

Questions and Answers

Re-evaluation of Lawn and Turf Uses of the Herbicide 2,4-D

Health Canada's Pest Management Regulatory Agency has conducted its re-evaluation of lawn and turf uses of 2,4-D. 2,4-D is a herbicide commonly found in weed control products used by homeowners on their lawns. Health Canada has proposed that 2,4-D is acceptable for use on lawns and turf with specific label directions for use and handling. Therefore, Health Canada is proposing continued registration of 2,4-D for lawn and turf use.

Health Canada is aware of the public's concerns of uses of pesticides on lawns and gardens (often referred to as cosmetic or aesthetic uses). The PMRA has prepared the following questions and answers on the re-evaluation of 2,4-D and pesticide regulation in Canada to help clarify concerns on the safety of pesticide use.

If you have any further questions regarding the re-evaluation of 2,4-D or about any other pesticide issue, please contact the PMRA's Pest Management Information Service at 1-800-267-6315 or 613-736-3799 from outside of Canada (long distance charges apply).

About the August 2006 Re-evaluation Note on 2,4-D

What is the Re-evaluation Note?

Health Canada published its Proposed Acceptability for Continuing Registration document [PACR2005-01](#) for lawn and turf uses of 2,4-D for a 60-day comment period in February 2005. The PMRA has published Re-evaluation Note [REV2006-11](#) detailing the interim measures in advance of its final decision regarding the lawn and turf uses of 2,4-D. The Re-evaluation Note also contains the responses to the comments received during the comment period.

At this time, what additional measures are required by the PMRA as a result of the re-evaluation?

The following changes were made as a result of the PMRA's review of the comments and information received:

- Statements indicating the most effective timing of application are now required on product labels.
- Environmental precaution statements have been modified to increase their relevancy to all products.
- The proposed buffer zones for commercial products have been altered.
- Data on microcontaminants present at extremely low levels must be submitted to the PMRA.

Also, the PMRA has determined that registered products containing the diethanolamine (DEA) form of 2,4-D must be discontinued because adequate data to evaluate the potential health effects of the DEA form have not been provided.

What are the next steps for 2,4-D?

The PMRA is expecting to release its proposed decision on the agricultural uses of 2,4-D for a 60-day comment period in late fall 2006. Once the comment period is closed and the comments have been reviewed, the PMRA will release a final decision on all uses of 2,4-D consistent with the new *Pest Control Products Act*.

Can we provide comments on the Re-evaluation Note?

The PMRA is always open to receiving comments. However, this document is not a formal request for comments. The Re-evaluation Note is a document responding to comments received during the 60-day comment period, which closed April 25, 2005. A proposed decision on the agricultural uses of 2,4-D is slated for publication and public comment later in late fall 2006.

About the Health Canada's re-evaluation of 2,4-D

How did Health Canada conclude that 2,4-D is acceptable, when it is used according to label directions?

Health Canada conducted an exhaustive, four-year re-evaluation of the broad body of information pertaining to the lawn and turf uses of 2,4-D. This information included an extensive proprietary database, published scientific information, foreign reviews and any use pattern information collected by the PMRA. The Re-evaluation Note contains further information on the types of information assessed.

The PMRA examined all the scientific data and assessed them to determine if products containing 2,4-D posed any health or environmental concerns. This assessment consisted of:

- a human health risk assessment that looked at the potential for 2,4-D to cause adverse health effects such as cancer, birth defects and endocrine disruption;
- an assessment of all sources and routes (oral, dermal, inhalation) of potential exposure to 2,4-D, including exposure from the diet, drinking water and from contact with treated areas like lawns and gardens;
- homeowner as well as occupational exposure assessments (exposure encountered by the user/applicator of the product), while 2,4-D is applied and after application;
- a human health risk assessment, which determines the toxicity in relation to the amount of exposure in all potentially exposed populations, including children;
- an environmental risk assessment that considered risks to plants, birds, mammals and aquatic organisms as well as fate in the environment; and
- an assessment of value as it relates to the efficacy of the product.

To assess the risk to children from any potential 2,4-D exposure, the PMRA also took into consideration the unique physiology, behaviours and play habits of children, such as their body weight and hand-to-mouth contact while playing on treated grass.

