

Registration Status of Products Containing Cyanazine

The purpose of this Regulatory Note is to outline the registration status of cyanazine-containing herbicide products in Canada. Information for cyanazine products was provided in previous Notes to CAPCO C87-07, *Cyanazine (Bladex, Blagal)*, and C88-09, *Cyanazine (Bladex) Liquid Formulations*, and is summarized in Part 1.0 of this document.

Effective in the 1997 use season, the registrants of cyanazine products will voluntarily amend product labels to limit the maximum application rate of cyanazine to 2.7 kilograms active ingredient per hectare (kg a.i./ha). In response to the voluntary discontinuation of cyanazine supply, the registrants have agreed that they will apply to discontinue the registrations of cyanazine products by December 31, 2000. Cyanazine products will be permitted for sale at the distributor and retail level until December 31, 2002 to allow the depletion of market inventories. These actions are consistent with those announced by the United States Environmental Protection Agency (US EPA).

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1.0 Background

Cyanazine end-use products were first registered in Canada in 1970. Prior to December 31, 1995, technical cyanazine, a manufacturing-use product and six end-use products containing cyanazine alone (including liquid, wettable powder and dry flowable formulations) were registered by DuPont Canada Inc. Three cyanazine plus atrazine preformulated products (including liquid, wettable powder and dry flowable formulations) were each registered by DuPont Canada Inc. and Ciba-Geigy Canada Ltd. Two preformulated products containing cyanazine plus MCPA potassium salt were registered by DuPont Canada Inc.

Health Canada commenced in 1986 a review of teratology and worker exposure studies submitted to support cyanazine. This review concluded that, while cyanazine should be regarded as a potential teratogen, the dermal exposure study indicated an adequate margin of safety with the liquid formulation when protective clothing was utilized. Based on this review, amendments of product labels were made. These included the use of full protective clothing and chemical-resistant gloves during all product handling, cleanup and repair of equipment, washing of gloves prior to removal, use of a chemical-resistant apron during mixing and loading (liquid formulations), and washing of contaminated clothing separately from household laundry.

In November 1994 the US EPA initiated a Special Review of cyanazine, simazine and atrazine (triazines) based on the possibility that these pesticides may pose a risk of cancer from long-term exposure in food and drinking water. On August 2, 1995 the US EPA announced that it had reached an agreement with DuPont Agricultural Products to phase out production of cyanazine over a four-year period. DuPont Agricultural Products voluntarily agreed to cancel all products in the United States effective December 31, 1999, with all use ceasing effective December 31, 2002. This agreement also included significant use rate reductions to be phased in over the period 1997-1999 from 6.5 lbs/acre (7.28 kg a.i./ha) to 1 lb/acre (1.12 kg a.i./ha) and limitation to closed cab application equipment commencing in the 1998 use season.

2.0 Current Cyanazine Use Patterns in Canada

The major use of cyanazine in Canada is for annual broadleaf and grass weed control in corn (field and sweet) grown in Eastern Canada. Cyanazine can be applied preplant incorporated (PPI) in combination with atrazine (preformulated mixtures or tank mixtures), metolachlor or butylate/safener at rates ranging from 1.8 to 2.7 kg a.i./ha, depending on soil type and tank mix partner. Applied pre-emergence (PRE) cyanazine can be applied alone at rates of 1.575 kg a.i./ha on sandy soils and up to 4.56 kg a.i./ha for clay loam soil type. Tank mixtures with atrazine (also preformulated mixtures), metolachlor, dicamba or pendimethalin are registered for PRE application at rates ranging from 1.80 to 2.25 kg a.i./ha, depending on the tank mix partner and soil type. Early post-emergence (EPOST) application of cyanazine alone is registered at 2.25 kg a.i./ha for all soil types, and at 1.80-2.25 kg a.i./ha when in tank mixture with atrazine (also preformulated mixtures), metolachlor, dicamba or pendimethalin.

In the Prairie provinces, cyanazine is registered for annual broadleaf and grass control in corn (field and sweet) applied PPI at 2.025-2.475 kg a.i./ha in tank mixtures and at 2.25-2.70 kg a.i./ha applied PRE alone or at 1.80-2.25 kg a.i./ha in tank mixture or EPOST alone at 2.25 kg a.i./ha.

Cyanazine is registered for post-emergence broadleaf weed control in Eastern Canada and in the Prairie provinces on triazine-tolerant canola (TTC) varieties at a rate of 1.44 kg a.i./ha. Post-emergence application was registered for use on spring wheat and barley, oats and mixed grain at a rate of 281 g a.i./ha as preformulated mixtures with MCPA potassium salt. Cyanazine products with label uses on cereal crops were voluntarily discontinued at the end of 1995.

