Health Canada / Santé Canada

Pest Management Regulatory Agency / Agence de réglementation de la lutte antiparasitaire

June 26, 2007

Ms. Ann Rowan
Director
Sustainability Project
David Suzuki Foundation
219-2211 West 4th Avenue
Vancouver, British Columbia V6K 4S2

Dear Ms. Rowan:

Please find attached a detailed response from Health Canada's Pest Management Regulatory Agency (PMRA) to the David Suzuki Foundation's request for initiation of a special review of 60 active ingredients described in its report entitled *The Food We Eat: An International Comparison of Pesticides Regulations*. The attached document provides information on each of the 60 active ingredients, including their international status and conclusions regarding requirements for a special review in Canada.

The David Suzuki Foundation has requested that a special review be initiated for these 60 pesticides on the grounds that they have been prohibited in one or more OECD country for health or environmental reasons, in accordance with Section 17(2) of the *Pest Control Products Act* (PCPA).

Health Canada's mandate and primary objective with regards to pesticide regulation in Canada is to prevent unacceptable risks to people and the environment from the use of pest control products. Before a pesticide is registered, it must undergo a thorough science-based assessment and meet strict health and environmental standards. Furthermore, all pesticides are re-evaluated on a 15 year cycle using the same rigorous scientific approach to ensure their continued acceptability. Pesticides are approved for registration, or continued use, by Health Canada only when their use results in an acceptable level of risk to health and the environment and acceptable value, within the Canadian context.

In addition to re-evaluations, special reviews can be conducted to verify continued acceptability of registered products. While a re-evaluation is designed to encompass an overall reassessment of the health and environmental risk and the value of a pesticide, a special review is conducted to target a specific issue. It entails the review of the science relative to the specific area of concern only. Section 17(2) of the PCPA states that the Minister shall initiate a special review if all uses of an active ingredient have been

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prohibited in an OECD country for health or environmental reasons. The purpose of a special review would be to verify acceptability of the pesticide. Where such a determination was made previously (at the time of registration or re-evaluation), taking into account the concerns raised by other jurisdictions, or where re-evaluations are underway in which these concerns will be taken into account, the statutory intent of subsection 17(2) is met.

Health Canada is monitoring its international partners for developments which may affect the acceptability of a pesticide in Canada, and concerns associated with a pesticide that are identified in other nations are taken into account when making a registration or re-evaluation decision.

The Canadian regulatory status of the 60 active ingredients listed in the David Suzuki Foundation's report is as follows:

- 49 are currently under re-evaluation;
- 4 were recently re-evaluated and found acceptable for continued registration;
- 2 were recently registered; and
- 5 are no longer registered in Canada, or will be phased out as a result of re-evaluation.

Amongst the 60 active ingredients listed in the Suzuki Foundation report which are currently registered in Canada, all but 6 are part of Health Canada's Re-evaluation Program. Under this program, pest control products that were registered before January 1, 1995, are being reviewed to determine if their use continues to be acceptable under current standards for health and environmental protection. While a special review is meant to target a specific issue, the re-evaluation of an active ingredient examines all aspects of human health and environmental risk and is based on all available information including any concerns identified in an OECD country. Since a re-evaluation will address any issue that would be the focus of a special review and more, initiation of a special review in addition to their ongoing re-evaluation is not warranted for these active ingredients.

Recent regulatory decisions have been made regarding the remaining six active ingredients based on internationally accepted approaches and protocols. Furthermore, any concerns identified in the OECD were taken into account when the Canadian registration or re-evaluation decision was made. For these reasons, initiation of a special review for these 6 active ingredients is not required.

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The enclosed document describes the status of each active ingredient in the OECD countries listed in the David Suzuki Foundation report and provides conclusions regarding the requirement for a special review in Canada.

It should be noted that prohibition or withdrawal of a pesticide in a foreign country does not necessarily equate to unacceptable risk in Canada. The regulatory and environmental conditions in Canada are inherently different from other nations. A pesticide could be prohibited in another nation based on a legislation specific to that nation that does not apply to Canada, or based on an environmental risk that does not exist in Canada.

The enclosed document indicates that 8 of the active ingredients are not prohibited in the OECD countries listed in the Foundation's report. The enclosed document also provides information on decisions taken by the European Commission regarding acceptability of active ingredients for use in pesticides in the European Union. Among the 60 active ingredients listed in the Suzuki Foundation report, 18 have been prohibited in one or more OECD country but have more recently been approved for use in the European Union.

I trust that this is of assistance to you, and thank you for your interest in the regulation of pesticides in Canada.

Yours truly,

Karen L. Dodds, Ph.D
Executive Director
PEST MANAGEMENT REGULATORY AGENCY

Enclosure

c.c.: Mr. William King
Chief of Staff to the Honourable Tony Clement, PC, MP.

Attachment

Conclusions regarding requirements for a special review in Canada of the 60 active ingredients listed in the David Suzuki Foundation Report

1. 1,3-dichloropropene (CAS# 542-75-6)

Assessment by the David Suzuki Foundation (DSF)	Prohibited in Austria, Germany, Sweden, registration cancelled in Australia.
Regulatory status in OECD countries listed by DSF	**Austria**: All uses prohibited since 1992 due to its suspected mutagenic and carcinogenic properties and high mobility in soils (PIC circular X, 1999). **Germany**: Use as a plant protection product has been prohibited since 1991 because of its potential to leach (risk of ground and surface water contamination) and suspected carcinogenic effects (PIC circular X, 1999). **Sweden**: Withdrawn by the manufacturer and prohibited since 1988 due to its suspected carcinogenic properties and high mobility in soil (KEMI, 1998). **Australia**: Withdrawn by industry in 1988 due to its mutagenic, carcinogenic properties in rats and mice, and the conclusion that it is a probable human carcinogen (PIC circular X, 1999).
Status in the US	For the purpose of reregistering this active ingredient, the US EPA conducted a re-evaluation of human health and environmental risk associated with its uses in 1998. Environmental fate data and water monitoring studies were reviewed for this purpose, and demonstrated that 1,3-D has the potential to contaminate groundwater as a result of agricultural uses. The US EPA classified 1,3-D as a probable human carcinogen and its re-evaluation included an assessment of potential cancer risk from exposure through inhalation and drinking water. The US EPA concluded overall that 1,3-D would not result in unreasonable adverse effects to human health or the environment provided new restrictions are applied. These restrictions included a buffer zone around wells and prohibition of use in areas where the soil is permeable and the water table is shallow. (US EPA, 1998a)
Status in Canada	1,3-dichloropropene is currently under re-evaluation by the PMRA.

Conclusions:

1,3-dichloropropene has been prohibited in several OECD countries based on its toxicological effects on laboratory animals and its environmental properties. The Canadian re-evaluation of 1,3-D is ongoing and will address concerns identified in these OECD countries.

2. 2,4-D (CAS# 94-75-7)

DSF assessment	Prohibited in Denmark, Norway, Sweden.
Regulatory status in OECD countries listed by DSF	**Denmark**: Severely restricted in 1997 to application to specific grass fields (overall use reduced to 5-10% of former use), because it is considered to represent a "risk to cause groundwater pollution" (PIC circular X, 1999). **Norway**: Prohibited for use as a pesticide since 2000, based on possible adverse health and environmental effects (high mobility), combined with the existence of pesticides with same or improved agronomical value (PIC circular XIII, 2001). **Sweden**: Voluntarily withdrawn in 1991 from the market due to concerns raised by toxicological and epidemiological reports on its adverse health effects (PIC circular X, 1999).
Status in the EU	Reviewed by the European Commission, and approved for inclusion in the list of active ingredients authorized for use as plant protection products in the European Union (i.e., Annex I to Directive 91/414/EEC) (EC 1991a, 2001a).
Status in the US	For the purpose of reregistering this active ingredient as a pesticide, the US EPA conducted a re-evaluation of human health and environmental risk associated with all its uses in 2005. The EPA concluded that use of 2,4-D as a pesticide does not result in unreasonable adverse effects to human health or the environment provided the risk reduction measures recommended in the Reregistration Eligibility Decision document are implemented (US EPA, 2005a).
Status in Canada	This active ingredient is currently under re-evaluation by the PMRA. PMRA has implemented interim measures for products used on lawns and turf. A science-based assessment of human and environmental health risk from lawn and turf uses was conducted. The human health assessment looked at the potential for 2,4-D to cause adverse health effects such as cancer, birth defects and endocrine disruption, in relation to the amount of exposure in all potentially exposed populations, including children, of all sources and routes (oral, dermal, inhalation, from the diet, drinking water and contact with treated areas). In addition to the 2,4-D-specific animal toxicity data, the PMRA also considered the large body of epidemiological studies and reviews pertaining to 2,4-D and human health. The environmental assessment considered risks to plants, birds, mammals, aquatic organisms as well as fate in the environment. Based on this, the PMRA determined that 2,4-D is acceptable for use on lawn and turf when label directions are followed (PMRA, 2005a). Registered products containing the diethanolamine (DEA) form of 2,4-D are being phased-out because adequate data to evaluate the potential health effects of the DEA form were not provided. The PMRA will make a final decision regarding the continued acceptability of lawn and turf uses of 2,4-D when a final decision on all uses, including agricultural uses of 2,4-D is developed (PMRA, 2006e).

Conclusions:

Pesticide uses of this substance were prohibited in Sweden in 1991 and in Norway in 2000, but have since been approved in the European Union. Health and environmental concerns which formed the basis of restrictions or prohibitions in OECD countries were taken into consideration in the re-evaluation assessments for 2,4 -D conducted to date. Re-evaluation of 2,4-D is under way and will address any issues that would be the focus of a special review.

3. **Amitraz** (CAS# 33089-61-1)

DSF assessment	Prohibited in Norway, European Union.
Regulatory status in OECD countries listed by DSF	**Norway**: Prohibited for use as a pesticide since 1989 based on toxicological effects in laboratory animals (increased number of tumors in liver and the lymphatic system in mice, impact on the hormone balance) (PIC circular X, 1999). **European Union**: Will not be included in the list of authorised active ingredients (Annex I to Directive 91/414/EEC). This regulatory decision was finalised in 2004, to protect consumers from the potential neurological effects of acute exposure to amitraz (EC, 2004a).
Status in the US	The US EPA conducted a re-evaluation of all amitraz uses and concluded that environmental and human health risks associated with its use are acceptable under the conditions listed in the 1995 Re-registration Eligibility Decision document (US EPA, 1995a); they also reassessed food residue tolerance levels and concluded in 2005 that tolerances for amitraz meet the safety standards (US EPA, 2006a).
Status in Canada	This active ingredient is currently under re-evaluation by the PMRA.

Conclusions:

The Canadian re-evaluation of amitraz will take into consideration all currently available information regarding health and environmental risk, including health concerns identified in Norway and the European Union; this will be reflected in the proposed decision which will be available for comment when the consultation document is published.

4. Amitrole (CAS# 61-82-5)

DSF assessment	Prohibited in Finland, Norway, Sweden
Regulatory status in OECD countries listed by DSF	**Finland**: Prohibited for use as a pesticide since 1980, based on the conclusion that it represents a "high risk to human health" (PIC circular X, 1999). **Norway**: Prohibited for use as a pesticide since 1972 because of risk of carcinogenic properties (PIC circular X, 1999). **Sweden**: Prohibited for use as a pesticide since 1972 due to a "risk of carcinogenic effect on humans, according to epidemiological data" (PIC circular X, 1999).
Status in the European Union	This active ingredient was reviewed by the European Commission, and was approved for inclusion in the list of active ingredients authorized for use as plant protection products in the European Union (i.e., Annex I to Directive 91/414/EEC) (EC, 2001b).
Status in the United States	The US EPA conducted a re-evaluation of all amitrole uses and concluded that environmental and human health risks associated with its use are acceptable under the conditions specified in the 1996 Re-registration Eligibility Decision document (US EPA, 1996a).
Status in Canada	This active ingredient is currently under re-evaluation by the PMRA.

