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Environmental Appeal Board

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DECISION NO. 2010-IPM-001(a)

In the matter of an appeal under section 14 of the *Integrated Pest Management Act*, S.B.C. 2003, c. 58.

BETWEEN:	Caryl and Jeff Jones	**APPELLANTS**
AND:	Administrator, *Integrated Pest Management Act*	**RESPONDENT**
AND:	Minister of Forests and Range	**PERMIT HOLDER**
BEFORE:	A Panel of the Environmental Appeal Board Alan Andison, Chair	
DATE:	Conducted by way of written submissions concluding on April 12, 2010	
APPEARING:	For the Appellants: Caryl Jones For the Respondent: Jeff Fournier For the Permit Holder: A.K. Fraser, Counsel	

APPEAL

[1] On March 18, 2010, Caryl and Jeff Jones filed an appeal against Pesticide Use Permit No. 738-0013-2010/2011 (the "Permit"), which is attached as Appendix 1 to this decision. The Permit was issued to the BC Minister of Forests and Range ("MFR") on February 17, 2010 by J.G. Fournier, Senior Pesticide Management Officer, on behalf of the Administrator, *Integrated Pest Management Act*. It authorizes the use of Foray 48B, a pesticide with the active ingredient *Bacillus thuringiensis* var. *kurstaki* ("Btk"), in a spray program designed to eradicate introduced populations of the European gypsy moth (*Lymantria dispar*) from a specified area in Richmond, BC. The Permit is effective from April 15, 2010 to June 30, 2010.

[2] The Environmental Appeal Board has the authority to hear this appeal under section 93 of the *Environmental Management Act* and section 14 of the *Integrated Pest Management Act*. The Board's authority under section 14(8) of the *Integrated Pest Management Act* is as follows:

> (8) On an appeal, the appeal board may
>
> (a) send the matter back to the person who made the decision being appealed, with directions,
>
> (b) confirm, reverse or vary the decision being appealed, or

(c) make any decision that the person whose decision is appealed could have made, and that the board considers appropriate in the circumstances.

[3] The Appellants ask the Board to rescind the Permit and for the Board to order the Permit Holder to comply with the following conditions:

a. For a minimum period of 12 months from April 1, 2010, introduce alternative integrated pest management methods of gypsy moth control in Richmond deemed to be the most appropriate and effective for the region using a variety of biological, cultural, physical, mechanical and behavioural controls.

b. Review and adopt appropriate measures from the "Slow the Spread" campaign in the United States.

c. Monitor and investigate the impacts of these alternative methods of control on the current population of gypsy moths and make the results available to the Board and the public.

[4] Should the spraying be allowed, and or in consideration of future spraying, the Appellants seek the following orders:

a. The Permit Holder must obtain informed consent from the population of experimental subjects within the aerial spray zones.

b. The Respondent must acknowledge its legal duties under the Nuremberg Code and provide accommodation (cost) or otherwise for those who are deemed to be at risk within the spray zone.

c. In anticipation of possible future aerial spray events, the other parties are asked to obtain, from Health Canada's Pest Management Regulatory Agency ("PMRA"), detailed information about the strain used in the Foray 48B solution for the benefit of treating physicians.

d. Require the PMRA to obtain disclosure of the inert ingredients within the Foray 48B pesticide formulas for the benefit of treating physicians.

e. Require the Permit Holder to provide a warranty/guarantee to the Appellants stating that they will not experience any adverse affects, be injured, disabled or experience a fatality, in the short or long term, because of the application of aerial spray Foray 48B, a microbiological product containing a novel bacterium, to the City of Richmond, if the Appellants should lose their appeal.

f. The Permit Holder must cover the costs of the Appellants moving to an alternative accommodation from April 15 to July 8th, the proposed period of spray application.

[5] The Appellants also ask the Board to recommend that an independent advisory committee composed of non-governmental doctors, toxicologists, microbiologists, immunologists and zoologists, be set up to evaluate the risks to human health and rare and endangered species affected by aerial pesticide spray programs using Foray 48B.

[6] In addition to the above orders, the Appellants requested a preliminary order from the Board staying the Permit pending a decision on their appeal.

[7] The Board determined that the hearing should be conducted by way of written submissions and set an expedited submission schedule given that a decision on the appeal was needed in advance of the permitted spraying which could commence as early as April 15th. Because the Board decided to render its final decision before the Permit took effect, it became unnecessary to hear the stay application.

PRELIMINARY QUESTION OF JURISDICTION

[8] After the Appellants provided their written submissions in support of their appeal, but prior to filing its written submissions, the Permit Holder (the MFR) questioned the Board's jurisdiction over the appeal. It submitted that the Appellants based their appeal on the predecessor legislation, section 15 of the *Pesticide Control Act*, which allowed appeals of permits by the public. However, it pointed out that under section 14 of the new Act, the *Integrated Pest Management Act*, there is no right to appeal a permit *per se*, as it only allows an appeal of the terms or conditions of a permit. Since the Appellants did not specifically appeal any particular term or condition of the Permit, the Permit Holder asked the Board to dismiss the appeal.

[9] The *Integrated Pest Management Act* came into force in December of 2004 when the *Pesticide Control Act* was repealed. This appeal is the first one of its kind to be considered by the Board under the new *Act*.

[10] After considering the new appeal sections set out under section 14 of the *Integrated Pest Management Act*, the Board agreed with the Permit Holder that the Legislature has reduced the types of pesticide-related decisions that may be appealed to the Board. In a letter dated April 6, 2010, the Board concluded that section 14(1) of the *Integrated Pest Management Act* provides a definition of an appealable "decision" and that subsection 14(1)(b) limits the Board's jurisdiction to hearing an appeal against the terms and conditions of the Permit, not the permit itself. This is based on the following analysis.

[11] Section 14(3) of the *Act* states that "A person may appeal a decision under this *Act* to the appeal board." Section 14(1) then narrows the kind of decisions that can be appealed by providing a definition of "decision". It states:

Appeals to Environmental Appeal Board

14 (1) For the purposes of this section, **"decision"** means any of the following:

(a) making an order, other than an order under section 8 *[minister's orders]*;

(b) specifying terms and conditions, except terms and conditions prescribed by the administrator, in a licence, certificate or permit;

(c) amending or refusing to issue, amend or renew a licence, certificate or permit;

(d) revoking or suspending a licence, certificate, permit or confirmation;

(e) restricting the eligibility of a holder of a licence, certificate, permit or pest management plan to apply for another licence, certificate or permit or to receive confirmation;

(f) determining to impose an administrative penalty;

(g) determining that the terms and conditions of an agreement under section 23(4) *[administrative penalties]* have not been performed.

