

## Evaluation Report for Category B, Subcategory B.2.6 Application

**Application Number:** 2011-6164  
**Application:** New Product Chemistry; New Combination of Technical Grade Active Ingredients  
**Product:** Boundary NS F "Herbicide  
**Registration Number:** 30812  
**Active ingredients (a.i.):** s-metolachlor and r-enantiomer (AME) and metribuzin (BAX)  
**PMRA Document Number :** 2211691

### Background

The active ingredients, s-metolachlor/r-enantiomer and metribuzin, are currently fully registered for use on soybeans, potatoes and tomatoes with Dual Magnum Herbicide (registration number 25728) and Sencor 75DF Herbicide (registration number 17242), respectively. These active ingredients are also available as a co-pack containing Dual Magnum Soybean Herbicide (registration number 27363) and Sencor DF Soybean Herbicide (registration number 27362) for use on soybeans in Eastern Canada.

### Purpose of Application

The purpose of this application was to register a new end use product, Boundary NS F "Herbicide, containing s-metolachlor and r-enantiomer, and metribuzin, for use in Eastern Canada on soybean (pre-plant surface, pre-emergence, or pre-plant incorporated), potato (pre-emergence) and transplanted tomatoes grown for processing (pre-plant incorporated) to control of annual and broadleaf weeds. The option to tank mix Boundary NS F "Herbicide with glyphosate for pre-plant surface or pre-emergence application for broad spectrum weed control was also requested.

### Chemistry Assessment

Boundary NS F "Herbicide is formulated as an emulsifiable concentrate containing s-metolachlor and r-enantiomer, and metribuzin at nominal concentrations of 628 g/L and 149 g/L, respectively. This end-use product has a density of 1.08 g/mL and a pH of 4.2. The chemistry requirements for Boundary NS F "Herbicide have been completed.

### Health Assessments

Boundary NS F "Herbicide is slightly toxic to rats via the oral ( $LD_{50\text{♀}} = 1805 \text{ mg/kg}$ ) and of low toxicity via the dermal ( $LD_{50\text{♂♀}} > 5000 \text{ mg/kg}$ ), and inhalation routes ( $LC_{50\text{♂♀}} > 2.53 \text{ mg/L}$ ). It is mildly irritating to the eye and skin of rabbits. It is not a dermal sensitizer in guinea pigs.

Boundary NS F "Herbicide, for use on soybeans, potatoes and transplanted tomatoes grown for processing to control annual and broadleaf weeds fits within the registered use pattern for s-metolachlor and r-enantiomer and metribuzin. The potential exposure for mixers, loaders,

applicators and postapplication re-entry workers is not expected to exceed the current exposure to registered products.

No new residue data were required to support the registration of the new end-use product Boundary NS F "Herbicide containing metribuzin and s-metolachlor and r-enantiomer since the active ingredients are currently registered for use on soybeans, potatoes and transplanted tomatoes in Canada with equal or higher application rates with all other aspects of the use pattern remaining the same. The use of Boundary NS F "Herbicide is not expected to increase the magnitude of metribuzin and s-metolachlor and r-enantiomer residues in/on the treated crops. Therefore, the registration of Boundary NS F "Herbicide will not increase the dietary exposure and will not pose an unacceptable risk to any segment of the population, including infants, children, adults and seniors.

### **Environmental Assessment**

The PMRA has determined that no additional environmental data are required to register the new end-use product, Boundary NS F "Herbicide, for the control of annual grasses and broadleaf weeds on soybeans, potatoes and transplanted tomatoes grown for processing. Label statements and buffer zones for Boundary NS F "Herbicide were updated according to current practice.

### **Value Assessment**

Data were submitted from 7 field trials conducted in Ontario in 2011 in which the efficacy of Boundary NS F "Herbicide applied pre-emergence in soybean (4 trials), pre-emergence in potato (2 trials) and pre-plant incorporated in transplanted tomatoes (1 trial) was evaluated for control of several labelled weeds. Crop tolerance data were also collected in each of these trials.

The data demonstrated that the efficacy of Boundary NS F "Herbicide is similar to that of Dual Magnum Herbicide for control of weeds listed on the Dual Magnum label. Boundary NS F "Herbicide can also be expected to result in the control of redroot pigweed.

The crop phytotoxicity and yield data indicate that a high margin of crop safety can be expected with application of Boundary NS F "Herbicide to each of the three crops when applied in accordance with the label.

The availability of Boundary NS F "Herbicide provides soybean, potato and tomato producers a one-pass soil-applied residual weed control option. The amount of metribuzin applied as Boundary NS F Herbicide is less than that which is applied in currently labelled metribuzin plus s-metolachlor tank mixtures in soybean, potato and tomato. This reduced rate of metribuzin, while affording control of redroot pigweed, can also be expected to reduce the potential crop injury risk for growers who have experienced 'metribuzin splash-up' injury from heavy rainfall on their crops in the past.