Conclusions:

This substance was prohibited in Finland, Norway and Sweden in the early 70's and 80's but has since been approved for pesticide use in the European Union in 2001. The Canadian re-evaluation of amitrole will take into consideration all currently available information regarding health and environmental risk, including the health concerns identified in Finland, Norway and Sweden; this will be reflected in the proposed decision which will be available for comment when the consultation document is published.

5. Atrazine (CAS# 1912-24-9)

DSF assessment	Prohibited in Denmark, Germany, Norway, Sweden, European Union.
Regulatory status in OECD countries listed by DSF	**Denmark**: Prohibited for use as a pesticide since 1995, based on the assessment that atrazine is mobile and persistent and has caused groundwater pollution over the limits set down in EEC Directive 80/778 EEC on drinking water (PIC circular X, 1999). **Germany**: Prohibited for use as a pesticide since 1991, based on the assessment that it is highly mobile and persistent in soil, it is suspected of having harmful effects on ground water and drinking water (PIC circular X, 1999). **Norway**: Prohibited for use as a pesticide since 1991, because of high persistence and risk of water pollution (PIC circular X, 1999). **Sweden**: Prohibited for use as a pesticide since 1989, due to its high mobility in soil and potential for contamination of water (PIC circular X, 1999). **European Union**: This active ingredient was reviewed by the European Commission, and was not approved for inclusion in the list of active ingredients authorized for use as plant protection products in the European Union (i.e., Annex I to Directive 91/414/EEC). This was based on the conclusions that data were insufficient to demonstrate that concentrations of the active substance and its breakdown products will not exceed 0,1 µg/l in groundwater. A longer withdrawal period (until June 2007) was granted for a limited number of uses considered as essential (EC, 2004b).
Status in the US	The US EPA conducted a re-evaluation of all atrazine uses and conducted environmental and human health risks assessments. These assessments included estimates of ecological and health risk through exposure from possible water contamination. The US EPA concluded that risks were acceptable under the conditions required in the 2006 Interim Reregistration Eligibility Decision document. These conditions include monitoring data requirements and a requirement to meet a performance standard for atrazine in community water systems, use in watersheds would become prohibited if the standard is not met. The US EPA also concluded that there is a reasonable certainty that no harm will result to the general U.S. population, infants, children, or other major identifiable subgroups of consumers from aggregate exposure (from food, drinking water, and non-occupational sources) to cumulative residues of atrazine and pesticides chemically similar to atrazine (i.e, all triazines) (US EPA, 2006b).
Status in Canada	The Pest Management Regulatory Agency is in the final stage of the re-evaluation of atrazine. The Re-evaluation Decision Document for the human health risk assessment of atrazine was issued on May 25, 2004. The PMRA has determined that it is acceptable for use on corn (all other uses will be phased out). The environmental risk assessment for the atrazine re-evaluation has been released for public comment.

Conclusions:

This substance is prohibited in four OECD member countries and the EU based on its potential to contaminate groundwater and drinking water. Health risks from potential drinking water contamination in Canada have been examined by the PMRA in the health risk component of the re-evaluation and have been found acceptable provided the required risk reduction measures are implemented. Furthermore, re-evaluation of the environmental risk associated with the use of atrazine is ongoing. The past and future re-evaluation activities undertaken by the PMRA with regards to atrazine uses in Canada address the concerns identified in OECD countries.

6. Bromacil (CAS# 314-40-9)

DSF assessment	Prohibited in Germany, Slovenia, Sweden.
Regulatory status in OECD countries listed by DSF	**Germany**: Prohibited for use as a pesticide since 1993, based on "high persistence... in soil", "high leaching potential", and "likelihood that application... would exceed a regulatory limit of 0.1 micrograms/l in ground water" (PIC circular X, 1999). **Sweden**: Prohibited for use as a pesticide since 1990 because it is suspected to have carcinogenic properties and because of its high mobility in soil (KEMI, 1998). **Slovenia**: Not an OECD member.
Status in the US	The US EPA conducted a re-evaluation of all bromacil uses and concluded that environmental and human health risks associated with its use are acceptable under the conditions listed in the 1996 Re-registration Eligibility Decision document. Bromacil was found to be mobile and persistent in soil and water, and residues were found in ground water in the United States. The US EPA conducted a health risk assessment based on the highest residue level found in groundwater and on several toxicological effects including cancer, and concluded that the risk to the most sensitive population subgroup, i.e., infants and children, is acceptable (US EPA, 1996b).
Status in Canada	In Canada, a re-evaluation was completed in 2006 and was largely based on the US EPA assessment and therefore concerns raised in Germany and Sweden have been addressed. Bromacil was found acceptable for continued registration (PMRA, 2006b).

Conclusions:

All uses have been prohibited in two OECD countries since the early 90's based on environmental properties (mobility and persistence) and toxicological effects observed in laboratory animals (carcinogenic properties); these concerns have been addressed in the Canadian re-evaluation of bromacil.

7. Bromoxynil (CAS# 1689-99-2, 1689-84-5)

DSF assessment	Prohibited in Norway, Sweden.
Regulatory status in OECD countries listed by DSF	**Norway**: Prohibited for use as a pesticide since 2000, based on unacceptable risk to the applicator, its toxicity to aquatic organisms, and because there were "already alternatives on the market that pose a lower risk to human health" (PIC circular XIV, 2001). **Sweden**: The substance was withdrawn by the manufacturer in 1994 due to " teratogenic effects in experimental animals" (KEMI, 1998).
Status in the European Union	This active ingredient was reviewed by the European Commission, and was approved for inclusion in the list (i.e., Annex I to Directive 91/414/EEC) of active ingredients authorized for use as plant protection products in the European Union (EC, 2004c).
Status in the US	The US EPA conducted a re-evaluation of bromoxynil uses and concluded that environmental and human health risks associated with its use are acceptable under the conditions specified in the 1998 Re-registration Eligibility Decision document (US EPA, 1998b).
Status in Canada	This active ingredient is currently under re-evaluation by the PMRA.

Conclusions:

This substance is prohibited in Sweden and Norway but approved for use as a pesticide in the European Union in 2004. The Canadian re-evaluation of bromoxynil will take into consideration currently available information regarding health and environmental risk, including concerns identified in Norway and Sweden; this will be reflected in the proposed decision which will be available for comment when the consultation document is published (target 2007).

8. Captan (CAS# 133-06-2)

DSF assessment	Prohibited in Denmark, Finland, Norway.
Regulatory status in OECD countries listed by DSF	**Denmark**: Prohibited for use as a pesticide since 1998 based on its carcinogenic properties, acute toxicity , and toxicity to aquatic organisms (PIC circular X, 1999). **Finland**: All uses have been prohibited since 1972, based on its carcinogenic properties (pers. com., Finnish Food Safety Authority EVIRA, November 2006). **Norway**: Withdrawn by manufacturer in 1991 because of labelling requirements (warning of carcinogenicity) (PIC circular X, 1999).
Status in the European Union	This active ingredient was reviewed by the European Commission, and was approved in 2006 for inclusion in the list (i.e., Annex I to Directive 91/414/EEC) of active ingredients authorized for use as plant protection products in the European Union. (EC, 2004d)
Status in the US	The US EPA conducted a re-evaluation of all captan uses and concluded that environmental and human health risks associated with its use are acceptable under the conditions specified in the 1999 Re-registration Eligibility Decision document (US EPA, 1999a).
Status in Canada	This active ingredient is currently under re-evaluation by the PMRA.

Conclusions:

This substance is prohibited in Denmark, Finland and Norway but was approved for use as a pesticide in the European Union in 2006. The Canadian re-evaluation of captan will take into consideration all currently available information regarding health and environmental risk, including toxicological effects in laboratory animals identified by Denmark, Finland and Norway; this will be reflected in the proposed decision which will be available for comment when the consultation document is published.

9. Carbaryl (CAS# 63-25-2)

DSF assessment	Prohibited in Austria, Germany, Sweden.
Regulatory status in OECD countries listed by DSF	**Austria**: Uses as a pesticide were prohibited in 1993 due to its mutagenic and teratogenic potential (PIC circular X, 1999). **Germany**: Uses as a plant protection product prohibited in 1986 based on its effect on bees (risk of poisoning of bees via contaminated pollen and nectar) (PIC circular X, 1999). **Sweden**: Use as a pesticide prohibited in 1991 due to its mutagenicity and suspected carcinogenicity (PIC circular X, 1999).
EPA status	The US EPA has assessed the risk associated with uses of carbaryl to be acceptable under the conditions specified in the 2004 Interim Re-registration Eligibility Decision document (US EPA, 2004a). Carbaryl is classified as a carbamate based on its chemical structure and the US EPA decision is interim pending an assessment of cumulative risk associated with all registered carbamates.
Status in Canada	This active ingredient is currently under re-evaluation by the PMRA.

Conclusions:

The re-evaluation of carbaryl will take into consideration all currently available information regarding health and environmental risk, including concerns related to its toxicity identified in Austria, Germany, and Sweden; this will be reflected in the proposed decision which will be available for comment when the consultation document is published.

10. Carbofuran (CAS# 1563-66-2)

DSF assessment	Prohibited in Sweden.
Regulatory status in OECD countries listed by DSF	This active ingredient was never registered in Sweden (pers. com., National Chemicals Inspectorate, Sweden, February 2007).
Status in the US	In 2006, the US EPA reviewed the safety and benefits of all uses of carbofuran and concluded that ecological and human health risks were of concern. A phase-out of all products over four years was required (US EPA, 2006c).
Status in Canada	Granular formulations as well as uses on alfalfa, turnip, rutabaga, cereals, headlands, pastures and roadsides of liquid formulations were discontinued in 1997 as a result of a special review focussing on the risk to birds and other invertebrates. Other restrictions to the remaining crops included reduction of a number of applications, limits to the maximum application rate, applications by ground equipment only and by air to corn fields greater than 5 hectares only (PMRA, 1995). The remaining uses of this active ingredient are currently under re-evaluation by the PMRA (PMRA, 2002).

Conclusions:

This substance has not been prohibited in Sweden. In Canada, a special review was completed in 1995 resulting in the phase-out of granular formulations and certain uses to mitigate the risk to birds. Remaining uses are under re-evaluation with the PMRA, and all currently available information regarding health and environmental risk will be taken into consideration, including the results of the US re-registration; this will be reflected in the proposed decision which will be available for comment when the consultation document is published.

11. Chloropicrin (CAS# 76-06-2)

DSF assessment	Prohibited in Austria, Germany, Sweden.
Regulatory status in OECD countries listed by DSF	**Austria**: Use as a pesticide has been prohibited since 1992 based on the assessment that it has high acute toxicity and suspected carcinogenic effects (PIC circular X, 1999). **Germany:** Use as a plant protection product has been prohibited since 1981 based on the assessment that it is "highly toxic against warm blooded animals and man", and it has "high mobility in soil (risk of drinking water contamination; intensive smell)" (PIC circular X, 1999). **Sweden**: Withdrawn since 1966, after discussion between the National Chemicals Inspectorate and importers, because of its high acute toxicity (PIC circular X, 1999).
Status in Canada	This active ingredient is currently under re-evaluation by the PMRA.

