

Status of Lindane in Canada: The Pesticide Perspective

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OUTLINE

- **Review of regulatory history of lindane in Canada**
- **National use patterns of lindane in Canada**
- **Review of current status of lindane in Canada**
- **Quantities, Production, Import information is not available**



REGULATORY HISTORY

- **Lindane has been registered in Canada since 1938**
- **Until mid-1990s, lindane was used for:**
 - **Seed treatment**
 - **Soil application**
 - **Livestock**
 - **Companion animals**
 - **Ornamentals and turf**
 - **Treatment of industrial and residential structures**

Largest use of lindane was for seed treatment in canola



DISCONTINUED USES OF LINDANE

- **Livestock and tobacco**
 - **Discontinued end of 2000**
- **Canola/rapeseed**
 - **Spring 2002**
- **Seed treatment on mustard, cabbage, broccoli, Brussel sprouts, cauliflower and rutabaga for flea beetles**
 - **October 1, 2002**



REMAINING USES OF LINDANE

- **Seed treatment on wheat, barley, oats, rye, flax, corn, beans, soybeans and peas for control of wireworms**
- **Voluntary discontinuation:**
 - **Longer time frame—fewer alternatives**
 - **Sale by registrants (December 31, 2002)**
 - **Sale by distributors/retailers (December 31, 2003)**
 - **Treated seed use (December 31, 2004)**



PESTICIDE ALTERNATIVES

- **Registered alternatives for uses of lindane in Canada (see handout)**
 - **Terrestrial food crops**
 - **Livestock**
 - **Lawn and ornamentals**
 - **Dogs and dog kennels**
 - **Structural**



LINDANE DISCONTINUATION

- **All uses of lindane will stop December 31, 2004**
- **Recommendation of revocation of all lindane MRLs, including domestic and import**
- **Will consider requests to modify or maintain MRLs to cover imports**



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OUTLINE

- **Review of regulatory history**
- **Current status**
- **Alternative therapies**
- **Preliminary Action Plan**



REGULATORY HISTORY & STATUS

- **Registered in Canada since the early 1960s**
- **Six companies, marketing 14 products**
- **Evaluated according to a Canadian labelling standard**



...REGULATORY HISTORY & STATUS

- **Pediculicide shampoo and scabicide lotion (1% solution)**
- **Treatment of head lice, crab lice and scabies**
- **Non-prescription medication (requires pharmacist intervention-exception Quebec)**



...REGULATORY HISTORY & STATUS

- **Head lice remain endemic in Canada**
- **Canadian Paediatric Society position on lindane:¹**
 - **Not always ovidical**
 - **Possibly neurotoxic**
 - **Mild dermal reactions 2-3%**
 - **Not to be used in children under 6**
- **Not officially listed as a second-line agent**

¹Paediatrics & Child Health 1996; 1:237-49 (reaffirmed in February 2003)



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ALTERNATIVES PEDICULICIDES

➤ Pediculicides¹

- 1% permethrin (Kwellada-P Creme Rinse, Nix Dermal Creme Rinse)
- Pyrethrin and piperonyl butoxide (R&C shampoo, Pronto lice killing shampoo)
- Bioallethrin and piperonyl butoxide (Scabene, Para special shampoo for lice)

¹Paediatrics & Child Health 1996; 1:237-49 (reaffirmed in February 2003)



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ALTERNATIVES SCABICIDES

➤ Scabicides¹

- 5% Permethrin creme (Kwellada-P Lotion, Nix Dermal Creme)
- Precipitated sulfur 6% in petrolatum



NOT AVAILABLE IN CANADA

- **DDT**
- **Malathion**
- **Carbamate agents**
- **Oral ivermectin**



NATURAL ALTERNATIVES

- **Wet combing**
- **Formic acid preparations**
- **Topical vinegar and mineral oil**
- **Tea tree oil**
- **Acetic acid, citronella oil, camphor, sodium lauryl ether sulfate (SH-206)**



CONCERNS WITH ALTERNATIVES

- **Treatment resistance**
- **Lack of efficacy**
- **Toxicity**



PRELIMINARY ACTION PLAN

- **Review of case reports**
- **Benefit/Risk assessment**
 - **Marketing data**
 - **Alternative therapies**
 - **Product monograph changes**
 - **Prescription status**
- **External consultation**





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MAXIMUM RESIDUE LIMITS

➤ 3.0 ppm

- Apples, apricots, asparagus, avocados, etc.

➤ 2.0 ppm

- Meat, meat by-products and fat of cattle, goats, hogs and sheep

➤ 0.7 PPM

- Meat and meat by-products of poultry

➤ 0.2 PPM

- Butter, cheese, milk and other dairy products



ADVERSE REACTION DATA

- **Canadian Adverse Reaction database (ADR) search (1/71-12/02)**
- **38 adverse drug reactions**
- **Two fatalities**
 - **One child, one adult**
 - **Causality could not be established**
- **11 possibly neurotoxic**
 - **5 in children under age 12**



CASE REPORT SUMMARY

➤ Outcome:

- 5 recovered without sequelae; 2 not yet recovered at time of report; 2 recovered with sequelae, 2 deaths

➤ Causality

- 1 probable; 7 possible; 2 unassessible; 1 report unobtainable

➤ Misuse of product

- Overdose
- Inappropriate use in child (3 cases)

