Acronyms: (in a separate box)
PMRA: Pesticide Management Regulatory Agency. the Canadian Agency, under the federal Department of Health, licensing pesticides in Canada under the *Pest Control Products Act*.

CFIA: Canadian Food Inspection Agency responsible for food safety in Canada, but also responsible for the Fertilizer Act under which weed-and-feed products are registered.
" However, the conditions for use of these products must reflect the registered uses for the pesticide under the *Pest Control Products Act*."[1]

US EPA: United States Environmental Protection Agency. The Agency responsible for licensing pesticides in the United States.

Racemic mecoprop (+/-): mixed isomer form which industry chose not to re-register in summer 2004 for lack of safety. It is however, still allowed to be used in pesticide products until December 31, 2009. [2]

Writer's NOTE: The original version of this letter to the editor was sent to the Saskatoon Star Phoenix in response to the letter to the editor on *Proper Use of Mecoprop Safe for Humans* published in the Jan 7, 2005 Star Phoenix. To my knowledge, it was not published. It has since been updated and is now current as of April 29, 2005.

Mecoprop reality-check
By Paule Hjertaas, B Sc.
April 29, 2005 (updated from January 8, 2005)

1. It is illegal to say or imply that a pesticide is safe because it is registered
The illegal statement of mecoprop safety[3] *"the agency…determined that the product does not present a human health risk when used according to label instructions."* should be reported to the Auditor General of Canada for investigation. It is a clear and illegal inference of safety because of registration.

The Canadian regulatory system recognizes pesticides as dangerous. In fact, advertising of pesticides as safe, even when used as directed, is illegal under Canadian and U.S. law.[4] The second restriction is more specific. The Pest Control Products Regulations[5] specify that "*words stating, implying or inferring that a control product is approved, accepted or recommended by the Government of Canada or by any department or agency thereof shall not appear on a package or label or in any advertisement respecting a control product"* because "*the terms "safe" or "safer" in the context of environmental claims may be misinterpreted as relating to personal safety and, as a result, may cause some confusion."*[6]

2. Most registered Canadian products for turf, domestic and commercial, contain the untested form of mecoprop
When one looks at the Canadian registered mecoprop products, one notices that several of the agricultural (commercial) products have already switched to the licensed mecoprop-p. However, 90.59% (183/202) of the mecoprop products licensed for turf (lawns) still contain the untested racemic (mixed isomers) mecoprop: **ALL** 42 PMRA registered mecoprop products[7] for domestic use, 85% (17/20) PMRA registered commercial turf products, and 88.57 % (124/140) of CFIA registered weed-and-feed products also contain racemic mecoprop[8] You can identify it on the label by the **(+/-)** sign following "MECOPROP PRESENT AS AMINE SALTS" as in the example below:
"MECOPROP PRESENT AS AMINE SALTS **(+/-)**-2-(4-CHLORO-O-TOLYOXY)PROPIONIC ACID"

3. Mecoprop safety studies have been under suspicion
Mecoprop was first registered in 1960 in Canada and in 1964 in the U.S.[7] When the IBT scandal came to light in 1977, a lot of questions were raised about the safety data submitted to regulatory agencies (U.S. EPA, and the PMRA in Canada). At that time the US EPA, answering a request under the Freedom of Information Act, had to release a long list of pesticides for which the safety data was now suspicious, as IBT laboratories had performed the experiments. **Mecoprop, under the synonym MCPP, was on that list.** The U.S. EPA issued its first registration standard only in late 1980. 'In effect,' E.P.A. told the court in 1981, '**the agency is considering <u>all new registrations are conditional</u> <u>until data gaps identified by the registration standard are filled and the products are 'reregistered' under the standard</u>**…The registered products which were granted registration **prior to 1978 are also subject to the Registration Standard review**…These products will also be subject to 'reregistration' once all the data gaps have been satisfied.'[9]

4. What does it mean that the manufacturers is replacing mecoprop by mecoprop-p?
Industry chose not to re-register mecoprop because there were too many safety data gaps needed for re-evaluation.[2] Basically, it would be too expensive to do the research.