Conclusions:

The re-evaluation of chloropicrin will take into consideration all currently available information regarding health and environmental risk, including concerns related to its toxicity and environmental properties identified in Austria, Germany, and Sweden; this will be reflected in the proposed decision which will be available for comment when the consultation document is published.

12. Chlorothalonil (CAS# 1897-45-6)

DSF assessment	Prohibited in Sweden.
Regulatory status in OECD countries listed by DSF	Use as a pesticide was prohibited in Sweden in 1991 because of its carcinogenic properties (PIC circular X, 1999). It has since been removed from the Swedish list of prohibited substances after it was approved in 2006 by the European Commission for use in the European Union ; it is not currently registered for use as a pesticide in Sweden (pers. com., National Chemicals Inspectorate, Sweden, February 2007).
Status in the European union	This active ingredient was reviewed by the European Commission, and was approved in 2006 for inclusion in the list (i.e., Annex I to Directive 91/414/EEC) of active ingredients authorized for use as plant protection products in the European Union (EC, 2005).
Status in the US	In 1999, the US EPA conducted a re-evaluation of human health and environmental risk associated with all uses of chlorothalonil. The EPA concluded that use of chlorothalonil as a pesticide does not result in unreasonable adverse effects to human health or the environment provided the risk reduction measures recommended in the Reregistration Eligibility Decision document are implemented (US EPA,1999b).
Status in Canada	This active ingredient is currently under re-evaluation by the PMRA.

Conclusions:

This product is no longer on the Swedish list of prohibited products after it was approved for use in 2006 by the European Commission. Nonetheless, the Canadian re-evaluation of chlorothalonil is under way and will take into consideration all currently available information regarding health and environmental risk. A proposed decision will be available for comment when the consultation document is published.

13. Chlorpyrifos (CAS # 2921-88-2)

DSF assessment	Prohibited in Finland, Sweden.
Regulatory status in OECD countries listed by DSF	**Finland**: Registered for indoor use (pers. com., Finnish Food Safety Authority EVIRA, November 2006). **Sweden**: There are no record of this product being prohibited
Status in the European Union	This active ingredient was reviewed by the European Commission, and was approved in 2005 for inclusion in the list (i.e., Annex I to Directive 91/414/EEC) of active ingredients authorized for use as plant protection products in the European Union (EC, 2005b).
Status in the US	The US EPA conducted a re-evaluation of human health and environmental risk associated with all its uses in 2001. The EPA concluded that use of chlorpyrifos as a pesticide does not result in unreasonable adverse effects to human health or the environment provided the risk reduction measures recommended in the Interim Reregistration Eligibility Decision document are implemented. Conclusions on the acceptability of its associated risk were interim pending the results of the assessment of cumulative risk from all organophsophate (OP) compounds. The cumulative risk assessment was completed in 2002 and the US EPA concluded that the cumulative margins of safety from exposure to OPs in the US did not raise a concern (US EPA, 2002a).
Status in Canada	Chlorpyrifos is under re-evaluation by the PMRA and results of Phase 1 and 2 of the re-evaluation have been published (PMRA, 2000a and 2003a). Re-evaluation of lawn and turf uses was completed in Phase I. Phase 1 resulted in a phase-out of all Domestic Class products with the exception of containerized low-concentration ant baits, removal of residential uses, both indoor and outdoor (including all public areas such as schools, playgrounds and restaurants) from Commercial Class products, reduction of the maximum application rate to sod farms and golf courses, phase-out of use on tomatoes, changes to tomato and apple maximum residue limits, addition of re-entry intervals for potsapplication agricultural workers; phase-out of certain uses for controlling termites. Phase 2 resulted in the discontinuation of some agricultural uses and implementation of interim mitigation measures to further protect workers and the environment (i.e., discontinuation of paintbrush applications for indoor uses; discontinuation of high-pressure handwand equipment; implementation of engineering controls and/or additional protective equipment; and establishment re-entry intervals for postapplication workers, buffer zones and additional precautions to protect bees, limitations on the maximum number of applications per season). Phase 3 of the re-evaluation of chlorpyrifos will include a refined environmental risk assessment (PMRA, 2007). A final decision on chlorpyrifos registration will be made after completion of Phase 3 of the re-evaluation scheduled for 2008.

Conclusions:

This active ingredient has not been prohibited in Finland or Sweden. In addition, it was approved for use in the European Union in 2005. Nonetheless, re-evaluation of chlorpyrifos is underway in Canada. Significant regulatory actions have been taken during the first two phases of the re-evaluation to mitigate health or environmental concerns; the final phase, i.e., re-evaluation of the remaining uses, is ongoing and will take into consideration all currently available information regarding health and environmental risk. A proposed decision will be available for comment when the consultation document is published.

14. Dazomet (CAS# 533-74-4)

DSF assessment	Prohibited in Denmark
Regulatory status in OECD countries listed by DSF	In Denmark, pesticide uses have been prohibited since 1997 based on its risk to contaminate groundwater and because it was assessed as being harmful to health and the environment (PIC circular X, 1999).
Status in Canada	This active ingredient is currently under re-evaluation by the PMRA.

Conclusions:

The Canadian re-evaluation of dazomet is under way and will take into consideration all currently available information regarding health and environmental risk, including concerns identified in Denmark. This will be reflected in the proposed decision which will be available for comment when the consultation document is published.

15. Deltamethrin (CAS# 52918-63-5)

DSF assessment	Prohibited in Denmark
Regulatory status in OECD countries listed by DSF	**Denmark**: Uses as a pesticide have been restricted to indoor use only, since 1998 (PIC circular X, 1999).
Status in Canada	This active ingredient is currently under re-evaluation by the PMRA.

Conclusions:

Pesticide uses of deltamethrin are restricted but not prohibited in Denmark. Nonetheless, the Canadian re-evaluation of deltamethrin is under way and will take into consideration all currently available information regarding health and environmental risk. A proposed decision will be available for comment when the consultation document is published.

16. Diazinon (CAS# 333-41-5)

DSF assessment	Prohibited in Denmark
Regulatory status in OECD countries listed by DSF	**Denmark**: Agricultural uses as a pesticide have been prohibited since 1997, because it was assessed as a "risk to cause groundwater pollution, to be persistent in soil and to poison aquatic organisms, wild birds and mammals" (PIC circular X, 1999).
Status in the US	In 2004, the US EPA reviewed the safety and benefits of all uses of diazinon and concluded that ecological and human health risks were acceptable. Diazinon is an organophosphate (OP) and the US EPA concluded that the cumulative margins of safety from exposure to OPs in the US did not raise a concern (US EPA, 2004b).
Status in Canada	This active ingredient is currently under re-evaluation by the PMRA. All indoor uses and non-agricultural outdoor uses of diazinon, including all uses on lawns and turf, have been phased-out as a result of voluntary action by registrants. The preliminary risk assessment indicated a level of concern for workers and the environment. The PMRA solicited information in 2005 to refine these preliminary assessments and/or mitigate risks. The PMRA is reviewing the information received, and will revise the risk assessments and propose regulatory actions. In addition, the following uses are not supported by the registrant and will be proposed for discontinuation: greenhouse (tomato, pepper and ornamentals); seed treatment (onion, radish, sugarbeet and potato seed pieces); feed crops (clover, grass, pastures, rangeland and green forage or hay from crop margins); non-crop areas (wastelands, roadsides, ditch banks, fence rows and barrier strips); certain food crops (field pepper, salsify, potato, tobacco (field), plums, prunes); structural (farm buildings, food processing plants, poultry houses) (PMRA, 1999, 2000b, 2000c, 2005e).

Conclusions:

The Canadian re-evaluation of diazinon is under way. All indoor and non-agricultural uses (e.g. use on lawn) of diazinon have been phased out. Re-evaluation of the remaining uses is ongoing and will take into consideration all currently available information regarding health and environmental risk, including concerns identified in Denmark. This will be reflected in the proposed decision which will be available for comment when the consultation document is published.

17. Dichlobenil (CAS# 1194-5-6)

DSF assessment	Prohibited in Denmark, Norway, Sweden
Regulatory status in OECD countries listed by DSF	**Denmark**: Agricultural uses as a pesticide have been prohibited since 1997, based on the conclusion that it is associated with "a risk to cause groundwater pollution" (PIC circular X, 1999). **Norway**: Use as a pesticide has been prohibited since 2001, based on toxicological effects observed in laboratory animals, and on the conclusion that one of its metabolite (2,6-diclorobenzamide) is mobile and can contaminate groundwater (PIC circular XII, 2000). **Sweden**: Use as a pesticide has been prohibited since 1994 on the basis that it is "persistent and volatile" (KEMI, 1998).
Status in the US	The US EPA re-evaluated dichlobenil in 1997. Human health and environmental risk assessments were conducted for both dichlobenil and a major metabolite (2,6-diclorobenzamide) and were found acceptable (US EPA, 1998c).
Status in Canada	Re-evaluation of dichlobenil by the PMRA is complete and was largely based on the US EPA assessment. The human health and environmental risk associated with dichlobenil were found acceptable with implementation of additional risk reduction measures (PMRA, 2005g; 2006d).

Conclusions:

Pesticide uses of dichlobenil have been prohibited in three OECD countries based on environmental properties and toxicological effects observed in laboratory animals; these concerns have been addressed in the Canadian re-evaluation.

18. Dichlorprop (CAS# 120-36-5, 7547-66-2)

DSF assessment	Prohibited in Denmark.
Regulatory status in OECD countries listed by DSF	Pesticide uses in Denmark were restricted to specific grass fields (5-10% of former use) in 1997 (PIC circular X, 1999).
Status in the European Union	Dichlorprop-p was reviewed by the European Commission, and was approved in 2005 for inclusion in the list of active ingredients authorized for use as plant protection products in the European Union (I.e., Annex I to Directive 91/414/EEC) (EC, 2006).
Status in Canada	This active ingredient is currently under re-evaluation by the PMRA.

Conclusions:

Dichlorprop is not prohibited in Denmark and has been approved for use in 2005 by the European Commission. Nonetheless, this active ingredient is currently included in the PMRA's re-evaluation program, and its re-evaluation will be based on all available information regarding health and environmental risk. A proposed decision will be available for comment when the consultation document is published.

19. Dichlorvos/DDVP (CAS# 62-73-7)

DSF assessment	Prohibited in Denmark, Sweden, United Kingdom.
Regulatory status in OECD countries listed by DSF	**Denmark**: Pesticide uses have been prohibited since 1998 because dichlorvos was "assessed to be carcinogenic" and the "formulated products are highly acutely toxic"(PIC circular X, 1999). **Sweden**: This substance was first restricted due to its mutagenic properties, then voluntarily withdrawn in 1991 (PIC circular X, 1999). **UK**: The government has suspended the sale of a range of agricultural, professional and domestic insecticide products containing the chemical dichlorvos. This was based on a concern that the possibility that dichlorvos is a genotoxic carcinogen could not be ruled out (GNN, 2002). Prohibition of all uses could not be verified, as it is not listed in documents published by the Rotterdam Convention (i.e., PIC circulars).
Status in the US	In 2006, the US EPA assessed the human health and ecological risks associated with the uses of dichlorvos and determined that risks do not exceed levels of concern. Dichlorvos is an organophosphate (OP) and the US EPA concluded that the cumulative margins of safety from exposure to OPs in the US did not raise a concern (US EPA, 2006d).
Status in Canada	This active ingredient is currently under re-evaluation by the PMRA.

