, contact the Pesticides Information Service.

Before making a special review decision on ethalfluralin products intended for blending with fertilizers under section 21 of the *Pest Control Products Act*, the comments received during the consultation period will be taken into consideration in preparation of the final special review decision document. A science-based approach will be applied in making a final decision on ethalfluralin products intended for blending with fertilizers. In accordance with subsection 28(5) of the *Pest Control Products Act*, Health Canada will then publish a final special review decision document, which will include the decision, the reasons for it, a summary of the comments received during the consultation period that are directly related to the assessment of the aspects

² For the purposes of the risk assessment, the term “dry” is used in place of “granular” which is consistent with label terminology.

of concern for this proposed special review decision, and Health Canada's response to these comments.

Refer to Appendix I for details on specific products impacted by this proposed decision.

The following additional data may be submitted during the consultation for consideration during the final decision phase:

Human health

No additional scientific data are being requested. However, during the consultation period, the registrants and other stakeholders may submit the following information that could help address uncertainties in the available information for ethalfluralin products intended for blending with fertilizers and support revised assessments.

The evaluation of any additional data would be based on the scientific merit and relevance to the risk assessment. While additional data may reduce uncertainty in the risk assessment, continued registration of any uses would be based on the acceptability of risk assessed using a science-based approach.

- Additional dermal absorption data.
- Description of worker activities in fertilizer blending facilities where workers may potentially contact ethalfluralin.
- Typical amount of ethalfluralin handled per day per shift/person at commercial blending facilities.
- Typical application rate of ethalfluralin used in Canada with liquid and dry fertilizers in Canada.
- Typical area treated per day with liquid blended fertilizers in Canada.
- Information regarding the prevalence of custom applicators applying liquid fertilizers blended with ethalfluralin. A custom applicator is someone who applies pesticides on someone else's property or for multiple clients, rather than just using pesticides on their own land; they may treat multiple fields over the growing season.
- Information regarding whether workers who load the liquid blended fertilizer into the applicator are typically different from those who apply the blended fertilizer to the field.

Other information

The relevant confidential test data on which the proposed decision is based (see References section of this document) are available for public inspection, upon application, in Pesticides Regulatory Directorate's Reading Room. For more information, please contact Health Canada's Pesticides Information Service.

Evaluation of the aspects of concern that prompted the special review

Following the initiation of the special review, Health Canada requested information related to the aspects of concern from provinces, territories and other relevant federal government departments and agencies in accordance with subsection 18(2) of the *Pest Control Products Act*. No information was received.

To assess the aspects of concern, Health Canada considered the information that prompted the special review, and other currently available relevant scientific information from existing Health Canada assessments, including the re-evaluation decision for ethalfluralin (PRVD2011-16/RVD2012-09).

1.0 Occupational exposure and cancer risk assessment

Occupational cancer risk is estimated by comparing potential exposures with the most relevant endpoint from toxicology studies. For occupational workers, a lifetime cancer risk of less than 1×10^{-5} is considered acceptable. If the cancer risk is greater than 1×10^{-5} , it does not necessarily mean the risk of excess cancer is of concern. Potential conservatisms with inputs into the risk calculation should be considered. Cancer risks greater than 1×10^{-5} may require measures to mitigate risk.

1.1 Toxicology reference values

The toxicology reference values determined for the re-evaluation (PRVD2011-16/RVD2012-09) were used in the special review. Refer to Appendix II, Table 1 for the cancer quotient (q_1^*) value used in the occupational risk assessments.

1.2 Dermal absorption

A dermal absorption value of 2.8% was used in the re-evaluation (PRVD2011-16/RVD2012-09). This value was based on the USEPA review of a monkey in vivo dermal absorption study. This study was revisited by Health Canada and determined to have major limitations (for example, only a single, high dose was tested; a very high amount of the applied dose (55%) was recovered in the dressings). As such, it could no longer be used to support the previous dermal absorption value. No new data were available to Health Canada for ethalfluralin. A dermal absorption value of 25% was determined from a weight-of-evidence, which included the monkey in vivo study, the physical/chemical properties of ethalfluralin, and observations from toxicology studies.

1.3 Occupational exposure and risk assessment

There are potential exposures to workers using manufacturing concentrate products containing ethalfluralin in commercial blending facilities, as well as when handling and applying fertilizer blended with ethalfluralin.

