THE 2007 PROPOSED FOREST PROTECTION PROGRAM

AGAINST THE HEMLOCK LOOPER

ON THE NORTHERN PENINSULA

USING AERIALLY APPLIED INSECTICIDE

MIMIC™ (tebufenozide)

Submission to:

DEPARTMENT OF ENVIRONMENT AND CONSERVATION
ENVIRONMENTAL ASSESSMENT DIVISION

by:

DEPARTMENT OF NATURAL RESOURCES
FORESTRY AND AGRIFOODS AGENCY
FORESTRY SERVICES BRANCH

May 2007

2007-04-23

NAME AND ADDRESS OF PROPONENT

This application is submitted on behalf of

THE DEPARTMENT OF NATURAL RESOURCES
FORESTRY AND AGRIFOODS AGENCY
FORESTRY SERVICES BRANCH
CORNER BROOK, NL

Chief Executive Officer:

Mr. Leonard Moores

CEO – Forestry and Agrifoods Agency
637-2339

Corner Brook

Contact Person:

Mr. Hubert Crummey

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Corner Brook

THE UNDERTAKING:

In fulfilment of the mandate and commitment of the Department of Natural Resources - Forestry Services Branch to protect the forest resource and limit damage from infestations of significant pests, and with due regard for human health and non-target environmental effects, the following undertaking is proposed.

NATURE OF PROPOSED APPLICATION

The Department of Natural Resources – Forestry Services Branch is proposing to carry out an operational aerial control program on the Northern Peninsula, using the registered insecticide Mimic™ (tebufenozide), to selected forest areas mainly within the moderate to severe hemlock looper defoliation forecast for 2007. Additional areas within the forecast will be treated using the biological insecticide, B.t.k. **[Not a part of this submission]**

PURPOSE OF PROPOSED APPLICATION

The purpose of this control program is to reduce larval populations of the hemlock looper and thus minimize feeding pressure on infested trees and thereby prevent additional tree mortality and protect existing silvicultural treatment areas.

Background:

Although coniferous defoliators are natural elements in the forests of Newfoundland and Labrador, the potential impact of unchecked forest pest outbreaks cannot be ignored. The need to protect the forest resource against insect outbreaks has been evident from past, serious infestations of hemlock looper and spruce budworm. As a result of the 1980 Royal Commission on Forest Protection and Management, Government adopted the recommendation for a long-term policy on protection, particularly related to investment in expensive silvicultural practice aimed at renewing the forest resource. This policy did and does provide the basis for forest pest management within the Province. Control programs (as and if necessary) have become an integral part of sustainable forest management. The Department is committed to forest protection against insect pests, using the most effective federally registered insecticides that have minimal impacts on the environment. It is imperative that a variety of control tools / methods be available to allow for efficient and effective control of pest infestations as the situation arises. No particular tool / method works well in all situations. In addition, the Department is committed to actively seek more acceptable solutions to pest problems, such as: biological insecticides, enhancing natural control measures or any other practical methods of pest management. All pesticide usage is subject to annual environmental assessment and/or review processes within the Province, as deemed necessary. Annually, Government decides on the nature and extent of a program based on all available information and recommendations.

A healthy forest is important for ecosystem management, biodiversity and environmental health as well as the economic benefits to the people of the Province derived from this renewable resource.

The Department has been successful in the past in dealing with major forest insect pests such as the spruce budworm and hemlock looper where treatment was adequate. Previous insect control programs have limited the potential impacts of infestations by minimizing extensive tree mortality and saving as much foliage as possible.

In valuable stands and in areas where weather is a significant factor or where program logistics are influencing pest management operations, it is necessary to utilize those tools that will more adequately provide effective insect control in such circumstances.

HEMLOCK LOOPER

Background:

The hemlock looper is a native, defoliating insect on balsam fir in Newfoundland and Labrador. After hatching from the overwintering eggs, looper larvae initially feed on the current year's growth and then move to feed on the older needles. Hemlock looper larvae are wasteful feeders in that they damage but do not consume the entire needle, particularly in the later instars (Figure 1.).

Figure 1. Hemlock Looper Larvae

Once damaged, needles usually die causing the needles to turn a rusty brown color (Figure 2.).

Figure 2. Hemlock Looper Defoliation

In high numbers, looper larvae can cause severe defoliation and resulting tree mortality in one season (Figure 3.).

Figure 3. Tree Mortality caused by Hemlock Looper

Because of the seriousness of a looper infestation, immediate control action is required to protect affected valuable stands. The Department has been addressing hemlock looper infestations for many years by treating and protecting those high value stands on a priority basis, and as required.

Current situation:

The hemlock looper infestation and

general population levels have been in general decline for the last several years. However, small pockets of infestation still occur and control measures have been taken as necessary and are being proposed, particularly to maintain valuable forest stands including commercial thinning areas. The current small hemlock looper infestation on the Northern Peninsula is of some concern. The 2007 hemlock looper moderate and severe defoliation forecast (Figure 4.) is for approximately 5,000 ha to be affected. Extra samples have been taken and are being processed at this time. Results may cause the forecast area figure to increase slightly.

Control options:

As in the past, an integrated pest management approach has been and is being taken. Only two control options are currently available to minimize looper damage - the biological insecticide Foray® 76B (*Bacillus thuringiensis* var. *kurstaki* (B.t.k.)) and the insect growth regulator Mimic™ 240 LV (tebufenozide). Both are effective depending on circumstances and program requirements. Mimic™ was used on a limited basis on very high looper population areas in 2001 on 3,010 hectares (ha), on 19,260 ha in 2002 and on 23,977 ha in 2003. The product was successful in reducing looper population levels and preventing expected levels of tree defoliation. At present, both products are proposed for the 2007 program. This document, prepared for the Environmental Assessment process, only deals with the Mimic™ proposal.

Mimic ™ (tebufenozide) [Pest Control Product # 24502], an insect growth regulator, is registered for use against the hemlock looper and several other forest insect pests such as the spruce budworm, tussock moth and jack pine budworm. In fact, data from experimental trials carried out in insular Newfoundland on the hemlock looper supported the registration of the product for looper control.

Mimic™ (like B.t.k.) must be present on the needles and eaten by the larvae to be effective. Mimic™ can be applied just at larval hatch and therefore will be present at the initial onset of larval feeding. Mimic™ is less susceptible to weather conditions (rain) and breakdown from sunlight (UV light) compared with B.t.k., which is subject to rain and sunlight degradation after several days. Because Mimic™ remains on the foliage for a longer period (several weeks), it is an ideal choice for looper control where larvae could hatch over 3 or 4 weeks in some years. Thus its use will allow a time frame to provide essential control and maximize protection of tree foliage within the overall 2007 forest protection program.

Although B.t.k. has been reasonably successful where treatment could be carried out on time, weather and program logistics often interfere with the appropriate timing of insecticide application and how long the product is effective. B.t.k. must be applied after most of the larvae have hatched and are actively feeding since B.t.k. is effective for a shorter period of time (days). When spray weather is suitable, larvae are actively feeding, and post-spray weather favours larval feeding and product

retention on the needles, B.t.k. is very effective. Often when weather causes spray delays or unfavourable post-spray weather causes deterioration of the product or inhibits larval feeding, B.t.k. is less effective and the degree of program success is affected.

