2003

Report of the

Commissioner of the Environment and Sustainable Development

to the House of Commons

Chapter 1

Managing the Safety and Accessibility of Pesticides

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The 2003 Report of the Commissioner of the Environment and Sustainable Development comprises four chapters and The Commissioner's Perspective—2003. The main table of contents is found at the end of this publication.

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Chapter

1

Managing the Safety and Accessibility of Pesticides

All of the audit work in this chapter was conducted in accordance with the standards for assurance engagements set by the Canadian Institute of Chartered Accountants. While the Office adopts these standards as the minimum requirement for our audits, we also draw upon the standards and practices of other disciplines.

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Managing the Safety and Accessibility of Pesticides

Main Points

1.1 Despite substantial improvements in some areas over the last eight years, the federal government is not adequately ensuring that many pesticides used in Canada meet current standards for protecting health and the quality of the environment. The range of weaknesses we identified raises serious questions about the overall management of the health and environmental risks associated with pesticides.

1.2 The Pest Management Regulatory Agency, a branch of Health Canada, has developed a sound framework for evaluating pesticides, but key elements of the evaluation process need to be strengthened. For example, the Agency needs to use up-to-date evaluation methods; ensure that it has adequate information to complete the evaluations; carefully test its assumptions, especially about user behaviours; and consistently apply its procedures and policies. In particular, we are concerned about the heavy and repeated use of temporary and emergency registrations.

1.3 Health and environmental standards relating to pesticide use have risen, but the progress made in re-evaluating older, widely used pesticides against them has been very slow. All pesticides re-evaluated to date were found to pose significant health or environmental risks, at least for some uses. They were either removed from the market or had greater restrictions placed on their use. It is likely that some pesticides on the market that have not yet been re-evaluated will also fail to meet today's standards.

1.4 If users do not comply with the *Pest Control Products Act* or follow the instructions on pesticide labels, they may risk their health. They may also increase the risk to their families, other people, or the environment. The Agency does not know to what extent pesticide users are complying with the Act and associated regulations. Nor does it know how effective its user compliance programs have been. As a result, it cannot demonstrate that it is meeting its commitments to ensure compliance with the Act.

1.5 Health Canada has done only limited research on the health effects of pesticides despite the federal government's stated priority in this area. Other departments involved in pesticide management are making new efforts to co-ordinate their research and their programs to monitor pesticides, but their efforts need a sharper focus on supporting regulatory decisions.

1.6 Efforts to monitor the health and environmental impacts of pesticides are hampered by a lack of information about their use and adverse effects, by an incomplete set of national guidelines for water quality monitoring, and by a lack of suitable methods to measure pesticides.

1.7 The Pest Management Regulatory Agency is not meeting its targets for evaluating new pesticides. As a result, it is not providing timely access to new, possibly safer, products—a key concern for farmers. However, new measures are being implemented to increase the availability of pesticides for crops grown on small areas of land.

Background and other observations

1.8 The Pest Management Regulatory Agency was created in 1995 as a branch of Health Canada. It has the primary responsibility for regulating pesticides. Other Health Canada branches and other federal departments and agencies, including Agriculture and Agri-Food Canada, the Canadian Food Inspection Agency, Environment Canada, Fisheries and Oceans Canada, and Natural Resources Canada also play important roles in managing pesticides. The federal government shares the responsibility for managing pesticides with provincial, territorial, and in some cases, municipal governments.

1.9 The Pest Management Regulatory Agency faces significant internal challenges. It did not receive the funding it originally expected when it was created and funding has been pieced together from various sources. Funding over the longer term now appears to be more secure. Human resources management will continue to be difficult, as the Agency must now manage and train large numbers of new employees hired to implement the new *Pest Control Products Act*.

1.10 The House of Commons Standing Committee on Agriculture and Agri-Food recommended that we examine the management practices, controls, and reporting systems of the Agency. Parts of this chapter address the Committee's main concerns.

1.11 Prior to this audit, the Office of the Auditor General had examined aspects of federal pesticide management three times over the last fifteen years. In 2002 we reported the results of a follow-up of our 1999 audit of the management of toxic substances.

1.12 In December 2002, the new *Pest Control Products Act* received royal assent. New regulations under the Act and new funding will provide opportunities for the federal government to significantly improve how it manages pesticides. This chapter provides a snapshot of pesticide management against which Parliament can measure the government's progress in this area.

The departments have responded. The departments have generally agreed with our recommendations. Their responses, including the actions they are taking or intend to take to address the recommendations, are set out in the chapter.

Introduction

Pesticide use affects almost all Canadians

1.1 Pesticides are used to produce and preserve the food Canadians eat. People rely on pesticides in house paint to stop mildew. Homeowners use pesticides to control weeds in their lawns, insects in their gardens and homes, and parasites on pets.

Pesticide or pest control product—A product, organism, or substance that is used to control, destroy, attract, or repel a pest, or to lessen or prevent its harmful or troublesome effects. For brevity, we have referred to such products as pesticides in this chapter.

1.2 Pesticide use in Canada has been controversial for over 40 years and the subject of difficult policy decisions, such as how to manage the West Nile virus (Exhibit 1.1). The federal government plays a crucial role in determining which pesticides can be used in Canada and contributes to setting the conditions of where and how they can be used.

1.3 **Debates over risks.** The controversies stem, in part, from the facts that most pesticides are designed to be toxic to pests and are deliberately released into the environment. People may be unaware that they are exposed to pesticides. The possible health and environmental impacts may be delayed—in some cases, for decades—and some people, especially children, may be particularly susceptible.

Exhibit 1.1 Choosing pesticides to control the West Nile virus

People across Canada are facing the possibility that they may contract the West Nile virus, a disease that can be incapacitating or deadly for a small proportion of people infected. Public health officials, municipalities, provinces, and federal agencies have to make some difficult decisions about how to deal with the virus. For example, insecticides can be used to kill the mosquitoes that transmit the disease to people and birds, yet some of the insecticides carry their own risks. Other options also pose risks.

The alternatives include:

Malathion. First registered in Canada in 1953, this organophosphate pesticide can be used to kill adult mosquitoes. It is highly toxic to insects and fish, and in high concentrations can affect people's nervous systems. Malathion is supposed to be fully re-evaluated by the federal Pest Management Regulatory Agency to ensure that the directions for use are consistent with current standards. The Agency completed an accelerated re-evaluation of the use of malathion on adult mosquitoes in early 2003. As a result of the re-evaluation, it has increased the restrictions on how malathion can be used.

Bacillus thuringiensis israelensis. Found naturally in soil, this bacterium has been used since 1982 to control mosquitoes and black flies. It kills mosquito larvae when ingested and is relatively non-toxic to most animals, including people. It may be more costly than other methods.

DEET (N,N-diethyl-m-toluamide). Also regulated by the Agency, this substance repels mosquitoes, rather than killing them. The Agency began a re-evaluation of DEET in 1990, and completed it in April 2002. As a result of the re-evaluation, the Agency has substantially restricted the use of DEET, especially for younger children. It may irritate the eyes and skin, and in rare cases, cause neurotoxic effects.

Pesticides can be used to kill or repel mosquitoes that may carry the West Nile virus.

Photo: Agricultural Research Service, United States Department of Agriculture

"Natural" insect repellents. Repellents such as oil of citronella are also regulated by the federal government. Oil of citronella contains a substance that scientists believe to be a human carcinogen.

Source: Based on information from the Pest Management Regulatory Agency

Pesticides may be sprayed from the air to control insect pests in forests.

Photo: Canadian Forest Service, Natural Resources Canada

1.4 Canadians are asking questions such as these:

- Do pesticides increase the risk of cancer?
- What are the long-term impacts on bird and fish populations?
- What are the health hazards associated with using pesticides on our lawns?
- Are there harmful residues in foods and what are the long-term effects?
- How should decisions be made about which pesticides are used in Canada?

1.5 **Pesticides also deliver benefits.** Statistics Canada estimates that Canadian farmers spent about $1.5 billion on pesticides in 2000. Some farmers consider pesticides as essential tools to prevent the substantial damage inflicted by weeds, insects, and disease (Exhibit 1.2). In the forest industry, pesticides are used to control insect pests, such as the spruce budworm, or to eliminate deciduous trees and shrubs for improved growth of coniferous forests. In aquaculture, they are used to control sea lice—parasites which scar salmon and reduce their market value.

Exhibit 1.2 **Pesticide use in Canada**

Total land area in crops in Canada in 2000: 36.4 million hectares.

- Treated with herbicides: 25.9 million hectares.
- Treated with insecticides: 2.2 million hectares.
- Treated with fungicides: 2.6 million hectares.

Area of agricultural land treated with pesticides in 1970: less than 10 million hectares.

Total forest area in Canada managed for timber production in 2000: 119 million hectares.

- Treated with herbicides: 0.18 million hectares.
- Treated with insecticides: 0.21 million hectares.

Percentage of Toronto households with lawns that used pesticides outdoors in 2001 or 2002, as estimated in a study commissioned by the Toronto public health department: 38%

Source: Statistics Canada, Natural Resources Canada, and Toronto Public Health

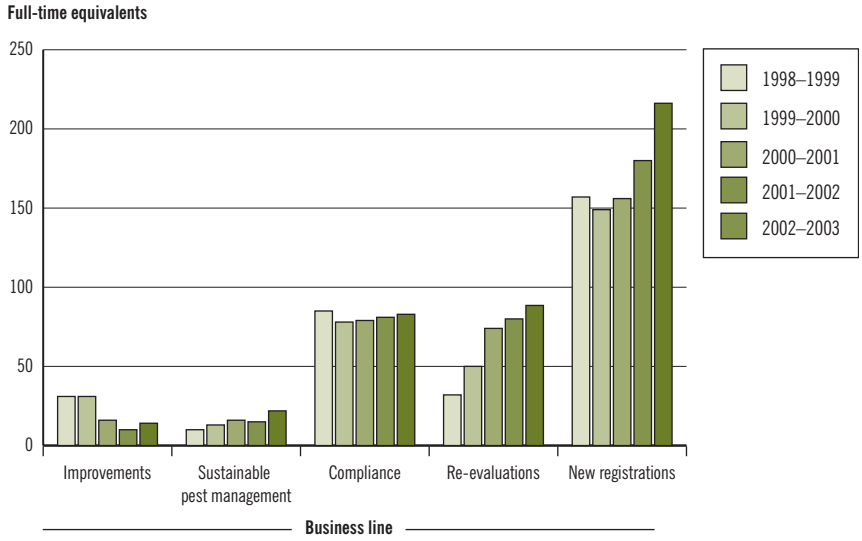
The federal government's approach to managing pesticides has evolved

1.6 Early Canadian legislation was designed primarily to avoid fraud in the descriptions of pesticides. By 1969, the legislative emphasis had shifted toward health and environmental protection.

1.7 Before 1995, pesticide regulation in Canada was the responsibility of Agriculture and Agri-Food Canada, which relied on advice from Environment Canada, Health Canada, Natural Resources Canada, and Fisheries and Oceans Canada. Following a review of pest management in 1989–90, the federal government created a new organization, the Pest Management Regulatory Agency, which was set up as a branch of Health Canada in 1995.

1.8 The Agency spent an estimated $38.7 million in 2002–03 and had the equivalent of 424 full-time employees distributed among five business lines (Exhibit 1.3). The objective of the Agency is to protect human health and the environment by minimizing the risks associated with pest control products.

Exhibit 1.3 Staffing the major business lines at the Pest Management Regulatory Agency



Source: Based on information from the Pest Management Regulatory Agency

1.9 In December 2002, Parliament passed the revised *Pest Control Products Act*. The new Act gave the Agency additional responsibilities, such as supporting greater public access to information on pesticides. The Agency's funding is intended to increase over the next few years.