The following occupational handler scenarios and tasks were identified for consideration in the special review:

- Blending of liquid ethalfluralin products with dry³ fertilizers (impregnation) in commercial facilities
 - Loading ethalfluralin into blending equipment
 - Mixing/blending dry fertilizer with ethalfluralin
 - Handling dry fertilizer blended with ethalfluralin
 - Cleaning fertilizer equipment used to treat dry fertilizer with ethalfluralin
- Custom applicators (in field) of the liquid fertilizer blends
 - Loading/transferring liquid ethalfluralin-fertilizer blend into application equipment
 - Applying liquid ethalfluralin-fertilizer blend to field using groundboom equipment

Other occupational handler scenarios (blending of liquid ethalfluralin with liquid fertilizers in commercial facilities, application of impregnated dry fertilizers to the field) were not included as part of this special review.

No chemical-specific exposure studies (passive dosimetry, biomonitoring) were submitted to Health Canada for ethalfluralin. For the impregnation of dry fertilizer in commercial facilities, no chemical-specific handler exposure data were available. Therefore, to address all possible activities and exposure scenarios in commercial fertilizer facilities (for example, treaters, cleaners), worker exposure was estimated using unit exposure values derived from seed treatment exposure studies. Cleaner unit exposures were determined by normalizing by the time spent cleaning in the study (~8 hours), rather than the study application rate, which is specific to seed treatment. A dermal absorption factor was used for route-to-route extrapolation. Other exposure assessment inputs included the typical amount of ethalfluralin manufacturing concentration product applied to dry fertilizer per day (600 L product), the time typically spent cleaning fertilizer blending equipment by hand per day (1 hr), the days per year a worker would handle ethalfluralin (10 days) and the years spent working in a commercial blending facility where ethalfluralin is used every year (40 years).

For custom applicators loading and applying liquid fertilizer blends to fields, exposure was estimated using unit exposures from Agricultural Handlers Exposure Task Force (AHETF) and the Pesticide Handlers Exposure Database (PHED) for pesticides. A dermal absorption factor was used for route-to-route extrapolation. Inputs included typical area treated per day values for liquid pesticides, number of days per year a custom applicators would handle ethalfluralin (10 days) and the career duration of a worker handling ethalfluralin (40 years).

The occupational exposure and risk assessment for the use of ethalfluralin in commercial fertilizer blending facilities is presented in Appendix III, Table 1. Cancer risks were at or below 1×10^{-5} and therefore were shown to be acceptable for workers cleaning and handling treated dry blended fertilizer at current label mitigation (coveralls over single layer, chemical-resistant (CR)

³ For the purposes of the risk assessment, the term “dry” is used in place of “granular” which is consistent with label terminology.

gloves). For treaters, cancer risk was greater than 1×10^{-5} and therefore not acceptable at current label mitigation (closed loading of ethalfluralin or open loading with a respirator, closed mixing/blending with fertilizer; coveralls over single layer, CR gloves). Cancer risks are acceptable if treaters wear CR coveralls over a single layer and CR gloves. Only closed loading of ethalfluralin will be proposed as this reflects the underlying study conditions used to show acceptable risk.

The occupational exposure and risk assessment for the loading and application of liquid fertilizer blended with ethalfluralin to fields by custom applicators is presented in Appendix III, Table 2. Cancer risks were below 1×10^{-5} and therefore were shown to be acceptable for small field crops at current label mitigation (closed transfer; open cab when handling less than 110 kg a.i./day; single layer, CR gloves). For large field crops, cancer risks are greater than 1×10^{-5} and therefore not acceptable at current label mitigation (closed transfer; open cab and respirator or closed cab when handling more than 110 kg a.i./day; single layer, CR gloves). Cancer risks are acceptable for large field crops if custom applicators only use closed cabs, wear coveralls over single layer during application and limit the amount of blended liquid fertilizer applied per person per day. This limit is 260 kg a.i./day, which is equivalent to 180 ha/day or 20 582 L of blended fertilizer per day (722 L ethalfluralin product + 19 860 L fertilizer) at the maximum rate of 1.44 kg a.i./ha.

2.0 Health incident reports

As of 8 October 2025, three human incidents involving ethalfluralin were submitted to Health Canada.

In one human major incident that occurred in the U.S., there was insufficient information on the reported circumstances of ethalfluralin exposure. The incident also involved several additional unidentifiable products. In the remaining human incidents that were considered to be related to the reported ethalfluralin products, the exposure scenarios involved exposure to spray drift from an application site and accidental ocular exposure to the product. The reported symptoms were minor or moderate in severity and included effects such as eye irritation, skin irritation, and chemical taste in mouth.