It means that this product, mecoprop, which will still be sold retail in Canada until 2009[2] (not 2005[3]), likely has **<u>never had the safety data needed for registration purposes</u>**. It kept being sold without any restriction or suspension without these data. In Canada, as in the U.S., I suspect the registration had to be considered "**conditional until data gaps identified by the registration standard are filled and the products are 'reregistered' under the standard**…"[9], however:

- There was no public knowledge of that conditional registration status, or of what data were missing
- Now that we know, Canada will still allow the retail sale until the end of 2009
- As a home owner, you get the wrong end of the stick. Over 90% of pesticides containing mecoprop licensed for turf still contain the untested racemic mecoprop, and likely will until 2009.

According to the PAN pesticide data base[10], mecoprop-p, the more recently registered form, is still acutely toxic, and a possible carcinogen. Its effects on endocrine disruption, as a developmental or reproductive toxin, and its acute aquatic toxicity have not yet been assessed properly. As neither Canada nor the US mandate any studies on endocrine disruption, low dose effects, or developmental toxicity for this product, no study on these health effects have been submitted by registrants.

<u>5. Mecoprop for lawn care is mostly used in mixtures not assessed for safety</u>
usually with 2,4-D and often with dicamba added. Even the U.S. EPA says that they don't have a clue how to assess the effect of mixtures.[11] While the PMRA recognizes that this mixture is synergistic[1] (in the value section), no studies have been performed by industry to evaluate this synergy for health effects. One independent study[12] was reviewed but not considered in the final 2,4-D assessment.[1]

<u>6. Many formulants in mecoprop[13] are already listed as toxins</u>

A pesticide is rarely used by itself. While the US EPA estimates that, on average, 2/3 of every pesticide product is made of formulants,[14] the PMRA does not have a clue.[15] Domestic pesticide formulations tend to contain much less active pesticide ingredient and much more formulants than commercial ones. They consist of up to 99 % formulants.[16]

Five formulants (called inerts in the U.S.) have been reported in domestic U.S. mecoprop formulations.[13] (see Appendix 1) While all of them are listed on the PMRA current formulants list[17], most formulants are considered secret information in Canada, so we don't know if either of them are used in Canadian registered mecoprop formulations. However, it is logical to think that one or several may be. Three are considered mutagens, others cause severe eye and skin

irritations, liver and kidney damage, muscle weakness, one is a carcinogen, and one reduces fertility. 40 % (2/5) of these formulants are already considered as potentially toxic (list 2) by the PMRA. They must be listed on pest control product labels only by January 9, 2006.[18] In the US, however, 100% (5/5; 2 on list 2 and 4 listed in other lists) are already recognized as chemically, biologically, or toxicologically active.[14]

As 86.6% (195/225) Canadian registered 2,4-D turf products contain mecoprop, many of the 30 US listed formulants for 2,4-D turf products are likely to occur with mecoprop as well, in addition to thee 5 listed separately.[19] (See 2,4-D formulants in Canada) set link

Of the 2,4-D 30 secret formulants (we don't know which is used where), 23.3% (7/30) are listed by the PMRA (or government of Canada) as potentially toxic (List 2) and 10 % (3/30) as "may be toxic but insufficient data" (list 4B). One only is a minimum risk product (list 4A), and 63.3% (19/30) are on List 3.**Error! Bookmark not defined.** In the US, 70% (21/30) of these same formulants are already recognized as chemically, biologically, or toxicologically active.[14]

Ignorance is not equivalent to safety.
Safety of a product available for sale cannot be inferred from the decision on a single ingredient.