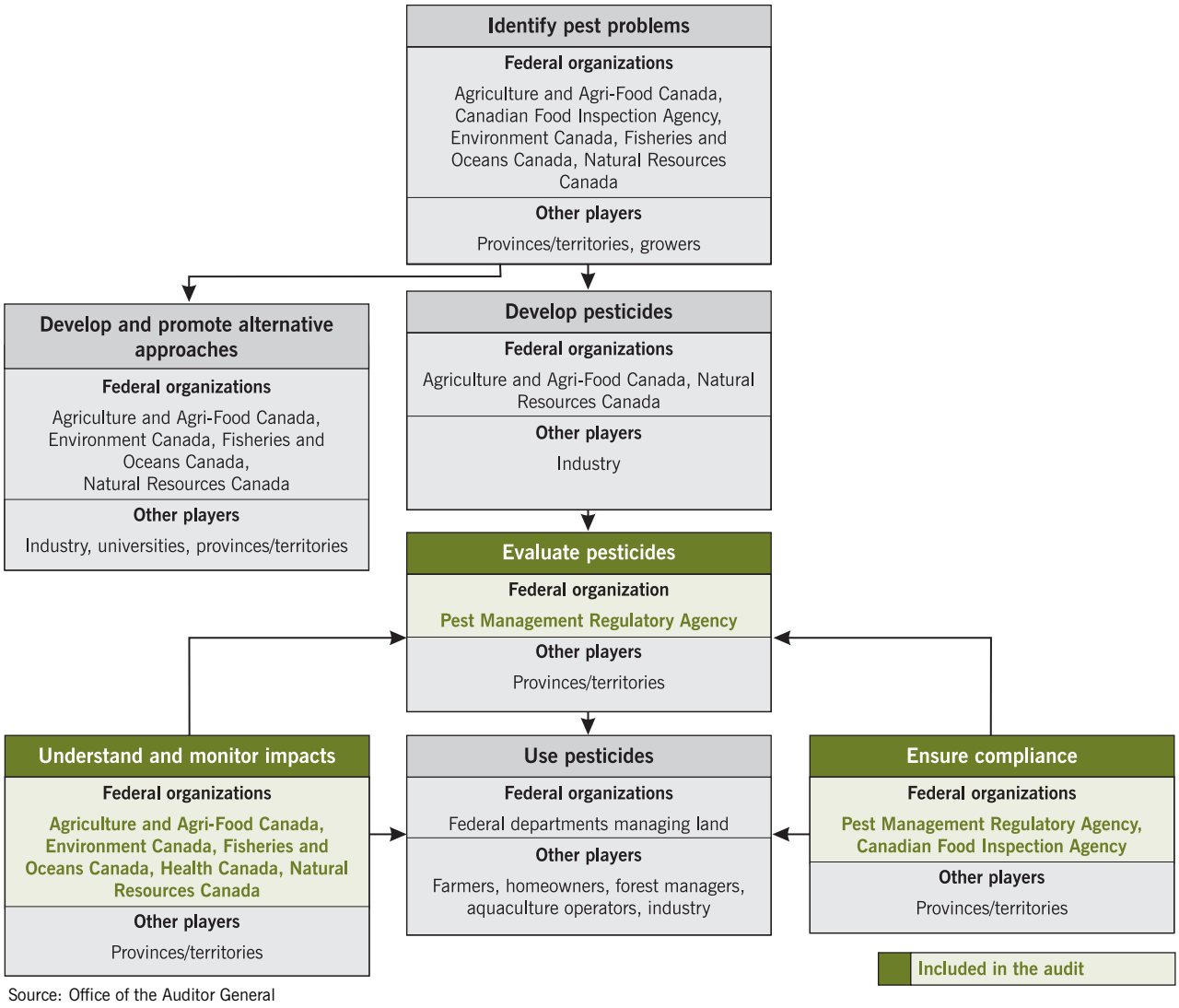
Responsibility for managing pesticides is shared

1.10 Other federal departments and the rest of Health Canada contribute to managing pests in Canada (Exhibit 1.4). For example, Natural Resources Canada has conducted research on biological pesticides for controlling forest insect pests. Agriculture and Agri-Food Canada has developed crop varieties that are more resistant to pests.

1.11 Several departments are also involved in managing pesticides, one of the key tools used to control pests. Health Canada has funded programs that encourage homeowners to use pesticides in smaller amounts. Scientists at Environment Canada and Fisheries and Oceans Canada research the environmental impacts of pesticides, including in oceans, rivers, and lakes. The Canadian Food Inspection Agency monitors pesticide residues on food and enforces the required standards.

1.12 The federal government shares the responsibility for managing pesticides with provincial, territorial, and in some cases, municipal governments.

Exhibit 1.4 How pests are managed



Source: Office of the Auditor General

Focus of the audit

1.13 Our objective was to determine to what extent the federal government—primarily through the Pest Management Regulatory Agency—is effective in managing key aspects of pesticide use in Canada. This audit focussed on some of the critical roles the federal government plays:

- evaluating new pesticides to ensure that they meet current standards;
- re-evaluating old pesticides against current standards;
- providing timely access to new, possibly safer, pesticides;
- ensuring compliance with the legislation and other legal requirements; and

- understanding the impacts of pesticides through research and monitoring.

We also examined some of the Agency's internal management issues, and commented on the move to managing pests sustainably.

1.14 The audit built on previous work of this Office. In 1988 we assessed how well the Food Production and Inspection Branch of the Department of Agriculture was managing pesticides. In 1999 we looked at how the federal government managed toxic substances and discussed some aspects of pesticide management. In 2002 we reported on the progress federal departments had made in implementing our 1999 recommendations. This chapter provides an update on some of those recommendations.

1.15 After we started this audit, the House of Commons Standing Committee on Agriculture and Agri-Food recommended that the Auditor General conduct a value-for-money audit of the Pest Management Regulatory Agency to examine its management practices, controls, and reporting systems. Parts of this chapter address the Committee's main concerns.

1.16 We did not examine the impact the new *Pest Control Products Act* will have on pesticide management because we had finished our audit when the regulations that will shape the Act's implementation were being drafted. Further details on the objectives, scope, approach, and criteria are provided in About the Audit at the end of the chapter.

Observations and Recommendations

Evaluating new pesticides

1.17 To determine if the Pest Management Regulatory Agency is adequately ensuring the safety of pesticides, we examined how it evaluates pesticides (Exhibit 1.5). The Agency draws on scientific studies to predict the effectiveness of pesticides and their risks to health and the environment. Pesticide risk evaluation includes determining whether the risks are acceptable; it relies on the expertise and judgment of the Agency's scientists and managers. The evaluation of new pesticides before they are sold or used in Canada is similar to that of old pesticides that need to be re-evaluated against current standards. The evaluation process ends with the approval of the pesticide label, which describes the pesticide's hazards and its proper use.

Label—The product label that is approved as part of the registration process contains the conditions of registration that, along with the *Pest Control Products Act* and Regulations, govern the use of the product.

1.18 We examined four aspects of new pesticide evaluation: the Agency's decision-making framework, the information required to do the evaluations, the implications of various assumptions used in predicting risks, and the consistency with which the process is followed.

The Agency has a sound, evolving framework for evaluating pesticides

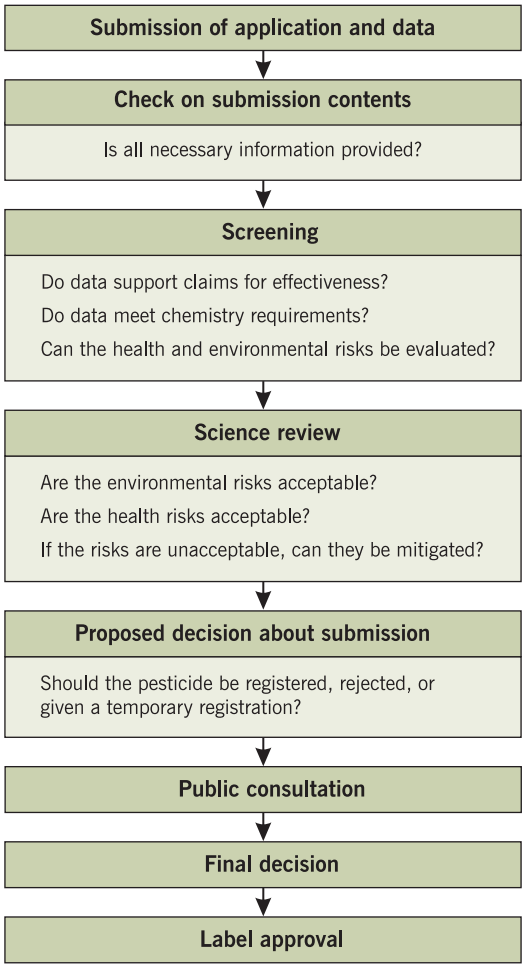
1.19 Since its creation, the Pest Management Regulatory Agency has established increasingly systematic and well-documented steps for its evaluators to follow. The process includes internal reviews and the use of multidisciplinary teams to integrate the different parts of the evaluation.

The Agency's process is similar to those of pesticide regulators in the United States and other countries of the Organisation for Economic Co-operation and Development (OECD). Its standards and tests to determine whether risks to health and the environment are acceptable are generally consistent with international standards.

1.20 Agency evaluators also review information on how effective pesticides are in controlling pests. This review provides assurance to buyers that the product will work as claimed. Evaluators may also determine if using less pesticide would still be effective—which would reduce the health and environmental risks and application costs. Pesticide regulators in most other OECD countries conduct similar reviews.

1.21 **Evolving requirements and methods.** The Agency's tests and standards for pesticide safety continue to evolve. For example, it is working on risk assessment methods that recognize that different people or animals may be exposed to pesticides at different levels. Working with regulators in

Exhibit 1.5 **How pesticides are evaluated**



Source: Based on information from the Pest Management Regulatory Agency

other countries, the Agency is developing methods to evaluate substances with potential long-term impacts on the endocrine systems of animals. These substances include pesticides used currently, such as atrazine, and others removed from the market, such as DDT.

1.22 **Changes driven by U.S. requirements.** One of the most important drivers of change in Canada has been the evolving regulatory approaches used in the U.S. For example, the U.S. requires that the aggregate effects of a pesticide from various sources be assessed along with the cumulative effect of different pesticides that act in the same way. These requirements have been included in Canada's new *Pest Control Products Act*. The Agency has relied on the U.S. Environmental Protection Agency to develop methods of doing these assessments.

1.23 **Slow progress on new methods.** Developing new evaluation methods and adapting methods from other countries compete with other day-to-day demands on the Agency, especially the evaluation of submissions on new pesticides, which are a priority. As a result, its work on developing and adapting new methods—to predict pesticide levels in drinking water sources, for example—has slipped. The Agency needs to make a sustained effort to ensure that its framework is consistent with current scientific understanding and new regulatory requirements. Because of competing demands and limited resources, it has experienced difficulty doing this.

Some pesticides are approved based on inadequate information

1.24 **Limited assurance of information quality.** The Agency's policy is that applicants are to provide a complete package of information on a pesticide before the evaluation starts. This information can be extensive—one submission included 175 binders of information. For studies such as toxicological assessments, potential registrants are to provide results generated by laboratories that are inspected periodically by an independent body. We noted several examples where studies meeting such quality standards were not provided. Other studies, such as those on pesticide effectiveness, are not subject to any independent checks on quality control. Such checks can help prevent cases like the 1976 discovery by the U.S. Environmental Protection Agency that background studies for over 100 pesticide registrations in the U.S. and Canada were invalid and had to be done again.