[12] Accordingly, the Board concluded that it does not have jurisdiction to grant one of the remedies sought by the Appellants; that is, the rescission of the Permit itself. However, it concluded that the wording of the first paragraph of the Permit identifies all of the subsequent paragraphs as "conditions". Considering those sections, the Board found that the Appellants' concerns related to certain "conditions" in the Permit, including conditions I, J, K, M and Q, and declined to dismiss the appeal in its entirety. The Board invited the Permit Holder to make further submissions regarding the Board's jurisdiction over these matters in its written submissions on the merits of the appeal, which it has done. These submissions will be addressed later in the Panel's decision.

BACKGROUND

General

[13] The pesticide at issue in this case, Btk, has been used in ground and/or aerial spray programs to combat gypsy moth infestations in a long list of BC communities since 1978. Aerial spraying of Btk has occurred in Victoria, Colwood, Vancouver, Kelowna, Parksville, Chilliwack, Fort Langley, Burnaby, Delta, Courtenay and Harrison, to name just a few. Such spraying has always been controversial as evidenced by the many appeals against aerial spraying that the Board has heard over the years. Information regarding the introduction of the gypsy moth to North America, its life cycle, feeding behaviours, and the methods used to identify developing populations of gypsy moths in British Columbia is included in many of those decisions and will not be repeated here (see for example the last two Board decisions in *Ecological Health Alliance, Gordon Watson and Nonna Weaver v. Deputy Administrator, Pesticide Control Act (Ministry of Forests, Third Party)*, Decision Nos. 2004-PES-002(a), 2004-PES-004(a), 2004-PES-005(a), April 14, 2004 [*Ecological Health Alliance et. al.*]; and *Resident Advisory Board et al. v. Deputy Administrator* Pesticide Control Act *(Canadian Food Inspection Agency, Third Party),* Decision No. 1998-PES-003(b), April 15, 1998 [*Resident Advisory Board et al.*]).

Btk and Foray 48B

[14] It is generally accepted in this appeal that the bacteria, *Bacillus thurengiensis*, or Bt, is found naturally at low levels in soil. The *kurstaki* variety of Bt in this case works as an insecticide in the gut of caterpillars after they eat treated leaves. Foray 48B contains a protein crystal and dormant spores of the bacteria that are only activated after they are eaten by a susceptible caterpillar. The affected larvae die soon afterwards. Commercial Btk products contain bacterial spores of Btk and protein crystals as well as several "inert ingredients". The

"inerts" are trade secrets belonging to the manufacturer and have not been disclosed to the general public, the parties to this appeal, local health authorities, or this Panel.

[15] In Canada, pesticide products are registered under the federal *Pest Control Products Act* administered by Health Canada's PMRA. Foray 48B is registered for sale and use in Canada under registration no. 24977.

[16] The label for Foray 48B states that it is most effective when the larvae are newly hatched. This occurs in the spring when caterpillars hatch from the egg masses (the larval stage). This stage lasts from 7 to 10 weeks and is when the insect feeds and is most amendable to eradication. The label states: "Young larvae (early instars) are most susceptible to the effects" of Btk. It also states that treatment for gypsy moths should be done "when the larvae are in 2nd and 3rd instar and when leaf expansion is 40-50%; when egg hatch is extended, 2 or more applications, 7-10 days apart, may be required."

[17] The product is authorized for residential use by aerial application. The label states: "Foray 48B may be used for aerial application in urban areas for treatment of residential areas and municipal recreational areas (including parks, parkland, vacant lots, shelterbelts, and rights of way under municipal jurisdiction."

[18] This product was re-evaluated and approved by the PMRA in 2008.

[19] A document titled "Commonly Asked Questions Concerning Potential Health and Environmental Effects Associated with *Bacillus thuringiensis* subsp. *kurstaki* (Btk) and Foray 48B Aerial Spray Programs" was distributed by the Respondent during the consultation process. This document advises that Health Canada does not conduct health and safety testing itself; rather, it bases its decisions on its thorough review of studies submitted by registrants which are "usually performed by independent testing laboratories and conducted in accordance with rigorous internationally-accepted experimental methods or guidelines." It also states that, prior to registration, all pesticide formulations are tested for their potential to cause acute toxic effects, skin or eye irritation or sensitization according to internationally accepted scientific protocols.

[20] This document states that, in terms of human health, Health Canada has concluded that members of the public are unlikely to experience any adverse symptoms if inadvertently exposed to Bt sprays immediately after spraying. However, people with asthma or other health concerns are advised that they may follow the same precautions they would on poor air quality days, by staying indoors with doors and windows closed during the spray period and a few hours thereafter in order to reduce exposure. The document also states that after 5-6 hours, these people may want to open windows and doors to "air out" any concentration of Btk that may have entered the house through air vents or other openings.

[21] Other precautions identified are:

- day care centres and pre-schools may choose to wipe over outdoor play equipment and cover sand lots, and
- continue to ensure that all fruits and vegetables are thoroughly washed before eating.

Gypsy moths in Richmond

[22] British Columbia is monitored annually for gypsy moths by the Ministry of Forests and Range and the federal Canadian Food Inspection Agency ("CFIA"). From monitoring in 2008 and 2009, it was determined that "a substantial breeding population of the gypsy moth has become established in Richmond." This information went to the Gypsy Moth Technical Advisory Committee to determine how to address the situation.

[23] According to the "Rationale for 2010 treatment recommendations for European gypsy moth populations in Richmond BC", produced by the Committee, trapping in 2008 located male moths in two consecutive traps. More extensive trapping was conducted in 2009, in which mostly single moths were located in individual traps, although there was a single trap containing five male moths. An egg mass search was also conducted which located a group of egg masses on trees along Garden City Road. These egg masses were found 340 metres from the trap with the five male moths. The egg masses are considered the possible epicentre of the infestation.

[24] One concern of the Committee was that the gypsy moth may reach the undeveloped blocks west of the Richmond Nature Park. No trap information was available along Westminster Highway, but there was a single male found near the corner of Garden City Road and Alderbridge Way.