No consistent exposure or adverse effects patterns were noted following the review of ethalfluralin incidents due to limited number of incidents. As such, no health issues relating to the aspect of concern were identified. Therefore, no additional mitigation measures are being proposed based on the incident report review.

List of abbreviations

µg	micrograms
ADD	absorbed daily dose
AHETF	Agricultural Handler Exposure Task Force
a.i.	active ingredient
ATPD	area treated per day
bw	body weight
CF	conversion factor
CR	chemical-resistant
g	gram(s)
h	hour
ha	hectare
kg	kilogram(s)
L	litre(s)
LADD	lifetime average daily dose
Max	maximum
mg	milligram(s)
PCPA	<i>Pest Control Product Act</i>
PHED	Pesticide Handler Exposure Database
PMRA	Pest Management Regulatory Agency
PPE	personal protective equipment
PRVD	Proposed re-evaluation decision
RfD	Reference Dose
RVD	Re-evaluation decision

Appendix I Registered products containing ethalfluralin in Canada intended for blending with fertilizers¹

Table 1 Products containing ethalfluralin subject to proposed label amendments

Registration number	Marketing class	Registrant	Product name	Formulation type	Active ingredient (g/L)
21012	Manufacturing Concentrate	Gowan Company, L.L.C.	Ethalfluralin Manufacturing Concentrate	EC – Emulsifiable Concentrate or Emulsion	360
34685	Manufacturing Concentrate	Rath Holdco Inc.	RHI Ethalfluralin 360 Manufacturing Concentrate	EC – Emulsifiable Concentrate or Emulsion	360

¹ As of 4 June 2026, excluding discontinued products or products with a submission for discontinuation.

Appendix II Toxicology reference values for health risk assessment

Table 1 Toxicology reference values for use in health risk assessment for ethalfluralin¹

Exposure scenario	Reference dose (RfD)	Point of departure and endpoint	CAF or target MOE ²
Cancer risk assessment	Cancer Quotient (q_1^*) = 8.9×10^{-2} (mg/kg bw/day) ⁻¹ from a rat 2-year chronic/carcinogenicity study, based on increased mammary gland fibroadenomas and combined adenomas/fibroadenomas in rats		

¹ Unchanged from the re-evaluation of ethalfluralin (PRVD2011-16/RVD2012-09).

² CAF (Composite assessment factor) refers to the total uncertainty and PCPA factors for dietary and residential risk assessment; MOE refers to the target margin of exposure for occupational assessment.

Appendix III Occupational exposure and risk assessment

Table 1 Cancer risk assessment for commercial facilities blending ethalfluralin with dry fertilizer

Activity	Amount handled (kg a.i./day) 1	Unit exposures 2 (µg/kg a.i.)		Absorbed daily dose (ADD) 3 (µg/kg bw/day)	Exposure days/year	LADD 4 (µg/kg bw/day)	Cancer risk 5
		Dermal	Inhalation				
Using Krolski 2010 (Canola) – Coveralls + Single Layer + CR Gloves 6							
Treater (closed mix/load)	216	53.5	1.12	39.1	10	0.550	5 E-05*
Workers handling treated fertilizer 7	216	7.33	1.5	9.00	10	0.126	1 E-05
Using Purdy and Houghton 2000 (Canola) – CR Coveralls + Single Layer + CR Gloves							
Treater (closed mix/load)	216	7.36	0.27	5.70	10	0.0800	7 E-06
Activity	Time spent cleaning 1	Unit exposures (µg/h) 2		Absorbed daily dose (ADD) 3 (µg/kg bw/day)	Exposure days/year	LADD 4 (µg/kg bw/day)	Cancer risk 5
Using Krolski 2010 (Canola) – Coveralls + Single Layer + CR Gloves 6							
Cleaning	8 h	1204	211	6.40	10	0.090	8 E-06

* Cells indicate where cancer risks are greater than 1×10^{-5} .

PPE = personal protective equipment; Single layer = long-sleeved shirt, long pants; CR = chemical-resistant; MOE = margin of exposure; kg = kilogram; a.i. = active ingredient; h = hour; CF = conversion factor.