Registrant—An organization or individual that holds the certificate of registration and is thereby responsible for the product.

1.25 **Heavy use of temporary registrations.** Based on the available information, the Agency's evaluators may conclude that there are still scientific uncertainties or inconsistencies and gaps in information. Senior managers may be willing to approve the temporary use of the pesticide pending the submission of further studies. Of new pesticide registrations in 2001–02, 58 percent were temporary. For some temporary registrations, the missing information was to have been included with the original submission. Examples of information gaps at the time of temporary registration include what happens to the pesticide after it is released into the environment, what impact it is likely to have on children's central nervous systems, and how toxic it is to invertebrates and non-target plants. As a result, many pesticides

are used before they have been evaluated fully against current health and environmental standards. Evaluators may make conservative assumptions to substitute for missing information—as a result, their decisions may be unnecessarily restrictive.

1.26 Regulations under the *Pest Control Products Act* stipulate that temporary registrations may be approved for up to a year. Yet over the last six years, more than 370 temporary registrations were extended and, in most cases, more than once—some up to five times. This further prolonged the use of products whose risks had not been precisely assessed.

1.27 We are concerned that incomplete and potentially unreliable information resulting in temporary registrations may increase the risks to Canadians and their environment. Inadequate information also means that evaluation decisions are more subjective and may rely on assumptions and non-scientific considerations, such as the Agency's perception of the need for the product.

Key assumptions are not tested and some are not correct

1.28 **Effects of assumptions not analyzed.** Agency evaluators must make a series of assumptions to link the laboratory studies they receive to the possible impacts of the pesticide's use (Exhibit 1.6). Such assumptions include how large a crop area will be treated, how much treated food Canadians will eat, and how the pesticide will be applied. These assumptions are often conservative—they tend to overestimate the risks. However, despite the uncertainties in all of the different assumptions evaluators make, we found that they have not determined how reliable their predictions of the risks are. For example, evaluators have not tried systematically altering their assumptions slightly to see if that would reverse the decision to approve a pesticide.

Exhibit 1.6 Applying safety factors

The approximate calculation of the acceptable risk level for people is the following:

Acceptable risk level for people	=	No-effect level for test animals	X	Factor for differences among species	X	Factor for differences among people	X	Other factors

Since toxicology studies are done on animals such as mice, rats, and dogs, evaluators use "safety factors" to adjust for differences between humans and other species, and differences in sensitivity among people. Each of these two factors has been estimated to be ten. Additional factors may be applied to compensate for possible impacts on children, inadequate data, or impacts on endocrine systems.

A recent U.S. study published by the Centers for Disease Control and Prevention illustrated the importance of such factors. It reported that children consistently had higher levels of organophosphate pesticide metabolites in their urine than adults. The levels excreted by children varied by more than ten times.

For the environmental impacts on other animals, such as birds or fish, no comparable safety factors are applied. As a result, people receive a relatively higher level of protection than other animals.

Source: Based on information from the Pest Management Regulatory Agency

Pesticide labels may require users to wear protective equipment such as respirators, gloves, and coveralls to lessen adverse health effects.

Photo: Agricultural Research Service, United States Department of Agriculture

Spraying equipment requires calibration between applications of different pesticides to ensure that the application is done according to the label.

Photo: Valérie Chabot, La coopérative fédérée de Québec

1.29 **Predictions not checked.** When the health or environmental risks of a pesticide are considered unacceptable, evaluators try to identify measures that could reduce the predicted risks to an acceptable level. For example, a pesticide label could require workers who handle the pesticide to wear protective equipment such as respirators or coveralls. It could also require a buffer between the treated area and fish habitat. Evaluators have to predict whether such mitigation measures will prevent or minimize the impacts of pesticides, but the Agency and other federal departments do very little follow-up to determine whether the measures, when implemented, actually reduce the risks to acceptable levels.

1.30 In several cases, the measures listed on pesticide labels, even if followed, appear not to have been enough to prevent environmental damage. For example, in Prince Edward Island more than 20 instances of fish kills since 1994 have been attributed to pesticides, with up to 35,000 dead fish collected in each incident. In British Columbia, birds of prey were killed after granular pesticides were used, even though the label instructions had been followed correctly. These examples illustrate the importance of systematic follow-up on the success of mitigation measures.

1.31 **Unrealistic assumptions about user behaviour.** Agency staff also assume that pesticide users will follow label instructions, although the Agency's own compliance reports show that they may not. Other studies have documented only partial compliance with requirements to use personal protective equipment. An unrealistic assumption of full compliance means that evaluators are underestimating the risks of pesticide use—by how much is not clear, because the actual impacts of users' practices are not checked.

1.32 Similarly, when evaluators predict occupational exposure to pesticides and pesticide residues on food, they assume that all agricultural users will follow good practices. The available evidence suggests otherwise. For example, a 2001 survey of farmers by Statistics Canada concluded that only 14 percent calibrate their pesticide spraying equipment between applications of different pesticides. Thus, the amounts they actually use on their crops may be higher or lower than the levels specified on the label.

1.33 The underestimation of health and environmental risks may be countered by conservative assumptions at other steps in the risk assessment. However, unless evaluators check the validity of their predictions more systematically, they cannot project the final result with precision.

The Agency does not consistently apply its evaluation framework

1.34 **Steps are not always followed.** Although the Agency's process for evaluating pesticides is well defined, its staff do not always follow the required steps. We reviewed files on 30 recent submissions. They included those that were processed most quickly and those that took the longest to process. We found that in more than half, evaluators expedited the submission, skipped screening steps, cut the scientific review short, or skipped the public consultation stage. While we recognize that any evaluation process needs some flexibility, we are concerned that there are no clear criteria for these decisions to alter the normal process. In addition, some of these files lacked

documentation of senior management's approval to exclude required steps. Besides the inconsistent treatment of submissions in such cases, steps skipped could mean health or environmental risks were not considered fully.

1.35 In one case, to meet demands for alternatives to pressure-treated wood, the scientific review stage of the submission was completed in 17 calendar days rather than the 550 days the Agency would normally have allowed. During this stage the Agency was supposed to evaluate at least 75 different scientific studies related to this product, weigh their results, and determine whether the risks were acceptable. In this case, screening was skipped, the scientific review was incomplete, and the product was issued a temporary registration.

1.36 **Repeated use of emergency registrations.** We found that the Agency has also not followed its procedures for emergency registrations. At the request of a province or territory, the Agency may approve the emergency use of a pesticide for one year or less. For a sample of 17 emergency registrations granted in 2002–03, we found that 9 were repeat requests to extend the use beyond one year, and 5 of them had been repeated three times or more. The Agency's regulatory directive on emergency registrations states that a request for a third year of emergency use normally will not be considered. We are concerned that repeated emergency registrations may be a disincentive to use the normal, more detailed, pesticide submission and evaluation processes.

1.37 **Overall, safeguards need to be strengthened.** Agency evaluators reject about 22 percent of the applications they receive for new pesticides, reduce the number of proposed uses and planned application rates, and require additional measures to protect people and the environment. All these measures reduce the potential risks to Canadians and their environment. And regulations under the new legislation provide an opportunity to implement additional safeguards. In our view, however, the Agency needs to address the weaknesses described above to ensure that pesticides that are being evaluated meet today's standards.

1.38 **Recommendation.** To ensure that pesticides meet today's environmental and health standards, the Agency should continue to strengthen its pesticide evaluations. In particular, it should ensure that data are complete and reliable, ensure that assumptions are realistic and tested, and follow its own evaluation policies and procedures more systematically.

Department's response. Agreed and implemented.

The Pest Management Regulatory Agency (PMRA) is the only pesticide regulatory agency within the Organisation for Economic Co-operation and Development that does such a detailed preliminary review for deficiency to ensure reviewability of submissions before proceeding to detailed evaluation. Procedures for pre-screening and preliminary science reviews of data have been rigorously implemented for each submission type. Deficiencies are identified and must be addressed by registrants prior to implementation of full review of submission. No further strengthening is required.

Assumptions are an essential component of a pre-market assessment program. Measurement and monitoring are obviously not options for products

that have not yet been approved for use. The Agency recognizes the need to ensure that these assumptions are well founded in predictive science and internationally established practices. Whenever possible, these assumptions have been tested. The approaches used by the Agency for risk assessment are those used internationally.

The Agency considers scientifically-based modifications from evaluation policies and procedures to be warranted in some cases, but these are limited to scientifically-justifiable circumstances, and are subject to approval by relevant committees in the PMRA.

Actions being taken:

Working in co-operation with the international community, the Agency will continue to identify candidate assumptions for testing and will schedule such tests as resources become available.

The Agency will reassess the adequacy of its procedures on submission screening and early stages of the review processes to ensure that the submitted data are complete and reliable.

The Agency will review and, if necessary, enhance the procedures of the Management of Submission Policy to ensure that deviations from the norm are approved and documented.

Re-evaluating old pesticides

The Agency manages a legacy of older pesticides

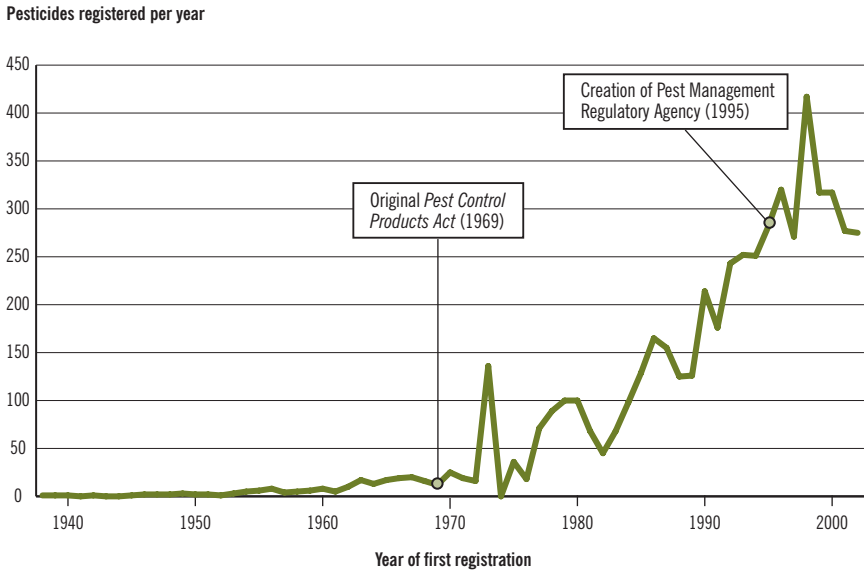
1.39 **Older pesticides were not evaluated against current standards.** Many pesticides have been registered in Canada for decades (Exhibit 1.7), based on evaluations that did not apply the more stringent methods and standards used today. Some of the changes in requirements include considering the impacts on bystanders, the reproductive impacts on later generations, and the greater susceptibility of children.

1.40 To ensure that older pesticides meet today's standards, the Agency has implemented re-evaluation programs. All pesticides re-evaluated so far were found to pose unacceptable risks for some uses and had to be restricted or removed from the market. For example, in January 2003 the Agency published its summary of the re-evaluation of phorate, the active ingredient in an organophosphate insecticide first registered in 1969. It is used to control insects on corn, lettuce, beans, rutabagas, and potatoes. The re-evaluation concluded that the pesticide poses extremely high environmental risks, risks that may not have been assessed when it was first registered: one granule can kill a small bird or mammal. After 31 December 2004, use of this pesticide will not be permitted in Canada.