Proposed Control Product - Mimic™:

Mimic™ (tebufenozide), a growth regulator, is an aqueous flowable formulation whose mode of action mimics the action of the insect molting hormone, ecdysone, in larval Lepidoptera (caterpillars). This initiates an unsuccessful (lethal) molt in the larvae. Mimic™ has very little effect on the environment and non-target species, **when used under operational spraying parameters and according to the label directions with stipulated buffers and the correct dosage**. Mimic™ does not adversely affect bees, birds, fish, mammals, shrimp, oysters, green algae or earthworms. It also does not affect beneficial insects such as predatory mites, beetles, wasps, and spiders. As indicated, Mimic™ has advantages in that it has a wider window of application and appears to weather better on the foliage. Because it is active for a longer time (weeks) it can be applied at larval hatch and still be effective against later hatching larvae.

Mimic™ will allow earlier application to infested areas where timing, weather or program logistics might otherwise cause delays in treatment. Foray® is being proposed for the remainder of the program or where other factors, such as required buffer (no spray) areas are of specific concern. **In terms of this submission**, Mimic™ is **proposed** to be used on up to approximately 4,500 ha, with **the general locations being identified on maps in this document**. The purpose of this program is to reduce insect population levels as early as possible. Early control, during the early larval feeding stages in treated areas, will minimize the loss of foliage, the loss of tree growth and the prevention of tree mortality.

The pest management program that has been developed will address the current small infestation. The total proposed looper program for 2007 involves control intervention on the Northern Peninsula using a combination of the two insecticides.

DESCRIPTION OF UNDERTAKING

The locations of the **insect infestation (damage)** and the proposed Mimic™ treatment locations for 2007 are as indicated on the accompanying map. **These areas are not treatment block boundaries. These blocks will be identified later, subject to the necessary "no-spray" buffer zones and other stipulations, as dictated by the Department of Environment and Conservation, providing adequate protection for human habitation, sensitive areas, etc.**

Hemlock Looper Control Activity

As per the label, Mimic™ will be applied in a single application of 70 grams of active ingredient (290 mL) per ha.

The Department will request an

Operator's Licence from the Department of Environment & Conservation to allow operational use of Mimic™ in 2007. The product will be applied to selected areas within the finalized forecast by single engine spray aircraft.

As previously indicated, teatment areas will be refined as environmental concerns, e.g. buffer zones, are determined and stipulated in the Operator's Licence.

Treatment is expected to start in late June, (depending on weather affecting insect hatching and development) and continue into July. Operations will be based out of the Port au Choix airstrip. Final aircraft type that will be used will depend on aircraft availability, operational parameters, economics, logistics, and final spray block sizes. The Department uses the most up-to-date standard technology to ensure the best delivery of the program.

UNDERTAKING PARAMETERS

SPRAY PROCEDURES

Since 1977, the Forest Engineering & Industry Services Division (formerly the Forest Protection Division) of the Newfoundland Department of Natural Resources – Forestry Services Branch assumed responsibility for any operational control programs conducted against forest insect and disease pests and to date have planned and supervised major insect control programs. The insect population forecast, now carried out by Departmental staff, predicts infestation levels for the following summer and this is used to determine if there is a need for control intervention and if so, provides the outline to identify proposed treatment areas. The Department has carried out all other aspects of the operational aerial programs (apart from the actual aircraft application of the control product and aircraft maintenance), including the transportation, handling, mixing, loading and decontamination of equipment and containers, up to and including the loading of aircraft. The Department also oversees the actual spraying by the contractor to ensure that the proper areas are treated under the appropriate weather conditions, and that all Licence stipulations, including buffer zones, are followed. The Department monitors insect and host tree shoot development and larval numbers from early in the season, to determine the ideal application date(s) and priorities of areas to be treated. Monitoring to determine insecticide efficacy continues throughout the spray program, and a final assessment is made after insect feeding has ended. All necessary ground, communication and sampling equipment is supplied and owned by the Department.

The Department utilizes currently available equipment and technology. It complies with existing regulatory guidelines. In earlier programs navigation of spray aircraft was provided by utilizing qualified and licenced Departmental personnel in a helicopter that led spray aircraft along pre-determined flight lines, and a supervisor, in a fixed-wing aircraft or a helicopter, determined the accuracy of the navigation and performance of the spray aircraft, and initiated corrective action, as necessary. The supervisor also assessed the favourability

of weather parameters before and during spray missions. For the past 9 years (1998-2006), and because of the buffer zones stipulated in the provincial Operators Licences, the Department has required the use of Differential Global Positioning System (DGPS) technology to enhance navigation thereby enabling the spray aircraft pilots and aerial supervisors to better anticipate identified buffer zones during spray missions and to facilitate the actual flight along the pre-determined flight lines. This technology is the best available at this time for operational programs, has worked reasonably well, will be used in 2007. The aerial supervisor is still monitoring and directing the treatment, as well as assessing the accuracy of the application and the suitability of weather, etc, as before.

Spray bases have been provided with appropriate equipment to ensure environmental safety by using approved containment dyking and currently acceptable safety and emergency equipment and materials.

WORKER SAFETY

The Department has well-established safety guidelines for workers involved in insect control activity. Staff have a lot of experience and an enviable safety record. To protect workers involved with the program, personnel handling the insecticide (each mixer/loader) will be required to wear hooded rubber suits, rubber gloves, rubber boots, goggles and appropriate respirators during the mixing of the insecticide formulation, the filling of loading and holding tanks and aircraft, and during the decontamination of insecticide drums (as necessary according to current occupational health and safety standards and product label instructions). Pilots and navigators/supervisors are not permitted to be involved in the handling of insecticides.

In addition, approved safety precautions and established rules and guidelines will be adhered to concerning personal hygiene of all mixer/loader personnel working with insecticides and what to do if contact with an insecticide occurs or if symptoms of illness occur during or after handling of any insecticide or mix. Hospital and emergency telephone numbers will also be posted in a conspicuous place to be used in the event of accident.

Applicable contingency measures will be available to personnel in the event of an accident.

PUBLIC HEALTH CONSIDERATIONS

To minimize the risk of exposure of people to insecticide spray, “no-spray” buffer zones will be left around known places of permanent human habitation and around areas such as cabin development and park (camp and day use) areas. **In 2007, any spraying near habitation will be subject to terms and conditions of the Operator’s Licence from the Department of Environment & Conservation in consultation with the appropriate Health and Community Services personnel (if required). Identified and occupied cabins will be adequately buffered in relation to the product being applied. In addition, a 1.6 km buffer zone is left around identifiable intakes to known community water supplies**; however, it may be desirable to

decrease buffers in specific cases. These are dealt with in consultation with the provincial Department of Environment & Conservation on an individual basis as and when identified. If, during the course of a spray mission, unauthorized personnel are detected in or near a treatment area, the aerial supervisor will instruct the spray aircraft pilot(s) to provide extra buffers or to terminate the mission, as applicable in the circumstance. Local hospitals and regional public health officials in the vicinity of the proposed spray areas are notified in advance of the program concerning which product(s) are to be used, general areas of treatment blocks, timing of spray season, etc. This action is to ensure full notification and preparation should an incident occur which would require medical assistance.