[25] Alternative treatments were considered by the Committee but aerial spraying was considered the most effective and appropriate treatment for this area because of the sheer size of the affected area and the difficulty associated with getting the necessary equipment into the area. Because of this, the Committee concluded that ground spraying would be virtually impossible to implement to ensure eradication. Aerial treatment is also less costly. In addition, the Committee states that ground treatments result in greater exposure to the pesticide to both homeowners and the applicators.

[26] Based on the moth findings and these considerations, the Permit Holder decided to pursue a pesticide use permit to eradicate the population of gypsy moths established in the Richmond area.

The permit application

[27] According to the Permit Holder's evidence, a program of aerial application of Btk was planned to eradicate the gypsy moth population in Richmond. To effectively treat the current gypsy moth population, the program would need to begin after April 15, 2010, depending on weather conditions.

[28] The Permit Holder believes that three applications will be required, although a fourth may be needed if weather conditions (such as heavy rain within 24 hours of application) limit the effectiveness of any of the planned sprays. Due to the size of the treatment area, each application will take an estimated two to three mornings, depending on delays associated with weather or air traffic from Vancouver International Airport.

[29] On October 21, 2009, the Permit Holder submitted a Pesticide Use Permit Application to the Ministry of Environment, requesting permission to conduct the

above-noted spraying. The perimeter of the proposed treatment area was determined on the basis of the distance and direction of the male captures relative to the egg mass site. The largest distance from the egg mass site to male capture is approximately 1.26 km to the southwest. The perimeter of the proposed treatment area runs along the south western shore of the Fraser River from the south end of the Dinsmore Bridge to Shell Road to Alderbridge Way, west to No. 4 Road, south to Westminster Highway, west to Gilbert Road and then in a straight line to the south end of the Dinsmore Bridge. The Permit Holder advised the Ministry of Environment that, included in this area are four residential care facilities, one hospital, eight schools, 31 registered daycares and 16 parks, fields and other areas where children might congregate within the treatment and buffer area.

[30] The Permit Holder advised the Ministry of Environment that the proposed spray area included the "Garden City Lands", a large undeveloped block that is vegetated by low shrubs and tree saplings that poses as a risk of being colonized by gypsy moth larvae that could emerge from any undetected egg masses.

[31] The Permit Holder also requested a spray shut down time of 8 am in an effort to complete the spray operations in 2 days which would reduce the amount of flying time and maximize timing windows with respect to weather conditions.

The Permit

[32] The decision-making process used to issue the Permit, with conditions, is set out in a Technical Report (Major) prepared by Mr. Fournier and dated April 6, 2010. It states that Mr. Fournier and another staff member conducted an inspection of the proposed treatment area with representatives of the Permit Holder in attendance. They viewed the location of the egg masses and discussed alternative treatment methods.

[33] Mr. Fournier determined that the gypsy moths found in Richmond met the definition of an "established population", which is "finding more than one living life stage of gypsy moths in an area or finding one or more traps with more than one male moth in two consecutive years."

[34] Mr. Fournier considered the toxicity of Bt and pesticide use and application rates of Foray 48B as applied for. The Permit Holder applied for the use of 4.0 litres per hectare which Mr. Fournier determined was within the range allowed on the product label for the treatment of gypsy moth (2.4-4.0 L/ha), as was the dose of 50 BIU per hectare. He also determined that the requested number of applications (maximum of 4) was consistent with the label requirements which state that 2 or more applications may be required, 7-10 days apart.

[35] Mr. Fournier also evaluated the potential impact associated with the use of Btk to human health. He noted that in May of 2008, the PMRA released a re-evaluation decision confirming that Btk could remain registered in Canada based on an analysis of technical data. He noted concerns previously expressed in relation to aerial sprays about Btk's impact on people with asthma or immune systems that are compromised or/weakened, but found that these concerns were not supported by studies such as the one prepared for the Capital Health Region in 1999, following the aerial spray program on southern Vancouver Island. The results of the Capital Health Region study are contained in a document titled *Human Health Surveillance*

During the Aerial Spraying for Control of North American Gypsy Moth on Southern Vancouver Island, British Columbia, 1999. This study is summarized in the Technical Report as follows:

> This study involved surveying the health of asthmatic children, laboratory surveillance of clinical samples which contained Btk, measuring environmental levels of Btk and monitoring and analyzing visits to doctor's and emergency rooms. The results of this study found that there was no apparent relationship between aggravation of asthma in children and the aerial application of Foray 48B and that there were no short-term health effects detected in emergency room visits within the general adult population.

[36] He also states that both the Vancouver Island Health Region and the Fraser Health Authorities have reviewed data on emergency department visits, nurse line phone calls and other human health information relative to potential unexpected impacts associated with Foray 48B sprays, and have not advised of any information inconsistent with the 1999 study.

[37] Mr. Fournier also considered the potential impact to non-target species. There is no dispute that Btk can impact non-target *Lepidoptera* (butterflies) present in the treated areas, particularly in the life stage susceptible to Btk. To reduce this impact, the Ministry of Forests and Range is using monitoring equipment to more precisely estimate when gypsy moth eggs will hatch to add precision to the timing of the treatment. He notes generally that the impacts of Btk on *Lepidoptera* were studied on southern Vancouver Island after the 1999 spray program and that the non-target populations were rebuilding (*Non-target Lepidoptera on Southern Vancouver Island: Field assessment at four years after the 1999 gypsy moth eradication program, 2003 Final Report*, July 18, 2003, Timothy J. Boulton).

[38] Mr. Fournier considered the impact to populations of *Lepidoptera* species in Richmond and concluded the impact would be minimal based on the records from the BC Conservation Data Centre and information from Jennifer Heron, Invertebrate Specialist, Ministry of Environment. He also considered a concern from the Ecosystems Branch, Ministry of Environment, regarding the Red-legged Frog, a species of "special concern".

[39] Regarding other species, Mr. Fournier concluded that the toxicity data indicates there are no toxicity concerns for non-target non-*Lepidoptera* organisms such as fish, beneficial organisms, birds and mammals.

[40] He noted that the label for Foray 48B does not require buffers around water bodies.

[41] Mr. Fournier considered other integrated pest management practices available, and considered the input from referral agencies. Ultimately, he concluded that other methods of dealing with the gypsy moth in this area would not provide the level of certainty that Btk provides from an eradication perspective, which is the intent of the application. He determined that several aerial applications of Btk to eradicate the gypsy moth would not result in an unreasonable adverse effect on human health or the environment. However, he also concluded that public awareness of pending applications was important so that members of the public could limit their exposure to the spray if they choose to do so. He determined that conditions should be added to address notification and monitoring.