The Agency also consulted with an independent Science Advisory Panel that included university and government researchers in toxicology, biology and epidemiology. The Panel agreed with the PMRA's risk assessment, which determined that 2,4-D is acceptable for use on lawns and turf with specific label directions for use and handling.

The PMRA's Information Note on [Assessing Human Health Risks During Pesticide Review in Canada](#) provides additional information on how potential effects to human health are assessed during the review of pesticides.

Why did Health Canada re-evaluate 2,4-D?

As scientific knowledge evolves and new information becomes available, the PMRA requires that registered pesticides be re-evaluated according to modern risk assessment approaches. The PMRA is currently re-evaluating of all pesticides registered before January 1, 1995, to ensure they meet modern health and safety standards. This is part of our normal process and is now required under the new *Pest Control Products Act*. See the Information Note on the [Re-evaluation of Pesticides Program](#) for further details.

In 2000, the Agency also committed to re-evaluating the eight most commonly used lawn and turf pesticides as part of its Action Plan on Urban Use of Pesticides; 2,4-D is one of them.

Similar re-evaluation programs exist in other Organisation for Economic Co-operation and Development (OECD) member countries such as the United States and those in the European Union.

What are dioxins? Why should we worry about them?

Dioxins make up a large family of over 200 chemicals. Certain types of dioxins are considered much more toxic than others and are classified as "dioxins of concern." In the early 1980s, the methods used to manufacture 2,4-D were carefully examined in light of the emerging knowledge and concerns regarding these dioxins. Changes were made to reduce the levels of contamination for all dioxins. In 1983, Agriculture Canada's Pesticides Division established a production limit of "not detectable at 1 ppb" for 2,3,7,8-TCDD, a dioxin of concern, in 2,4-D.

Since the 1980s, more sensitive analytical methodologies have been developed. It is now possible to detect much lower levels of dioxins in 2,4-D than before. The PMRA is requiring additional data on dioxin levels that will be generated using the most up-to-date analytical methods available.

Health Canada's [It's Your Health: Dioxins and Furans](#) publication gives some additional information on dioxins and lists the greatest sources for the presence of dioxins in the environment, including the incineration of medical and municipal waste, the burning of fuel and wood, electrical power generation and tobacco smoke.

For more information on the dioxins in 2,4-D, please consult Re-evaluation Note [REV2006-11](#).

Can I find out the exact levels of dioxins in 2,4-D?

Levels of the dioxins and furans of concern, as listed in The List of Pest Control Products Formulants and Contaminants of Health or Environmental Concern (*Canada Gazette*, Part II, November 30, 2005) are available for currently registered technical class products in Canada.

Why does the PMRA request data from the technical grade of 2,4-D? Why not test the end-use products containing 2,4-D that are actually for sale to the public?

The technical grade would have the highest level of dioxins. Therefore, the analysis of the data of the technical grade provides clearer evidence of the presence of dioxins.

Dioxins, if present in the product, are generated during the manufacturing process of the technical grade active ingredient. Any dioxins in an end-use product would have come from the technical grade product that was used to formulate the final product (i.e., what is purchased in store). The levels of dioxins in the final products would therefore be proportionally lower. If the percentage of the technical grade product used to formulate the final product is very low, dioxins present in the end product may be below the level of detection.

Have the dioxin levels in 2,4-D been monitored?

The dioxin levels in 2,4-D and other products were monitored during and after the development of the regulatory standard presented in Memorandum to Registrants R-1-216 in the 1980s. It was because of this monitoring that newer manufacturing processes were developed to meet these standards. With the new manufacturing processes, the test data confirm that the products are in compliance with the standard.

What is the review status of the other pesticides commonly used in lawn-care?

On September 27, 2000, the PMRA announced the priority re-evaluation of the eight (8) most commonly available lawn pesticides. This re-evaluation uses modern scientific standards to determine their continued acceptability for registration and whether any changes need to be made to the conditions of registration of these chemicals.