Active ingredient—The ingredient of a pesticide that actually controls the targeted pest.

1.41 **Effectiveness not reconsidered.** Many re-evaluations do not consider new information about the pesticide's effectiveness, resulting, for example, from new research. As a consequence, opportunities may be missed to reduce the rate of application. For instance, Agriculture and Agri-Food Canada researchers have shown that in some controlled situations applications of herbicides could be reduced well below the rates on the label and still be effective.

Exhibit 1.7 **Pesticide registrations in Canada**



Note: This includes only pesticides that are still registered.

Source: Based on information from the Pest Management Regulatory Agency

Progress on re-evaluations has been very slow

1.42 By 2006, the Agency plans to re-evaluate all products registered before 1994. This will require reviewing 405 active ingredients, approximately three quarters of all active ingredients currently registered in Canada. Over the last 15 years, we commented three times on the inadequate progress on re-evaluations. By March 2003, only 1.5 percent of the 405 active ingredients had been fully re-evaluated. For a further 6 percent, the Agency has either published a regulatory proposal or taken some regulatory action. The Agency has been working on some of these re-evaluations for more than a decade. The lack of progress was due partly to the limited resources assigned to the task.

Did you know?

Number of pest control products registered in Canada as of 31 December 2002: **5,622**

1.43 Not all old pesticides undergo a full re-evaluation; when some have come up for re-evaluation, the registrants have decided to discontinue the registration. By March 2003, 11 percent of the 405 active ingredients had either been discontinued or were scheduled to be discontinued.

1.44 **Progress depends on U.S. efforts and priorities.** The Agency has decided to rely very heavily on U.S. re-evaluations. This decision offers advantages because the U.S. has devoted significantly more resources to re-evaluations than Canada, but the Agency's success in meeting its re-evaluation deadlines depends on the U.S. regulator's meeting its own deadlines.

1.45 The Agency has increased the number of employees working on re-evaluations from 21 in 1998–99 to 44 in 2001–02. It has also addressed some of the major obstacles to progress, such as the need to implement science policies consistent with the U.S. While it plans to further increase its

re-evaluation efforts, we are concerned that this may not be enough to meet the ambitious deadlines it has set. And now under the new *Pest Control Products Act*, the Agency has legally binding deadlines for starting its re-evaluations.

1.46 Basic management tools not used. We are also concerned that the Agency is not using basic management tools to guide its re-evaluations. For example:

- There is no plan containing detailed time and cost estimates by which to gauge the Agency's level of effort and its progress toward its deadlines; nor does the Agency report that progress. The kind of plan we would expect would include contingencies in the event that U.S. progress was delayed.
- We were surprised that the Agency had not screened pesticides to determine its priorities for re-evaluation. We would expect its priorities to reflect, among others, the pesticides used most heavily in Canadian agriculture and those that posed the highest risks to health and the environment (Exhibit 1.8). In our view, this is a necessary step to ensure that the Agency allocates its limited resources appropriately.
- The Agency has not yet established guidelines for determining how quickly pesticides with unacceptable risks should be taken off the market.
- The Agency lacks a clear policy or process for actively informing users when it concludes that a pesticide presents unacceptable risks.

Exhibit 1.8 Delays in re-evaluating lawn and turf pesticides

Municipalities across Canada have been debating how to deal with pesticides that are used for "cosmetic" purposes on both public and private properties. Some municipalities have opted to ban or phase out certain uses. Some have adopted bylaws; others have focussed on educating the public.

Some homeowners use pesticides on their lawns and gardens to control insects and weeds.

The Pest Management Regulatory Agency responded to this concern by committing to re-evaluate eight lawn and turf pesticides by 2001. There were four insecticides (chlorpyrifos, diazinon, malathion, and carbaryl) and four herbicides (2,4-D, dicamba, MCPA, and mecoprop). For those that were already being re-evaluated, the Agency gave a higher priority to the lawn and turf uses over other uses.

At the end of our audit work in March 2003, re-evaluations of five of the eight pesticides were still underway. Some of these pesticides were originally registered over 50 years ago. Some changes have been made to the labels for some of these pesticides since then, but it is unlikely that some of their current uses will meet today's higher standards for acceptable health and environmental risks. The delays in re-evaluations mean that Canadians may be unnecessarily exposed to these pesticides. The delays also mean that public debates about pesticide risks are less well informed.

Source: Based on information from the Pest Management Regulatory Agency

The Agency has been slow to manage other components of old pesticides

Formulant—Ingredient of a pesticide that serves a purpose other than actual control of the targeted pest. Examples include sugar, peanut butter (an allergen), malathion (a pesticide), fuel oil, and nonylphenol (an endocrine-disrupting compound).

1.47 **Slow progress on formulants.** Old pesticides in Canada are composed of more than the active ingredients; they also contain formulants. The federal government has recognized that some formulants may pose a risk to human health and the environment.

1.48 In 1994 the federal government committed to developing a policy on formulants. It published a draft policy in 2000 but has not produced a final document or an up-to-date list of formulants in pesticides used in Canada. Many formulants have not yet been classified by risk. The Agency has taken some action to reduce the risks from the formulants already identified as most toxic, but not all registrants complied with the requirement to phase out these substances by the end of 2002. Micro-contaminants in current pesticides are a similar concern; these are contaminants from the manufacturing process that are of toxicological concern, but are usually found in very low concentrations.

Did you know?

When is a pesticide also a formulant? Sometimes a pesticide—malathion, for instance—will be used to prevent insects from damaging other pest control products, such as baits to kill rodents.

Overall, the Agency is not ensuring that pesticides meet current standards

1.49 Many widely used pesticides have not yet been re-evaluated, but based on those that have, it is likely that some pesticide uses will fail to meet today's standards. And our concerns about the evaluation process for new pesticides, such as working with incomplete information, extend to re-evaluations. For formulants and micro-contaminants of pesticides already in use, progress has been slow in identifying the risks and in taking effective action. The Agency has a responsibility to ensure that its judgments of which pesticides can be used are up to date. In our view, it is not yet fulfilling this essential responsibility. In particular, it needs to assign re-evaluations a higher priority than it has in the past.

1.50 **Recommendation.** To reduce the risks of older pesticides, the Agency should speed up its re-evaluations. It should demonstrate how it will meet its re-evaluation deadlines and report to Parliament annually on its progress, indicating clearly what remains to be done, what its priorities are, and how it will achieve its objectives. The report should include the Agency's progress in managing formulants and micro-contaminants.

Department's response. Agreed and initiated.

The Agency is conscious of the need to use all opportunities to accelerate the re-evaluation of a large number of pest control products. The strong reliance on U.S. re-assessment efforts offers the best opportunity to do so and the re-evaluation program was implemented after public consultation. As well, additional resources have been dedicated to re-evaluation.

The Agency recognizes the need for more transparency and accountability in reporting on the priorities, progress, and remaining workload on pesticide re-evaluation. Accordingly, the PMRA will report on an annual basis the progress and priorities of the pesticide re-evaluation program.

The management of formulants and micro-contaminants in pest control products always has been part of managing the risks associated with pesticides. The Formulants Policy Regulatory Proposal and the Toxic Substances Management Policy implementation plan for pesticides describe how these substances are managed by the Agency.

Actions being taken:

The Agency has developed and is in the process of implementing a work plan to re-evaluate all older pesticides by 2006. Opportunities to expedite re-evaluation based on international reviews have been identified and will be addressed in Program 1 of the PMRA re-evaluation program.

A re-evaluation note describing the priorities for completion of reviews within fiscal year 2003–04 will be published shortly. The PMRA will report on progress and priorities on an annual basis starting with fiscal year 2003–04. The Agency will include in the annual report that is required by the new *Pest Control Products Act*, progress on managing formulants and micro-contaminants.

1.51 Recommendation. To better manage the risks associated with older pesticides, the Agency should develop and implement guidelines for determining how quickly pesticides with unacceptable risks should be removed from the market. The Agency should also develop and implement guidelines for advising current users when pesticides are found to have unacceptable risks.

Department's response. Agreed and initiated.

The Agency recognizes the important and often central role of communication in the management of risk.

The PMRA currently follows a consistent approach in determining how quickly older pesticides with unacceptable risks should be removed from the market. When the risks of a pesticide are found to be unacceptable, possible courses of action under Section 20 of the Pest Control Regulations include cancellation or suspension. The appropriate course of action and timeline for action (for example, last date of use) depend on the nature and severity of the potential risks.

Although the Agency has always communicated risk management decisions to various audiences in a consistent manner, the process has not been documented. To enhance the transparency of these processes, we will develop and publish a description of the process.

Actions being taken:

The Agency will develop and implement internal guidelines for communicating to registrants how older pesticides with unacceptable risks will be removed from the market. The Agency will also develop by the end of fiscal year 2003–2004, a description of the process for advising current users when older pesticides are found to have unacceptable risks. This process will reflect current PMRA practice.

Providing access to new pesticides

Kaolin clay forms a barrier between the pest and fruit that might be attacked.

Photo: Agricultural Research Service, United States Department of Agriculture

1.52 **New approaches needed for controlling pests.** As a result of re-evaluations, some pesticides may be severely restricted or removed from the market, and replacements may not be readily available. As well, because cropping systems have changed and pests have evolved resistance to certain pesticides, farmers need new products and approaches. Further, many pesticides sold in the U.S. are not available to Canadian farmers. As the Standing Committee on Agriculture and Agri-Food noted, this affects the ability of Canadian farmers to compete.

1.53 While the Pest Management Regulatory Agency is not responsible for developing new pesticides, it determines how quickly it will evaluate new pesticides. Newer pesticides can improve the overall safety of pesticide use by replacing more dangerous products. For example, one new product simply uses a clay barrier to protect developing fruit from insect attacks.

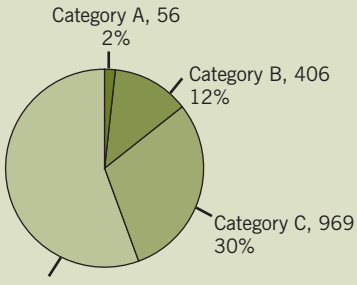
1.54 In 1996, the Agency proposed performance targets for processing new submissions. It has not formally announced the targets, but its staff have worked hard to meet them. By reclassifying submissions and removing dormant ones, they have also eliminated most of the backlog of hundreds of unfinished evaluations that the Agency inherited when it was created.

The Agency is not meeting its performance targets consistently

1.55 In 2002–03, the Agency received 3,223 submissions (Exhibit 1.9). Its performance standards set out the time allocated to process a submission and state that 90 percent of submissions will be processed in that time. The target time for standard registration of a pesticide never before registered in Canada is 737 calendar days, over two years. However, if a submission is deficient and the Agency needs more information from the registrant, the process could take close to five years or more. Smaller submissions that require less information, such as a change in how a pesticide is applied, can take as few as 17 days.

Exhibit 1.9 **Types of pesticide submissions**

Proportions of submission types in 2002–03



Source: Based on information from the Pest Management Regulatory Agency

Category A—new active ingredients and the related end-use products. They are usually accompanied by a significant amount of data that supports their safety and value.

Category B—new products with an active ingredient that has already been registered. They are less complex and take less time to review than Category A submissions.

Category C—submissions with no or reduced data requirements for new or amended registrations.

Categories D, E, and Miscellaneous—mostly administrative submissions including those that register or amend products within particular programs. These also include permits to use pesticides for research purposes.

