

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



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LINDANE REVIEW

- Review was based on occupational risk
- Preliminary assessment of dietary risk
- Review data contained in the Agency for Toxic Substances and Disease Registry (ATSDR) document



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



LINDANE DISCONTINUATION

➤ **Phase out designed to allow for reduction of existing stockpiles**



Status of Lindane in Canada: The Pharmaceutical Perspective

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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
- Three companies, marketing 5 products
- Evaluated according to a Canadian labelling standard



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...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 unassessable; 1 report unobtainable

➤ Misuse of product

- Overdose
- Inappropriate use in child (3 cases)