### **Conclusion**

The PMRA has completed an evaluation of the available information and the registration of Boundary NS F "Herbicide for use in Eastern Canada on soybean (pre plant-surface, pre plant

incorporated, pre-emergence), potato (pre-emergence), and tomato (pre plant incorporated) to control annual and broadleaf weeds has been approved. Additionally, the submitted information is adequate to support the pre-plant surface or pre-emergence use of a tank mixture of Boundary LQD Herbicide plus 850-900 g a.e./ha glyphosate (present as potassium salt, isopropylamine salt or di-ammonium salt) in soybean.

## References

### PMRA

#### Document

Number	Reference
2143334	BOUNDARY Herbicide Starting Materials, DACO: 3.2.1 CBI.
2143335	2011, BOUNDARY Herbicide - Description of Formulation Process, DACO: 3.2.2 CBI.
2143336	2011, BOUNDARY Herbicide - Certification of limits, DACO: 3.3.1 CBI.
2143337	2001, Analytical Method AF-1459/1, DACO: 3.4.1 CBI.
2143338	2001, Final report. Validation of Analytical Method AF-1459/1 for the determination of CGA-77102 and metribuzin in formulation A12831A, DACO: 3.4.1 CBI.
2143339	1999, Analytical final report. Validation of Analytical Method AF-1386/1 for the determination of CGA-77102 and metribuzin CGA-77102/metribuzin 7.8EC (A12081B), DACO: 3.4.1 CBI.
2143340	BOUNDARY Herbicide - Chemical and Physical Properties, DACO: 3.5.1,3.5.10,3.5.11,3.5.12,3.5.13,3.5.14,3.5.15,3.5.2,3.5.3,3.5.4,3.5.5,3.5.6,3.5.7,3.5.8,3.5.9 CBI.
2143341	2011, BOUNDARY Herbicide - Note to Reviewer, DACO: 3.7 CBI.
2126279	2011, Summary - Toxicology profile for Boundary Herbicide, DACO: 4.6.
2126281	2001, Acute oral toxicity study in rats - defined LD50, DACO: 4.6.1.
2126282	2001, Acute dermal toxicity study in rats - limit test, DACO: 4.6.2.
2126283	2001, Acute inhalation toxicity study in rats - limit test, DACO: 4.6.3.
2126284	2001, Primary eye irritation study in rabbits, DACO: 4.6.4.
2126289	2001, Primary skin irritation study in rabbits, DACO: 4.6.5.
2126290	2001, Dermal sensitization study in guinea pigs (Buehler Method), DACO: 4.6.6.
2143397	2011, Weed control and potato tolerance to new Boundary formulation (A12831A) and Reflex applied PRE. Trial ID PO11T1, DACO: 10.2.3.3,10.3.2.
2143398	2011, Boundary (A12831A) and Reflex for weed control in potato applied PRE. Trial ID 11UGSOL01b, DACO: 10.2.3.3,10.3.2.
2143399	2011, Bridge A12831A 777EC(S-metolachlor/metribuzin pre-mixture) to DUAL MAGNUM 915EC demonstrating improved AMARE control and also evaluate Syngenta soybean options versus competitors. Trial ID: H8542B-201-2011, DACO: 10.2.3.3,10.3.2.
2143400	2011, Bridge A12831A 777EC(S-metolachlor/metribuzin pre-mixture) to DUAL MAGNUM 915EC demonstrating improved AMARE control and also evaluate Syngenta soybean options versus competitors. Trial ID: H8542B-203-2011, DACO: 10.2.3.3,10.3.2.
2143402	2011, Bridge new Boundary 777EC(A12831A)(S-metolachlor/metribuzin pre-mixture) to DUAL MAGNUM 915EC demonstrating improved AMARE control and also evaluate Syngenta soybean options versus competitors. Trial ID: H8542B-204-2011, DACO: 10.2.3.3, 10.3.2.

- 2143403 2011, Bridge A12831A 777EC(S-metolachlor/metribuzin pre-mixture) to DUAL  
MAGNUM 915EC demonstrating improved AMARE control and also evaluate Syngenta  
soybean options versus competitors. Trial ID: H8542B-205-2011, DACO: 10.2.3.3,10.3.2.
- 2143404 2011, Weed control and transplanted tomato tolerance to new Boundary (A12831A)  
formulation and Reflex applied PPI. Trial ID TO11T5, DACO: 10.2.3.3,10.3.2.

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