Donald Blouin

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À: d.blouin@cerfo.qc.ca
Objet: Concernant le glyphosate

229 **DA5**
Programme décennal d'épandage de phytocides par voie aérienne en milieu forestier sur des terrains privés de Smurfit-Stone inc. sur le territoire de La Tuque et de la MRC du Domaine-du-Roy
Mauricie **6211-13-011**

Bonjour M. Blouin,

Pour donner suite à notre conversation téléphonique de cet après-midi, j'ai effectué une recherche dans mes courriels et j'ai fait un coupé-collé de trois réponses traitant du glyphosate que j'ai envoyées au cours des deux dernières années qui pourraient peut-être vous servir comme point de départ.

Tel qu'indiqué lors de notre entretien, j'acheminerai vos questions concernant le glyphosate dès que je recevrai votre courriel.

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L'ARLA a quelques publications traitant du glyphosate

http://www.pmra-arla.gc.ca/francais/highlights/in20050511-f.html

http://www.pmra-arla.gc.ca/francais/pdf/rr/rr2005-01-f.pdf

Reviews of the available toxicity data/information for glyphosate indicated that glyphosate and its salts are practically non-toxic to mammals.

Toxicity testing of glyphosate has shown that it does not accumulate in the body, but is rapidly excreted. Developmental toxicity tests in rats and rabbits showed that glyphosate did not cause birth defects or malformations. A reproductive study conducted in rats over three generations showed that glyphosate did not cause any treatment-related effects on reproductive performance or offspring survival. There is no evidence that glyphosate and its salts might be endocrine disruptors in humans and wildlife, and there are no cancer concerns. The Vision product may cause eye irritation, but inhalation toxicity is not a concern.

At this time, there is no formal process under the current Pest Control Products Act for an individual to request that a specific scientific issue on a pesticide be investigated. The new legislation, however, will have provisions for the triggering of special reviews. In addition, any adverse effects of a pest control product may be reported through the Adverse Effect Reporting Program.

Mr. X's conclusion that effects on amphibians are not considered in the PMRA's environmental review of pesticides is not correct. While it is true that the PMRA does not have formal data requirements for acute, chronic and developmental (e.g., teratogenic) toxicity to amphibians (as with international regulatory agencies), these data have been and increasingly continue to be required for active ingredients and / or formulants and their transformation products, when a risk is suspected or has been identified. Otherwise, fish toxicity data are applied to amphibians, as explained in our response to Mr. X's initial enquiry.

The staff of the PMRA are concerned about amphibian toxicity. Several have been involved in the peer review and comment on draft OECD amphibian toxicity guidance documents. We are waiting for these guidelines to be finalized and officially adopted. We are aware of

amphibian toxicity guideline development activities underway in Environment Canada (EC), as well the research findings of our EC colleague, Bruce Pauli, co-author on three of the five laboratory research papers that were cited by Mr. X in his initial communication.

Historically, pesticide reviews have mainly focussed on the active ingredient and major transformation products. Over the last five or so years, however, PMRA's scrutiny of pesticide formulants has increased dramatically. When a pesticide product contains a potentially toxic ingredient or an ingredient with a known toxicological concern, such as nonylphenol ethoxylate, a known endocrine disrupting chemical, registrants are required to replace them with less toxic alternatives. In the case of new formulants, interim environmental data requirements were recently established and if potential environmental concerns are identified, this chemical is tested and reviewed in the same manner as the active ingredient. See the PMRA Regulatory Note REG2005-01 and Regulatory Directive DIR2004-01 for further details.

Over the last five years, the PMRA has also undertaken an ambitious re-evaluation program of active ingredients registered before 1995. Reports and studies from the scientific literature on toxicity and effects on amphibians are included in the re-evaluation review of these older actives and products when they are available. It is anticipated that the re-evaluation of glyphosate will be initiated within the next five years.

At the time of registration of the glyphosate forestry product, Vision, in 1987, toxicity data specific to amphibians were not considered by the Canadian regulatory authority and its scientific environmental advisors (Environment Canada and Fisheries and Oceans). This is also true for the agricultural glyphosate formulation, Roundup, which was first registered in 1976.

With respect to the glyphosate formulations, however, staff of the PMRA are familiar with the potential adverse effects to amphibians attributed to its formulants, notably polyoxyethylene amine (POEA), that have been investigated under laboratory conditions. They also know of and are concerned about the general decline of amphibian populations, which the scientific literature has attributed to a number of potential environmental factors, including exposure to pesticides.

In order to more fully respond to Mr. X's concerns, the scientific literature was searched for recent studies on the issue. Please note that the following discussion is intended to expand upon the points raised by Mr. X and should not be construed as a complete or comprehensive review of the ecotoxicity of glyphosate and its formulations.

In addition to the laboratory studies cited by Mr. X, i.e., (Howe et al, 2004) and (Mann and Bidwell, 1999), the following laboratory studies by Perkins et al. (2000), Howe et al. (2004) and Edginton et al. (2004) should also be taken into consideration. In summary, the results of all the studies indicate that glyphosate formulated with POEA is more toxic to amphibians than the technical active ingredient or other glyphosate products formulated without POEA. All of the studies discuss the importance of evaluating the toxicity of the formulants when evaluating the environmental effects of pesticides. In addition, there are studies that indicate that late larval stages of native amphibians are very sensitive to the effects of glyphosate formulated with POEA and that toxicity may be enhanced by simultaneous exposure to other stressors such as pH (Mann and Bidwell, 1999; Wojtaszek et al., 2004).

The results of laboratory studies are useful in identifying and predicting potential risks to the environment, but do not necessarily represent actual exposure and actual effects in the environment. For a toxic effect to be realized in the environment, the non-target organism must be exposed to the toxicant at concentrations high enough to elicit effects. To reiterate our previous response, POEA strongly adsorbs to soil and this is expected to restrict its mobility in the environment and exposure of non-target organisms. Both the US EPA and the WHO have concluded that there is minimal risk to the environment from the glyphosate formulations. In the published literature, the worst-case scenario calculated environmental exposure concentrations indicate that on an acute basis and a chronic basis no risk to amphibians is expected for both the Vision and the Roundup formulated products (Edginton et al. 2004; Giesy et al, 2000; Perkins et al., 2000; Solomon and Thompson, 2003; Wojtaszek et al., 2004).

The results of the previously cited risk assessments are further supported by several field studies reported in the literature. Two field studies assessing the effects of Vision on amphibian larvae confirm the negligible adverse effects on sensitive larval life stages of native amphibians.
Wojtaszek et al. (2004) assessed the effects of Vision on mortality, avoidance response and growth of larval amphibians (Rana clamitans and Rana pipiens) using in-situ enclosures deployed in two forest wetlands of northern Ontario. The larvae were exposed to concentrations lower and greater than the predicted worst-case environmental concentrations. The conclusions indicated that the silvicultural uses of Vision herbicide in accordance with the product label should have negligible adverse effects on sensitive larval life stages of native amphibians. In the second field study conducted by Thompson et al. (2004), in-situ enclosures and monitoring studies refuted predictions of risk to native amphibians. The assessment of the potential acute effects of Vision on native amphibian larvae (Rana pipiens and Rana clamitans) in forest wetlands in Ontario after direct overspray of Vision at typical application rates indicated that there is insufficient exposure to induce significant acute effects to the most sensitive aquatic life stages of native amphibians in forest wetland environments (Thompson, 2003b).

References:

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