



## Evaluation Report for Category B, Subcategory 2.6 Application

**Application Number:** 2011-4157  
**Application:** New combination of technical grade active ingredients  
**Product:** Enforcer M Herbicide  
**Registration Number:** 30691  
**Active ingredients (a.i.):** Bromoxynil, Fluroxypyr and MCPA  
**PMRA Document Number :** 2142908

### Purpose of Application

The purpose of this application was to register an end-use product, Enforcer M Herbicide, with a new combination of technical grade active ingredients (guarantee: 80 g a.i./L fluroxypyr, present as 1-methylheptyl ester, 200 g a.i./L bromoxynil, present as octanoate ester, and 200 g a.i./L MCPA, present as esters) for use in the prairie provinces and the Peace River region of British Columbia, as a selective postemergent herbicide to control annual and perennial broadleaf weeds in wheat (spring, durum and winter) and barley.

### Chemistry Assessment

Enforcer M Herbicide is formulated as an emulsifiable concentrate containing fluroxypyr, present as 1-methylheptyl ester, at a nominal concentration of 80 g/L, MCPA, present as 2-ethylhexyl ester, at a nominal concentration of 200 g/L and bromoxynil, present as octanoate ester, at a nominal concentration of 200 g/L. This end-use product has a density of 1.135 g/mL and pH of 4.2. The chemistry requirements for Enforcer M Herbicide are complete.

### Health Assessments

Enforcer M is of moderate toxicity to rats via the oral ( $LD_{50} = 550$  mg/kg bw) route, and of low toxicity via the dermal ( $LD_{50} > 5000$  mg/kg), and inhalation routes ( $LC_{50} > 2.10$  mg/L). It is mildly irritating to the eye and moderate irritating to the skin of rabbits. It is a dermal sensitizer in guinea pigs.

Exposure by mixing, loading and applying Enforcer M herbicide to wheat (spring, winter and durum) and barley was estimated using PHED Version 1.1. Risk estimates calculated for handlers wearing long sleeves, long pants, eye protection and gloves are not of concern.

There is potential for post-application exposure to workers re-entering treated wheat and barley fields. Risk estimates for workers re-entering treated fields were calculated using default assumptions for dislodgeable foliar residues and dissipation. Risk estimates for workers re-entering treated wheat and barley fields on the day of application are acceptable after a 24 hour period has passed.

No new residue data were submitted to support the registration of the end-use product Enforcer M Herbicide, a formulation containing the registered active ingredients fluroxypyr, bromoxynil and MCPA for use on wheat (spring, durum and winter) and barley. The application rates for each active ingredient are within the currently registered label rates. All other aspects of the use pattern remain the same. The disposition, translocation and magnitude of the residues of each active ingredient are not expected to change when they are co-formulated. Therefore, the dietary risk is not expected to increase and the formulation will not pose an unacceptable risk to any segment of the population, including infants, children, adults and seniors.

### **Environmental Assessment**

No new environmental data were required for the registration of Enforcer M Herbicide. All three active ingredients in the formulated product have full registration status and the risks to the environment for each active ingredient have been previously assessed at the use rates. Enforcer M Herbicide may pose a risk to aquatic organisms and non-target terrestrial plants. However, the required environmental mitigation statements on the product label are sufficient to mitigate the identified risks from the use of this herbicide.

### **Value Assessment**

Data from seven field trials conducted in Alberta, Saskatchewan, and Manitoba in two years were submitted for review. Efficacy and crop safety were reported for Enforcer M Herbicide applied alone at 0.625 L/ha (equivalent to 50 g a.i./ha fluroxypyr, 125 g a.i./ha bromoxynil, and 125 g a.i./ha MCPA Ester) and 1.25 L/ha (equivalent to 100 g a.i./ha fluroxypyr, 250 g a.i./ha bromoxynil, and 250 g a.i./ha MCPA Ester) or applied at the rate of 1.25 L/ha in tank mix with Axial 100EC (Registration number 28642), Cordon (Registration number 29494), Everest Solupak 70DF (Registration number 26448), Nufarm Clodinafop (Registration number 29962), or Achieve Liquid Herbicide (Registration number 27011) at the respective labeled rate in those trials. Mextrol 450 Liquid Herbicide (Registration number 26999) and Trophy Herbicide Tank Mix were included as commercial standard treatments for comparison purposes of efficacy and crop tolerance.

The efficacy of Enforcer M Herbicide for control of volunteer canola, kochia, lamb's-quarters, wild mustard, wild buckwheat, redroot pigweed, and chickweed was evaluated on three or four occasions during the growing season. The submitted data supported efficacy claims for control of kochia, lamb's-quarters, and wild mustard and suppression of wild buckwheat at the rate of 0.625 L/ha and for control of cleavers, chickweed, and wild buckwheat and suppression of redroot pigweed at the rate of 1.25 L/ha. Data from those trials also demonstrated that the level of control of each of these weed species with Enforcer M Herbicide was not compromised when it is applied in tank mix with a graminicide for additional grassy weed control, e.g. Achieve Liquid Herbicide, Cordon, Everest Solupak 70DF, or Nufarm Clodinafop at the respective labeled rate.

Tolerance ratings to two spring wheat varieties in two trials, three barley varieties in four trials, and one durum wheat variety in one trial was reported three times for the same treatments at the same rates as indicated above. Crop injury following the application of those treatments was minor at the early season ratings and not detectable in the late season rating and comparable to

that of the commercial standard treatments of Mextrol 450 Herbicide and Trophy Herbicide Tank Mix. Yield data confirmed that spring wheat, durum wheat, and barley exhibited an adequate margin of crop safety to Enforcer M Herbicide when applied in accordance with the label.

Crop safety to Enforcer M Herbicide Herbicide was further supported since Trophy Herbicide Tank Mix (at rates up to 108 g a.i./ha fluroxypyr and 560 g a.i./ha MCPA Ester), and Mextrol 450 Herbicide (at rates up to 281 g a.i./ha bromoxynil and 281 g a.i./ha MCPA Ester) are registered for use in spring wheat, durum wheat, winter wheat, and barley.

Rotational crop tolerance claims for Trophy Herbicide Tank Mix were extrapolated to Enforcer M Herbicide because the maximum registered rate of Trophy Herbicide Tank Mix includes the soil residual herbicide component fluroxypyr that is applied at a higher rate than with Enforcer M Herbicide.

Based on the evidence made available, the registration of Enforcer M Herbicide for post-emergent control of broadleaf weeds on spring wheat, durum wheat, winter wheat, and barley was supported from a value standpoint.

## **Conclusion**

The PMRA has completed an assessment of the available information and found that there is sufficient information to support the registration of Enforcer M Herbicide for use in the prairie provinces and the Peace River region of British Columbia, for control of annual and perennial broadleaf weeds in wheat (spring, durum and winter) and barley.

## **References**

### **PMRA**

#### **Document**

<b>Number</b>	<b>Reference</b>
2099525	2011, Product Identification and Selected Chemical and Physical Properties, DACO: 3.1.1,3.1.2,3.1.3,3.1.4,3.5.12,3.5.13,3.5.15,3.5.4,3.5.5 CBI
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2099533	2008, Acute Dermal Toxicity, DACO: 4.6.2
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2099510	2011, A rationale based on trial data to support of NUP 08002 (bromoxynil / fluroxypyr / MCPA4-D Ester) for broadleaf weed control in wheat and barley crops. Prepared by Nufarm Agriculture Inc. DACO 2.3.3 and 10.3.2

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