[42] On February 17, 2010, Mr. Fournier, on behalf of the Administrator, issued the Permit which allows the Permit Holder to spray Foray 48B at a distribution of 4 litres per hectare. The Permit allows the spray program to be conducted by aerial application with a 7:30 am shutdown time. A maximum of 4 treatments is allowed. Mr. Fournier reduced the size of the spray area and drift zone in the southeast corner based on the trapping and egg mass data submitted, resulting in a maximum area of 776 hectares within the boundaries delineated on a map attached to the Permit. The Permit is effective from April 15, 2010 to June 30, 2010.

[43] In addition, Mr. Fournier attached conditions similar to those previously imposed in aerial permits, as well as the following new conditions:

- the Permit Holder needs to collate and report out on public health concerns raised through health lines about the permitted spray operations; and
- the proponent must develop, and maintain current, a location-specific communication plan including information made available via the internet.

[44] The Permit sets out requirements for public notification, monitoring and for a final report.

The Appeal

[45] The Appellants' principal residence is within the area affected by the spray. They filed a detailed Notice of Appeal against the Permit on March 18, 2010.

[46] The Appellants provided lengthy written submissions and attached studies, documents and emails in support of their appeal. Both Appellants have health conditions which they submit may be negatively impacted by exposure to Foray 48B. They also allege that the Permit will impact the health of the general population and non-target species. In general, the Appellants submit that:

- The area to be sprayed contains 25% of the population of Richmond with 45,000 people residing there. They state that this area has the highest density of high rise buildings, a hospital, schools, public facilities and a rapid transit system. They point out that in 1998, the Board considered a similar permit and found that "aerial spraying will create an unacceptable risk of health problems among residents of these densely populated areas" (*Resident Advisory Board et al*).
- Gypsy moth populations die out on their own within 5 years. There is no infestation of gypsy moths in Richmond; rather, there is an outbreak. The gypsy moth population was low in Richmond for 2009 and preceding years, with less than 10 moths trapped compared to 2000 trapped in Vancouver in 1993.
- PMRA Instructions for use do not exempt Btk from the Federal *Pesticide Control Act* requirement, "do not apply to any body of water and avoid drifting over any body of water of other non-target areas."
- The PMRA label does not indicate that Foray 48B can be used over school grounds and playgrounds.

- Under the *Integrated Pest Management Act*, Btk spray should not be relied upon as the sole method of gypsy moth control. Rather, the focus should be on combined methods including trapping, mechanical and spot control.
- The Permit Holder has not undertaken any other means of control of the gypsy moth in Richmond over the last 5 years other than a "trap, count and watch" approach.
- Clause M of the Permit requires the Permit Holder to "take steps, to the satisfaction of the administrator, to mitigate spray related impacts on any population(s) of pesticide-sensitive rare and endangered species found to exist within the treatment area and the primary zone of spray drift deposition." However, they submit that there are a number of rare aquatic beetles and water boatmen in Richmond Nature Park, and a Yellow Banded Day Sphinx was on the inventory record for the Lulu Island Bog, which are not properly protected contrary to this clause.

[47] The Respondent, Mr. Fournier, did not take a position on the appeal but provided the background information relied upon to issue the Permit.

[48] In its submissions on the appeal, the Permit Holder provided a further challenge to the Board's jurisdiction to hear the appeal, in particular the appeal of paragraphs I, J and K of the Permit, as well as the Board's jurisdiction to consider any remedy in relation to conditions M and Q. In the alternative, the Permit Holder addressed some of the Appellants concerns regarding the Permit and asked that the conditions be confirmed and the appeal dismissed.

ISSUES

1. Whether paragraphs I, J and K of the Permit are appealable "terms and conditions" under section 14(1)(b) of the *Integrated Pest Management Act*?
2. If the Board has jurisdiction over paragraphs I, J and K, as well as paragraphs M and Q, what are the appropriate principles or considerations to be applied to the terms and conditions?
3. Should the terms and conditions be rescinded or varied?
4. Whether any of the additional orders sought by the Appellants should be granted in the circumstances?

RELEVANT LEGISLATION

[49] The Permit was issued pursuant to section 6 of the *Integrated Pest Management Act,* which reads as follows:

Permit for use of pesticides

6 (1) A person must not use or authorize the use of a prescribed pesticide or class of pesticides or a pesticide for a prescribed use unless the person

(a) holds the permit that is, under the regulations, required for that purpose, and

(b) complies with the terms and conditions in or attached to that permit.

(2) A person may apply for a permit under this section by submitting to the administrator an application that

(a) is in the form specified by the administrator for use under this section,

(b) contains the information prescribed by the administrator, and

(c) is accompanied by the prescribed fee.

(3) The administrator may issue a permit to an applicant if satisfied that

(a) the application complies with subsection (2),

(b) the applicant meets the prescribed criteria,

(c) the applicant is not subject to a restriction imposed by the administrator under section 15 (2) *[suspension and revocation]* in respect of a permit, and

(d) the pesticide use authorized by the permit will not cause an unreasonable adverse effect.

(4) The administrator may specify in a permit issued under subsection (3)

(a) the date the permit expires, and

(b) terms and conditions that

(i) are not inconsistent with the terms and conditions prescribed by the administrator, and

(ii) the administrator considers appropriate in the circumstances.

[Emphasis added]

[50] Section 1 of the *Act* defines "adverse effect" to mean "harm to humans, animals or the environment".

[51] The Board's jurisdiction to hear appeals under this *Act* is set out in section 14, which states:

Appeals to Environmental Appeal Board

14 (1) For the purposes of this section, "**decision**" means any of the following:

(a) making an order, other than an order under section 8 [minister's orders];

(b) specifying terms and conditions, except terms and conditions prescribed by the administrator, in a licence, certificate or permit;

(c) amending or refusing to issue, amend or renew a licence, certificate or permit;

(d) revoking or suspending a licence, certificate, permit or confirmation;

(e) restricting the eligibility of a holder of a licence, certificate, permit or pest management plan to apply for another licence, certificate or permit or to receive confirmation;

(f) determining to impose an administrative penalty;

(g) determining that the terms and conditions of an agreement under section 23 (4) [administrative penalties] have not been performed.