1.56 The Agency has significantly improved the rigour and timeliness with which it processes submissions, compared to before the Agency's creation. It continues to refine these processes. However, it has not met its performance targets consistently—even for high-profile new products (Exhibit 1.10). In March 2003 its evaluations of 33 percent of submissions were overdue—some by almost three years. Delays in processing submissions can have serious economic consequences for registrants and farmers, especially if they mean postponing sales of the product for a full year until the next growing season.

Exhibit 1.10 How the Agency performs against its targets

	Total time (calendar days)[1]		Percentage meeting performance target[2]	
Category	Average	Range	Screening	Scientific review
A	748	42 to 2,107	32	74
B	351	5 to 1,956	25	85
C	351	2 to 1,174	51	63
D	124	2 to 868	59	31

Based on submissions completed in 2002–03

[1]Note that total time depends on both the Agency's performance as well as how quickly registrants respond to deficiencies.
[2]The Agency attempts to meet its performance targets for 90 percent of submissions.

Source: Based on information from the Pest Management Regulatory Agency

Planned performance gains have not been achieved

1.57 **Efficiency improvements are limited.** When it created the Agency, the federal government committed to processing submissions more efficiently. The Agency was to meet its commitment to a 40 percent improvement by 2003 partly by using electronic submissions and conducting reviews jointly with the U.S. By 1999–2000, the Agency calculated its improvement at about 15 percent. It now relies on the use of electronic submissions by registrants to help increase its efficiency, but only a few fully electronic submissions have been made so far.

1.58 **Joint reviews are not achieving planned gains.** The Agency and its U.S. counterpart can share the work of evaluating pesticides because they use similar evaluation processes. Joint reviews with the U.S. began in 1996, and offer benefits such as reduced trade irritants. They were also expected to make evaluations faster and less costly. In practice, joint reviews are not faster for the Canadian evaluators. We noted that the Agency has had problems co-ordinating priorities and schedules with the U.S. evaluators. It does not know if joint reviews have saved it money because it does not track or estimate its costs or level of effort by submission.

1.59 The Agency expected efficiency gains to free resources for new product evaluations, re-evaluations, reporting of adverse effects, and public access to registration information. However, resources were not freed as the Agency planned.

Minor use pesticides pose other problems

Minor use pesticide—A pesticide required by growers, but in such small quantities that the anticipated sales volume is not sufficient to persuade a manufacturer to register and sell the product in Canada.

1.60 Some pesticides are used only on a small area because the area affected by pests or the total crop area is small. Such minor use pesticides can be particularly important to growers of fruit and vegetable crops with fewer pest control options.

1.61 Some growers feel the Agency has hampered their access to needed minor use pesticides by processing evaluations too slowly, imposing "excessive" requirements for tests of effectiveness and trials to detect the presence of residues, and refusing to accept some U.S. registration data. Growers have also said that the Agency is unresponsive. Growers without other options could press for emergency registrations of pesticides, including older, more dangerous products.

1.62 The Agency has not met its targets for evaluating minor use pesticides consistently; in March 2003, about one quarter of the 129 outstanding submissions were overdue—five by more than a year.

1.63 Other concerns reflect questions over which data are essential for the Agency to evaluate minor use pesticides. There are questions about the extent to which Agency evaluators can accept data from similar crops and geographic areas and still ensure that a pesticide is effective and the risks are acceptable. Agriculture and Agri-Food Canada is now increasingly involved in conducting some of the necessary background studies. In our view, the Agency and Agriculture and Agri-Food Canada need to resolve these concerns about data together and then advise those who will be conducting the effectiveness and pesticide residue studies.

A new initiative to make minor use pesticides more available

1.64 On 24 June 2002, the Minister of Agriculture and Agri-Food announced several new measures to address the major concerns of growers. Over the next six years, $54.5 million will be allocated jointly for Agriculture and Agri-Food Canada to help prepare submissions for new minor use pesticides and for the Agency to evaluate the submissions. The Agency has also hired an advisor as a contact person for growers.

1.65 One year after the funding announcement, Agriculture and Agri-Food Canada had made progress identifying the priority needs for minor use pesticides, but had not finished setting up the organization needed to manage the work on submissions. Nor have the Department and the Agency finalized a memorandum of understanding that outlines their respective roles and responsibilities. In our view, the delays could result in continued frustration for growers.

Ensuring compliance

1.66 The federal government enforces compliance with the *Pest Control Products Act* and the *Food and Drugs Act*. The *Pest Control Products Act* influences how pesticides are produced, distributed, and used. Lack of compliance could cause serious environmental impacts and expose users and bystanders to unnecessary risks. The *Food and Drugs Act* deals with residues in food; lack of compliance would affect those who eat treated or contaminated

food. Other legislation covers the use of pesticides on seeds, in animal feed, and in fertilizers. The provinces and territories also take compliance and enforcement action in complementary areas.

To verify compliance, a pesticide officer collects and preserves samples for analysis during an inspection.

Photo: Pest Management Regulatory Agency

The Agency does not know to what extent users are complying with pesticide labels

1.67 The Agency conducts inspections across the country to determine whether pesticide registrants, distributors, and users are complying with the *Pest Control Products Act*. It targets inspections each year using available information and the experience and informal networks of its regional pesticide officers.

1.68 The Agency's compliance staff recently shifted their focus from users to the relatively small number of registrants and distributors. Particularly in re-evaluations, they feel that this focus can make them more effective. As a result of re-evaluations, the Agency has required registrants and distributors to remove some pesticides from the market.

1.69 **Limited and unreliable information about user compliance.** The Agency conducted only 510 inspections of users in 2002–03, although in agriculture alone roughly 216,000 farms in all regions of the country could have used pesticides. Inspection programs check which pesticides are being used, but do not determine systematically whether the label requirements are being met. The Agency's samples do not provide a statistically reliable basis for drawing conclusions about compliance rates.

1.70 The Agency has identified several examples of poor overall compliance. In 2001 it collected soil samples from 20 onion growers in Ontario. Of those, 14 had violated the Act by using pesticides not registered in Canada. Four of the other growers were using pesticides not registered for use on onions. (The Agency has warned the 14 growers and is continuing to follow up.)

Problems with labels make it harder to ensure compliance

1.71 Lack of compliance is partly due to problems with pesticide labels. Some agricultural pesticides may have 30 or more pages of directions in fine print. Some users may not read English or French sufficiently to understand complex labels. Some label instructions are hard to follow (Exhibit 1.11). Not following instructions could affect the health of users and their families, and increase the risks to other people and the environment. If label instructions are not being followed, the Agency may need to reconsider what types of measures it includes on labels.

1.72 Ambiguous labels mean that enforcement action cannot be taken for some possible violations of the Act (Exhibit 1.12). The Agency is improving the wording on some labels when pesticide registrations are renewed, but will not update other labels until it does a full re-evaluation of the products. We also noted one label with instructions that conflicted with the regulatory decision published by the Agency. We are concerned that the Agency has not systematically reviewed pesticides currently in use and determined to what extent the labels carry vague and unenforceable instructions.

Exhibit 1.11 **Examples of vague labels**

Label statements	Comment / issue
"Buffer Zones: **Appropriate** buffer zones should be established between treatment areas and aquatic systems and treatment areas and **significant** habitat."	The terms appropriate and significant are vague and open to interpretation.
"Do not apply **near** buildings inhabited by humans or livestock…"	The term near is vague.
"Fish and crustaceans may be killed at application rates recommended on this label. Do not apply where these are **important** resources"	The term important is vague.
"Avoid overspraying or drift onto **sloughs**."	Slough is not a common term across the country—so much so that provincial officials asked for assistance in interpreting the label—specifically asking whether that meant that a 15-metre buffer zone was required around streams.

Source: Based on information from the Pest Management Regulatory Agency

Exhibit 1.12 **Difficulties with label instructions**

In November 2002, the Prince Edward Island Department of Fisheries, Aquaculture and Environment responded to local citizens' concerns about water quality by testing the water in two private wells. Provincial officials found contamination from dichloropropene, which is used to control soil pests. Further tests found the same pesticide in 5 of 36 wells tested on and near the farm that was believed to be the source of the contamination. The Water Quality and Health Bureau of Health Canada issued an emergency health advisory at the request of the province.

The Agency investigation concluded that the product appeared to have been applied according to the label instructions, with the possible exception of one instruction:

> Do not apply in areas where soils are highly permeable and ground water is near the surface.

The Pest Management Regulatory Agency has concluded that enforcement action could not be taken in this case because the words "highly" and "near" are not specific enough. Also, because the word "and" appears in the instructions, both conditions would need to be met.

This example also illustrates the problem pesticide users have in working with vague labels. In contrast, the U.S. label for the same pesticide was revised in 1998 and is more specific on conditions of use, including a 100 foot (30 metre) buffer zone around any well used for potable water.

Source: Based on information from the Pest Management Regulatory Agency

The Agency does not know how effective its compliance activities have been

1.73 We noted that when Agency pesticide officers have clearly documented violations of the *Pest Control Products Act*, they consistently take action. Since 2001, officers have been able to levy fines, an enforcement option that fills the gap between warning violators or sending educational letters, and prosecuting violators. The Agency has now used this option more than 40 times.

1.74 The Agency does not have reliable or timely information on the effectiveness of its compliance programs. For example, the Agency does not know whether its programs to follow up on violations by greenhouse pepper growers have been successful. Therefore, it is difficult for the Agency to determine what resources are needed and to help target its limited inspection and enforcement activities systematically or on the basis of risk. Nor can it demonstrate that it is meeting its commitment to ensure compliance with the *Pest Control Products Act*.

1.75 **The job will get harder.** With more re-evaluations and tighter restrictions on the availability and use of pest control products, the Agency anticipates more difficulty in ensuring compliance. As one Agency document noted, "This kind of change to registered products is massive and has never happened on this scale before." In our view, ensuring compliance will be even harder in cases where few pest control alternatives are available.

1.76 Overall, the Agency can provide only very limited assurance that pest control products are used according to the *Pest Control Products Act*, relevant regulations, and label instructions.

1.77 **Recommendation.** To determine compliance levels and target its activities more efficiently, the Agency should implement measurement and reporting procedures that will give it reliable and timely information about user compliance.

Department's response. Agreed in principle.

The Agency agrees that it is important to efficiently target its compliance activities effectively and will develop revisions to the current Agency approach to measurement and reporting on compliance while taking into consideration other provincial, national, and international compliance and enforcement regulatory authorities.

The Agency agrees that user compliance is important; responsibility in this area is shared between the federal and provincial/territorial governments. Given finite Agency resources, an increased or exclusive focus on user compliance will be at the expense of activities and programs targeted at distributors and registrants. The Agency will continue to determine the appropriate and most effective balance for its compliance activities.

Actions being taken:

The Agency has initiated discussions with comparable Canadian and international organizations that are responsible for promoting, inspecting, and enforcing compliance to determine how, with finite resources, they target

activities and how they measure user compliance. Measurement and reporting procedures will be developed by end of 2007.

Discussion with provincial/territorial pesticide regulatory authorities will start late in 2003 and are expected to finish in 2005, to enhance the sharing of information about user compliance.

Methods for measuring pesticide residues on food are not up-to-date

The Canadian Food Inspection Agency's chemical residue sampling program includes testing for pesticide residues in food.

Photo: Health Canada

1.78 The Canadian Food Inspection Agency conducts an extensive chemical sampling program that includes testing each year for pesticide residues in food. In 2001–02, it analyzed 2,548 samples of domestic fruits and vegetables and 13,557 samples of imported fruits and vegetables for a variety of pesticides. These random samples are collected to estimate compliance rates and may be tested for more than one contaminant, including pesticides. The results are compared with the maximum residue limits set by the Pest Management Regulatory Agency. In 2001–02, 97.6 percent of domestic samples and 99.3 percent of imported samples were below the limits.