ENVIRONMENTAL SAFETY

In terms of environmental safety, all stipulations in the licence issued by the provincial Department of Environment & Conservation are followed. These include the reporting of any incidents, such as spills, to the appropriate authorities. In connection with this, the Department of Natural Resources – Forestry Services Branch has a contingency plan which is annually reviewed and approved prior to receiving of an Operator's Licence. The plan outlines procedures for spill reporting, emergency first aid for exposure, insecticide spill only, aircraft crash in bush, aircraft accident on or near the airport, jettisoned aircraft load, drum decontamination and disposal, and other general regulations and instructions as necessary.

PUBLIC NOTIFICATION

As part of the program, the public and media in the vicinity of the proposed treatment areas are notified, prior to commencement of the program, through ads or news releases, or through appropriate contact if required, with information of which product is being used, general areas of spray blocks, timing of application, contact numbers, etc. Access roads to the general areas are posted with signs indicating treatment, product, dates, and phone numbers for more information. A phone-in information line will be set up and the general public can call to find out the status of areas receiving treatment. Since 1977, daily messages have been sent to the news media with information indicating what areas are ready to be treated as well as the status of areas treated since the last update.

Regional offices of the Department of Natural Resources – Forestry Services Branch and the Department of Environment & Conservation, as applicable, will be provided with maps showing treatment areas. These maps are available for viewing by the general public during regular office hours. District offices of the Department will be made aware of spray blocks in their area and are provided with applicable detailed maps so they can inform the public on specific local blocks, when requested.

POTENTIAL SPRAY CONFLICTS:

There are always potential conflicts with insect control programs, such factors as: proximity to habitation, cabin development areas, individual cabins, water supply areas, recreational uses (fishing and camping, berry

picking), potential impacts on wildlife. However, in approving a product at the federal registration level, and in granting a licence at the provincial level, mitigating measures are identified which eliminate or significantly reduce the potential for conflicts. These mitigating measures are outlined on the product label as approved by the PMRA-Health Canada and in terms of buffer zones stipulated in the Operator's Licence [**see attachments to this document**]. In addition, the proponent is also required to post signs and advise the public about the program to lessen accidental exposure.

ALTERNATE OPTIONS FOR SAWFLY CONTROL

Integrated Pest Management Approach

The Department prefers, and has been actively encouraging and participating in research focussed on the identification and development of, biological solutions to insect problems. This work will continue. Scientists will continue to look at alternate and more acceptable solutions for a number of pest problems.

Also, in attempting to improve control measures and techniques, the Canadian Forest Service, in cooperation with the Department and the Forest Industry, will continue to identify methods of dealing with pest outbreaks. Research and experimental programs are an integral part of operational programs and essential to better manage pest problems in an effective and efficient manner.

The Department of Natural Resources – Forestry Services Branch will continue to explore control options (and field test promising candidates) for insect pests to determine cost effective, efficient control methods with regard to minimizing human health risks and environmental impacts.

APPROVAL OF THE UNDERTAKING

Aerial (and ground) application of insecticides falls under both federal and provincial legislation. The approval of product use (operationally or experimentally) has first to be given by the federal government. This mandate rests with the Pest Management Regulatory Agency (PMRA) of Health Canada.

In Canada, before they are registered, pesticides must have undergone extensive assessments for both environmental impact and human health risks, when used according to label directions under appropriate weather conditions.

In Newfoundland and Labrador, pesticide application has to be carried out under an Operators Licence, issued by the Department of Environment and Conservation, and under the direction of qualified and licensed Applicators.

The Federal Government, insecticide manufacturers, universities and colleges are also involved in pesticide research. Decisions, made by government after all of the research has been reviewed, are made with wide safety margins.

Any manufacturer who wishes to sell a

pesticide in Canada must first register that pesticide under the *Pest Control Products (PCP) Act*. To receive registration, the manufacturer must follow the registration process administered by the PMRA of Health Canada. Registration involves the submission of an application by the manufacturer. Before this is possible, the company must carry out specific studies on the product. The application must be supported by a very thorough data package documenting the effects of the pesticide on users, bystanders and the environment

The scientific testing may take years, depending on the nature of the product, as the study includes long and short term health effects of the user, exposure to bystanders, residues in food, ground water contamination, effects on wildlife and environmental fate. A scientific evaluation of the product is then performed by Health Canada – PMRA. A registration will be granted if the pesticide's safety, merit and value for the proposed use are found to be acceptable. If problems with the product are identified, registration will not be granted. All products are subject to re-evaluation, with provision for suspension or cancellation.

Once the federal government approves a registration, the provincial governments become more involved. Each province has legislation dealing specifically with pesticide use in that province. In Newfoundland and Labrador pesticide use is regulated under the *Pesticides Control Act.* This legislation requires all organizations and companies using pesticides to apply for and receive a Pesticide Operator License. This license regulates aspects of an operation not covered by federal legislation and requirements. As with federal regulations, the Pesticide Operator License is designed to minimize risks to human health and the environment. Aspects of a pesticide operation like buffer zones, spill response, public information and notification programs, monitoring requirements, weather conditions, etc are all specified in the license as they relate to a particular spray program.

Provincial legislation also requires individuals to be trained in the safe use of pesticides. Only individuals that successfully pass the provincial pesticide applicator exam (administered by the Department of Environment & Conservation - Pesticides Control Section) are granted an applicator license and authorized to handle pesticides. Compliance and enforcement activities are also carried out by the Pesticides Control Section.

As with all commercial pesticide operations, the 2007 insecticide program will be regulated by the Pesticides Control Section of the Department of Environment and Conservation [**see attachments to this document**]. The Federal registration system combined with the provincial licensing and regulatory system ensures that any pesticide that is used in Canada has passed a comprehensive environment/health evaluation.

SCHEDULE

The insects will emerge, and the best time for application of control, is expected to be

early July to late July, but weather dependent. Because of the logistics and acquisition of supplies and services, it is essential that approval be given at the earliest.

May 1, 2007
Date

Original signed by
Leonard Moores
CEO - Forestry &
Agrifoods Agency

ATTACHMENTS

Map of infested areas proposed for Mimic™ treatment in 2007 ***See Attachment A***

Copy of 2006 OPERATORS LICENCE (TERMS AND CONDITIONS) - FOREST INSECTICIDE USE from the Department of Environment and Conservation ***see Attachment B***