(2) A declaration, suspension or restriction under section 2 [Act may be limited in emergency] is not subject to appeal under this section.

(3) A person may appeal a decision under this Act to the appeal board.

(4) The time limit for commencing an appeal of a decision is 30 days after the date the decision being appealed is made.

(5) An appeal must be commenced by notice of appeal in accordance with the practice, procedure and forms prescribed by regulation under the *Environmental Management Act*.

(6) Subject to this *Act*, an appeal must be conducted in accordance with Division 1 [Environmental Appeal Board] of Part 8 of the Environmental Management Act and the regulations under that Part.

(7) The appeal board may conduct an appeal by way of a new hearing.

(8) On an appeal, the appeal board may

(a) send the matter back to the person who made the decision being appealed, with directions,

(b) confirm, reverse or vary the decision being appealed, or

(c) make any decision that the person whose decision is appealed could have made, and that the board considers appropriate in the circumstances.

(9) An appeal does not act as a stay or suspend the operation of the decision being appealed unless the appeal board orders otherwise.

EVIDENCE AND ARGUMENT

The Appellants' Evidence and Argument

[52] The Appellants provided extensive submissions and a number of studies and documents in support of their appeal of the Permit, and the terms and conditions of the Permit. Due to the urgency in reaching a decision on the appeal, the Panel has summarized their main points and evidence as follows.

A) Impact to Human Health

Evidence of impact to people post spray.

[53] The Appellants state that a food poisoning toxin has been found in commercial Foray 48B insecticides, and is produced after the Foray 48B spore germinates. They state that there has been one case where someone with Crohn's disease developed a Btk positive intestinal infection with symptoms of food poisoning and was subsequently hospitalized after a Foray 48B aerial spray exposure.

[54] The Appellants also state that two studies measured immune responses in people exposed to Foray 48B and discovered the development of Foray 48B related allergies. They state that common symptoms reported after aerial spraying of Foray 48B include the same symptoms that people with mould, pollen and other environmental allergies experience. They submit that a 2004 study done for the New Zealand Ministry of Health showed a marked increase in asthma complications after exposure to Foray 48B spray programs. Further, in 1999, the BC Lung Association cited "negative respiratory effects" twice in refusing to support a spray program on Vancouver Island.

[55] The Appellants state that asthma affects 8.4% of Canadians aged 12 and over according to the 2003 Health Status Indicators, and that prevalence rates world-wide are, on average, rising by 50% every decade. They state that, according to the Occupation Asthma and Allergies & Asthmas Society of Canada, 12% of Canadians will have asthma by 2013. They also state that a Toronto allergist, Dr. Karen Binkley, has considered surveys and is of the view that approximately one-quarter of the Canadian population suffers from seasonal allergies and 3% from food allergies. Based on this information, the Appellants submit that approximately 40% of Richmond's population will suffer from pre-existing allergies of some type if persons with food allergies and asthma are included, but excluding the unknown number of immune compromised persons. Therefore, many people are at risk of negative health effects from the aerial spray.

Can't rely on Government and Manufacturer's claims of safety

[56] Regarding the federal registration of Foray 48B, the Appellants point out that the PMRA has recalled 370 pesticides that were formerly deemed safe from the market over the past 10 years.

[57] The Appellants also submit that the research relied on by the provincial government and the manufacturer's representative at the public Open House is old

and outdated. Some of it is 10 years old. The Appellants performed a great deal of research into Foray 48B and submitted much of it to the Panel. They provided the following articles:

- *Adverse Health Consequences Following Aerial Spraying with Bacillus Thuringiensis (var. Kurstaki) (BTK), to Control the Gypsy Moth: Flaws in Government Risk Assessments and in Public Health Officials' Attitudes*, by R.B. Philp, D.V.M., Ph.D. [publisher/source and year of article not identified].
- Appendix B from *The Case Against Overhead Pesticide Spraying in the Townsite of Waskesiu Lake, Prince Albert National Park of Canada,* by Saskatchewan Environmental Society in conjunction with Permanent Residents of Waskesiu Lake, Saskatchewan, January 28, 2003.
- *Aerial Spraying of Bacillus Thuringiensis Kurstaki (Btk),* by Claude Ginsburg, Journal of Pesticide Reform, Summer 2006, vol. 26, No. 2.
- An except from the Final Report to the Capital Health Region, May 2000, titled *Airborne Exposures to* Bacillus thuringiensis *var.* kurstaki *During Gypsy Moth Eradication*, by Kay Teschke, Yat Chow, Karen Bartlett, Chris van Netten, Victor Leung and Andrew Ross, University of British Columbia.
- A selection of pages from *A Comparative Review of the Mammalian Toxicity of Bacillus thuringiensis-Based Pesticides*, by J. Thomas McClintock, Cindy R. Schaffer and Roy D. Sjoblad, Pacific Science, 1995, vol. 45.

[58] Based on information contained in these documents, the Appellants submit that the City of Richmond and the Permit Holder are providing misleading information in an effort to make the public believe that aerial spraying is safe. They submit that statements about Btk being "naturally present in soils" are designed to mislead because the actual spray is Foray 48B, is man-made, and contains concentrations of Btk that are far greater than those found in soils.

[59] The Appellants submit that the government is attempting to trivialize the risks of the spray program to people. They maintain that the potential for 40% or more of the population within a target zone to experience adverse affects ranging in severity from minor to severe can hardly be considered a minority of the population. Further, when an unknown number of debilitated or immune compromised persons is added, it is more accurate to say "the vast majority will likely have some reaction to it." The Appellants state:

> Given the complexity of the variables discussed and the lower confidence in field studies overall, government claims of safety of Foray 48B aerial sprays, overreach and overarch beyond what has been studied and what is known. According to Philp's recent research reviews, government endorsement of the safety of Foray 48B spray is a leap of faith, lacking in any empirical rational. (p. 5)

Harm from Foray 48B – including from the inert ingredients

[60] The Appellants submit that Foray 48B and all the undisclosed (inert) components of the pesticide formulation are inhaled due to the presence of fine spray droplets. The inert ingredients comprise about 70 percent of the pesticide formulation, therefore identification and disclosure of the inert proprietary ingredients should occur since allergic reactions to inert components in other pesticide formulations has occurred.