The re-evaluations are completed for four of the lawn pesticides. As a result of these re-evaluations, the insecticides chlorpyrifos, diazinon and malathion (broadcast turf use), and the herbicide mecoprop, are being phased out. The re-evaluation review for lawn and turf uses of 2,4-D was released in February 2005 and the proposed decision following the review of the agricultural uses is expected in late fall 2006. The proposed decision for the herbicide MCPA was published April 2006, and the herbicide dicamba is slated for publication late 2006. The assessment of the insecticide carbaryl is underway and expected to be completed next fiscal year.

The medical community has noted associations between 2,4-D and serious illnesses in children. How can you say it's acceptable for use?

When re-evaluating a pesticide, the PMRA has access to the available scientific information on the product, including laboratory, epidemiology and toxicology studies, scientific reports and more. This allows the PMRA to conduct thorough scientific assessments to determine if a product is acceptable for use or not when used according to label directions. The PMRA also examines the product's uses, the amounts used and the label instructions for each product.

For 2,4-D, the PMRA carefully considered the epidemiology literature, some of which suggested weak associations, while others suggested no link between adverse health effects and the use of 2,4-D. In addition, the Agency reviewed the extensive database of toxicology information that specifically looked for the potential to cause adverse effects such as cancer.

The PMRA concluded that 2,4-D does not cause cancer and it is acceptable for use by homeowners who choose to use it on their lawns when they follow the directions on the label.

No other international regulatory body considers 2,4-D to cause adverse health effects such as cancer, birth defects or endocrine disruption. Based on all available and relevant data, the Agency agrees with this position.

An Ontario College of Family Physicians' Report published in April of 2004 recommended that the public limit their exposure to pesticides wherever possible by seeking alternative pest control methods and, if they use pesticides, by educating themselves on their safe handling, mixing, storage and application. The PMRA promotes this approach to pesticide use as part of its Healthy Lawns Strategy. The report also notes that children are more susceptible to pesticides due to their behaviour and unique physiological characteristics. The PMRA conducts specific risk assessments for sensitive subpopulations including children and takes their unique physiological characteristics and behaviour into account.

A study in Quebec found traces of pesticides in the urine of children. Was 2,4-D one of them?

Yes, 2,4-D was one of the pesticides found. The PMRA reviewed the study conducted by the *Institut national de santé publique du Québec* and found that the detected levels of phenoxy herbicide (2,4-D) were well below the levels of concern.

It is not unusual to find a pesticide or traces of any other environmental contaminant in tissues or fluids when an individual has been exposed to it. However, exposure does not mean there will be a negative health effect, particularly if the levels are very low.

In April 2006, an article in the journal *Paediatrics and Child Health* claimed that 2,4-D is the cause of cancers, neurological impairments and reproductive problems. Is this the case?

On April 24, 2006, *Paediatrics and Child Health* published an article entitled “Pesticide assessment: Protecting public health on the home turf.” The article made a number of claims primarily linking 2,4-D as a cause of numerous negative health effects.

The PMRA examined the scientific information available when determining the acceptability of using 2,4-D on lawn and turf. The re-evaluation included a review of an extensive proprietary database, published scientific information, foreign reviews and any use pattern information collected by the PMRA. Based on this information, Health Canada proposed that 2,4-D is acceptable for use on lawns and turf when label directions are followed. This PMRA assessment was supported by an external expert scientific panel and the United States Environmental Protection Agency, and was made available for public consultation.

The article also claimed the PMRA didn’t take into account a number of epidemiology studies. Did the PMRA examine epidemiological data when doing its review?

Yes, the PMRA examined epidemiological data in its review of 2,4-D. Some of these studies suggested weak associations, while others suggested no link between adverse health effects and the use of 2,4-D. Few if any of these studies characterized exposure in the specific context of how the product was used. Using epidemiology studies in regulatory decision making is challenging in the absence of a direct measure of exposure.

Epidemiology studies that identify associations between the use of a product and a health effect are verified by conducting a toxicological assessment to determine the actual potential for cause and effect.

The PMRA performs these toxicity assessments to supplement the information about associations that may be established by epidemiology studies.

Does 2,4-D cause cancer and other illnesses?

The PMRA, as well as other international regulatory bodies, has not concluded that 2,4-D causes adverse health effects such as cancer, birth defects or endocrine disruption.