Extra Resources:
Mecoprop fact sheet from NCAP **http://www.pesticide.org/mecoprop_MCPP.pdf**

Researching Health Effects of Pesticides on the Web (NCAP)
http://www.pesticide.org/ResPHealth.html

References:

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[1] PMRA; February 21, 2005; "Proposed Acceptability for Continuing Registration (PACR Series) 2005; Re-evaluation of the Lawn and Turf Uses of (2,4-Dichlorophenoxy)acetic Acid [2,4-D]" (PACR2005-01) - 555Kb
http://www.pmra-arla.gc.ca/english/pdf/pacr/pacr2005-01-e.pdf

> *"In addition to these products, there are numerous fertilizer/herbicide products registered for use on fine turf in Canada that contain 2,4-D. These fertilizer/herbicide products are registered with the Canadian Food Inspection Agency under the Fertilizers Act and not with the PMRA under the Pest Control Products Act. However, the conditions for use of these products must reflect the registered uses for the pesticide under the Pest Control Products Act."*

[2] PMRA; 13 May 2004; *"Re-evaluation Decision Document RRD2004-09 Mecoprop"*

> "Beyond 2005, sales of existing end-use products in the possession of those other than the registrant as well as use of end-use product by users is permitted until **31 December 2009 when the registrations will be cancelled**." http://www.pmra-arla.gc.ca/english/pdf/rrd/rrd2004-09-e.pdf

[3] letter to the editor; Jan 7, 2005 "*Proper Use of Mecoprop Safe for Humans"* published in the Star Phoenix

[4] *"Environment Label Claims and Advertising of Pest Control Products";* (DIR96-02) March 15, 1996 - 41Kb; http://www.pmra-arla.gc.ca/english/pdf/dir/dir9602-e.pdf

[5] PCPA regulations C.R.C.,c.1253, section 51c; under 2.0 General Principles

[6] PMRA, March 15, 1996; *"Regulatory Directive: Environmental Label Claims and Advertising of Pest Control Products",* DIR 96-02 and Pest Control Products Regulations, C.R.C, c.1253, Sect 51 (c)

[7] PMRA site, mecoprop labels, right hand side box (extra info): *http://www.eddenet.pmra-arla.gc.ca/4.0/4.1.asp* - checked on Jan 6, 2005

[8] PMRA site, 2,4-D labels, http://www.eddenet.pmra-arla.gc.ca - checked end February 2005; and CFIA list of weed-and-feed products obtained from CFIA March 2, 2005

[9] Van Strum, Carol; 1983; "*A Bitter Fog Herbicides and Human Rights"*;; Sierra Club Books, San Francisco. The quote is from *Merrell* v. *J. R* .Block, et al (U.S. D.C. Oregon) Civil No 81-6138-E. Defendants' November 9, 1981, motion for summary judgment.

[10] *panna.org* Search the database

[11] NATIONAL CENTER FOR ENVIRONMENTAL RESEARCH (U.S. Environmental Protection Agency National Institute for Occupational Safety and Health, National Institute of Environmental Health Sciences)

Opening Date: April 10, 2000-Closing Date: July 10, 2000; "COMPLEX CHEMICAL MIXTURES; FY 2000 Science to Achieve Results (STAR) Program"
Location of quote:
Under "Research Goals and Scope," then find "Exposure Assessment."

> The EPA states clearly there are no methods for assessing the toxicity of mixtures of chemicals. "A major, long-term challenge for regulatory agencies is to develop defensible means of combining exposure assessments in a manner that provides meaningful ways of determining potential health risks from total exposures to many chemicals. Lacking are methods to characterize potential toxicological risk."