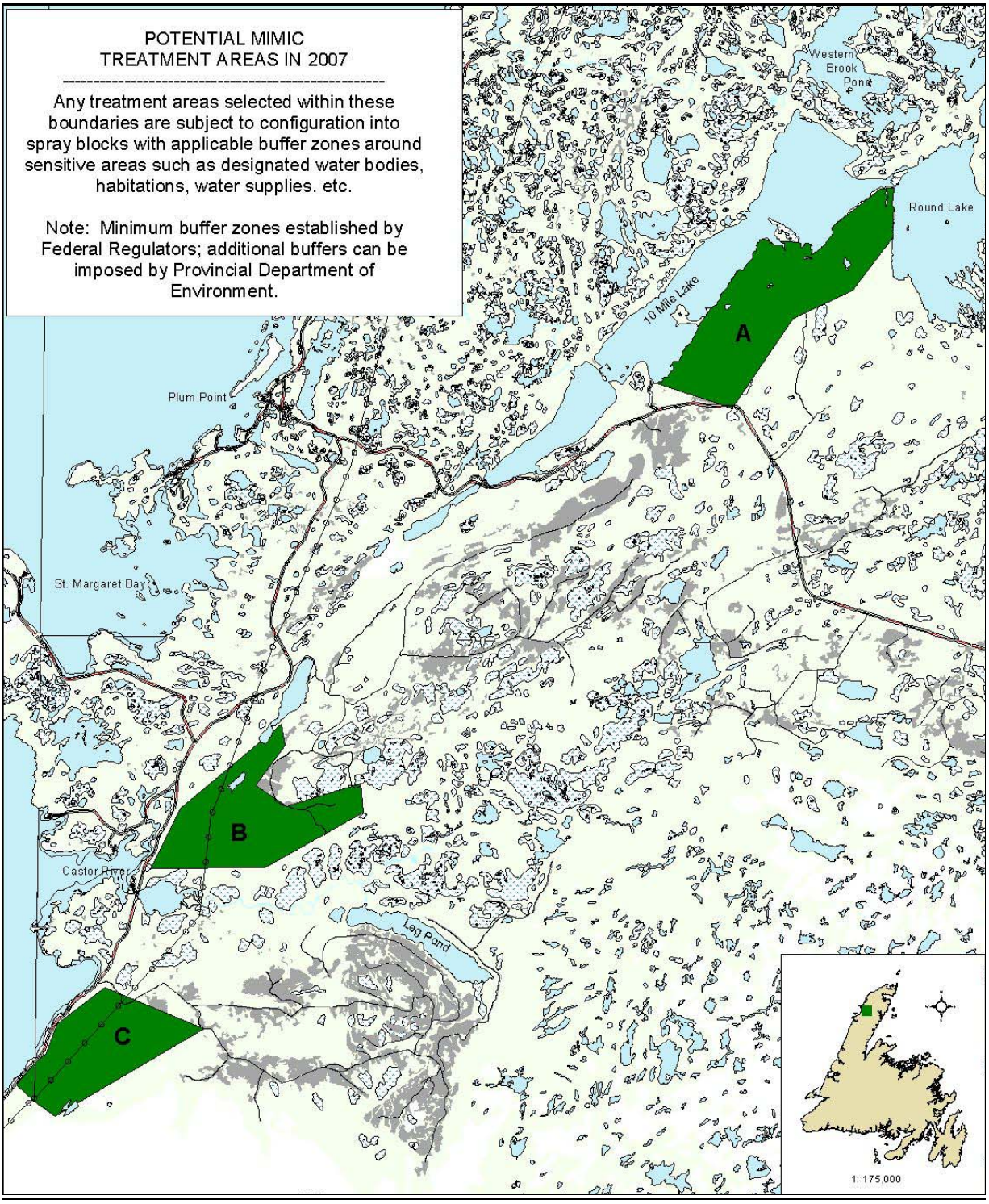
Health Canada – Pest Management Regulatory Agency approved Mimic™ label
See Attachment C

Attachment A

1) Map of **predicted infestation** areas within which treatment with Mimic™is **proposed** for 2007

NOTE:

The areas outlined on the following map indicate where the hemlock looper populations and defoliation / damage are expected to occur in 2007 and within which treatment with Mimic™ is proposed. They are not final treatment areas. Spray (treatment) blocks will be established within these boundaries once the terms and conditions and buffer zones (no-spray areas) are determined by the provincial Department of Environment and Conservation under the approval and licensing process.


POTENTIAL MIMIC
TREATMENT AREAS IN 2007
Any treatment areas selected within these boundaries are subject to configuration into spray blocks with applicable buffer zones around sensitive areas such as designated water bodies, habitations, water supplies. etc.
Note: Minimum buffer zones established by Federal Regulators; additional buffers can be imposed by Provincial Department of Environment.
Western Brook Pond
Round Lake
10 Mile Lake
A
Plum Point
St. Margaret Bay
B
Castor River
Lag Pond
C
1: 175,000

NOTE: The following is the 2006 Operator Licence – Terms & Conditions. These are subject to annual review by Environment & Conservation and could change from the preceding year(s) based on new information.

Attachment B

GOVERNMENT OF NEWFOUNDLAND AND LABRADOR

Department of Environment and Conservation
Pesticides Control Section

Pesticide Operator Licence - Terms and Conditions

Department of Natural Resources
PESTICIDE OPERATOR LICENCE NO: **06-049**
EFFECTIVE DATE: July 5, 2006
EXPIRY DATE: December 31, 2006

Definitions

Water body: means any surface (high water mark) or subterranean source of fresh or salt water within the province, whether such course usually contains water or not, and includes coastal water within the jurisdiction of the province and includes water above the bed of the sea that is within the jurisdiction of the province, any river, stream, brook, creek, water course, lake, pond, spring, lagoon, ravine, gully, canal and any other flowing or standing water and the land usually or at the time covered by any such body of water.

Well: means an artificial opening in the ground from which water is obtained or that is made for the purpose of exploring for or obtaining water.

Human habitation: means every structure in which a person or persons resides on either a part-time or full time basis.

Penstock: means a pipeline leading from the intake to the turbines.

Right-of-Way (ROW) means an easement, granted by the land owner, that permits the construction and operation of a utility corridor for the purpose of transmitting electricity. The utility corridor may be of varying lengths and widths.

GENERAL STIPULATIONS

1. For the purpose of this licence, all definitions and regulations as indicated in the Environmental Protection Act SNL 2002 cE-14.2 and the Pesticides Control Regulations, 2003 shall apply.

2. All applications shall be conducted in strict compliance with the label registered under the authority of the Pest Control Products Act (Canada).

3. The operator shall be limited to using only those pesticides (See Appendix A) and applicators (See Appendix B) as indicated on its Pesticides Operators License Application dated **June 28, 2006**. Any changes in the program outlined in the application must receive the written approval of the Manager, Pesticides Control Section, prior to their implementation.

4. The operator shall review these terms and conditions with each applicator prior to the start of each season, and a copy of the terms and conditions shall be provided to each applicator.

5. A copy of the operator's license and these terms and conditions shall be available at each site during the application of a pesticide. In addition the operator shall ensure that all applicators have their applicators license in their possession while applying pesticides.

6. All vehicles used during the application of pesticides for Landscape, Structural or Industrial Vegetation Management programs shall have the company name, **as per your Pesticide Operator Licence**, prominently displayed on the vehicle.

7. Upon completion of the pesticide program for the year the operator shall submit to the Pesticides Control Section details regarding the type and quantity of each pesticide used and the name of the vendor/s from whom the pesticide was purchased. This information shall be submitted no later than **December 31** of each year**.** Licenses for the following season will not be processed until this information is received.

DISPOSAL

8. Empty pesticide containers which have been triple rinsed, cleaned and rendered unusable may be disposed of at an Approved waste disposal site. Contaminated material shall be disposed of in accordance with the manufacturer's directions and in consultation with the Pesticides Control Section.