Conclusions:

The Canadian re-evaluation of dichlorvos will take into consideration all currently available information regarding health and environmental risk, including toxicological effects in laboratory animals identified by Denmark, Sweden and the United Kingdom. This will be reflected in the proposed decision which will be available for comment when the consultation document is published.

20. Dicofol (CAS# 115-32-2)

DSF assessment	Prohibited in Finland, Netherlands, Norway, Sweden.
Regulatory status in OECD countries listed by DSF	**Finland**: Not currently registered. It was removed from the market by the manufacturer in 1991 after prohibition by Sweden. (pers. com., Finnish Food Safety Authority EVIRA , November 2006). **Netherlands**: Use as a pesticide has been prohibited since 1997. This was based on the assessment that dicofol is persistent and has the potential to bioaccumulate to levels reported to cause adverse effects in non-target animals. Although manufacturers had an opportunity to provide additional data to demonstrate whether or not these effects would occur in the field, no additional field experiment was carried out and the substance was withdrawn from further use (PIC circular XXII, 2005) **Norway**: Use as a pesticide has been prohibited since 1992 because it was found to have possible carcinogenic effects and high persistence (PIC circular X, 1999). **Sweden**: Use as a pesticide is prohibited. It was withdrawn from the market in 1991 by the manufacturer because it was assessed to be persistent and bioaccumulative by the Swedish government (PIC circular X, 1999).
Status in Canada	This active ingredient is currently under re-evaluation by the PMRA.

Conclusions:

The Canadian re-evaluation of dicofol is under way and will take into consideration all currently available information regarding health and environmental risk, including concerns identified in Finland, the Netherlands, Norway, and Sweden. This will be reflected in the proposed decision which will be available for comment when the consultation document is published.

21. Dinitrophenol (CAS# 51-28-5)

DSF assessment	Prohibited in Sweden.
Regulatory status in OECD countries listed by DSF	Pesticide uses have been prohibited since 1985 in Sweden. It was withdrawn by the manufacturer following an assessment that it as "high acute toxicity, high penetration through the skin and specific toxic effects" (KEMI, 1998).
Status in Canada	Uses are no longer supported by the manufacturer and all have been discontinued (PMRA, 2005f).

Conclusions:

No further action is required in Canada.

22. Dinocap (CAS# 39300-45-3)

DSF assessment	Prohibited in Sweden, voluntarily withdrawn in the US.
Regulatory status in OECD countries listed by DSF	**Sweden**: Pesticide uses have been prohibited since 1990, based on the assessment that it has teratogenic effects in mice and rabbits (PIC circular X, 1999). **US**: The US EPA re-evaluation of dinocap uses resulted in a voluntary cancellation of all registered uses in the US. The US EPA assessed the health risks associated with exposure to residues at the tolerance level on imported apples and grapes and concluded that the risk is acceptable (US EPA, 2003a).
Status in Canada	This active ingredient is currently under re-evaluation by the PMRA.

Conclusions:

The Canadian re-evaluation of dinocap is under way and will take into consideration all currently available information regarding health and environmental risk, including concerns identified in Sweden and the United States. This will be reflected in the proposed decision and available for comment when the consultation document is published.

23. Diquat (CAS# 85-00-7)

DSF assessment	Prohibited in Denmark.
Regulatory status in OECD countries listed by DSF	Pesticide uses have been prohibited since 1998 in Denmark, based on the assessment that it is harmful to the environment (i.e., persistent in soil and toxic to the aquatic environment and some terrestrial species) (PIC circular X, 1999).
Status in the European Union	Safety with regards to human health and the environment in the European Union was reviewed and approved by the European Commission. Diquat is on the list of active ingredients authorized for use as plant protection products in the European Union (Annex I to Directive 91/414/EEC); authorized uses include terrestrial herbicide and desiccant, the aquatic weed control use is prohibited (EC, 2001b).
Status in the US	In 1995, the US EPA assessed the human health and ecological risks associated with the uses of diquat and determined that risks do not exceed levels of concern (US EPA, 1995b). In 2002, the US EPA reassessed tolerance residue levels and concluded that there was reasonable certainty that no harm to any population subgroup would result from aggregate exposure to diquat when considering dietary exposure and all other non-occupational sources of pesticide exposure (US EPA, 2002b).
Status in Canada	This active ingredient is currently under re-evaluation by the PMRA.

Conclusions:

This substance was prohibited in Sweden in 1998 but has since been approved for use as a pesticide in the European Union. The Canadian re-evaluation of diquat is under way and will take into consideration all currently available information regarding health and environmental risk, including the environmental concerns raised in Denmark. This will be reflected in the proposed decision and available for comment when the consultation document is published.

24. Diuron (CAS# 330-54-1)

DSF assessment	Prohibited in Sweden.
Regulatory status in OECD countries listed by DSF	Prohibited for use as a pesticide in Sweden after it was withdrawn by the manufacturer in 1993, based on the assessment that it is carcinogenic (PIC circular X, 1999).
Status in the US	In 1995, the US EPA assessed the human health and ecological risks associated with the uses of diuron and concluded that its use as specified in the 1995 Reregistration Eligibility Decision document, will not pose unreasonable risks or adverse effects to humans or the environment. In 2003, the US EPA reassessed tolerances and concluded that there was reasonable certainty that no harm to any population subgroup would result from aggregate exposure to diuron when considering dietary exposure and all other non-occupational sources of pesticide exposure. The carcinogenic potential of diuron was taken into consideration by the US EPA in the 1995 and 2003 assessments (US EPA, 2003b).
Status in Canada	This active ingredient is currently under re-evaluation by the PMRA. It is largely based on the 1995 and 2003 US EPA assessments, which were found to address Canadian uses of diuron and the main science areas that are necessary for a Canadian regulatory decision. Proposed re-evaluation results for diuron were published (PMRA, 2006f), the final decision is pending.

Conclusions:

Uses of diuron have been prohibited in Sweden since 1993, based on its toxicity alone (carcinogenicity). This endpoint was taken into consideration in the Canadian assessment of diuron. The hazard concern identified by Sweden has been addressed in the proposed Canadian re-evaluation decision.

25. Endosulfan (CAS# 115-29-7)

DSF assessment	Prohibited in the Netherlands, Norway, Sweden, European Union.
Regulatory status in OECD countries listed by DSF	**Netherlands**: Pesticide uses have been prohibited since 1990, based on the assessment that application of endosulfan will result in surface water concentrations that will significantly affect aquatic organisms (PIC circular XI, 2000). **Norway**: Pesticide uses have been prohibited since 1999, based on the assessment that "endosulfan has high persistence in soil, is extremely toxic to fish and toxic to bees", endosulfan is "highly toxic" to human health and "there have been cases of intoxication among workers" (PIC circular XIII, 2001). **Sweden**: Use as a pesticide has been prohibited since 1995. It was withdrawn by the manufacturer, based on the assessment that it is persistent and bioaccumulative, and has high acute toxicity (KEMI, 1998). **EU**: Not included on the list of active ingredients authorized for use as plant protection products in the European Union (Annex I to Directive 91/414/EEC), based on uncertainties in the environmental fate assessment (endosulfan is volatile, its main metabolite is persistent and it has been found in monitoring results of regions where the substance was not used), the ecological risk assessment (long term risk due to unknown metabolites could not be sufficiently addressed), and the operator risk assessment (exposure of operators under indoor conditions has not been considered to be sufficiently addressed) (EC, 2005c).
Status in the US	The US EPA conducted a re-evaluation of human health and environmental risk associated with all its uses in 2002. The EPA concluded that use endosulfan as a pesticide does not result in unreasonable adverse effects to human health or the environment provided the risk reduction measures recommended in the Reregistration Eligibility Decision document are implemented (US EPA, 2002c).
Status in Canada	This active ingredient is currently under re-evaluation by the PMRA.

Conclusions:

The Canadian re-evaluation of endosulfan is ongoing and will take into consideration all currently available information regarding health and environmental risk, including any concerns identified in other countries. This will be reflected in the proposed decision which will be available for comment when the consultation document is published.

26. Ethylene oxide (CAS# 75-21-8)

DSF assessment	Prohibited in Austria, Czech Republic, Finland, Germany, Sweden, United Kingdom, European Union.
Regulatory status in OECD countries listed by DSF	**Austria**: Pesticide uses have been prohibited since 1992 based on the assessment that it has carcinogenic and mutagenic properties (PIC circular X, 1999). **Czech Republic**: There are no reports that this country has taken any regulatory action against ethylene oxide. **Finland**: Not currently registered as a pesticide, it was added to a list of prohibited substances when Finland joined the European Union in 1996 (pers. com., Finnish Food Safety Authority EVIRA, 2006). **Germany**: Pesticide uses have been prohibited since 1981, based on the assessment that it is "highly toxic to warm blooded animals and man, suspected of having teratogenic effects", and residues are a concern in stored products (PIC circular X, 1999). **Sweden**: Pesticide uses have been prohibited since 1991, based on the assessment that it has carcinogenic properties (PIC circular X, 1999). **United Kindom**: Pesticide uses have been prohibited since 1990, based on the assessment that it has shown evidence of carcinogenicity (PIC circular X, 1999). **European Union**: Use as a plant protection product (e.g., fumigation of plants or plant products in storage) has been prohibited since 1986, based on the assessment that treatment with this active ingredient "leaves residues in foodstuffs which may give rise to harmful effects on human or animal health" (EC, 1986), and it is not included on the list of active ingredients authorized for use as plant protection products in the European Union (i.e., Annex I to Directive 91/414/EEC). Pesticidal use for control of wool and fur pests and industrial uses are still allowed. Control of wool and fur pests is not covered by the plant protection legislation (PIC circular X, 1999).
Status in the US	The re-evaluation of all uses of this active ingredient is scheduled for completion in 2007. In 2006, the US EPA assessed the safety of food residue tolerances and concluded " there is a reasonable certainty that no harm to any population subgroup will result from exposure to ethylene oxide or its reaction products" and " the four tolerances established for residues of ethylene oxide are considered reassessed as safe" (US EPA, 2006e).
Status in Canada	This active ingredient is currently under re-evaluation by the PMRA. The only pesticidal use of this substance in Canada is spice fumigation.

Conclusions:

Use of ethylene oxide in Canada is currently limited to spice fumigation. Re-evaluation of this use is under way and will take into consideration all currently available information regarding health and environmental risk, including any concerns identified in other countries. This will be reflected in the proposed decision which will be available for comment when the consultation document is published.

27. Fenthion (CAS# 55-38-9)

DSF assessment	Prohibited in the European Union
Regulatory status in OECD countries listed by DSF	In 2004, the human health and environment risks was assessed by the European Commission and fenthion was not approved for inclusion to the list of active ingredients authorized for use as plant protection products in the European Union (Annex I to Directive 91/414/EEC). This was based on environmental concerns and the conclusion that the risk to birds from the proposed uses (bait in orchard) of fenthion remained uncertain (EC, 2004e).
Status in Canada	This active ingredient was recently re-evaluated by the PMRA (PMRA, 2003b). As a result of the re-evaluation of fenthion, the registrant of the technical product has decided to voluntarily discontinue all products and uses for this active ingredient (PMRA, 2004b).

Conclusions:

No further action is required in Canada.