[12] Cavieres, et al. 2002. Developmental toxicity of a commercial herbicide mixture in mice and effects on embryo implantation and litter size. *Environmental Health Perspectives*. 110(11): 1081–1085.
[13] Mecoprop fact sheet from NCAP **http://www.pesticide.org/mecoprop_MCPP.pdf**
[14] Northwest Coalition for Alternatives to Pesticides; 1998; "*Toxic Secrets Inert Ingredients in Pesticides 1987-1997*"; report by Californians for Pesticide Reform (exec summary and p.1)
[15] PMRA correspondence Date: Wed, 02 Mar 2005 16:32:36 -0500
[16] **.** Vacco, Dennis C, Attorney General; revised 1994; "*The Secret Hazards of Pesticides: Inert Ingredients"*; New York State Dept of Law
Canadian label comparisons: the first 4 mixed amines on the list all contain less than .4% active ingredients (AI) total (including dicamba and mecoprop) versus the first 3 commercial products listed which contain between 19.4 to 58.2 % AI. Most Weed-and-feed products contain less than 2 % active ingredients.
[17] PMRA; 31 March 2005; *"PMRA List of Formulants";* Regulatory Note REG2005-01; http://www.pmra-arla.gc.ca/english/pdf/reg/reg2005-01-e.pdf
[18] PMRA: Regulatory Directive DIR2004-01 "*Formulants Program"* http://www.pmra-arla.gc.ca/english/pdf/dir/dir2004-01-e.pdf (which replaces PRO 2000-04)
[19] Hjertaas, Paule; March 22, 2005; "*2,4-D Formulants and their toxicology-background document'*; prepared for comments on ref 1.

Appendix 1

LIST AND TOXICOLOGY OF FORMULANTS (Inert Ingredients) USED IN THE US IN DOMESTIC MECOPROP PRODUCTS [13]

Hazards posed by inert ingredients in **household** mecoprop-containing herbicides[1] include the following:

Name and effects	CAS #	Canada list[17]	CPR[14]
toxic			
Morpholine is a severe eye and skin irritant. It is labeled as a "mutagen" by the National Institute for Occupational Safety and Health because it caused genetic damage in laboratory tests. It also damaged the liver and kidney.[2]	110-91-8	3	O, A
8-hydroxyquinoline sulfate is labeled as a "mutagen" by the National Institute for Occupational Safety and Health because it caused genetic damage in human blood cells.[3]	134-31-6		3
AI			
Methyl carbitol reduced fertility in laboratory tests.[4]	111-77-3	2	A, AI
Absorbed by inhalation, skin or ingestion 7			
Hexylene glycol is a severe eye irritant. It also reduced the Functioning of the kidneys and caused muscle weakness in laboratory tests.[5]	107-41-5	3	AI
Quartz silica is classified as a carcinogen by the International Agency for Research on Cancer. The National Institute for Occupational Safety and Health labels it as a "mutagen" because it caused genetic damage in laboratory tests.[6]	14808-60-7		2

1. U.S. EPA. 2004. Response to Freedom of Information Act request RIN-1178-99. Received by NCAP in February 2004.
2. National Institute for Occupational Safety and Health. 2002. Registry of Toxic Effects of Chemical Substances: Morpholine. www.cdc.gov/niosh/rtecs/qd62ccf8.html.
3. National Institute for Occupational Safety and Health. 1997. Registry of Toxic Effects of Chemical Substances: 8-Quinolinol, sulfate (2:1) (salt). www.cdc.gov/niosh/rtecs/vc7e09a0.html.
4. National Institute for Occupational Safety and Health. 2002. Registry of Toxic Effects of Chemical Substances: Ethanol, 2-(2)methoxyethoxy)-. www.cdc.gov/niosh/rtecs/kl5d75c8.html.
5. National Institute for Occupational Safety and Health. 2002. Registry of Toxic Effects of Chemical

Substances: 2,4-pentanediol, 2-methyl-. www.cdc.gov/niosh/rtecs/sac5c10.html.
6. National Institute for Occupational Safety and Health. 2002. Registry of Toxic Effects of Chemical Substances: Silica, crystalline-quartz. www.cdc.gov/niosh/rtecs/vv6fd8d0.html. » (6)

7. **ICSC:NENG0040 International Chemical Safety Cards (WHO/IPCS/ILO) | CDC/NIOSH**
http://www.cdc.gov/niosh/ipcsnfrn/nfrn0040.html; updated Apr 5, 2005

Column 4 acronyms, US listed: (C) carcinogen, (TRI) toxic chemicals listed under the Toxic Release Inventory, (O) occupational hazards, (A) hazardous under US Clean Air Act, Clean Water Act, or the Safe Drinking Water Act, (AI) pesticide active ingredients in the past or present.