[61] The Appellants note that, although the Board has previously recommended that inert ingredients be disclosed to health authorities and local physicians, this has not happened. Therefore, local doctors may be compromised in their use of treatment modalities due to lack of disclosure from PMRA of the inert ingredients, and they may not be able to competently treat people who experience adverse reactions to the spray.

Adverse impact on the Appellants' health

[62] The Appellants' evidence regarding their current health status is as follows. Mr. Jones is in his mid forties and has suffered from an autoimmune disease since 2000. He takes a daily prescription of immune suppressive drugs to prevent disease flare-ups which can be painful and debilitating. He states that the presence of ingested Foray 48B, a novel protein, could trigger a disease relapse requiring him to seek medical intervention and intensive treatments to bring the symptoms back under control.

[63] In addition, Mr. Jones was diagnosed with an endocrine related cancer in 2005. He underwent chemotherapy and two surgeries, one of which permanently altered his ability to clear toxins from his body. Consequently, his ability to eliminate ingested aerosol Foray 48B may be reduced.

[64] Mrs. Jones has multiple chemical sensitivity syndrome, chronic fatigue syndrome and environmental allergies. Her allergies include sulphites and she states that sulphite is a component of Foray 48B.

[65] Both Appellants have a long list of food sensitivities and allergies and follow elimination diets to control the symptoms as well as a daily health supplementation and exercise regime. They also purchase certified organic foods whenever possible.

[66] The Appellants acknowledge that they are already exposed to agricultural pesticide drift spray applied to local farms. However, they submit that the cumulative load of annual agricultural applications, together with the spraying authorized under the Permit, is excessive for them. They also argue that the result is an "environmental trespass" because it is a form of chemical experiment without the Appellants' consent.

Prevention of adverse effect not feasible/possible

[67] The Appellants submit that it is "functionally impossible for people at risk, who reside and work in the spray zone to avoid aerosol exposure to Foray 48B by remaining indoors." Therefore, it is impossible for them to avoid ingesting Foray 48B given the location of their residence. They submit that 6 researchers from the

University of British Columbia have demonstrated that levels of this pesticide within a closed home become higher than outdoor levels within 6 hours of the spray application (see *Spatial and Temporal Distribution of Airborne* Bacillus thuringiensis *var.* kurstaki*,* Final Report to the Capital Region).

[68] The Appellants also submit that these researchers found that indoor concentrations of Foray 48B diminish more slowly than outdoor concentrations, taking from 9 to 17 days to return to normal parameters. Therefore, they submit that "repeated sprays at 10 day intervals reload pesticide levels to the point where indoor exposures remain consistently high until the complete cessation of the 4th spray application." They argue that, overall, this means that exposure levels in the indoor environment could be much higher than anticipated and higher than outdoor exposures over the same time period.

[69] The Appellants submit that, because Foray 48B aerosols persist in the indoor environment for days/weeks, relocation is the only possible way to avoid ingestion. They state that family and friends would be unable to accommodate them for an extended period of time and that the disruption and stress from any potential relocation to the Appellants' health status is also a limiting factor.

Application of the Nuremberg Code and its requirement of informed consent

[70] The Appellants explain that the Nuremberg Code was established in 1947 and protects human subjects in the context of medical research. They submit that the aerial spraying of Btk is, in essence, akin to conducting an experiment on test subjects without their informed consent. They submit that the Permit allows a "field experiment in Richmond to apply an inadequately tested substance in longitudinal animal or human studies, called Foray 48B, to thousands of human subjects, (sample size > 100) who believe the purpose of the experiment is to treat moths." They submit that the Permit Holder has asked people to call a 1-800 telephone number to report any symptoms. The Appellants submit that this experiment is being conducted without consent from the human subjects and, accordingly, has failed to comply with the principles embodied in the Nuremberg Code and Canada's Tri-Council Policy Statement which embodies the Nuremberg Code principles, e.g., ethical treatment of human subjects.

[71] The Appellants submit that provincial and federal governments have conducted this type of research 12 times without obtaining the consent of the citizens, contrary to the Nuremberg Code as adopted into Canadian law. They describe the BC government's 1999 spray program on Vancouver Island as a "bioterrorism experiment" because researchers used this data to establish that biological agents could be disseminated from aircraft, backpack sprayers or truck-mounted foggers.

[72] They submit that the Permit Holder cannot proceed with its aerial spray program because it must obtain explicit consent of all the participants which would be the population living, residing, working or travelling through the target area during the dates of application. They also submit that the Permit Holder has a duty to ensure that the quality of the consent complies with the Nuremberg Code definitions, and a duty to provide protection to those who do not consent.

[73] Further, the Appellants submit that the government has a duty to conduct properly designed experiments: past conclusions on the safety of Foray 48B for use over urban populations are invalid because of faulty experimental design.

B) Impact to Non-Target Species

[74] The Appellants submit that the application of this pesticide will harm non-target species, such as caterpillars, moths and butterflies, which will then impact the food chain of other animals.

[75] However, they state that the greatest impact will be to caterpillars of rare species, and other rare insects and species. They point out that the Richmond Nature Park (east and west), consisting of 200 acres of the raised peat bog habitat that once covered large portions of Lulu Island, is just beyond the mapped zone, approximately one kilometre away. The Appellants provided 2 pages from *A Biophysical Inventory and Evaluation of the Lulu Island Bog, Richmond, British Columbia*, Neil Davis and Rose Klinkenberg (eds.), a project of the Richmond Nature Park Society Ecology Committee, 2008, in which certain rare species of water beetle, water boatman, dragon flys and moths were identified. The Appellants specifically highlighted the following species and information on these pages: *Agonum belleri* (a potentially rare ground beetle), *Procloeon spp.* (an as-yet unidentified species, belonging to a rare genus of mayflies), *Epitheca canis* (Beaverpond Baskettail), *Sympetrum vicinum* (a blue listed Autumn Meadowlark), *Proserpinus flavofasciata* (the Yellow-banded Day Sphinx) and *Tyto alba* (Barn owl). Of note, the only moth in this list is the Yellow Banded Day Sphinx, which is described in this document as “an extremely rare moth” that is “only known on Lulu Island from one record”.