SPILLS

9. All spills involving greater than 100 litres of mixed pesticide or the equivalent of unmixed formulation shall be reported immediately. All spills involving mixed or unmixed pesticide into a water body or within 100 metres of a water body, well or area frequented by people shall be reported immediately. Spills involving less than 10 litres of mixed pesticide or equivalent amount of unmixed formulation in areas not frequented by people, or remote from water bodies or wells shall be duly recorded by the Operations Supervisor. Records of all such incidents (spills) shall be kept on file by the Operator.

Reporting of spill incidents shall be made to the Pesticides Control Section, Newfoundland and Labrador Department of Environment and Conservation, St. John's (ph.709- 729-3395) and to Environment Canada, St. John's (ph.709-772-2083).

10. All vehicles carrying liquid pesticide formulations shall carry a quantity of approved absorbent materials sufficient to contain the amount of product on hand. The vehicle shall also carry clean-up equipment such as shovels, brooms, bags, etc.

STORAGE

11. All pesticide storage sites shall be in accordance with Section 13 of *The Pesticides Control Regulations* and are as follows*:*
    - A source of water in an area in or adjacent to the storage area;
    - Approved safety equipment as required which is properly maintained, functional and available at all times for personnel handling and working with pesticides;
    - Flooring which shall not contain a floor drain or catch basin which is directly or indirectly connected to a private or municipal sewage system or public water course;
    - Adequate ventilation by either natural or mechanical means so as to prevent the accumulation of toxic and/or flammable vapours;
    - A "Danger Stored Pesticide" sign posted on all entrances which is printed in block letters 5 centimetres or more in height. The sign must also include contact numbers for the owner and the Department of Environment and Conservation, Pesticides Control Section;
    - Clean-up procedures, materials and equipment available to cleanup spills or leaks;
    - Security procedures consistent with the instructions of the minister or person designated by the minister. Including the locking of all entrances when the owner or employee of the owner is not present;

12. Pesticides shall be stored in their original container or a substitute container approved by the manufacturer. Substitute containers shall be labelled appropriately.

13. Concentrated pesticides transported in a vehicle during spray operations shall be contained in a lock box, secure area or compartment which must be locked while unattended. Pesticides shall not be transported in the passenger compartment of any vehicle.

PROTECTIVE EQUIPMENT

14. The operator shall provide and ensure that all personnel involved in the mixing, loading, and application of pesticides wear appropriate protective equipment in accordance with the pesticide manufacturer's product label and/or Material Safety Data Sheet.

WEATHER CONDITIONS

15. All exterior spraying activities, except foliar applications of insecticides to trees taller than three (3) metres, are permitted only when wind speeds are between 2 and 15 km/h; air temperatures are below 25°C; the relative humidity is above 50% and it is not raining nor is rain anticipated over the next 2 hour period.

    Foliar applications of insecticides to trees taller than three (3) metres, are permitted only when wind speeds are between 2 and 10 km/h; air temperatures are below 25°C; the relative humidity is above 50% and it is not raining nor is rain anticipated over the next 2 hour period.

    Exceptions to wind speed conditions may be granted on a case by case basis. Contact the Pesticides Control Section for details.

    All exterior granular pesticide applications are permitted only when air temperatures are below 25°C; the relative humidity is above 50% and it is not raining nor is rain anticipated over the next 2 hour period.

PUBLIC NOTIFICATION

16. The operator shall ensure that public notification programs are carried out as per the applicable attachment to these terms and conditions.

BUFFER ZONES

17. The operator shall adhere to all buffer zones indicated in the applicable attachment when applying pesticides near water bodies or wells.

ADDITIONAL STIPULATIONS

18. The operator shall adhere to all additional conditions stipulated in the applicable attachment.

REVOCATION

19. Failure by an operator, its agent, employee or a licensed pesticide applicator under its control, to adhere to the Environmental Protection Act SNL 2002 cE-14.2, the Pesticides Control Regulations, 2003 or the stipulations attached to its operator licence shall authorize the Minister of Environment and Conservation to suspend, revoke, or cancel the subject licence or prosecute under the Environmental Protection Act SNL 2002 cE-14.2.

PENALTY

20. Failure by an operator, its agent, employee or a licenced pesticide applicator under its control to comply with any of the terms and conditions of its licence is guilty of an offence under the Environmental Protection Act SNL 2002 cE-14.2.

APPENDIX A
PESTICIDE LIST

Department of Natural Resources

PESTICIDE OPERATOR LICENCE NO: **06-049**

These are the only pesticides that have been approved for use for this pesticide operator license. The operator is not permitted to purchase, apply, store or otherwise handle pesticides not on this list.

If you require additional pesticides, please submit the form, "**Request for Additional Pesticide(s)"**, to **Fax # (709) 729-6969** or in writing to:

Pesticide Control Section
P.O. Box 8700
St. John's, NL
A1B 4J6

Pesticide Name	PCP Act Reg. #	Formulation

APPENDIX B
EMPLOYEE LIST

Department of Natural Resources

PESTICIDE OPERATOR LICENCE NO: **06-049**

These are the only employees that have been approved as pesticide applicators for this pesticide operator License. The operator is not permitted to allow any other employee to apply or handle pesticides for the company.

If you intend to make changes to the pesticide applicators in your employ, please submit the form, **"Notice of Pesticide Applicator Addition / Removal"**, to **Fax # (709) 729-6969** or in writing to:

Pesticide Control Section
P.O. Box 8700
St. John's, NL
A1B 4J6

Applicator Name	PAL #

APPENDIX C

PESTICIDE OPERATOR LICENCE

FORESTRY

C1. **For pesticide operations involving a total of 300 ha or more**, dyking, security, storage and communications plans shall be provided and approved by the Pesticides Control Section in advance of any spray program for all locations where any pesticide is to be mixed or loaded.

The operator will also be responsible for the development of contingency plans and associated call out notifications to the satisfaction of the Pesticides Control Section in advance of any spray program.

C2. **For aerial insect control programs**, requests to treat proposed areas during the next seven calendar day period shall be submitted to the Pesticides Control Section, Ph:(709)729-3395; FAX: (709) 729-6969); at least **one week** prior to said seven day period. At the end of the seven day period the Pesticides Control Section shall be notified of any future anticipated work in the manner described above.

C3. Aerial spraying of pesticides is generally not permitted within Protected Water Supply Areas. The storage, mixing, loading and application of any pesticide within Protected Water Supply Areas requires a separate approval from the Water Resources Management Division of the Department of Environment and Conservation. The approval request shall provide detailed information on the type and duration of activity, location of activity (to be delineated on a 1:50 000 NFS topographical map), name of the pesticide along with its composition and toxicity data, application rate, application method, as well as any other information required.

The requirement of obtaining a separate approval from the Water Resources Management Division may be waived provided the above-noted information is provided to the Pesticides Control Section at the time of the submission of the pesticide operator licence application. The Water Resources Management Division will consult appropriate town council(s) before issuing any approval or consent for a pesticide operator licence.

The operator assumes liability to provide an alternate source of water to the affected community or communities as a result of the source of water supply being contaminated due to the spray program.