1.79 We have three concerns about this program. First, methods for measuring pesticide residues on food are not up-to-date. The Canadian Food Inspection Agency currently uses a risk-based, multi-residue testing method that screens for 269 different pesticides in various commodities. However the Agency has identified more than 190 additional pesticides, used in Canada or in other countries that export food to Canada, for which practical testing methods are not available. Second, the small number of samples tested for any given pesticide on one type of food may prevent meaningful conclusions about compliance with the limits. As a result, the Canadian Food Inspection Agency can provide only limited assurance that pesticide residues on food comply with the *Food and Drugs Act*. Third, some of the residue limits set by the Pest Management Regulatory Agency are based on old assessments and are inconsistent with current standards. These will be re-evaluated when the pesticides are re-evaluated.

Understanding the impacts of pesticides

1.80 Pesticide use in Canada has resulted in contamination of drinking water sources and harm to birds and fish. The Pest Management Regulatory Agency needs to understand the impacts of pesticides and how well measures to reduce those harmful effects are working. Understanding the health and environmental impacts of pesticides requires both field research to identify possible new harmful effects and long-term monitoring to track the impacts over time. Other levels of government and other federal departments are responsible for research and monitoring. The responsible federal departments include Agriculture and Agri-Food Canada, the Canadian Food Inspection Agency, Environment Canada, Fisheries and Oceans Canada, Health Canada and Natural Resources Canada.

1.81 We examined the following:

- information on pesticide use and exposure;
- research on health impacts;
- research on environmental impacts;

- overall monitoring, with a focus on water quality; and
- co-ordination of these activities among federal departments and agencies.

Critical information on pesticide use and exposure is still missing

1.82 **Pesticide sales database only in prototype.** In 1994 the federal government said it would set up a database on pesticide use. Such a database would support better targeting of research, monitoring, and compliance activities. In 1999 and 2002, we criticized the Agency for not acting on this commitment. The database, which is still not in place, will include only data on sales of pesticides and not on their use. The Agency has developed a prototype using data provided by the industry, but implementation is still a long way off and significant obstacles remain, such as a lack of agreement on the level of geographic detail in the database.

Female mallard poisoned from the accumulation of an organophosphate pesticide in standing water on an agricultural field in British Columbia.

Photo: John Elliot, Canadian Wildlife Service, Environment Canada

1.83 Without this information, Agency staff must attempt to piece together for each re-evaluation a separate picture of how that pesticide is used. It does not have up-to-date information on hand. When we asked the Agency which pesticides were used most widely in Canada, it referred to sales data from 1994.

1.84 **Gaps in data on Canadians' exposure to pesticides.** To estimate the exposure of Canadians to pesticides through food consumption, Agency evaluators have relied on U.S. data from the mid-1990s or Canadian data from the 1970s. In neither case are the data likely to accurately capture current patterns of food consumption in Canada. Canadians are also exposed to pesticides through drinking water, but the Agency has only limited and inconsistent data available on this source of exposure. As a result, evaluations are based on theoretical models that may not accurately reflect how pesticides move in the environment.

1.85 **Monitoring of adverse effects still not implemented.** Reports of pesticide problems by registrants, doctors, provincial agencies, university researchers, and pesticide users could help the Agency and other organizations understand the impacts of pesticides. Currently, the adverse effects of pesticides on human health and the environment are tracked and reported only on an ad hoc basis. In 1994 and again in 2000, the federal government committed to developing a program of mandatory reporting, in a consistent format, on adverse effects of pesticides.

Did you know?

Number of Quebec poison control centre calls in 2002 associated with

- Pesticides: 2,096
- Medications: 19,921
- Other domestic products: 22,922
- Industrial products: 1,564.

1.86 With the new Act, registrants will be required to report adverse effects to the Agency. The Agency has laid part of the foundation for the program. We are concerned, however, about the work that remains, particularly as the program is to include voluntary reports from other sources such as pesticide users, physicians, and provincial environment and agriculture departments.

1.87 In our view, the lack of reliable information on pesticide use, exposure, and impacts is a major hurdle that continues to interfere with the Agency's ability to regulate pesticides.

1.88 **Recommendation.** To support sound regulatory decisions, the Agency should accelerate and promptly complete the implementation of its pesticide sales database and its reporting system for adverse effects. Environment Canada and the rest of Health Canada should co-operate with the Pest Management Regulatory Agency to fill the gaps in the Agency's information on pesticide exposure through food and water.

Departments' response. The Agency agrees that implementation of a sales database and a reporting system for adverse effects should be implemented as expeditiously as possible.

The new *Pest Control Products Act* (PCPA) imposes a mandatory requirement on registrants to report any prescribed information that relates to the health or environmental risks or value of a pest control product registered to them. It also requires registrants, as a condition of registration, to report information on the sales of each of their products. Relevant discussion documents, *Preliminary Consultation on Proposed Sales Reporting Regulation* and *Pesticides Adverse Effects Reporting Regulation*, have been published and the PMRA has prepared drafting instructions for proposed regulations that take into consideration the comments received. Regulations that will require the reporting of pesticide sales data, and the mandatory reporting of adverse effects, are included in the first phase of regulations that are being developed so that the new PCPA can be brought into force at the earliest possible date. It is anticipated that reporting of 2003 sales information will be required in 2004.

Water quality monitoring is a shared responsibility of all levels of government. As a federal contribution, Health Canada and Environment Canada will continue to work closely with the PMRA and the provinces and territories, who have primary jurisdiction for water, to promote the monitoring and reporting of pesticides in water through their various federal-provincial-territorial committees.

Health Canada will provide pesticide residue information to the PMRA on food safety priority issues, as resources permit.

Actions to be taken:

A discussion document, *Preliminary Consultation on Proposed Sales Reporting Regulation*, has been published and the PMRA has prepared drafting instructions for a proposed regulation that takes into consideration the comments received. The proposed regulation would require every registrant of a pest control product to submit an annual report to the PMRA detailing information on sales, by province and territory, for each product during the previous calendar year. The sales information would be required for all end-use products, technical grade active ingredients, and manufacturing concentrates. *Canada Gazette*, Part I publication is expected in the current fiscal year. It is anticipated that reporting of 2003 sales information will be required in 2004.

The adverse effects reporting program proposal has been published for public comment and the PMRA has prepared drafting instructions for a proposed

regulation that takes into consideration the comments received. The proposed regulation would specify the types of information to be reported and the time frames for reporting. It would require registrants to report information they receive that pertains to adverse effects in humans, domestic animals, and the environment associated with the use of pesticides registered in Canada. *Canada Gazette*, Part I publication is expected in the current fiscal year. The Agency is finalizing the program details in accordance with comments received. It is anticipated that Phase 1 (required reporting by registrants) will be implemented in 2004. Voluntary public reporting will be implemented thereafter.

The Health Canada Food Program will consider pesticide-related health research and monitoring when setting priorities, and fund as resources permit.

Federal research on the health impacts of pesticides has not been a priority

Children may be more sensitive to pesticide exposure than adults.

Photo: Health Canada

1.89 The most controversial issues surrounding pesticide use include questions about their effects on health, such as long-term neurological impacts. The Agency recently identified some general priorities for research on health impacts that could help it to improve its regulatory decisions. For example, the Agency adjusts its risk estimates to account for the greater sensitivities of children and the elderly (Exhibit 1.6). These factors need to be examined to determine if they are appropriate.

1.90 **Priorities are not reflected in research.** While the Agency has to provide more details on its research priorities, the rest of Health Canada has taken only very limited steps to meet the Agency's needs. This is despite the Department's mandate for public health research and the federal government's stated priority for research on the effects of pesticides on children and other vulnerable populations. Nor has the Department said where pesticides research ranks among its priorities. Health Canada has very limited dedicated funding for research on human exposure to pesticides or the resulting health effects. Three researchers are working on current pesticides, and they rely primarily on outside funding. Unlike other science-based departments, Health Canada did not receive additional funding for research with the new *Pest Control Products Act*.

Some environmental impacts have been researched

1.91 Federal environmental research on currently used pesticides has focussed on some pesticides, addressing their impact on aquatic ecosystems and wildlife. The research could provide information needed for re-evaluations and suggest cases that require special reviews. For example, research by scientists at the National Water Research Institute contributed to a special review of tributyltin (Exhibit 1.13). Even with this focussed research, there are sometimes very long time lags between research results and regulatory action.

1.92 **Overall priorities are not yet clear.** Linked to passage of the new *Pest Control Products Act*, Environment Canada, Fisheries and Oceans Canada, and Natural Resources Canada received funding for research on environmental impacts. They have not yet jointly set their priorities for this

research although discussions are underway. The Agency has prepared a list of environmental research and monitoring needs, but it has to state its requirements in more detail so that other departments can better provide the information needed by Agency regulators.

Exhibit 1.13 **Special review of tributyltin**

According to scientists who have studied tributyltin, it is perhaps the most toxic chemical that has ever been deliberately introduced into the aquatic environment. Paints containing tributyltin are used to prevent the fouling of underwater structures and boats. It is also an endocrine-disrupting substance that affects the sexual characteristics of marine invertebrates at extremely low concentrations.

Paints containing tributyltin are used to prevent the fouling of boats and underwater structures by aquatic organisms such as barnacles.

Photo: James Maguire, Environment Canada

Concerns about tributyltin were first identified in 1975, and a series of studies by scientists from Environment Canada, Fisheries and Oceans Canada, and other countries confirmed the problem. Regulations were introduced in many countries in the 1980s and the 1990s. In Canada, antifouling paint containing tributyltin was regulated in 1989, however a survey five years later showed the problem had not been solved. Following a two-year special review, the Agency said that no antifouling uses of tributyltin would be permitted in Canada as of 1 November 2002—27 years later. There may be significant concentrations in some sediments in Canada for another 20 to 30 years because of the persistence of the substance. This example and other special reviews point to the need for better and faster ways to translate research results into regulatory action.

Source: Based on information from the Pest Management Regulatory Agency

A co-ordinated monitoring program is still not in place

1.93 **No shared priorities for monitoring.** The federal government's long-term monitoring for the presence and effects of currently used pesticides has also been limited to a relatively small number of pesticides and specific problem areas. We found that the departments concerned (Environment Canada, Fisheries and Oceans Canada, Health Canada, and Natural Resources Canada) did not have their own overall priorities for pesticide monitoring, nor was there a shared set of priorities. The departments have not developed and maintained a consolidated inventory of current monitoring programs for use in identifying critical gaps in information. Environment Canada has developed an inventory of its programs but not in enough detail to identify gaps.

1.94 **Gaps in monitoring of water quality.** The weaknesses in the current federal approach are illustrated by the monitoring of pesticides in water. Scientists at a recent National Water Research Institute workshop noted that

> In Canada we currently lack a systematic, co-ordinated, interjurisdictional system for monitoring pesticides in aquatic systems (both water and sediment). At present our database in this respect is poor. This lack of monitoring data diminishes our ability to identify problematic or potentially problematic chemicals, and/or to identify areas that may be threatened. In part, this lack of data is due to the lack of co-ordination between provincial and federal authorities.

Environment Canada has now begun work on a nationally co-ordinated program for monitoring currently used pesticides.