[76] Although the Permit has provided for a 500 meter spray drift buffer zone around the treatment boundary, they state that the study by the 6 University of British Columbia researchers in 2000 found aerosol drift spray can be dispersed by wind up to one kilometre away, and may go further depending on wind, temperature and humidity. Thus the Appellants submit that the buffer zone shown in the map gives a “false sense that West Richmond Nature Park will not be affected, when in fact it is within the one kilometre spray drift zone.” They also suggest that the spray drift zone could be as much as 6 kilometres from the target zone according to other studies, thus impacting these rare species identified in the Inventory, as well as those yet to be discovered. The Appellants argue:

> The evidence shows that MFR has not taken the pre-cautions advised on the PMR label nor taken measures to protect rare and sensitive species in the adjacent Richmond Nature Park. Presumably the reason Health Canada advises avoiding drifting pesticide over bodies of water is the potential to affect non-target species, aquatic invertebrates and because the product is designed according to the label to resist breakdown in a wet environment.

C) Adverse Impacts are Unreasonable

Unreasonable risk to health

[77] The Appellants submit that the likelihood of repeat gypsy moth re-infestation, followed by repeat aerial spraying of Foray 48B makes the health impacts to the Appellants unreasonable; especially since bacterial infections are established triggers in the development of autoimmune diseases.

[78] They submit that decades of repeat aerial exposure to the microbiological agent (bacteria) in Foray 48B constitutes an unreasonable risk for a minimum of 40% of any exposed population. If one includes those people with serious immune compromised status, such as cancers or AIDS, the percentage of the population exposed to adverse risks could be an overwhelming majority. The Appellants state:

> Governments ought to know that since the total number of allergic persons together with the number of debilitated people in an area can account for more than 40% of a population base. In the absence of long term studies of the impacts of BTK aerial spray, all non-toxic alternative methods should be employed to control the gypsy moth species, with spray programs being considered only as a last resort, rather than the method of choice. Indeed Agriculture Canada recognized the risk Foray 48B poses to humans by agreeing to move Parksville residents with medical concerns to a hotel for the duration of the spray events. Since entomologists design and implement these programs the public has no degree of protection, as these specialists are generally not knowledgeable about human current microbiological and health research.
>
> Being that local doctors may be compromised in their use of treatment modalities due to lack of information from PMRA on the inert ingredients in Foray 48B, the Appellants argue they cannot expect to be competently treated for any adverse reactions and therefore should not be exposed to Foray 48B or any of its inert ingredients in the first place. The Appellants are unable to leave their premises and family business for two and one half months, or even know with any degree of certainty, the dates of the aerosol spray applications.

Alternative Methods

[79] The Appellants submit that biological controls such as insect predators and parasitizes of gypsy moths have been used in the United States to keep well established populations low for a number of years. Since the gypsy moth population in Richmond is not well established, they submit that these methods could be used.

[80] As well, they submit that a fungus *Entomophaga maimaiga* can be established during wet springs typical of coastal weather patterns. These fungi grow on trees and parasitize the caterpillar larvae helping to keep populations low (*Extension Fact Sheet: Assessing Options for Managing Gypsy Moth*, The Ohio State University, Entomology, 1991, Daniel Herms, David Shetlar.)

[81] Further, the Appellants submit that gypsy moth populations can be suppressed with wide-spread pheromone disrupting flakes which prevent the male from finding the female moths. Although cost has been cited as one of the main reasons for not using this method, the costs could be offset if several other

biological or physical controls were used together as per the PMRA's recommendations.

Risk-benefit analysis

[82] The Appellants submit that, if the justification for this spray program is the threat of trade sanctions on raw log lumber exports to the United States, the Province is placing economic considerations over and above health considerations of 25% of the Richmond population in a dense urban city centre, contrary to the principles of the United Nations, Rio De Janeiro Declaration.

[83] They submit that the Permit Holder, and its entomologists, are biased in favour of economic interests and are incapable of evaluating the health and safety aspects on humans of this aerial spray program in Richmond. They submit that this is evidenced by various policies and decisions of that Ministry in the past. They submit that the evaluation of adverse effects of any aerial spray program is more appropriately delegated to non-governmental affiliated and independent medical experts, microbiologists, physicians, immunologists and toxicologists.

The Respondent Administrator's Evidence and Argument

[84] The Administrator took no position on the appeal, but provided the Panel with copies of various documents including the Permit Holder's permit application, comments received from various agencies on the application, the Permit Holder's draft gypsy moth communication plan 2010, the Gypsy Moth Technical Advisory Committee's rationale for treatment in Richmond, the pesticide label for Foray 48B, and his Technical Report, much of which has been referred to in the "Background" of this decision.

The Permit Holder's (MFR) Evidence and Argument

[85] The Permit Holder's submissions consisted of submissions on jurisdiction (outlined earlier and more fully presented below), and submissions on the merits of the appeal should the jurisdictional challenge fail.

[86] In relation to the merits of the Permit, the Permit Holder submits that there is a need for the aerial spray in Richmond and that the Permit was properly issued; it will not cause an unreasonable adverse effect. It rejects the Appellants' submissions that the principles of the Nuremberg Code apply to this Permit. It submits that the Code deals with testing on human subjects and has no relevance to the application of a pesticide that has been tested and authorized for use throughout Canada.

[87] The Permit Holder refers to the Board's 2004 decision in *Ecological Health Alliance et. al.* In that decision, the Board considered an aerial spray permit that was issued under the *Pesticide Control Act*. The Board balanced the minimal adverse effects of aerial spraying against the damage caused by the gypsy moth, including damage to health, the environment, and economic interests. It concluded that, in the circumstances, the adverse effects of aerial spraying were not unreasonable. The Permit Holder submits that the only important new evidence since that decision is the PMRA's re-evaluation of Foray 48B in 2008, which resulted in the PMRA adding some mitigation measures such as a revision of certain label

statements "to further protect handlers, bystanders and the environment" (Appendix 1 of the re-evaluation). However, PMRA's ultimate conclusion was that products containing Bt do not present unacceptable risks to human health or the environment when used in accordance with the label.

[88] Regarding the label, the Permit Holder notes the Appellants' concern that the label does not permit aerial spraying over water. The Permit Holder disagrees, referring to the absence of such a prohibition in the label.

[89] Regarding concentrations of Btk found indoors after spraying, the Permit Holder refers to recommendations by the PMRA to open doors and windows a few hours after spraying to ensure the spray brought indoors is properly ventilated.