¹ Amount of active ingredient handled per day (600 L product, 216 kg a.i.) or hours spent cleaning in a typical day.

² Unit exposures from the specified canola seed treatment study (Krolski: PMRA No. 2313618; Purdy and Houghton: PMRA No. 2313617). Representative of a closed mix/load transfer system. Cleaner unit exposures were determined by normalizing by time spent cleaning in the seed treatment studies (~8 hours per day) rather than the study application rate, which is specific to seed treatment.

³ Absorbed daily dose (ADD) was calculated using the following equation: Exposure (µg/kg/day) × CF (1 mg ÷ 1000 µg). Exposure (µg/kg bw/day) = [(dermal unit exposure (µg/kg a.i. or µg/hr) × dermal absorption of 25%) + inhalation unit exposure (µg/kg a.i. or µg/hr)] × Amount Handled per Day (kg a.i./day) or Time Spent Cleaning (hr) ÷ body weight (80 kg).

⁴ Lifetime average daily dose (LADD) = ADD × Exposure Days/Year × Working Duration/(365 days/year × 78 years). Working duration = 40 years.

⁵ Cancer Risk = LADD × q₁^{*}. A q₁^{*} value of 8.9×10^{-2} (mg/kg bw/day)⁻¹ was considered appropriate to use in the cancer risk assessment. Cancer risks in the range of 1×10^{-5} were considered to be acceptable.

⁶ Minimum level of PPE currently required on product labels (coveralls over single layer, CR gloves during blending and repair activities).

⁷ The seed treatment bagger, sewer, stacker activity was used to address potential activities in commercial facilities where treated fertilizer is handled.

Table 2 Cancer risk assessment for loading and application of liquid blended fertilizer by custom applicators

Scenario		Application rate ¹ (kg a.i./ha)	Area treated/ day (ha) ²	Absorbed daily dose (ADD) ³ (mg/kg bw/day)	Exposure days/year	LADD ⁴ (µg/kg bw/day)	Cancer risk ⁵
Eastern Canada							
Loading: Closed with Single Layer + CR Gloves. Application: Single layer + CR gloves ⁶							
Small field crops	Open cab	1.08 (max)	12	2.07	10	0.0291	3 E-06
Large field crops	Closed cab		240	24.9	10	0.349	3 E-05*
Loading: Closed with Coveralls + Single Layer + CR Gloves. Application: Coveralls + Single layer + CR gloves ⁶							
Large field crops	Closed cab	1.08 (max)	240	11.9	10	0.168	1 E-05
Western Canada							
Loading: Closed with Single Layer + CR Gloves. Application: Single layer + CR gloves ⁶							
Small field crops	Open cab	1.44 (max)	12	2.76	10	0.0388	4 E-06
Large field crops	Closed cab		240	33.1	10	0.466	4 E-05*
Loading: Closed with Coveralls + Single Layer + CR Gloves. Application: Coveralls + Single layer + CR gloves							
Large field crops	Closed cab	1.44 (max)	240	15.9	10	0.223	2 E-05*
		260 kg a.i./day		12.0	10	0.168	1 E-05

* Cells indicate where cancer risks are greater than 1×10^{-5} .

PPE = personal protective equipment; Single layer = long-sleeved shirt, long pants; CR = chemical resistant; MOE = margin of exposure; kg = kilogram; a.i. = active ingredient; ha = hectares; max = maximum; large field crops = canola, beans, peas, soybean, mustard, alfalfa, lentils. All other crops were considered to be small field crops.

¹ Maximum label application rates for Eastern and Western Canada.

² The standard values for custom pesticide applicators to small and large field crops for cancer assessments were used.

³ Absorbed daily dose (ADD) was calculated using the following equation: Exposure (µg/kg/day) × CF (1 mg ÷ 1000 µg). Exposure (µg/kg bw/day) = [(dermal unit exposure (µg/kg a.i. or µg/hr) × dermal absorption of 25%) + inhalation unit exposure (µg/kg a.i. or µg/hr)] × application rate (kg a.i./ha) × Area Treated per Day (ATPD) (ha) ÷ body weight (80 kg).

⁴ Lifetime average daily dose (LADD) = ADD × Exposure Days/Year × Working Duration/(365 days/year × 78 years). Working duration = 40 years.

⁵ Cancer Risk = LADD × q₁*. A q₁* value of 8.9×10^{-2} (mg/kg bw/day)⁻¹ was considered appropriate to use in the cancer risk assessment. Cancer risks in the range of 1×10^{-5} were considered to be acceptable.