Before a pesticide is approved for continued registration, it undergoes a scientific assessment to identify potential effects including cancer, birth defects, reproductive effects as well as prenatal and postnatal developmental effects. Epidemiology studies are also considered as a component of the scientific assessment.

As part of its re-evaluation of 2,4-D, the PMRA considered the epidemiology literature. Some of this literature suggested weak associations, while others suggested no link between adverse health effects and the use of 2,4-D. In addition, the Agency reviewed the extensive database of toxicology information that specifically looked for the potential to cause adverse effects such as

cancer. The PMRA concluded that 2,4-D does not cause cancer and it is acceptable for use by homeowners who choose to use it on their lawns use it according to the directions on the label.

These findings are consistent with other international pesticide regulators, including the United States Environmental Protection Agency, the European Union and those in other OECD-member countries.

Does 2,4-D cause cancer in dogs if they walk on treated lawns?

Based on re-examination of the data, various scientists and workgroups have concluded that there is no relationship between 2,4-D use and canine malignant lymphoma.

Although a 1991 article by the National Cancer Institute (NCI) indicated a link between dogs with canine malignant lymphoma and dog owners that applied 2,4-D to their lawn, a 1991–1992 independent panel concluded that the study design was severely flawed and, in fact, did not show an association between the two. In 1999, scientists at Michigan State University re-examined the National Cancer Institute’s data and also concluded that there was no relationship between 2,4-D use and canine malignant lymphoma.

Should I be concerned about exposure to 2,4-D from track-in of residues into my home?

No. A risk assessment conducted for adults and children exposed to 2,4-D while playing on recently treated turf considered the combined oral and dermal exposure and indicated no unacceptable risks. Therefore, as the levels of 2,4-D that have been measured in house dust are much lower than the concentrations on recently treated turf for which no concern was identified, the potential exposure from 2,4-D residues inside the home is not a cause for concern.

Should I be concerned about exposure to 2,4-D from spray drift?

No. Risk assessments conducted for individuals applying 2,4-D on residential turf indicated no unacceptable risks. Available data suggest that spray drift exposure to bystanders near the application area would be at least 100 to 1000 times less than the exposure to applicators for whom health and safety factors have already been considered.

For more information on pesticide spray drift, please see the Environmental Assessment section of Re-evaluation Note [REV2006-11](#).

Does 2,4-D stay in the environment?

2,4-D is not considered to be persistent in the environment. Studies from industry and from independent sources show that 2,4-D residues on turf decline quickly.

For more information on the persistence of 2,4-D in the environment, please see the Environmental Assessment section of the Re-evaluation Note [REV2006-11](#).

Health Canada's Consideration of Canadians' Health

How are the health risks from pesticide use assessed, including risks to children?

For an explanation of how the PMRA assesses health risks from pesticide use, please refer to the Information Note on [Assessing Human Health Risks During Pesticide Review in Canada](#).

Where can I find more information on the PMRA's health risk assessment?

Consult the [About PMRA](#) section under Registration Process for a more detailed account of the Agency's health risk assessment.

Science Policy Notice [SPN2002-01](#), *Children's Health Priorities within the Pest Management Regulatory Agency*, is a document detailing the Agency's commitment to protecting children's health.

Finally, the Science Policy Notice [SPN2000-01](#), *Decision Framework for Risk Assessment and Risk Management in the Pest Management Regulatory Agency*, provides further details on the decision-making process at PMRA.

2,4-D decisions in the United States

How do the USEPA and PMRA re-evaluations compare?

The approach to and outcome of the PMRA and USEPA re-evaluation assessments are similar.

The USEPA re-evaluation released in January 2005 is its most recent reassessment of 2,4-D. It also found 2,4-D to be acceptable for use on lawn and turf. USEPA documents relating to 2,4-D can be found at www.epa.gov/oppsrrd1/reregistration/24d/.

The PMRA re-evaluation of 2,4-D has been split into two parts: [review of the turf uses](#), which was announced in 2000, and review of the agricultural uses, which is targeted for release as a consultation document in late fall 2006.

General Questions about Pesticides

Several municipalities are looking at banning pesticides. Why can they do this when the federal government allows them to be on the market?