AERIAL HERBICIDE PROGRAM

C4. All commitments regarding safety precautions, buffer zones, public notifications, spill

responses, monitoring (pre- and post-spray activities as deemed necessary by the Pesticides Control Section), and meteorological conditions at the time of a particular spray event will be adhered to as outlined in the approved Operators Manual for Aerial Herbicide Spraying.

C5. Where large areas (over 200 hectares) are being sprayed over a 5-year period, 10 - 20% of the area shall be left unsprayed in a strip design throughout the area. Consultations involving such unsprayed areas are to be conducted with the Department of Environment and Conservation, Wildlife Division.

PUBLIC/MUNICIPALITY NOTIFICATION PROGRAMS

C6. For pesticide operations involving treatments of **pesticides applied aerially,** the public shall be advised of the purpose and scope of the project and of the issuance of this licence by means of a notice published in at least one (1) newspaper with circulation in municipalities whose boundaries encompass treatment areas. The newspaper ad will appear in any issue at least one week prior to commencing the program. The ad will state the area that is proposed for treatment over the next 21 calendar days, at the end of which time another ad is to be placed until the program is completed. The ad will contain the telephone numbers of the Pesticides Control Section, 709-729-3395, and
1-800-563-6181.

C7. **For aerial insect control programs**, municipal governments whose boundaries encompass treatment and storage areas shall be notified prior to commencement of the programs. As per provisions of the Urban and Rural Planning Act and the Municipalities Act, any activity within a town boundary requires approval of the town council in question.

C8. **For aerial insect control programs**, the public shall be advised of local treatments by the posting of signs in the area. The sign shall be as follows:

COMPANY NAME

this area has been treated with the federally registered pesticide

Name of Formulation

Date of Application

For more information call toll free:

1-800-563-6181

Department of Environment and Conservation

The particulars (location, timing, size of sign, etc.) of said posting shall be set by the Pesticides Control Section prior to spray programs.

C9. The Operator and/or his agent shall make every reasonable attempt to verbally notify adjacent owners, prior to the spray program, who, given the nature of the control operation, might be expected to benefit from said notification. In the event that this cannot be done, the operator shall use written notification to all dwellings to the satisfaction of the Pesticides Control Section.

C10. For all programs involving the **aerial application of insecticides**, the operator shall be required to submit the details of public/municipality information programs to the Department of Environment and Conservation. The details of said public/municipality information programs must be approved in advance by the Department of Environment and Conservation. The operator may be required to carry out these programs following review by the Department of Environment and Conservation.

C11. In the event that formulations containing Btk are to be used, the brochure, **Protecting the Forests with Btk,** is to be distributed to all municipal councils with boundaries that may contain spray blocks. In addition, the brochure is to be made readily available to members of the general public. Additional distribution is encouraged but is done so at the pesticide operator's discretion.

C12. A toll-free information line shall be set up one week prior to commencement of the spray program, for the duration of the spray program, and will remain operational until September 30, 2006. The toll-free number will be advertised prior to the beginning of the spray program.

C13. Daily notification through press releases shall be made by the licensed pesticide operator, for the duration of the spray program. Regular updates will be made regarding the status of the program. All updates will identify the toll-free information number.

BUFFER ZONES

C14. For any pesticide application involving, either directly or indirectly, an aircraft of any sort, the operator shall maintain a **800 metre buffer zone around all occupied osprey and bald eagle nests** during the period May 1 to August 15.

C15. ***Bacillus thuringiensis kurstaki* (*Btk*)**

If approved for aerial application in Protected Public Water Supply Areas, the operator shall provide the following widths of buffer zones, or any other buffer widths as specified by the Water Resources Management Division, along and around water bodies from the high water mark in a designated area:

WATER BODY	WIDTH OF BUFFER ZONE
Intake pond or lake	a minimum of 150 metres
River intake	a minimum of 150 metres for a distance of one (1) kilometre upstream and 100 metres downstream
Main river channel	a minimum of 75 metres
Major tributaries, lakes or ponds	a minimum of 50 metres
Other water bodies	a minimum of 30 metres

C16. **Mimic 240 LV (tebufenozide) PCP Act #24502.**
For all aerial applications of Mimic 240LV, the operator shall maintain a minimum buffer of 100 metres from all recognized salmon rivers. The proponent will also maintain a minimum buffer of 50 metres from any body of water identified on a 1:50 000 NFS topographical map, any occupied cabin or any other inhabited areas. ***[Based on more recent information this may change for the 2007 season]***

C17. **Glyphosate herbicides.**
When aerially applying **herbicides containing the active ingredient, glyphosate**, all commitments regarding buffer zones shall be adhered to as outlined in the approved Operator's Manual for Aerial Herbicide Spraying

C18. **Entrust 80W (spinosad) PCP Act Reg. #26833)**
For the aerial application of Entrust 80W for research purposes, the operator shall maintain a minimum buffer of 10 metres from any body of water, as indicated on the pesticide label.

MIXING AND LOADING

C19. All pesticide mixing and rinsing sites shall be located a minimum of 100 metres from the nearest water body. Loading of equipment with **water only** prior to the addition of pesticide can be done up to 5 metres from a water body. Addition of pesticide to the water in the equipment shall be performed at least 100 metres from the nearest water body.

C20. Where water must be pumped directly into the formulation tank, an antibackflow

device must be fitted onto the pump and the siting should be that the formulating unit be at least 30 metres from the watercourse and that the chemical not be opened for addition to the formulation tank until the equipment has been filled with water and is out of the respective buffer zone.

WEATHER CONDITIONS

C21. Foliar applications of insecticides to trees taller than three (3) metres, for the control of forest insect pests, in a forest pest management program are permitted only when wind speeds are between 2 and 15 km/h; air temperatures are below 25°C; the relative humidity is above 50% and it is not raining nor is rain anticipated over the next 2 hour period.

Attachment C

(Container)

Dow AgroSciences™

Mimic* 240 LV
Forestry Insecticide

For control of Eastern Spruce budworm, Jackpine budworm, Hemlock looper and whitemarked tussock moth in forests and woodlands

RESTRICTED

READ THE LABEL AND BOOKLET BEFORE USING
KEEP OUT OF REACH OF CHILDREN

GUARANTEE: TEBUFENOZIDE ..... 240 g/L
Contains 1,2-benzisothiazoline-3-one at 0.02% as a preservative

REGISTRATION NO. 24502 PEST CONTROL PRODUCTS ACT

CAUTION: EYE AND SKIN IRRITANT

NET CONTENTS: 10 L

Dow AgroSciences Canada Inc.
Suite 201, 1144 - 29 Avenue N.E.
Calgary, Alberta
T2E 7P1
1-800-667-3852
*Trademark of Dow AgroSciences LLC

PRECAUTIONS
KEEP OUT OF REACH OF CHILDREN
Caution: May irritate eyes and skin. Wear protective clothing (long trousers, long-sleeved shirts), impervious gloves and splash goggles during all mixing, loading and application. Wear a cartridge respirator during application. Protective clothing should be washed before re-use.