⁶ Minimum level of PPE currently required on product labels: Closed loading. When handling more than 110 kg a.i./day, a closed cab or a respirator with an open cab is required. PPE to be worn during loading and application was not specified on the label. Single layer PPE was assumed for loaders and applicators. A closed cab or respirator is not required for small field crops as they would handle less than 110 kg a.i./day.

Appendix IV Proposed label amendments for ethalfluralin products intended for blending with fertilizers

1.0 Label amendments relating to the health risk assessment

A Container label

Under PRECAUTIONS:

- **Replace:**
“Wear coveralls over a long-sleeved shirt and long pants, chemical resistant gloves and protective eyewear during blending and repair activities, plus a respirator with a NIOSH/MSHA/BHSE approved organic-vapour-removing cartridge with a prefilter approved for pesticides or a NIOSH/MSHA/BHSE approved canister approved for pesticides while loading (unless a closed transfer system is used for loading). In addition, when handling more than 110 kg ai/day (76 ha at the maximum rate of 1.44 kg ai/ha) wear a respirator as specified above when applying or use a closed cab while applying.”
With:
“Follow the personal protective equipment and restriction requirements for the appropriate worker scenario as described in the booklet entitled ‘Manufacturing Instructions for Blending Plant Operators’ or ‘Directions for Use for Custom Applicators’.”
- **Remove:** “Personal protective equipment as outlined above is required for the first soil incorporation.”
- **Remove:** “DO NOT enter treated areas for 12 hours following the first soil incorporation.”

B Blending booklet label

Under PRECAUTIONS:

- **Remove** “Personal protective equipment as outlined above is required for the first soil incorporation.”
- **Remove:** “DO NOT enter treated areas for 12 hours following the first soil incorporation.”
- **Add:** “Apply only in a way that this product will not contact workers or other persons, either directly or through drift. Only workers wearing personal protective equipment may be in the areas where loading and mixing/blending are occurring.”
- **Add:** “Note: As specified in the applicator booklet, there is a limit on the amount of liquid blended fertilizer that can be handled by applicators (260 kg a.i. per person per day, which is 180 ha/day or 20 580 L of blended fertilizer treated at the max rate of 1.44 kg a.i./ha). Blended liquid fertilizer must contain less than 260 kg ethalfluralin if it is to be applied to the field by a single applicator in a day.”
- **Replace:**
“Wear coveralls over a long-sleeved shirt and long pants, chemical resistant gloves and protective eyewear during blending and repair activities, plus a respirator with a NIOSH/MSHA/BHSE approved organic-vapour-removing cartridge with a prefilter

approved for pesticides or a NIOSH/MSHA/BHSE approved canister approved for pesticides while loading (unless a closed transfer system is used for loading). In addition, when handling more than 110 kg a.i./day (76 ha at the maximum rate of 1.44 kg a.i./ha) wear a respirator as specified above when applying or use a closed cab while applying.”

With:

“Follow the personal protective equipment and engineering controls for the appropriate task and application scenario. These restrictions are required to minimize exposure to the worker.”

Tasks	PPE/Engineering controls
Dry fertilizer: loading pesticide, mixing/blending fertilizer, and equipment repair	Chemical-resistant coveralls over a long-sleeved shirt, long pants, chemical-resistant gloves, socks, chemical-resistant footwear and protective eyewear (goggles or face shield). A closed loading/transfer ¹ system for the pesticide and a closed fertilizer mixing/blending system MUST be used.
Liquid fertilizer: loading pesticide, mixing/blending fertilizer, and equipment repair	Coveralls over a long-sleeved shirt, long pants, chemical-resistant gloves, socks, chemical-resistant footwear and protective eyewear (goggles or face shield). A closed loading/transfer ¹ system for the pesticide and a closed fertilizer mixing/blending system MUST be used.
Handling blended fertilizer, transferring blended fertilizer to application equipment and clean-up	Coveralls over a long-sleeved shirt, long pants, chemical-resistant gloves, socks, chemical-resistant footwear and protective eyewear (goggles or face shield). Ethalfluralin-blended fertilizer MUST be transferred using a closed system to applicator equipment in the field.

¹ A closed loading/transfer system removes the pesticide from its original container, rinses, mixes, dilutes, and transfers the pesticide through connecting hoses and couplings that prevent exposure to the pesticide.