28. Ferbam (CAS# 14484-64-1)

DSF assessment	Prohibited in the European Union.
Regulatory status in OECD countries listed by DSF	Ferbam was not authorized for use as a pesticide in the EU by the European Commission because the data required for the re-evaluation of the substance was not submitted by the manufacturer. Ferbam is not included on the list of active ingredients authorized for use as plant protection products in the European Union (i.e., Annex I to Directive 91/414/EEC) (EC, 1995).
Status in Canada	This active ingredient is currently under re-evaluation by the PMRA.

Conclusions:

Prohibition in the EU is not considered to be due to health or environmental reasons. Nevertheless, the Canadian re-evaluation of ferbam is under way and will take into consideration all currently available information regarding health and environmental risk. A proposed decision will be available for comment when the consultation document is published.

29. Hexazinone (CAS# 51235-04-2)

DSF assessment	Prohibited in Denmark, Norway, Slovenia, Sweden.
Regulatory status in OECD countries listed by DSF	**Denmark**: Use as a pesticide is prohibited since 1995, based on the assessment that it is persistent in soil, mobile and presents a risk of harmful effects on aquatic ecosystems (PIC circular X, 1999). **Norway**: Use as a pesticide is prohibited since 1998, based on the assessment that it is "persistent under Norwegian climatic conditions, highly mobile in soil, extremely toxic to algae" (PIC circular XIII, 2001). **Slovenia**: Not an OECD member. **Sweden**: Use as a pesticide was prohibited in 1994 after it was withdrawn from the market by the manufacturer. This was based on the assessment that it is "persistent, highly mobile in soil and toxic to water-living organisms" (KEMI, 1998).
Status in the US	The US EPA conducted a re-evaluation of human health and environmental risk associated with all its uses in 1994. The EPA concluded that use of hexazinone as a pesticide does not result in unreasonable adverse effects to human health or the environment provided the risk reduction measures recommended in the Reregistration Eligibility Decision document are implemented (US EPA, 1994). In 2002, for the purpose of assessing the safety of food residue tolerances, the US EPA evaluated the dietary risk associated with hexazinone and concluded that " there is a reasonable certainty that no harm to any population subgroup will result from aggregate exposure to hexazinone when considering dietary, drinking water, and residential exposure and all other non-occupational sources of pesticide exposure" (US EPA, 2002d).
Status in Canada	This active ingredient is currently under re-evaluation by the PMRA.

Conclusions:

The Canadian re-evaluation of hexazinone is under way and will take into consideration all currently available information regarding health and environmental risk, including the environmental concerns identified by Denmark, Norway, and Sweden. This will be reflected in the proposed decision which will be available for comment when the consultation document is published.

30. Iprodione (CAS# 36734-19-7)

DSF assessment	Prohibited in Denmark.
Regulatory status in OECD countries listed by DSF	Use as a pesticide has been prohibited in Denmark since 1998, based on the assessment that it is "seriously damaging to health" (carcinogenic and harmful to the reproduction), some products were found to be "toxic and harmful to reproduction of wild birds and mammals and are therefore seriously damaging to the environment"(PIC circular X, 1999).
Status in the US	The US EPA conducted a re-evaluation of human health and environmental risk associated with all its uses in 1998. The EPA concluded that use of iprodione as a pesticide does not result in unreasonable adverse effects to human health or the environment provided the risk reduction measures recommended in the Reregistration Eligibility Decision document are implemented (US EPA, 1998d).
Status in the European Union	Reviewed by the European Commission, and approved for inclusion in the list of active ingredients authorized for use as plant protection products in the European Union (i.e., Annex I to Directive 91/414/EEC) (EC, 2003a).
Status in Canada	This active ingredient is currently under re-evaluation by the PMRA.

Conclusions:

This substance was prohibited in Denmark in 1998, but was approved for use as a pesticide in the European Union in 2003. The Canadian re-evaluation of iprodione will take into consideration all currently available information regarding health and environmental risk, including concerns identified by Denmark. This will be reflected in the proposed decision which will be available for comment when the consultation document is published.

31. Linuron (CAS# 330-55-2)

DSF assessment	Prohibited in Norway, Sweden.
Regulatory status in OECD countries listed by DSF	**Norway**: Use as a pesticide has been prohibited since 2004, based on the assessment that it is associated with "relatively low degradation in soil and possible accumulation in soil, risk of adverse effects on birds, risk for groundwater contamination (based on results from monitoring programmes)" (PIC circular XIV, 2001). **Sweden**: Use as a pesticide has been prohibited since 1996, based on the assessment that it is carcinogenic and persistent (KEMI, 1998).
Status in the European Union	Reviewed by the European Commission, and approved for inclusion in the list of active ingredients authorized for use as plant protection products in the European Union (i.e., Annex I to Directive 91/414/EEC) (EC, 2003a).
Status in the US	The US EPA conducted a re-evaluation of human health and environmental risk associated with its uses in 1995, and concluded that linuron uses would not pose unreasonable risks or adverse effects to humans or the environment, provided they are amended to reflect the risk mitigation measures in the Reregistration Eligibility Decision document (US EPA, 1995c). All tolerances for linuron were reassessed and the aggregate risk associated with all non-occupational sources of exposure to linuron were not of concern (US EPA, 2002e).
Status in Canada	This active ingredient is currently under re-evaluation by the PMRA.

Conclusions:

This substance is prohibited in Norway and Sweden but was approved for pesticide use in the European Union. The Canadian re-evaluation of linuron is under way and will take into consideration all currently available information regarding health and environmental risk, including concerns identified by Norway and Sweden. This will be reflected in the proposed decision which will be available for comment when the consultation document is published.

32. Maleic hydrazide (CAS# 123-33-1, 10071-13-3)

DSF assessment	Prohibited in Austria, Denmark, Finland, Germany, United Kingdom
Regulatory status in OECD countries listed by DSF	**Austria**: Use as a pesticide has been prohibited since 1992, based on the assessment that it is associated with "high mobility in soils and potential for contamination of water", "suspected to have a carcinogenic potential", and that "its residue in food is highly toxic, causing negative effects on central nervous system and liver damage" (PIC circular X, 1999). **Denmark**: Prohibited since 1997, based on the assessment that it represents "a risk to cause groundwater pollution" (PIC circular X, 1999). **Finland**: Registered for pesticide use (growth regulator for onion) (pers. com., Finnish Food Safety Authority EVIRA , November 2006). **Germany**: Prohibited since 1991, based on the assessment that it contains impurities of concern (free hydrazine) (PIC circular X, 1999). **UK**: The status could not be verified, it is not listed in the Rotterdam Convention publications (i.e., PIC circulars).
Status in the US	The US EPA conducted a re-evaluation of human health and environmental risk associated with maleic hydrazide in 1994 and concluded that use as a pesticide would not pose unreasonable risks or adverse effects to humans or the environment (US EPA, 1994a). The EPA conducted an aggregate risk assessment in 2005, and determined that the human health risks from the combined exposure through food, drinking water and residential applications are within acceptable levels (US EPA, 2005b).
Status in the European Union	Reviewed by the European Commission, and approved for inclusion in the list of active ingredients authorized for use as plant protection products in the European Union (i.e., Annex I to Directive 91/414/EEC) (EC, 2003).
Status in Canada	This active ingredient is currently under re-evaluation by the PMRA.

Conclusions:

Pesticide use of this substance has been prohibited in Austria, Denmark and Germany in the 90's, but has since been approved in the European Union. It is not prohibited in Finland. The Canadian re-evaluation of maleic hydrazide is under way and will take into consideration all currently available information regarding health and environmental risk, including concerns identified in Austria, Denmark, and Germany. This will be reflected in the proposed decision which will be available for comment when the consultation document is published.

33. Mancozeb (CAS# 8018-01-7)

DSF assessment	Prohibited in Norway.
Regulatory status in OECD countries listed by DSF	This substance is currently registered for pesticide use in Norway (pers. com., Norwegian Food Safety Authority, December 2006).
Status in the US	The US EPA conducted a re-evaluation of human health and environmental risk associated with mancozeb in 2005, and concluded that use as a pesticide does not result in unreasonable adverse effects to human health or the environment provided the risk reduction measures recommended in the Reregistration Eligibility Decision document are implemented (US EPA, 2005c).
Status in the European Union	Reviewed by the European Commission, and approved for inclusion in the list of active ingredients authorized for use as plant protection products in the European Union (i.e., Annex I to Directive 91/414/EEC) (EC, 2005b).
Status in Canada	This active ingredient is currently under re-evaluation by the PMRA.

Conclusions:

The claim that mancozeb has been prohibited in Norway is incorrect. In addition, this substance was approved for pesticide use in the European Union in 2005. Nevertheless, the Canadian re-evaluation of mancozeb is under way and will take into consideration all currently available information regarding health and environmental risk. A proposed decision will be available for comment when the consultation document is published.

34. Maneb (CAS# 12427-38-2)

DSF assessment	Prohibited in Sweden.
Regulatory status in OECD countries listed by DSF	Use as a pesticide is prohibited in Sweden since 1996, based on the assessment that it is carcinogenic (KEMI, 1998).
Status in the European Union	Reviewed by the European Commission, and approved for inclusion in the list of active ingredients authorized for use as plant protection products in the European Union (i.e., Annex I to Directive 91/414/EEC) (EC, 2005b).
Status in Canada	This active ingredient is currently under re-evaluation by the PMRA.

Conclusions:

This substance was prohibited in Sweden in 1996, but approved for pesticide use in the European Union in 2005. The PMRA re-evaluation of maneb will take into consideration all currently available information regarding health and environmental risk, including concerns identified in Sweden. This will be reflected in the proposed decision which will be available for comment when the consultation document is published.

35. Metalaxyl (CAS# 57837-19-1)

DSF assessment	Prohibited in the European Union.
Regulatory status in OECD countries listed by DSF	Metalaxyl was not approved for inclusion in the list of active ingredients authorized for use as plant protection products in the European Union (i.e., Annex I to Directive 91/414/EEC) because the manufacturer chose not to participate in the review programme and did not submit the data necessary to complete the review (EC, 2003b).
Status in the US	The US EPA conducted a re-evaluation of human health and environmental risk associated with all its uses in 1994. The EPA concluded that use of metalalxyl as a pesticide does not result in unreasonable adverse effects to human health or the environment provided the risk reduction measures recommended in the Reregistration Eligibility Decision document are implemented (US EPA, 1994b).
Status in Canada	This active ingredient is currently under re-evaluation by the PMRA.

Conclusions:

Prohibition in the EU is based on a business decision from the manufacturer and not on health or environmental concerns. Nevertheless, the Canadian re-evaluation of metalaxyl is under way and will take into consideration all currently available information regarding health and environmental risk. A proposed decision will be available for comment when the consultation document is published (target 2007).

36. Metiram (CAS# 9006-42-2)

DSF assessment	Prohibited in Denmark, Finland, the United Kingdom.
Regulatory status in OECD countries listed by DSF	**Denmark**: There are no records of this substance being prohibited for use as a pesticide. **Finland**: Not currently registered but is not prohibited (pers. com., Finnish Food Safety Authority EVIRA, November, 2006). **UK**: Currently registered for use as a pesticide (PSD, 2005).
Status in the US	The US EPA conducted a re-evaluation of human health and environmental risk associated with metiram in 2005 and concluded that use as a pesticide does not result in unreasonable adverse effects to human health or the environment, provided the risk reduction measures recommended in the Reregistration Eligibility Decision document are implemented (US EPA, 2005d).
Status in the European Union	Reviewed by the European Commission, and approved for inclusion in the list of active ingredients authorized for use as plant protection products in the European Union (i.e., Annex I to Directive 91/414/EEC) (EC, 2005b).
Status in Canada	This active ingredient is currently under re-evaluation by the PMRA.