Pesticides must be registered before they can be imported, manufactured, sold or used in Canada. The PMRA is responsible for administering the *Pest Control Products Act* (PCPA) on behalf of the Minister of Health. Registration under the PCPA requires a thorough scientific evaluation to determine that new pesticides are acceptable for a specific use and that registered pesticides remain acceptable for use once on the market. If Canadians choose to use pesticides, they can only use a pesticide registered by the federal government for the pests and treatment areas listed on the label and they must use them according to the label directions.

The provinces and territories have the authority to enact regulations to restrict or prohibit products that are registered under the PCPA in their jurisdictions. These regulations can be more restrictive than the PCPA or other federal regulations, but cannot be less restrictive. For example, provinces and territories may require pesticide use permits and can impose additional use restrictions. They regulate the transportation, sale, use, storage and disposal of pesticides; they regulate the training, certification and licensing of pesticide applicators and vendors; and they respond to spills or accidents.

Provincial and territorial governments may also allow cities, towns and municipalities to enact bylaws to set further regulations on pesticide use, including use restrictions, based on local considerations, including use restrictions. See the Information Note on the [Role of Three Levels of Government in Pesticide Regulation](#) for more information.

What should homeowners do if they're concerned about using pesticides?

The PMRA suggests that Canadians learn about the pest they wish to control and explore all the options available to them. Prevention is key. [Pest Notes](#) provide information on how to deal with common household pests. The Healthy Lawns website contains information on how people can maintain a healthy lawn that can better resist pests, including weeds, thus reducing reliance on pesticides.

If you decide you need to use a pesticide, make sure you use a registered product and that you read and follow the label directions. The label tells you how to use a product safely. Do not use a pesticide to control a pest that is **not** listed on the label. Always use pesticides for their intended purposes. To prevent accidental poisonings, ensure that pesticides or any other household chemicals are stored safely out of reach of children and pets, and that pesticides are appropriately labelled.

Are there any alternative pest control methods or products for use on my lawn?

Pest prevention is key. One of the roles of the PMRA is to promote Integrated Pest Management (IPM) practices, which include a variety of methods to effectively control pests and prevent lawn and garden infestations. Visit the [Healthy Lawns](#) website for tips on how to maintain a healthy lawn.

The PMRA also publishes [Pest Notes](#) that provide useful tips on how to effectively control common household pests.

More Information on 2,4-D

When was 2,4-D first registered?

2,4-D was first registered in 1946.

Is 2,4-D Agent Orange?

No, 2,4-D is not Agent Orange. Agent Orange was a product made for the United States military and was never registered in Canada. Although its exact chemical composition is not known 2,4-D was a component of Agent Orange, along with TCDD-contaminated 2,4,5-T. TCDD is a dioxin that has been shown to cause cancer, and 2,4,5-T is no longer on the market. With the refined manufacturing processes that have been required by federal regulatory bodies over the years, dioxin contamination of 2,4-D is not considered to be a concern to health or the environment.

What is the status of the re-evaluation of agricultural uses of 2,4-D?

The review of the agricultural uses of 2,4-D is ongoing and is targeted for release as a consultation document in late fall 2006.

What are label improvements?

Label improvement is an ongoing process. The language is constantly being updated to ensure the public can easily understand the label and to ensure the most accurate directions for safety using the product. Pesticide labels are legal documents with which users must comply, in accordance with the *Pest Control Products Act*. They provide information to the user on the conditions of use of a product and use rates and use patterns (i.e., how, when and how much of the product is applied). These directions consider the acceptable exposure levels. They also contain many standard statements such as instructions for disposal, etc.

In 1994, a label improvement program was implemented for 2,4-D to reduce both occupational and public exposure. It improved label clarity, consistency and accuracy. The new label directions include common-sense precautions such as wearing long clothing and gloves when applying the product and washing up when application is complete.

What is the difference between commercial and domestic class pest control products?

Domestic Class products are sold for consumer use in and around their home. The intent of domestic classification is to provide consumers with products for such uses as insect and rodent control within the home, weed control in lawns and gardens, and swimming pool disinfection.

Commercial Class products are sold for general use in the commercial activities listed on the label. The intent of commercial classification is to provide operators of commercial pest control operations, such as lawn care service providers, with products that can be used with no health or environmental concerns in their particular business.

[About PMRA](#)