FIRST AID
Take container, label or product name and Pest Control Product Registration Number with you when seeking medical attention.
If in eyes: Hold eyelids open and flush with a steady, gentle stream of water for 15 minutes. Get medical attention or contact a poison control centre if irritation persists.
If swallowed: Do not induce vomiting unless instructed to do so by qualified medical personnel. If conscious, give individual two glasses of water to drink and consult a physician or contact a poison control centre. Do not give anything by mouth to an unconscious person.
If on skin: Immediately wash with plenty of soap and water. Get medical attention or contact a poison control centre if irritation develops. Remove contaminated clothing promptly and wash before re-use.
If inhaled: Remove individual to fresh air. Consult a physician or contact a poison control centre if effects occur.

TOXICOLOGICAL INFORMATION
No specific antidote. Employ supportive care. Treatment should be based on judgment of the physician in response to reactions of the patient.

AGRICULTURAL CHEMICAL
Do not ship or store with food, feeds, drugs or clothing.

ENVIRONMENTAL HAZARDS:
TOXIC to aquatic organisms. Do not apply to any body of water. Observe buffer zones specified under DIRECTIONS FOR USE.

STORAGE
Store in a cool, dry area. Do not contaminate water, food or feed by storage or disposal. Do not contaminate streams, lakes and ponds. Pesticide wastes are toxic. Improper disposal of excess pesticide, spray mixture or rinsate is prohibited.

DISPOSAL
Do not reuse this container for any purpose. This is a recyclable container, and is to be disposed of at a container collection site. Contact your local distributor/dealer or municipality for the location of the nearest collection site. Before taking the container to the collection site:

1. Triple- or pressure-rinse the empty container. Add the rinsings to the spray mixture in the tank.
2. Make the empty, rinsed container unsuitable for further use.

If there is no container collection site in your area, dispose of the container in accordance with provincial requirements.

For information on disposal of unused, unwanted product, contact the manufacturer or the provincial regulatory agency. Contact the manufacturer and the provincial regulatory agency in case of a spill, and for clean-up of spills.

NOTICE TO USER: This control product is to be used only in accordance with the directions on this label. It is an offence under the *Pest Control Products Act* to use a control product under unsafe conditions.

NOTICE TO BUYER: Seller's guarantee shall be limited to the terms set out on the label and, subject thereto, the buyer assumes the risk to persons or property arising from the use or handling of this product and accepts the product on that condition.

(Booklet)

Mimic* 240 LV

Forestry Insecticide

For control of Eastern Spruce budworm, Jackpine budworm, Hemlock looper and whitemarked tussock moth in forests and woodlands

RESTRICTED

READ THE LABEL AND BOOKLET BEFORE USING
KEEP OUT OF REACH OF CHILDREN

GUARANTEE: TEBUFENOZIDE ..... 240 g/L
Contains 1,2-benzisothiazoline-3-one at 0.02% as a preservative

REGISTRATION NO. 24502 PEST CONTROL PRODUCTS ACT

CAUTION: EYE AND SKIN IRRITANT

NET CONTENTS: 10 L, 110 L, 1000 L, Bulk

Dow AgroSciences Canada Inc.
Suite 201, 1144 - 29 Avenue N.E.
Calgary, Alberta
T2E 7P1
1-800-667-3852

NOTICE TO USER:
This control product is to be used only in accordance with the directions on this label. It is an offence under the *Pest Control Products Act* to use a control product under unsafe conditions.

NATURE OF RESTRICTION:
This product is to be used only in the manner authorized; contact local pesticide regulatory authorities about use permits that may be required.

RESTRICTED USES
FOREST MANAGEMENT: Ground/Aerial Application for sites greater than 500 ha.
WOODLANDS MANAGEMENT: Aerial Application for sites 500 ha or less.

NON RESTRICTED USES
WOODLANDS MANAGEMENT: Ground Application for sites 500 ha or less.

DIRECTIONS FOR USE:
Apply Mimic 240 LV Forestry Insecticide for the control of eastern spruce budworm, jackpine budworm and hemlock looper in conifer forests and woodlots. This product may be applied by air or by ground equipment.

Eastern Spruce Budworm
Apply when the insect larvae are between the third and sixth instar (at bud flush for spruce and/or balsam fir). A second application may be required to ensure adequate coverage.

Use of Mimic 240 LV Forestry Insecticide may reduce spruce budworm populations sufficiently to provide a second year of control. Population monitoring should be done to determine whether application in subsequent years is necessary.

Jack Pine Budworm
Apply when the insect larvae are in the third to fifth instar (at this time the shoots or candles have elongated and the needles have started to separate). A second application may be required to ensure adequate coverage.

Hemlock Looper
Apply when the insect larvae are in the first instar. A second application may be required to ensure adequate coverage.

White-marked Tussock Moth
Apply at late egg hatch when population densities are high. A second application may be applied to ensure adequate coverage.

Application Rates for Listed Pests
The application rate is a maximum of 290 millilitres of Mimic 240 LV Forestry Insecticide per hectare. For aerial application, use a spray volume with enough water as the carrier to provide uniform coverage. Uniform coverage of the foliage is essential to provide maximum protection from defoliation.

Before using this product, consult your local Canadian Forestry Service office or forestry authority and Dow AgroSciences Canada Inc. for information on timing, method of application, and concentration of spray mixtures.

BROADCAST AERIAL APPLICATION
Directions for Use
Apply only by fixed-wing or rotary aircraft equipment which has been functionally and operationally calibrated for the atmospheric conditions of the area and the application rates and conditions of this label.

Label rates, conditions and precautions are product specific. Read and understand the entire label before opening this product. Apply only at the rate recommended for aerial application on this label. **Where no rate**

for aerial application appears for the specific use, this product cannot be applied by any type of aerial equipment.

Ensure uniform application. To avoid streaked, uneven or overlapped application, use appropriate marking devices

Use Precautions
Apply only when meteorological conditions at the treatment site allow for complete and even crop coverage. Apply only under conditions of good practice specific to aerial application as outlined in the *Basic Knowledge Requirements for Pesticide Education in Canada: Applicator Core* and *Aerial Module*, developed by CAPCO.

DO NOT apply this product directly to freshwater habitats (such as lakes, rivers, sloughs, ponds, prairie potholes, creeks, marshes, steams, reservoirs, ditches and wetlands) and estuarine/marine habitats.

Field sprayer application: **DO NOT** apply during periods of dead calm. Avoid application of this product when winds are gusty. **DO NOT** apply with spray droplets smaller than the American Society of Agricultural Engineers (ASAE) fine classification.

Aerial application: **DO NOT** apply during periods of dead calm. Avoid application of this product when winds are gusty. **DO NOT** apply when wind speed is greater than 16 km/h at flying height at the site of application. **DO NOT** apply with spray droplets smaller than the American Society of Agricultural Engineers (ASAE) fine classification. **DO NOT** allow nozzle spacing to exceed 65% of boom length.

Buffer zones
The buffer zones specified in the table below are required between the point of direct application and the closest downwind edge of sensitive aquatic habitats (such as lakes, rivers, sloughs, ponds, prairie potholes, creeks, marshes, streams, reservoirs, wetlands and estuarine/marine habitats).