Conclusions:

The claim that metiram is prohibited in Denmark, Finland or the United Kingdom appears to be incorrect. This substance was approved for pesticide use in the European Union in 2005. Nevertheless, the Canadian re-evaluation of metiram is under way and will take into consideration all currently available information regarding health and environmental risk. A proposed decision will be available for comment when the consultation document is published.

37. Monolinuron (CAS# 1746-81-2)

DSF assessment	Prohibited in the European Union.
Regulatory status in OECD countries listed by DSF	Monolinuron was reviewed by the European Commission, but not approved for inclusion in the list of active ingredients authorized for use as plant protection products in the European Union (i.e., Annex I to Directive 91/414/EEC). This was based on environmental and human health concerns (EC, 2000a).
Status in Canada	As a result of the PMRA's re-evaluation of monolinuron, it is no longer supported by the manufacturer, and all uses have been discontinued (PMRA, 2004d).

Conclusions:

No further action is required in Canada.

38. PCNB, also known as Quintozene (CAS# 82-68-8)

DSF assessment	Prohibited in Austria, Finland, Germany, the European Union.
Regulatory status in OECD countries listed by DSF	**Austria**: Voluntarily withdrawn by the manufacturer since 1988 and uses prohibited since 1992 based on the assessment that it is carcinogenic and has reproductive effects (effects on fetus or embryo, fertility, developmental abnormalities) in experimental animals (PIC circular X, 1999). **Finland**: Voluntarily withdrawn by the manufacturer in early 1990s, then it was added to a list of prohibited pesticides in 1996 when Finland joined the EU (pers. com., Finnish Food Safety Authority EVIRA, November 2006). **Germany**: Use as a pesticide has been prohibited since 1988 because it was found to be associated with unacceptable levels of hexachlorobenzene as an impurity (PIC circular X, 1999). **EU**: Use as a pesticide has been prohibited since 2000. The European Commission reviewed quintozene and did not approve its inclusion in the list of active ingredients authorized for use as plant protection products in the European Union (i.e., Annex I to Directive 91/414/EEC) based on human health concerns (concerns with operator safety, insufficient data were available to assess the risk to the consumer exposed to potential residues) and environmental concerns (unacceptable risk to non-target organisms) (EC, 2000b).
Status in the US	The US EPA conducted a re-evaluation of human health and environmental risk associated with quintozene in 2005, and concluded that use as a pesticide does not result in unreasonable adverse effects to human health or the environment, provided the risk reduction measures recommended in the Reregistration Eligibility Decision document are implemented (US EPA, 2005e).
Status in Canada	This active ingredient is currently under re-evaluation by the PMRA .

Conclusions:

The Canadian re-evaluation of quintozene will take into consideration all currently available information regarding health and environmental risk, including concerns identified in Austria, Finland, Germany, or the European Union. This will be reflected in the proposed decision which will be available for comment when the consultation document is published.

39. Paclobutrazol (CAS# 76738-62-0)

DSF assessment	Prohibited in Sweden.
Regulatory status in OECD countries listed by DSF	Use as a pesticide in Sweden was prohibited after it was withdrawn by the manufacturer in 1991, based on its persistence (KEMI, 1998).
Status in Canada	This active ingredient was first registered in 1995, using Health Canada's modern pesticide registration process.

Conclusions:

This active ingredient was registered in 1995 in Canada and an assessment of its impact on the environment and human health was conducted at the time. Products are approved for registration in Canada by the PMRA only when the risks to health or the environment, and its value, are acceptable. The regulatory action taken by Sweden for paclobutrazol predates the Canadian registration decision. The persistence of paclobutrazol and its impact on the environment was taken into consideration in the registration decision.

40.Pentachlorophenol (CAS# 87-86-5)

DSF assessment	Prohibited in Germany, the Netherlands, New Zealand, Sweden, Switzerland.
Regulatory status in OECD countries listed by DSF	**Germany**: Production and commercialisation of products containing more than 0,01% or 5 mg/kg (ppm) of pentachlorophenol, and salts, has been prohibited since 1993 (PIC circular X, 1999). **Netherlands**: Use as a pesticide or as an industrial chemical has been prohibited since 1992, based on the assessment that its use would result in a " high concentration of active substance, metabolites and contaminants in the environment", it has "high toxicity for aquatic organisms" (PIC circular X, 1999). **Sweden**: Use as a pesticide has been prohibited since 1978 because of "highly toxic impurities in commercial products and formation of highly toxic compounds at combustion" (PIC circular X, 1999). **New Zealand**: Prohibited for use as a pesticide (Secretariat to the Rotterdam Convention, Decision Guidance Documents, Pentachlorophenol and its salts and esters, April 2007)._ **Switzerland**: Use as a pesticide is prohibited since 1988 because of concerns with "bioaccumulation, highly toxic impurities, formation of highly toxic substances on thermolysis" (PIC circular X, 1999).
Status in the European Union	Use of pentachlorophenol is restricted in the European Union. Preparations with a concentration higher than 0.1% by mass are prohibited, except for preparations intended for use in industrial installations: in the treatment of wood, in the impregnation of heavy-duty textiles, as a synthesising and/or processing agent in industrial processes. All preparations must have a contaminant concentration lower than 4 ppm (EC, 1991b).
Status in the US	The US EPA is re-evaluating pentachlorophenol uses in the US. Preliminary assessments of potential health and environmental risk associated with pentachlorophenol and with its contaminants were published in 2004 (US EPA, 2004c).
Status in Canada	In Canada, pentachlorophenol is currently registered for use as a heavy duty wood preservative only. All other uses have been phased-out. Non-wood preservative uses that are acceptable in the EU, e.g., impregnation of textiles, are not registered in Canada. A cooperative re-evaluation of heavy duty wood preservative uses of pentachlorophenol, involving the PMRA and the US EPA, is ongoing. Voluntary upgrades to Canadian wood treatment facilities that further increase protection of wood treaters and the environment have been implemented since December 2005. Canadian stakeholders have been consulted regarding preliminary risk assessments for pentachlorophenol and contaminants (HCB, dioxin and furans). Comments on these assessments will be considered in the finalisation of the re-evaluation decision, and development of risk management/mitigation options for pentachlorophenol and its contaminants (PMRA, 2004e, 2005c).

Conclusions:

The Canadian re-evaluation of pentachlorophenol will take into consideration all currently available information regarding health and environmental risk, including any concerns identified in other countries. This will be reflected in the proposed decision which will be available for comment when the consultation document is published.

41. Para-dichlorobenzene, aka 1,4-dichlorobenzene (CAS# 106-46-7)

DSF assessment	Prohibited in Sweden.
Regulatory status in OECD countries listed by DSF	Use as a pesticide has been prohibited in Sweden since 1989 based on its suspected carcinogenicity (PIC circular X, 1999).
Status in Canada	This active ingredient is currently under re-evaluation by the PMRA.

Conclusions:

The Canadian re-evaluation of paradichlorobenzene will take into consideration all currently available information regarding health and environmental risk, including the toxicity concern identified by Sweden. This will be reflected in the proposed decision which will be available for comment when the consultation document is published.

42. Paraquat (CAS# 1910-42-5, 4685-14-7)

DSF assessment	Prohibited in Austria, Denmark, Finland, Slovenia, Sweden.
Regulatory status in OECD countries listed by DSF	**Austria**: Use as a pesticide has been prohibited since 1993 because of "its high acute toxicity, irreversible toxic effects and numerous fatal accidents" (PIC circular X, 1999). **Denmark**: Use as a pesticide has been prohibited since 1995 based on its persistence in soil, toxicity to non-target organisms, and because "deaths have been documented among hare and rabbit which have eaten or walked on grass sprayed with paraquat" (PIC circular X, 1999). **Finland**: Use as a pesticide has been prohibited since 1986 based on the assessment that it is " very toxic also in small doses and can cause death", "because there is no effective method of nursing treatment available for cases of poisoning" and "some of the symptoms may occur only some weeks after the exposure." (It was noted that there had not been any cases of occupational poisoning in Finland at the time of the decision) (PIC circular X, 1999). **Slovenia**: Not an OECD member. **Sweden**: Use as a pesticide has been prohibited since 1983 " because of its high acute toxicity, irreversible toxic effects and imminent risk of accidents" (PIC circular X, 1999).
Status in the US	Human and environmental health risk assessments were conducted for paraquat by the US EPA, including examination of the risk of acute health effects from potential inhalation exposure during and post application, as well as environmental fate and impact of paraquat. The US EPA concluded that the human health and environmental risks associated with uses of paraquat were acceptable provided risk reduction measures described in the 1997 Re-registration Eligibility Decision document are implemented (US EPA, 1997a).
Status in the European Union	Reviewed by the European Commission, and approved for inclusion in the list of active ingredients authorized for use as plant protection products in the European Union (i.e., Annex I to Directive 91/414/EEC) (EC, 2003c).
Status in Canada	The re-evaluation of paraquat was recently completed. It was largely based on the US EPA reregistration eligibility review conducted in 1997. The 1997 US EPA RED was found to address uses of paraquat dichloride that are also registered in Canada, and to address the main science areas that are necessary for a Canadian regulatory decision. Based on the USEPA RED and Canadian use pattern, the PMRA concluded that paraquat dichloride is acceptable for continued registration provided that the required mitigation measures are implemented. Mitigation measures included cancellation of residential uses, increased requirements for protective equipment during handling, requirement for agricultural buffer zones (PMRA, 2004a, 2006c).

Conclusions:

Uses of paraquat are prohibited in four OECD countries, mainly based on its acute toxicity, and in some cases on its environmental properties (assessed as persistent by Denmark) and toxicity to non-target species. Paraquat has since then been approved for use as a pesticide in the European Union. The regulatory actions by OECD countries all predate the Canadian re-evaluation decision and the concerns which lead to these actions have been addressed in the Canadian re-evaluation of paraquat.

43. Permethrin (CAS# 52645-53-1, 54774-45-7, 51877-74-8)

DSF assessment	Prohibited in the European Union.
Regulatory status in OECD countries listed by DSF	The file submitted for review to the European Commission was found insufficient but no company wanted to continue support of the substance, the additional information was not submitted and permethrin was not added to Annex I (EC, 2000c).
Status in the US	The US EPA examined the eligibility for re-registration of permethrin uses and concluded that permethrin-containing products are eligible for reregistration. Results were published in a 2006 Re-registration Eligibility Decision document (US EPA, 2006f).
Status in Canada	This active ingredient is currently under re-evaluation by the PMRA.

Conclusions:

Prohibition in the EU is based on a business decision from the manufacturer and not on health or environmental concerns. Nevertheless, the Canadian re-evaluation of permethrin is under way and will take into consideration all currently available information regarding health and environmental risk. A proposed decision will be available for comment when the consultation document is published.

44. Picloram (CAS# 1918-02-1)

DSF assessment	Prohibited in Sweden.
Regulatory status in OECD countries listed by DSF	This substance was assessed as being persistent and mobile in Sweden and was withdrawn by the manufacturer in 1984 (PIC circular X, 1999).
Status in the US	The US EPA conducted a re-evaluation of human health and environmental risk associated with all its uses in 1995. The EPA concluded that use of picloram as a pesticide does not result in unreasonable adverse effects to human health or the environment provided the risk reduction measures recommended in the Reregistration Eligibility Decision document are implemented (US EPA, 1995d).
Status in Canada	This active ingredient is currently under re-evaluation by the PMRA.