Under DIRECTIONS FOR USE:

- **Remove** “[Product] must be uniformly applied to bulk fertilizers using a closed system.”

C Applicator and Grower Booklet Label

Under PRECAUTIONS:

- **Remove:**
“Personal protective equipment as outlined above is required for the first soil incorporation.”
- **Add:** “Apply only when the potential for drift beyond the area to be treated is minimal. Take into consideration wind speed, wind direction, temperature inversions, application equipment, and sprayer settings.”
- **Replace:**
“Wear coveralls over a long-sleeved shirt and long pants, chemical resistant gloves and protective eyewear during blending and repair activities, plus a respirator with a NIOSH/MSHA/BHSE approved organic-vapour-removing cartridge with a prefilter approved for pesticides or a NIOSH/MSHA/BHSE approved canister approved for

pesticides while loading (unless a closed transfer system is used for loading). In addition, when handling more than 110 kg a.i./day (76 ha at the maximum rate of 1.44 kg a.i./ha) wear a respirator as specified above when applying or use a closed cab while applying.”

With:

“Follow the personal protective equipment, engineering controls and restriction requirements for the appropriate task and application scenario. These restrictions are required to minimize exposure to the worker.”

Tasks	PPE/Engineering controls	Restricted amount applied per day per person ¹
Transfer ²	Use a closed system only. Coveralls over a long-sleeved shirt, long pants, chemical-resistant gloves, socks and chemical-resistant footwear, and protective eyewear (goggles or face shield).	Not applicable
Application, first soil incorporation, clean-up and repair		
Open Cab	Coveralls over a long-sleeved shirt, long pants, chemical-resistant gloves, socks and chemical-resistant footwear.	110 kg a.i. ⁴
Closed Cab ³	Long-sleeved shirt, long pants, chemical-resistant gloves, socks and shoes. Gloves are not required during application/incorporation within a closed cab.	
Closed Cab ³	Coveralls over a long-sleeved shirt, long pants, chemical-resistant gloves, socks and chemical-resistant footwear. Gloves are not required during application/incorporation within a closed cab.	260 kg a.i. ⁵

¹ Application may need to be performed over multiple days or using multiple applicators.

² Transfer includes transferring blended fertilizer to application equipment. Ethalfluralin-blended fertilizer MUST be transferred using a closed system to applicator equipment in the field.

³ A closed cab MUST provide both a physical barrier and respiratory protection (such as dust/mist filtering and/or vapour/gas purification system).

⁴ 76 ha/day at the maximum rate of 1.44 kg a.i./ha

⁵ 180 ha/day at the maximum rate of 1.44 kg a.i./ha

2.0 Re-classification of Ethalfluralin Products Intended for Blending with Fertilizers

- In order to accurately reflect the nature of their use, it is proposed that registered ethalfluralin products intended for blending with fertilizers be re-classified from manufacturing concentrate products to commercial-class end use products. This applies to the currently registered manufacturing concentrate products containing ethalfluralin, Reg. No. 21012 and 34685.

References

Information Considered in the Toxicological Assessment

Published Information

Document Number	Reference
2167566	PMRA, 2011. Proposed Re-evaluation Decision Document PRVD2011-16: Ethalfluralin.
3464754	PMRA, 2012. Re-evaluation Decision Document 2012-09: Ethalfluralin.

List of Studies/Information Submitted by Registrant

Document Number	Reference
1239845, 3648583	1982, Percutaneous Absorption Of 14C-Ethalfluralin (EL-161, Compound 94961) in Monkeys, DACO: 5.8

Information Considered in the Occupational Assessment

List of Task Force Studies/Information

Document Number	Reference
2572745	2015, Agricultural Handler Exposure Scenario Monograph: Open Pour Mixing and Loading of Liquid Formulations, DACO: 5.3,5.4
1913109	2009, Agricultural Handler Exposure Scenario Monograph: Open Cab Groundboom Application of Liquid Sprays, DACO: 5.3,5.4
1885209, 2313618	2013, Observational Study to Determine Dermal and Inhalation Exposure To Workers in Commercial Seed Treatment Facilities: Mixing/Treating with a Liquid Pesticide Product and Equipment Clean-out, DACO: 5.3,5.4
1349637, 2313617	2013, Commercial Seed Treatment Plant Worker Exposure Study with Helix 289FS Seed Treatment on Canola, DACO: 5.3,5.4