Aquatic habitats include all rivers designated as double-sided and all lentic (standing) water bodes, including impoundments, beaver ponds and bog ponds that appear on the most recent 1:50,000 topographic map of the area to be treated, or as identified by more up-to-date date (e.g., GIS systems) in the particular jurisdiction and approved by provincial regulatory authorities. Lentic (standing) water bodies that do not appear on a 1:50,000 topographic map of the treatment area, or a more up-to-date system, but are visible from the air during pretreatment reconnaissance flights should also be included, where possible.

Method of application	Crop	No. of applications	Buffer zones (metres) required for the protection of:		
			Aquatic habitats of depths		
			Less than 1 m	1 – 3 m	Greater than 3 m
Field sprayer	Non-restricted use	1	0	0	0
		2	1	0	0
Aerial (fixed wing)	Restricted use (forestry)	1	0	0	0
		2	90	0	0
Aerial (rotary wing)	Restricted use (forestry)	1	0	0	0
		2	55	0	0

Do not contaminate irrigation or drinking water supplies or aquatic habitats by cleaning of equipment or disposal of wastes.

Operator Precautions
Do not allow the pilot to mix chemicals to be loaded onto the aircraft. Loading of premixed chemicals with a closed system is permitted.

It is desirable that the pilot have communication capabilities at each treatment site at the time of application. The field crew and the mixer/loaders must wear chemical resistant gloves, coveralls and goggles or face shield
during mixing/loading, cleanup and repair. Follow the more stringent label precautions in cases where the operator precautions exceed the generic label recommendations on the existing ground boom label.

All personnel on the job site must wash hands and face thoroughly before eating and drinking. Protective clothing, aircraft cockpit and vehicle cabs must be decontaminated regularly.

Product Specific Precautions
Read and understand the entire label before opening this product. If you have questions, call the manufacturer at 1-800-667-3852 or obtain technical advice from the distributor or your provincial agricultural representative.

PRECAUTIONS
KEEP OUT OF REACH OF CHILDREN
Caution: May irritate eyes and skin. Wear protective clothing (long trousers, long-sleeved shirts), impervious gloves and splash goggles during all mixing, loading and application. Wear a cartridge respirator during application. Protective clothing should be washed before re-use.

FIRST AID
Take container, label or product name and Pest Control Product Registration Number with you when seeking medical attention.
If in eyes: Hold eyelids open and flush with a steady, gentle stream of water for 15 minutes. Get medical attention or contact a poison control centre if irritation persists.
If swallowed: Do not induce vomiting unless instructed to do so by qualified medical personnel. If conscious, give individual two glasses of water to drink and consult a physician or contact a poison control centre. Do not give anything by mouth to an unconscious person.
If on skin: Immediately wash with plenty of soap and water. Get medical attention or contact a poison control centre if irritation develops. Remove contaminated clothing promptly and wash before re-use.
If inhaled: Remove individual to fresh air. Consult a physician or contact a poison control centre if effects occur.

TOXICOLOGICAL INFORMATION
No specific antidote. Employ supportive care. Treatment should be based on judgment of the physician in response to reactions of the patient.

AGRICULTURAL CHEMICAL
Do not ship or store with food, feeds, drugs or clothing.

ENVIRONMENTAL HAZARDS:
TOXIC to aquatic organisms. Do not apply to any body of water. Observe buffer zones specified under DIRECTIONS FOR USE.

STORAGE
Store in a cool, dry area. Do not contaminate water, food or feed by storage or disposal. Do not contaminate streams, lakes and ponds. Pesticide wastes are toxic. Improper disposal of excess pesticide, spray mixture or rinsate is prohibited.

DISPOSAL
Recyclable Containers:
Do not reuse this container for any purpose. This is a recyclable container, and is to be disposed of at a container collection site. Contact your local distributor/dealer or municipality for the location of the nearest collection site. Before taking the container to the collection site:

1. Triple- or pressure-rinse the empty container. Add the rinsings to the spray mixture in the tank.
2. Make the empty, rinsed container unsuitable for further use.

If there is no container collection site in your area, dispose of the container in accordance with provincial requirements.

Returnable Containers:
Do not reuse this container for any purpose. For disposal, this empty container may be returned to the point of purchase (distributor/dealer).

For information on disposal of unused, unwanted product, contact the manufacturer or the provincial regulatory agency. Contact the manufacturer and the provincial regulatory agency in case of a spill, and for clean-up of spills.

GENERAL INFORMATION
Mimic 240 LV Forestry Insecticide has a novel mode of action in that it mimics the action of the insect molting hormone, ecdysone, in larval Lepidoptera (caterpillars). Larvae stop feeding within hours of ingestion of a toxic dose of Mimic 240 LV Forestry Insecticide and soon thereafter begin to undergo an unsuccessful (lethal) molt. Actual mean time to mortality is somewhat dependent on the physiology of the target species and on the local environmental conditions, but is generally three to seven days.

Mimic 240 LV Forestry Insecticide is effective against larval lepidoptera.

DIRECTIONS FOR USE
READ ALL DIRECTIONS CAREFULLY BEFORE APPLYING. FAILURE TO FOLLOW LABEL INSTRUCTIONS MAY RESULT IN ERRATIC INSECT CONTROL.

WOODLANDS MANAGEMENT
Ground application for sites 500 ha or less
For use in Recreation Areas, Cottage and Urban areas, Municipal Parks, Shelter Belts, Rights-of-Way, Farm Woodlots, Christmas Tree Plantations, Tree Nurseries and Ornamental Trees.

Apply Mimic 240 LV Forestry Insecticide for the control of eastern spruce budworm, jack pine budworm and hemlock looper by ground equipment.

Eastern Spruce Budworm
Apply when the insect larvae are between the third and sixth instar (at bud flush for spruce and/or balsam fir). A second application may be required to ensure adequate coverage.
Use of Mimic 240 LV Forestry Insecticide may reduce spruce budworm populations sufficiently to provide a second year of control. Population monitoring should be done to determine whether application in subsequent years is necessary.

Jack Pine Budworm
Apply when the insect larvae are in the third to fifth instar (at this time the shoots or candles have elongated and the needles have started to separate). A second application may be required to ensure adequate coverage.

Hemlock Looper
Apply when the insect larvae are in the first instar. A second application may be required to ensure adequate coverage.

White-marked Tussock Moth
Apply at late egg hatch when population densities are high. A second application may be applied to ensure adequate coverage.

Application Rates for Listed Pests
The application rate is a maximum of 290 millilitres of Mimic 240 LV Forestry Insecticide per hectare. Use a spray volume with enough water as the carrier to provide uniform coverage. Uniform coverage of the foliage is essential to provide maximum protection from defoliation.

Before using this product, consult your local Canadian Forestry Service office or forestry authority and Dow AgroSciences Canada Inc. for information on timing, method of application, and concentration of spray mixtures.

NOTICE TO USER: This control product is to be used only in accordance with the directions on this label. It is an offence under the *Pest Control Products Act* to use a control product under unsafe conditions.

NOTICE TO BUYER: Seller's guarantee shall be limited to the terms set out on the label and, subject thereto, the buyer assumes the risk to persons or property arising from the use or handling of this product and accepts the product on that condition.

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