Conclusions:

The Canadian re-evaluation of picloram is under way and will take into consideration all currently available information regarding health and environmental risk, including the concern related to its environmental fate identified by Sweden. This will be reflected in the proposed decision which will be available for comment when the consultation document is published (target 2007).

45. Propanil (CAS# 709-98-8)

DSF assessment	Prohibited in Sweden
Regulatory status in OECD countries listed by DSF	Propanil was withdrawn in Sweden in 1994 due to the formation of toxic metabolites (pers. com., National Chemicals Inspectorate, Sweden, February 2007).
Status in Canada	All uses have been discontinued (PMRA, 2005b).

Conclusions:

No further action is required in Canada.

46. Propoxur (CAS# 114-26-1)

DSF assessment	Prohibited in Sweden.
Regulatory status in OECD countries listed by DSF	Use as a pesticide has been prohibited since 1992 in Sweden based on the assessment that it is carcinogenic (PIC circular X, 1999).
EPA status	The US EPA conducted a re-evaluation of human health and environmental risk associated with all its uses in 1997. The EPA concluded that use of propoxur as a pesticide does not result in unreasonable adverse effects to human health or the environment provided the risk reduction measures recommended in the Reregistration Eligibility Decision document are implemented (US EPA, 1997b).
Status in Canada	This active ingredient is currently under re-evaluation by the PMRA.

Conclusions:

The Canadian re-evaluation of propoxur will take into consideration all currently available information regarding health and environmental risk, including the concern related to its toxicity identified in Sweden. This will be reflected in the proposed decision which will be available for comment when the consultation document is published.

47. Quizalofop ethyl (CAS# 76578-14-8)

DSF assessment	Prohibited in Norway.
Regulatory status in OECD countries listed by DSF	Prohibited for use as a pesticide in Norway since 1988, based on the assessment that it is associated with severe toxicological effects (cancer) and low agronomical need (pers. com., Norwegian Food Safety Authority, Pesticides Section, December 2006).
Status in Canada	All uses are discontinued since 2003.

Conclusions:

No further action is required in Canada.

48. Simazine (CAS# 122-34-9)

DSF assessment	Prohibited in Norway, the European Union.
Regulatory status in OECD countries listed by DSF	**Norway**: Use as a pesticide has been prohibited since 1998, based on the assessment that it has "high mobility, persistence in soil and water" and is "extremely toxic to algae" (PIC circular XIII, 2001). **EU**: Use as a pesticide has been prohibited since 2004. The European Commission reviewed simazine and did not approve its inclusion in the list of active ingredients authorized for use as plant protection products in the European Union (i.e., Annex I to Directive 91/414/EEC). This was based on the assessment that the available monitoring data were insufficient to demonstrate that in large areas, concentration of the active substance and its breakdown products would not exceed 0.1 µg/L in groundwater. Moreover, it could not be assured that continued use in other areas would permit satisfactory recovery of groundwater quality where concentrations already exceeded 0.1 µg/L in groundwater (EC, 2004f; PIC circular XXI, 2005).
Status in the US	The US EPA conducted a re-evaluation of human health and environmental risk associated with all its uses in 2006. The EPA concluded that use of simazine as a pesticide does not result in unreasonable adverse effects to human health or the environment provided the risk reduction measures recommended in the Reregistration Eligibility Decision document are implemented. EPA also completed a cumulative risk assessment for the chlorinated triazine class of pesticides and concluding that with the required mitigation measures, cumulative risks associated with these pesticides are below the level of concern (US EPA, 2006g).
Status in Canada	This active ingredient is currently under re-evaluation by the PMRA.

Conclusions:

The Canadian re-evaluation of simazine will take into consideration all currently available information regarding health and environmental risk, including concerns identified in Norway and the European Union. This will be reflected in the proposed decision which will be available for comment when the consultation document is published.

49. Sodium chlorate (CAS# 7775-09-9)

DSF assessment	Prohibited in Norway, Sweden.
Regulatory status in OECD countries listed by DSF	**Sweden**: Use as a pesticide is prohibited since 1990, based on the assessment that it has "high mobility in soil" (PIC circular X, 1999). **Norway**: Use as a pesticide is prohibited since 1992, because of "mobility, water solubility and risk of pollution" (PIC circular X, 1999).
Status in the US	The US EPA conducted a re-evaluation of human health and environmental risk associated with all its uses in 2006. The EPA concluded that use of sodium chlorate as a pesticide does not result in unreasonable adverse effects to human health or the environment provided the risk reduction measures recommended in the Reregistration Eligibility Decision document are implemented (US EPA, 2006h).
Status in Canada	This active ingredient is currently under re-evaluation by the PMRA.

Conclusions:

The Canadian re-evaluation of sodium chlorate will take into consideration all currently available information regarding health and environmental risk, including the concerns related to its environmental fate identified in Norway and Sweden. This will be reflected in the proposed decision which will be available for comment when the consultation document is published.

50. Terbacil (CAS# 5902-51-2)

DSF assessment	Prohibited in Sweden.
Regulatory status in OECD countries listed by DSF	Use as a pesticide has been prohibited since 1991 in Sweden, due to "high mobility in soil" (KEMI, 1998).
Status in the US	The US EPA conducted a re-evaluation of human health and environmental risk associated with terbacil in 1997, and concluded that use as a pesticide does not result in unreasonable adverse effects to human health or the environment, provided the risk reduction measures recommended in the Reregistration Eligibility Decision document are implemented (US EPA, 1998e).
Status in Canada	The re-evaluation of terbacil was recently completed. It was largely based on the US EPA reregistration eligibility review conducted in 1997. The 1997 US EPA RED was found to address Canadian uses of terbacil and the main science areas that are necessary for a Canadian regulatory decision. The PMRA concluded that the human health and environmental risks associated with uses of terbacil are acceptable provided that the required mitigation measures are implemented (PMRA, 2005d, 2006a).

Conclusions:

Uses of terbacil has been prohibited in Sweden since 1991 based on its environmental properties (mobility in soil). This regulatory action predates the Canadian re-evaluation decision regarding terbacil and has been taken into consideration in the assessment of the potential risks associated with terbacil uses within the Canadian context. The concern related to mobility in soil which formed the basis of the prohibitions in Sweden has been addressed through the Canadian re-evaluation of terbacil.

51. Thiabendazole (CAS# 148-79-8)

DSF assessment	All pesticide uses prohibited in Denmark, Slovenia.
Regulatory status in OECD countries listed by DSF	**Denmark**: Use as a pesticide is restricted since 1995 to indoor use only. This is based on the assessment that it is " persistent in soil", "very toxic to aquatic organisms, and is likely to seriously affect the earthworm population" (PIC circular X, 1999). **Slovenia**: Not an OECD member.
Status in the European Union	Reviewed by the European Commission, and approved for inclusion in the list of active ingredients authorized for use as plant protection products in the European Union (i.e., Annex I to Directive 91/414/EEC) (EC, 2001b).
Status in the US	The US EPA conducted a re-evaluation of human health and environmental risk associated with all its uses in 2002. The EPA concluded that use of thiabendazole as a pesticide does not result in unreasonable adverse effects to human health or the environment provided the risk reduction measures recommended in the Reregistration Eligibility Decision document are implemented (US EPA, 2002f).
Status in Canada	This active ingredient is currently under re-evaluation by the PMRA.

Conclusions:

The claim that all uses of thiabendazole have been prohibited in Denmark is incorrect. In addition, this substance was approved for pesticide use in the European Union in 2001. Nevertheless, the Canadian re-evaluation of thiabendazole is under way and will take into consideration all currently available information regarding health and environmental risk. A proposed decision will be available for comment when the consultation document is published.

52. Thiophanate-methyl (CAS# 23564-05-8)

DSF assessment	Prohibited in Denmark.
Regulatory status in OECD countries listed by DSF	Use as a pesticide has been prohibited since 1990 in Denmark, based on the assessment that it is "persistent in soil and toxic for earthworms" (PIC circular X, 1999).
Status in the US	The US EPA conducted a re-evaluation of human health and environmental risk associated with all its uses in 2004. The EPA concluded that use of thiophanate-methyl as a pesticide does not result in unreasonable adverse effects to human health or the environment provided the risk reduction measures recommended in the Reregistration Eligibility Decision document are implemented (US EPA, 2005f).
Status in Canada	This active ingredient is currently under re-evaluation by the PMRA.

Conclusions:

The Canadian re-evaluation of thiophenate-methyl is under way and will take into consideration all currently available information regarding health and environmental risk, including the environmental persistence and toxicity concern identified in Denmark. This will be reflected in the proposed decision which will be available for comment when the consultation document is published.

53. Thiram (CAS# 137-26-8)

DSF assessment	Prohibited in Sweden.
Regulatory status in OECD countries listed by DSF	Use as a pesticide has been prohibited since 1994 in Sweden, "due to a combination of toxic effects" (PIC circular X, 1999).
Status in the European Union	Reviewed by the European Commission, and approved for inclusion in the list of active ingredients authorized for use as plant protection products in the European Union (i.e., Annex I to Directive 91/414/EEC) (EC, 2003d).
Status in the US	The US EPA conducted a re-evaluation of human health and environmental risk associated with all its uses in 2004. The EPA concluded that use of thiram as a pesticide does not result in unreasonable adverse effects to human health or the environment provided the risk reduction measures recommended in the Reregistration Eligibility Decision document are implemented (US EPA, 2004d).
Status in Canada	This active ingredient is currently under re-evaluation by the PMRA.

Conclusions:

This substance was prohibited in Sweden in 1994, but has since been approved for use in the European Union. The Canadian re-evaluation of thiram is under way and will take into consideration all currently available information regarding health and environmental risk, including the hazard concern identified in Sweden. This will be reflected in the proposed decision which will be available for comment when the consultation document is published.

54. Triadimenol (CAS# 55219-65-3)

DSF assessment	Prohibited in Sweden.
Regulatory status in OECD countries listed by DSF	Use as a pesticide has been prohibited since 1993 in Sweden, based on the assessment that "triadimenol is highly persistent" (PIC circular X, 1999).
Status in the US	The US EPA did not re-evaluate triadimenol per se as it is not part of their reregistration program. Triadimefon, however, is a pesticide which breaks down into triadimenol and was re-evaluated in 2006. During this re-evaluation, all sources or triadimenol were taken into consideration in the risk assessments including use of triadimenol as a pesticide. The US EPA concluded that potential exposure to triadimenol does not result in unreasonable adverse effects to human health or the environment provided the risk reduction measures described in the 2006 RED are implemented. Although triadimenol is not subject to reregistration in the US, it is subject to tolerance reassessment. Based on its evaluation of combined non-occupational exposures from the uses of triadimefon, triadimenol, and their metabolites, the US EPA determined that the human health risks are within acceptable levels (US EPA, 2006i).
Status in Canada	This active ingredient was first registered in 1996 using Health Canada's modern pesticide registration process.

Conclusions:

This active ingredient was registered in 1996 and an assessment of its impact on the environment and human health was conducted at the time. Products are approved for registration in Canada by the PMRA only when the risks to health or the environment, and its value, are acceptable. The regulatory action taken by Sweden for triadimenol predates the Canadian registration decision; the concern related to persistence identified in Sweden was taken into consideration in the registration decision.