1.95 **Guideline development has lagged.** While much of the monitoring of pesticides in Canadian waters is done by provincial authorities, the federal government has worked to provide consistent guidelines for pesticides of national concern that may contaminate water. A federal-provincial-territorial committee oversees development of the national *Guidelines for Canadian Drinking Water Quality*. Health Canada plays a pivotal role, evaluating candidate pesticides and preparing the required technical assessments. The current guidelines cover only 28 pesticides currently registered in Canada, including some of the most widely used pesticides. But the development of guidelines has lagged behind the registration and use of new pesticides. For example, the widely used herbicide MCPA was first registered in 1952 and is now undergoing re-evaluation by the Agency. A drinking water quality guideline for this pesticide is finally being developed. Health Canada does not have a process to scan current pesticides to determine which other guidelines need to be developed. The national guidelines to protect aquatic life developed by the Canadian Council of Ministers of the Environment with the support of Environment Canada cover 30 pesticides currently registered in Canada.

1.96 **Recommendation.** To support more effective monitoring of pesticides, Health Canada and Environment Canada should ensure that they identify the need for and support the development of up-to-date water quality guidelines for the pesticides that pose the greatest risks to Canadians and their environment.

Departments' response. Agreed and implemented.

Health Canada and Environment Canada agree with this recommendation and view water quality guidelines as important tools that facilitate the interpretation of water quality monitoring data.

In Canada, national water quality guidelines are developed through federal-provincial-territorial mechanisms. Drinking water quality guidelines are developed by Health Canada, the provinces, and territories through the Committee on Drinking Water, a sub-committee of the Committee on

Environmental and Occupational Health. National water quality guidelines for the protection of aquatic life are developed by Environment Canada, the provinces, and territories through the Canadian Council of Ministers of the Environment, Water Quality Task Group. As such, the annual priority-setting process is multi-jurisdictional in nature and must consider a wide range of parameters, including pesticides, for guideline development. Within current capacities, Health Canada and Environment Canada agree that pesticide guideline development will continue to be a priority for both departments, particularly as new pesticides are introduced into Canada which have the potential to contaminate water sources.

Actions being taken:

To establish which pesticides pose the greatest risk to the aquatic environment and human health, the PMRA, other Health Canada branches, and Environment Canada will establish a ranking of pesticides that have the greatest potential to contaminate surface and ground waters. This ranking will be developed; implementation for newer chemicals can begin immediately; for older chemicals, implementation is tied to the re-evaluation cycle.

This ranking will be brought to the attention of the federal-provincial-territorial committees that develop drinking water guidelines and water quality guidelines for the protection of aquatic life for consideration in their guideline priority-setting process. The ranking will also be a useful tool for identifying priority pesticides for research, monitoring, and surveillance programs.

A water sample is taken to monitor pesticide levels in a creek.

Photo: Agricultural Research Service, United States Department of Agriculture

1.97 **Appropriate analytical methods are not always available.** Registrants must give the Agency descriptions of methods that could be used to measure pesticide residues, but the methods may be too costly or not sensitive enough for other purposes, such as field research and monitoring pesticides in use. As a result, federal scientists may have to use their limited resources to develop suitable methods.

Departments are making new efforts to work together

1.98 In 1999 we noted that the Agency was not sharing information effectively or working co-operatively with other departments. Since December 2001, the Agency and other departments have pushed for stronger interdepartmental co-ordination. In part, this has been the result of the new *Pest Control Products Act* and the accompanying additional resources. A working group of representatives of the key departments is now addressing pesticide research and monitoring needs.

1.99 While we found the current working relationship among the departments promising, significant challenges remain to set and sustain clear priorities across the departments and implement a strong accountability framework. For example, the Agency and other government departments need to define clearly how the other departments will support pesticide regulation, and, in particular, contribute to pesticide re-evaluations through their research and monitoring work. In our view, more attention is also

needed on strengthening formal mechanisms, such as memoranda of understanding, to complement the relationships between the members of the working group.

1.100 Recommendation. To better support pesticide regulation, the Agency, other branches of Health Canada, Agriculture and Agri-Food Canada, Environment Canada, Fisheries and Oceans Canada, and Natural Resources Canada should jointly establish research and monitoring priorities focussed on regulatory needs. They should clearly indicate which departments will be accountable for what research and monitoring results. They should work with the provinces and territories, as necessary, to implement the research and monitoring programs.

Departments' response. The departments agree with the principles of co-operation and co-ordination made in the recommendation.

The departments are already committed to a high level of co-ordination not only for surveillance, monitoring, and research on the effects and levels of pesticides but also for reducing the risks associated with pesticide use including the development of alternate pest management strategies. As a result of recommendations made by the Standing Committee on Environment and Sustainable Development for strengthening co-operation between departments, a working group on pesticide and pest management was established in December 2001 under the Memorandum of Understanding which exists between the five natural resource (5NR) departments. This working group is still considered to be the most appropriate vehicle to develop research and monitoring priorities of shared interest. The departments will continue to look for opportunities and efficiencies to co-operate including networking, joint planning sessions, collaborative monitoring and research projects, and information sharing and collaboration with the provinces and territories in areas where they have jurisdictional responsibility for monitoring activities.

Research and monitoring activities will provide information to support priority regulatory science needs under the *Pest Control Products Act*, such as the presence and effects of pesticides in the environment, and information on agricultural practices such as crop profiles. These activities will also provide the government with information to meet other federal mandates for protection of health and the environment.

While each department is accountable for results from research and monitoring, all departments have committed to reporting results and progress in the annual working group report.

Actions being taken:

The terms of reference of the 5NR Working Group on Pesticides and Pest Management will be reviewed and revised, where necessary, by January 2004 to include the responsibility for jointly developing priorities for research and monitoring. The Working Group will ensure that the timing of the priority-setting exercise will allow for input into the yearly planning activities

of each department. The first session to develop joint priorities will be held in the fall of 2003.

The 5NR Working Group on Pesticides and Pest Management will report yearly on the results of research and monitoring activities undertaken.

The Health Canada Food Program will consider pesticide-related research and monitoring when setting priorities, and fund as resources permit.

Addressing the Agency's management risks

1.101 We examined three key risks to how the Agency is managed as an organization: human resources, funding, and performance tracking and reporting. The Agency has not analyzed its business risks, but senior managers were well aware of the challenges facing the organization.

Human resources management continues to be difficult

1.102 We found that the Agency has three related human resources issues to manage. First, from year to year the number of new submissions and, as a result, the Agency's workload, may vary by 20 percent or more. This clearly puts strains on the organization as the skills and experience to evaluate submissions are not easily obtained from contractors, and new evaluators cannot be hired and trained quickly. We found that performance has suffered in some areas, such as developing new methods. It has meant that the Agency has had to reallocate work and adjust priorities.

As a science-based, regulatory organization, the Pest Management Regulatory Agency needs qualified and experienced employees.

Photo: Agricultural Research Service, United States Department of Agriculture

1.103 Second, any science-based, regulatory organization like the Agency cannot function unless it can attract and retain qualified, experienced employees. Some senior managers told us that turnover in key parts of the Agency had affected timely processing of submissions. In a 2002 survey of public servants, Agency employees were almost twice as likely as other federal employees to feel that turnover had strongly affected their group. Given the importance of this issue, we were concerned when the Agency was not able to readily provide us with accurate information on turnover. The Agency's current estimate of turnover is 10 percent per year—high by comparison to similar organizations.

1.104 Third, and of greatest importance, the Agency is now trying to cope with a period of rapid growth as a result of the new legislation. From April 2002 to February 2003, the Agency grew from 367 to 451 employees—an increase of 23 percent. The Agency estimates that it will need approximately 250 new employees between 31 March 2002 and 1 April 2005. It has met its staffing targets for 2002–03, but does not have a staffing plan that clearly links its future plans to the people it needs and its plans to recruit them. The large influx will place additional demands on existing staff to train new employees while maintaining adequate quality controls. The Agency's internal training program will be responsible for meeting some of the initial orientation needs, however other expertise can only be gained through operational experience and on-the-job coaching.

1.105 **Recommendation.** To ensure that it has the people it needs and that its new resources are used efficiently, the Agency should develop and implement a staffing plan that links its future activities to its staffing actions.

Department's response. Agreed and completed.

The Agency recognizes the need for recruitment and retention of employees to accomplish the mandate that has been assigned to PMRA and to implement the requirements of the new *Pest Control Products Act*.

Prior to 1999, staffing plans were prepared on a divisional basis and approved by the senior management committee. In 1999, a recruitment and retention working group was established to address the need to hire qualified individuals to meet the increasing demands and expectations of the Agency as mandated in the anticipated, new legislation. A three-year resource projection and staffing plan was developed. It was on this basis that a generic recruitment exercise was conducted to ensure that all new human resource needs would be adequately met over the next three years. The Agency has an annual planning activity process whereby these three-year resource projections are confirmed and approved. Annual staffing and recruitment strategies are then developed and implemented. The three-year staffing plan is updated annually during the Agency planning process.

Actions being taken:

No additional actions will be taken.

1.106 Recommendation. To maintain quality control, the Agency should develop and implement an operational program to handle the influx of new employees.

Department's response. Agreed and completed.

Continuous learning and professional development have been a cornerstone of the success of the Pest Management Regulatory Agency since its beginning. There are currently several programs in place that will continue to ensure the maintenance of quality control while new staff are integrated into the Agency.

To maintain quality control, study evaluations related to pesticide submissions all undergo both a peer review as well as manager review and sign-off. A final decision is made by the senior science committees (Science Review Committee or Re-evaluation Management Committee).

The Agency has an extensive in-house orientation program for all new staff. One of the key objectives of the program is to ensure that new staff members can do their job and do it well in as short a time as possible.

A development program for biologists and chemists was launched in May 2003. This is the first program of this kind for scientists in the federal government. Through the development program, new staff are assigned a learning "coach" who helps with on-the-job training as well as development. The participants are also assessed on a six-month basis against pre-established competency profiles for their job in order to identify development and learning priorities and also to determine when they have met the competencies required for the next level.

Actions being taken:

No additional actions are planned at this time.

Funding has been pieced together from several sources

1.107 **Funding less than anticipated.** The financial resources needed to run the Agency have come from various sources. Funding requirements of $34 million per year were identified when the federal government first proposed the Agency in 1994, but funding in 1996–97 was only $25.6 million. When the Agency was created in 1995, senior managers projected that recovering costs from pesticide registrants for processing new submissions would yield $12 million per year. In fact, the Agency has received annually about two thirds of that amount, resulting in an average shortfall of $4.1 million over the last five years, or about 14 percent of the Agency's budget.

1.108 Other funding has come from Health Canada ($0.5 million per year) and from Agriculture and Agri-Food Canada (an average of $2.5 million per year for six years) to reduce the fees paid by pesticide manufacturers, and indirectly what farmers pay for pesticides. The funding arrangement with Agriculture and Agri-Food Canada ended in March 2003. Thus over the past few years, the Agency has found funding to meet some of its short-term needs, but there have been some gaps. For example, Health Canada said the lower than expected funds from cost recovery delayed the re-evaluation of older pesticides.

1.109 With the new legislation, the Agency has received more funding and the future appears more secure. The additional funding is supposed to rise from $7.8 million in 2002–03 to a maximum of $19.6 million in 2007–08, an increase of 61 percent compared to 2001–02. Additional funding then drops to $14.4 million per year. It will not be clear for several years whether these additional funds will permit the Agency to recover from earlier shortfalls, and adequately meet the new demands that it faces.

1.110 **Cost recovery review not yet started.** As part of the cost recovery initiative, the Treasury Board has imposed a series of conditions on the Agency. The Agency has responded to all of these conditions except one. The Treasury Board required the Agency to review the implementation of cost recovery by December 2002. As of March 2003, the review as such had not yet begun. The new target date for completion is March 2004. As a result, the Agency does not have a solid, independent perspective on how well its cost recovery initiative is working. Cost recovery continues to affect many aspects of the Agency's business.