3.0 Alternative Registered Herbicides to Cyanazine

Numerous alternative herbicides are registered for broadleaf and/or annual grass control applied as PPI, PRE or EPOST treatments in field corn grown in Eastern Canada. Products containing the alternative triazines, atrazine, simazine and metribuzin, are registered for use in field corn. Non-triazine alternative active ingredients are butylate/safener, vernolate, pyridate, EPTC/safener, metolachlor, dimethenamid, pendimethalin, bromoxynil, bentazon, linuron, dicamba, MCPA amine, 2,4-D (amine, ester), 2,4-DB, MCPB (in formulation with MCPA), mecoprop (in formulation with 2,4-D/dicamba), rimsulfuron and rimsulfuron/nicosulfuron.

Some products contraindicate application on sweet corn, limiting available weed control options in this crop. Label contraindications of application on sweet corn are found on products containing metribuzin, dimethenamid, pendimethalin, dicamba, rimsulfuron and rimsulfuron/nicosulfuron. Directions for application on field corn only are indicated on 2,4-DB and MCPB/MCPA product labels.

Available options to cyanazine for use in corn grown in Western Canada are also more limited as certain herbicides are registered for use only in Eastern Canada or contraindicate use in the Prairie provinces. Herbicides with these restrictions include those containing metribuzin, dimethenamid, pendimethalin, rimsulfuron or rimsulfuron/nicosulfuron.

Significant herbicide alternatives from a wide range of chemical families are available as alternatives for broadleaf weed control in cereal crops. The discontinuation of cyanazine is expected to have minimal impact on cereal weed management strategies.

Atrazine is registered for use in TTC grown in Eastern Canada; however, no triazine alternative would be available to replace cyanazine in the Prairie provinces. Area planted to TTC has significantly declined in recent years because of the lower yield potential of these varieties and the registration of selective herbicides for use in non-triazine tolerant canola. With the introduction of new alternative canola varieties tolerant to other herbicides, the area of TTC production is anticipated to further decline. When cyanazine is discontinued, the lack of an alternative product for use on TTC in the Prairie provinces is expected to have minimal consequences.

4.0 Changes in Canadian Use Patterns and Registration Status

4.1 Reduction in Maximum Use Rate

As a precautionary measure to reduce operator exposure to cyanazine, DuPont Canada Inc. will voluntarily reduce the maximum label use rate of cyanazine from 4.56 kg a.i./ha to 2.7 kg a.i./ha. This action will reduce the currently registered maximum application rate of cyanazine applied alone PRE on loam soils and delete the use of cyanazine applied alone PRE on silt and clay loam soils. This reduced maximum application rate will be on product labels for the 1997 use season.

All other cyanazine uses including tank mixtures in corn, preformulated mixtures with atrazine for use in corn, and application on triazine-tolerant canola or cereals are registered at application rates at or below 2.7 kg a.i./ha and will not require label amendment.

In the interim period, the reduction in the maximum label use rate of cyanazine is not anticipated to have a negative impact on corn production practices. The use of the current higher label rates of cyanazine applied alone is perceived to be low and, typically, tank mixes with a graminicide partner or atrazine are used. Application rates of cyanazine in tank mixtures are at or below the 2.7 kg a.i./ha rate.

4.2 Schedule for Discontinuation of Cyanazine Products

In response to the announced voluntary discontinuation of cyanazine production by DuPont Agricultural Products, the registrants of cyanazine products in Canada have agreed to a schedule for discontinuation of cyanazine end-use products in Canada. This schedule has been established to allow growers sufficient opportunity to adopt alternative weed control strategies over the next seven-year period to minimize the impact on agricultural production when cyanazine is no longer available in the market.

Ten cyanazine end-use products were voluntarily discontinued by the registrants as of December 31, 1995. The four end-use products Bladex Liquid Agricultural Herbicide (Reg. No. 17901), Dupont Bladex 90 DF Agricultural Herbicide (Reg. No. 19159), Extrazine II DF Herbicide (Reg. No. 21857) and Titan Herbicide (Reg. No. 23824), a manufacturing concentrate Cyanazine 500 SC (Reg. No. 21857) and Technical Cyanazine (Reg. No. 18489) will continue to be registered after this date.

The Pest Management Regulatory Agency, DuPont Canada Inc. and Ciba-Geigy Canada Ltd. have agreed that the registrations of remaining cyanazine products will be discontinued on December 31, 2000. Sale of cyanazine products by the registrants will not be permitted after this date. However, sale of product at the distributor or retail level will be permitted until December 31, 2002 to deplete inventories, after which time all sales of cyanazine products will not be permitted.