55. Triallate (CAS# 2303-17-5)

DSF assessment	Prohibited in Sweden.
Regulatory status in OECD countries listed by DSF	Use as a pesticide has been prohibited since 1997 in Sweden, based on "suspected carcinogenic properties " (KEMI, 1998).
Status in the US	The US EPA conducted a re-evaluation of human health and environmental risk associated with all its uses in 2000. The EPA concluded that use of triallate as a pesticide does not result in unreasonable adverse effects to human health or the environment provided the risk reduction measures recommended in the Reregistration Eligibility Decision document are implemented (US EPA, 2001).
Status in Canada	This active ingredient is currently under re-evaluation by the PMRA.

Conclusions:

The Canadian re-evaluation of triallate is under way and will take into consideration all currently available information regarding health and environmental risk, including the concern related to toxicity identified in Sweden. This will be reflected in the proposed decision which will be available for comment when the consultation document is published.

56. Tributyltin oxide (CAS# 56-35-9)

DSF assessment	Prohibited in Denmark, Japan, the United Kingdom.
Regulatory status in OECD countries listed by DSF	**Denmark**: Danish regulations indicate that this substance is prohibited for use as a pesticide (DEPA, 1999). **Japan**: Use as a pesticide has been severely restricted since 1990. It appears that this substance can be manufactured and imported to Japan, but all uses are prohibited except uses for testing or research purposes. This is based on existing toxicity data and on the assessment that "this substance is hardly changed chemically by natural effect and is easily accumulated in living organisms" (PIC circular XI, 2000). **UK**: Use as a pesticide has been restricted to industrial wood preservatives and in paste formulations to be applied by professional operators since 1990. This was based on the conclusion that "the safety margins for human exposure are not sufficient in respect of immunogenic and teratogenic effects in experimental animals" (PIC circular X, 1999).
Status in the European Union	Severely restricted since 2003: the use of tri-organostannic compounds has been prohibited in all paints and products intended for antifouling use in marine, coastal, estuarine and inland waterways and lakes, use in appliances and equipment used for fish or shellfish farming, and any totally or partially submerged appliance or equipment; and in industrial water treatment. All other uses, including use as preservative for wood, remain allowed; the decision was based on the risk assessment conducted for the European Commission which identified unacceptable environmental and human health risks (PIC circular XVII, 2003).
Status in Canada	A special review of tributyltin antifouling paints concluded that their use represents unacceptable risk to the marine environment and were discontinued by January 1st 2003. Currently registered uses of tributyltin oxide in Canada are limited to domestic wood stain/wood preservative, and commercial use as bacteriostatic treatment of textile, clothes, paper. These uses are currently under re-evaluation with the PMRA to determine if they continue to be acceptable under current standards for health and environmental protection.

Conclusions:

A special review of tributyltin antifouling paints was conducted in Canada in 2002 and resulted in the phase out of these uses. The Canadian re-evaluation of remaining uses of tributyltin oxide will be based on all currently available information regarding health and environmental risk, including concerns identified in Denmark, Japan, and the United Kingdom. This will be reflected in the proposed decision which will be available for comment when the consultation document is published.

57. Trifluralin (CAS# 1582-09-8)

DSF assessment	Prohibited in Denmark, Norway, Sweden.
Regulatory status in OECD countries listed by DSF	**Denmark**: Use as a pesticide has been prohibited since 1998 based on the assessment that it is "unacceptably persistent in soil and the products are therefore assessed to be harmful to the environment" (PIC circular X, 1999). **Norway**: Use as a pesticide has been prohibited since 1993 based on the assessment that it is persistent in soil and toxic to aquatic organisms (PIC circular X, 1999). **Sweden**: Use as a pesticide has been prohibited since 1993 based on the assessment that it is persistent (PIC circular X, 1999).
Status in the US	The US EPA conducted a re-evaluation of trifluralin uses and concluded that the use of currently registered products containing trifluralin in accordance with approved labels will not pose unreasonable risks or adverse effects to humans or the environment. As a result, the US EPA has approved the reregistration of all trifluralin products except for those used on nongrass forage/fodder/straw/hay and dill. EPA conducted a reassessment of tolerances in 2004 and concluded that " trifluralin is safe as currently used in pesticide products" (US EPA, 1996a, 2004e).
Status in Canada	This active ingredient is currently under re-evaluation by the PMRA.

Conclusions:

The Canadian re-evaluation of trifluralin is under way and will take into consideration all currently available information regarding health and environmental risk, including the environmental concerns identified in Denmark, Norway and Sweden. This will be reflected in the proposed decision which will be available for comment when the consultation document is published.

58. Vinclozolin (CAS# 50471-44-8)

DSF assessment	Prohibited in Denmark, Finland, Norway, Sweden.
Regulatory status in OECD countries listed by DSF	**Denmark**: Use as a pesticide has been prohibited since 1998 based on the assessment that it can "cause serious harm to health", it was assessed to be "harmful to reproduction", "harmful to the unborn child", "carcinogenic" and to "cause cataracts" (PIC circular X, 1999). **Finland**: Use as a pesticide has been prohibited since 1996 based on the assessment that it is carcinogenic and is associated with reproductive effects (pers. com., Finnish Food Safety Authority EVIRA, November 2006). **Norway**: Use as a pesticide was first restricted to oil plants and ornamental plants in nurseries, based on adverse affects observed in laboratory animals, such as reproductive effects. The product was then withdrawn by the Norwegian importer, and became prohibited in 1999 for import, sell or use (PIC circular XIII, 2001). **Sweden**: Use as a pesticide has been prohibited since 1996 based on the conclusion that it is associated with reproductive and teratogenic effects in experimental animals (KEMI,1998).
Status in the US	The US EPA conducted a re-evaluation of vinclozolin and concluded that the use of currently registered products with approved labels will not pose unreasonable risks or adverse effects to humans or the environment. This decision took into consideration the manufacturer's request to cancel most uses of vinclozolin (US EPA, 2000).
Status in Canada	This active ingredient is currently under re-evaluation by the PMRA.

Conclusions:

The Canadian re-evaluation of vinclozolin is under way and will take into consideration all currently available information regarding health and environmental risk, including concerns identified in Denmark, Finland, Norway and Sweden. This will be reflected in the proposed decision which will be available for comment when the consultation document is published (target 2007).

59. Zineb (CAS# 12122-67-7)

DSF assessment	Prohibited in European Union. Zineb is not registered for use in the US.
Regulatory status in OECD countries listed by DSF	**EU**: This substance was not approved by the European Commission for inclusion in the list of active ingredients authorized for use as plant protection products in the European Union (i.e., Annex I to Directive 91/414/EEC). This was based on a decision from the manufacturer not to submit the information necessary for the review (EC, 2001c). **US**: Uses as a pesticide were cancelled in the US.
Status in Canada	This active ingredient is currently under re-evaluation by the PMRA.

Conclusions:

Prohibition of all uses of zineb as a pesticide in the European Union is not considered to be based on health or environmental concerns. In any case, the Canadian re-evaluation of zineb is under way and will take into consideration all currently available information regarding health and environmental risk. A proposed decision will be available for comment when the consultation document is published.

60. Ziram (CAS# 137-30-4)

DSF assessment	Prohibited in Denmark, Sweden
Regulatory status in OECD countries listed by DSF	**Denmark**: Use as a pesticide has been prohibited since 1997 based on the assessment that it is harmful to health because it is associated with a "risk for severe eye damage" (PIC circular X, 1999). **Sweden**: Pesticide uses have been prohibited since 1990 because of "suspected chronic toxicity" (KEMI, 1998).
Status in the European Union	Reviewed by the European Commission, and approved for inclusion in the list of active ingredients authorized for use as plant protection products in the European Union (i.e., Annex I to Directive 91/414/EEC) (EC, 2003d).
Status in the US	The US EPA conducted a re-evaluation of ziram uses and concluded that the use of currently registered products with approved labels will not pose unreasonable risks or adverse effects to humans or the environment (US EPA, 2003c).
Status in Canada	This active ingredient is currently under re-evaluation by the PMRA.

Conclusions:

This substance has been prohibited in Sweden and Denmark since the 90's but was approved for use in the European Union in 2003. The Canadian re-evaluation of ziram is under way and will take into consideration all currently available information regarding potential health and environmental risk, including the concern related to its toxicity identified in Denmark and Sweden. This will be reflected in the proposed decision which will be available for comment when the consultation document is published.

Information Resources

The information discussed above is from 3 main sources, PIC circulars, European Commission decision documents and US EPA reregistration decision documents.

PIC circulars are published by the Rotterdam Convention Secretariat. The Rotterdam Convention is a multilateral environmental agreement designed to promote shared responsibility and cooperative efforts among parties in the international trade of certain hazardous chemicals; under this Convention, parties to the Convention have committed to inform other parties about legislative bans or severe restrictions on the use of chemicals, and to notifying recipient countries of any exports of regulated substances. This procedure is called Prior Informed Consent (PIC). When a party has adopted a final regulatory action to ban or severely restrict a chemical, the party notifies the Rotterdam Convention Secretariat; notifications are published in PIC circulars.

The European Directive 91/414/EEC on the placing of plant protection products on the market is the legal framework for the market authorisation of pesticides in Europe. Under this legislation, pesticides cannot continue to be used in the EU unless they are included on a Community "positive list", i.e., Annex I of 91/414/EEC. A programme of evaluation to create this list was launched in 1993, when the European Commission started a review process for all active substances used in plant protection products in the EU, to be completed by 2008 and covering several hundreds of substances. Decisions from the European Commission whether to include pesticides on Annex I of 91/4141/EEC are available on the internet in the form of "Commission Decision" documents or "Commission Directives".

The US law requires that pesticides which were first registered before November 1, 1984, be reregistered to ensure that they meet today's more stringent standards. Under the Food Quality Protection Act of 1996, EPA must consider the increased susceptibility of infants and children to pesticide residues in food, as well as aggregate exposure of the public to pesticide residues from all sources, and the cumulative effects of pesticides and other compounds with a common mechanism of toxicity in establishing and reassessing tolerances. In evaluating pesticides for reregistration, EPA obtains and reviews a complete set of studies and develop mitigation measures or regulatory controls needed to effectively reduce each pesticide's risks. EPA then reregisters pesticides that can be used without posing unreasonable risks to human health or the environment. When a pesticide is eligible for reregistration, EPA explains the basis for its decision in a Reregistration Eligibility Decision (RED) document. The EPA is also required to reassess all the tolerances for registered chemicals in effect on or before the date of the enactment of the Food Quality Protection Act (FQPA) in August of 1996 against the new safety standard adopted in the FQPA. The tolerances are considered reassessed once the safety finding has been made or a modification or revocation occurs. When the reregistration eligibility decision (RED) of an active ingredient was completed prior to FQPA enactment, its tolerances are reassessed under the FQPA standard and results are published in a TRED.

A reference list is provided below.

Other sources of information included website information and personal communications with representatives of the Danish EPA, the Norwegian Food Safety Authority, the Finnish Food Safety Authority and the Swedish Chemicals Inspectorate.

Danish Environmental Protection Agency (DEPA). 1999. *Statutory Order No.689 of August 24, 1999, on Total or Partial Ban on Certain Pesticides*. Available from http://glwww.mst.dk/homepage/ (accessed April 2007).

European Commission (EC). 1986. *Council Directive 86/355/EEC of 21 July 1986 amending Directive 79/117/EEC prohibiting the placing on the market and use of plant protection products containing certain active substances*. Available from http://europa.eu.int/eur-lex/lex/ (accessed April 2007).

European Commission (EC). 1991a. *Council Directive 91/414/EEC of 15 July 1991 concerning the placing of plant protection products on the market*. Available from http://europa.eu.int/eur-lex/lex/ (accessed April 2007).

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