Performance information lacks the cost dimension

1.111 Since its creation, the Agency has made significant gains in internal performance tracking. Initiatives are now tracked against deadlines and reported on a quarterly basis. These are linked back to the Agency's strategic objectives and to the commitments the federal government made in 1994 leading to the creation of the Agency. Delays in progress are clearly identified in these reports. The Agency has also developed a sophisticated, computer-based performance and submission tracking database.

1.112 We found that costs are not tracked or estimated for individual projects or submissions. As a result, the Agency has difficulty determining how serious its performance problems are, adjusting its resources efficiently, or planning its future work effectively and realistically.

1.113 We also found that external reports are much less informative than internal reports. External stakeholders do not have good information about how well the Agency is doing with its submissions. The Agency has made some performance information public but only on the scientific review stage of the evaluation process. It does not provide information on the variation in its handling times for different submissions. Detailed performance information is not available to the public on other Agency initiatives, such as the target listed in Health Canada's sustainable development strategy to "reduce risks from selected products and environmental hazards by improving risk assessment and risk management processes." Given its central role in pesticide management, we encourage the Agency to include a fair and full summary of its activities in the annual report required under the new legislation, including quantitative information about its performance on new submissions and re-evaluations.

1.114 Overall, the Agency faces significant internal challenges, especially those associated with managing its growth. It does not have the tools that, in our view, it needs. These are

- a staffing plan that links its new responsibilities to its staffing actions,
- an operational strategy for managing its new employees,
- a solid review of its cost recovery initiative, and
- cost information tied to its activities.

Moving pest management forward

1.115 **A new phase.** The Agency and other departments involved in pesticide management are entering a new phase with new legislation, resources, and expectations. Public controversy over pesticide use will continue. For example, in Chapter 4 of this report we note that the Commissioner of the Environment and Sustainable Development received a petition concerning the use of pesticides to control spruce budworm in Prince Albert National Park. Increased public scrutiny of the Agency's decision making is likely to increase the need for good risk management and more effective communication.

A pheromone trap—an alternative to traditional pesticides—can be used to monitor pest populations. Male insects are attracted to the scent of the synthetic pheromones and become caught on the sticky base of the trap.

Photo: Ron Hines, Dixon Springs Agricultural Center, University of Illinois

1.116 **The search for alternatives to traditional pesticides.** In our audit, we did not focus on federal efforts to find better ways to manage pests, such as the research by Natural Resources Canada on using viruses to control insects, or the work by Agriculture and Agri-Food Canada on alternative farming techniques. As older pesticides are re-evaluated, the choices for managing pests are evolving, sometimes quite dramatically. In our view, as a longer-term solution to the concerns we identified, the Agency, Agriculture and Agri-Food Canada, Fisheries and Oceans Canada, and Natural Resources Canada need to work together as they continue to pursue new alternatives to traditional pesticides—to move from simply managing pesticides to managing pests sustainably.

1.117 An important element of this management approach will be an overall policy of reducing the risks from pesticides—a commitment the federal government made in 1994. The Agency and other players have been working on a draft policy for over two years. In our view, this needs to be finalized and translated into an operational plan. As part of a framework for reducing risk, the Agency is working closely with Agriculture and Agri-Food Canada to complete pest management profiles for individual crops These profiles, which include basic crop information and alternatives to pesticides, could prove to be an effective way of identifying where new approaches are needed.

Conclusion

1.118 In our view, the framework used by the Pest Management Regulatory Agency in making pesticide evaluation decisions is sound and has improved since the Agency was created. The Agency's process is similar to those of pesticide regulators in other countries, including the United States. However, the Agency needs to strengthen some key safeguards in the framework: using up-to-date evaluation methods; ensuring adequate information; carefully testing its assumptions, especially about user behaviours; and consistently applying its procedures and policies. Until it takes these steps, the Agency can give only limited assurance that pesticides it approves meet today's standards. In particular, we are concerned about the heavy and repeated use of temporary and emergency registrations.

1.119 Older pesticides that need to be re-evaluated present a more serious concern. Many that are widely used have not yet been re-evaluated against current standards, and it is likely that some uses will not meet these standards. The Agency has a responsibility to ensure that its judgments of which pesticides can be used are up to date. In our view, the Agency is not yet fulfilling this essential responsibility. We believe it is critical that it give higher priority and more resources to re-evaluations. It also needs to use some basic management tools to better manage these activities.

1.120 The Agency must also meet its own targets for timeliness in processing submissions on new pesticides. While new measures have been introduced to improve performance on processing minor use pesticide applications, the Agency is not meeting its own targets for this and other types of pesticides. This means that new and possibly safer products are taking longer to get to users than the government had expected. This has economic consequences for registrants and pesticide users, and health and environmental consequences for Canadians.

1.121 When it evaluates pesticides, the Agency assumes full compliance with the *Pest Control Products Act*, relevant regulations, and label instructions. However, it does not have reliable information about compliance rates and the effectiveness of its compliance programs. It can provide only limited assurance that users of pest control products follow the requirements. As a result, a crucial check to ensure that pesticides are used safely is not working as it should.

1.122 Another key safeguard in the management of pesticides is effective research on and monitoring of the impacts of pesticides. The responsible federal organizations are making new efforts to work together. So far, however, the federal government does not have the reliable, up-to-date information about pesticides that it needs to manage them effectively. It lacks significant information on the use of pesticides and exposure to them. Research on health impacts is very limited despite being a stated priority for the federal government. The federal government has not set, for either research or monitoring, clear overall priorities that focus on regulatory needs.

1.123 The Agency also faces significant internal challenges, especially those associated with managing its influx of new employees. It will not be clear for several years if the additional human and financial resources will permit the Agency to recover from earlier shortfalls and adequately support the new demands being placed on it as a result of the new *Pest Control Products Act*.

1.124 Overall, we conclude that the federal government is not managing pesticides effectively. We found weaknesses in many areas, such as re-evaluations, and we noted that problems in some areas spilled over into other activities. For example, gaps in monitoring mean that re-evaluations depend on incomplete, inconsistent, and out-of-date information.

1.125 It is difficult to judge the impact of all these weaknesses on health and environmental risks—federal departments themselves do not know what are the effects. The Agency will need to make improvements in these areas if it is going to meet the demands of the new legislation. The range of weaknesses raises serious questions about the overall management of the health and environmental risks associated with pesticides.

1.126 We identified several related explanations for the problems we noted. The Agency had assigned re-evaluations a low priority and insufficient resources. Expected funds from cost recovery and planned improvements in efficiency have not materialized. In some areas, not enough attention is paid to using some basic management tools and to collecting essential performance information. The connections with other branches of Health Canada and other departments only now are being strengthened to support better-focussed research and monitoring.

1.127 The new legislation and new funding make this a time of transition and opportunity for pesticide management in Canada. The federal government still faces a major challenge. This chapter provides a snapshot to help Parliament measure the government's progress in this area.

About the Audit

Objectives

Our overall audit objective was to determine the extent to which the federal government—primarily through the Pest Management Regulatory Agency—is effectively managing key aspects of pesticide use in Canada. Our audit work included five sub-objectives, to which we applied specific criteria (Appendix). These sub-objectives were to determine the extent to which

- the pesticide registration, re-evaluation, and special review processes are resulting in a mix of registered pesticides that meet current standards for acceptable environmental and health risks;
- the Agency is providing timely access to new pest control products and is re-evaluating older pesticides in a timely manner;
- the federal government ensures compliance with the *Pest Control Products Act*;
- the federal government has tracked the effects of pesticides, including their efficacy and their health and environmental effects, and then used this information in its decision making; and
- the Agency is managing the business risks associated with funding sources and human resources.

We also examined the context of pest management in Canada, including the nature and impact of pest problems, the evolving approaches to pest management, and the risks associated with pesticides in current use.

Scope and approach

Our audit looked at several key aspects of the federal government's pesticide management. We excluded areas such as research on new pest control products, and federal efforts to promote integrated pest management. Rather than address the science behind the Agency's evaluations of pesticides, we focussed on the management context of the evaluations.

We interviewed 124 people outside the federal government and inside the departments and agencies involved in pesticide management. These included senior managers and other staff from the Agency. We reviewed working documents, paper files, and electronic databases, focussing on the decisions about pesticides that posed the highest risks. We conducted interviews and reviewed files in four Agency regional offices. We also observed 12 meetings in which the Agency's senior managers and scientists made decisions about which pesticides could be used in Canada.

We had originally intended to rely on the review of the Agency's cost recovery initiative required by Treasury Board that was to have been completed by the end of 2002. However, because of administrative delays, this review was not available to us.

Our audit supports the Auditor General of Canada's focus on the well-being of Canadians through examination of the environmental and health effects of pesticides. It also supports her focus on the federal government's management of legacy issues, through examination of how old pesticides are being managed.

Some of the quantitative information in this chapter is based on data from various federal and other sources indicated in the text. We have satisfied ourselves as to its reasonableness given the use we made of these data. However, it has not been audited, unless otherwise indicated in this chapter.

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Appendix Audit criteria

Sub-objective 1: To determine the extent to which the pesticide registration, re-evaluation, and special review processes are resulting in a mix of registered pesticides that meet current standards for acceptable environmental and health risks.

Audit criteria:

- The Pest Management Regulatory Agency ensures that the new pest control products it registers are safe.
- The Agency ensures that registered pest control products meet current safety standards through re-evaluation, including special reviews.
- The Agency is taking action to discontinue products with formulants of greatest toxicological concern.

Sub-objective 2: To determine the extent to which the Agency is providing timely access to new pest control products, and is re-evaluating older pesticides in a timely manner.

Audit criteria:

- The Agency is meeting its stated performance standards for review times of registration submissions.
- The Agency is meeting its objectives with respect to timing and costs of re-evaluations.
- The Agency is providing access to minor use pesticides where there is a need.
- The Agency has achieved its stated goals with respect to efficiency improvements in reviewing submissions.

Sub-objective 3: To determine the extent to which the federal government ensures compliance with the *Pest Control Products Act.*

Audit criteria:

- The federal government has a clear understanding of the practices of agricultural and urban pesticide users.
- The Agency ensures that pest control products are used legally, according to the *Pest Control Products Act*, relevant regulations, and label instructions.
- The Agency has efficiently and effectively allocated its resources for compliance and enforcement.

Sub-objective 4: To determine the extent to which the federal government has tracked the effects of pesticides, including their efficacy and their health and environmental effects, and then used this information in its decision-making.

Audit criteria:

- The federal government has set clear priorities for its monitoring efforts, and is allocating its resources efficiently to meet these priorities.
- The Agency has up-to-date and reliable information on the efficacy of pesticides currently in use.
- The Agency has up-to-date and reliable information on the success of the risk mitigations it proposes.
- Health Canada (and the Agency) has up-to-date and reliable information on the health impacts associated with pesticide use.
- Environment Canada, Fisheries and Oceans and the Agency have up-to-date and reliable information on the environmental impacts associated with pesticide use.
- The Agency has established strong linkages in research and monitoring related to pest management with the five natural resource departments.

Sub-objective 5: To determine the extent to which the Agency is managing the business risks associated with funding sources and human resources.

Audit criteria:

- The Agency has identified its key business risks.
- The Agency has established measurable performance indicators and is measuring and reporting its overall performance.
- The Agency has obtained predictable and stable funding to achieve its objectives.
- The Agency has obtained and retained sufficient and appropriate human resources to achieve its objectives.

Report of the Commissioner of the Environment and Sustainable Development to the House of Commons—2003

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