[90] Regarding non-target species, the Permit Holder relies on certain studies that were also referred to, and relied upon, by the Board in *Ecological Health Alliance et. al.*

[91] As evidence in support of the need for the Permit, the Permit Holder tendered an affidavit sworn on April 7, 2010 by Jennifer Burleigh, the Provincial Forest Entomologist with the Forest Practices and Investments Branch of the British Columbia Ministry of Forests. Ms. Burleigh obtained a Masters degree in Pest Management in Forest Entomology in the year 2000. She was appointed to her current position in the Ministry in 2008.

[92] As the Provincial Entomologist, Mr. Burleigh is responsible for developing, implementing and monitoring operational programs related to forest entomology. She reviews insect management issues and provides comments and recommendations to executive staff of the Ministry as well as to regional and district staff. She is also a member of the BC Plant Protection Advisory Council and is presently the Chair of the Gypsy Moth Committee.

[93] In her affidavit, Ms. Burleigh explains why the Minister applied for the Permit. She provides information on the gypsy moth, government eradication programs, and this Province's long term management plan. She advises that the Permit Holder is responsible for administering the Province's program, in cooperation with the CFIA, previously Agriculture Canada. In addition, she describes the nature of the pesticide to be applied and explains why the Permit Holder believes there is a need for aerial spraying, as opposed to other methods of control, and gives details of the proposed spray area in Richmond.

Btk

[94] Regarding the use of Btk, Ms. Burleigh states that it is not a synthetic chemical; it is a naturally occurring organism which is toxic to moth and butterfly larvae that are actively feeding at the time of application. It has been registered for use in Canada for approximately 25 years. It has been reviewed by various Canadian agencies, most recently the PMRA. Ms. Burleigh notes that it is used to control pest caterpillars in the production of many food products. She states that "unlike many pesticides, Btk can be used right up to the time of harvest because it is not toxic to humans. Many fruits and vegetables in grocery stores have Btk on them." She also states that the Foray 48B formulation used in BC's eradication program is registered for use on Certified Organic Farms by the Organic Materials Review Institute.

[95] Ms. Burleigh also provided information regarding the use of Bt in the United States, and the review of Bt by the United States Environmental Protection Agency which concluded that Bt does not cause unreasonable risks to humans or the environment.

[96] Ms. Burleigh explains that Btk infects a narrow range of insect species. It kills caterpillars because they have a strongly alkaline digestive tract with particular enzymes that activate the toxic crystal. She distinguishes this from humans and other animals which have acidic digestive tracts. She states that Btk does not infect earthworms, honeybees, spiders or other non-*Lepidopteran* insects. It does not harm birds, snakes or other animals that eat pests, nor does it harm fish or amphibians.

[97] Ms. Burleigh states that to be effective on the gypsy moth, it must be applied at an appropriate dosage during the early larval state. Because eggs normally hatch between April and May, several applications of Btk are generally required to ensure that all gypsy moth larvae are exposed to a lethal dosage regardless of when they hatch. She states that Btk breaks down quickly in the environment, in approximately 3 to 7 days, which is why additional applications of Btk are required.

Inert ingredients

[98] Ms. Burleigh states that the commercial formulation of Foray 48B is 2.1% Btk, 7.9% inerts and 90% water. She explains that the bacterial culture and food medium in which Btk is grown is mixed with other ingredients that make the product stable, allows the product to mix easily in water, and permits the product to stick to leaves. She states that Btk is so fragile in the environment that ultraviolet light protectants are added to shield it from the sun. This mixture is then diluted with water to make a spray.

Treatment Options

[99] Ms. Burleigh states that, in general, aerial application is more effective than ground-based spraying because it is difficult to get even and consistent spray coverage into the upper portions of tree canopies with ground spraying. Aerial spraying provides more even and complete coverage, especially when the area is large (greater than 25 hectares) and must be treated within a short time frame.

[100] Although ground spraying can and has been used, she states that it is usually only useful as an eradication method for a small isolated infestation. She provided examples of other instances where ground spraying was not effective and ultimately led to aerial spray programs that were successful (North Delta, southern Vancouver Island).

[101] Ms. Burleigh also described other alternatives such as manual trapping and picking methods, but states that they do not result in eradication, even in small localized areas. However, where a small number of moths have populated a small region, a mass trapping program has succeeded in eradicating the moth population in some locations, but failed in others. She states that the reason for success in one location but failure in another is not known, but may depend on insect population densities and if the mass trapping grid encompasses the epicentre of the moth population.

[102] Although biological control methods have been used in other jurisdictions (e.g., new parasites and/or predators), Ms. Burleigh states that they have not been used in BC because it does not result in the eradication of the moth.

[103] She also noted that a fungus that is toxic to the moth has been introduced into infested areas in the eastern United States with some success. However, she states that the fungus was introduced several years ago and is only now showing any measurable effect. Further, it is not registered for use in Canada.

[104] Regarding the use of these biological control programs generally, Ms. Burleigh states, "Biological controls are only effective when a pest exists in high numbers and generally results in bringing a population from outbreak down to endemic levels." She notes that this is contrary to BC's objective of eradication, which is to prevent a continuous source of the host target insects and prevent infestation in high numbers.

[105] Ms. Burleigh also described the pros and cons of other biological control methods attempted in different jurisdictions such as the release of sterile moths and release of a virus specific to gypsy moths (trade name "Gypcheck").

Need for spraying in Richmond

[106] Ms. Burleigh described the monitoring program in BC undertaken by the Ministry and the CFIA. From monitoring in 2008 and 2009, it was determined that "a substantial breeding population of the gypsy moth has become established in Richmond." This information went to the Gypsy Moth Technical Advisory Committee to determine the best course of action.

[107] Alternative treatments were considered by the Committee but aerial spraying was considered the most effective and appropriate for this area because of the sheer size of the affected area and the difficulty associated with getting the necessary equipment into the area. The Committee concluded that ground spraying would be virtually impossible to implement effectively to ensure eradication. In addition, she states that ground treatments result in greater exposure to the insecticide to both homeowners and the applicators.

[108] Because of the way in which Btk works on the moth larvae and weather conditions, there is a limited window of opportunity for spraying. Ms. Burleigh advised that the Ministry believes that, if the spraying does not occur during this window, the gypsy moth population will have a further opportunity to establish itself in BC and further spray efforts will be ineffective until next spring when the next generation of moth larvae hatches.

[109] In Ms. Burleigh's view, continued growth of the gypsy moth population poses a serious threat to various vegetation ecosystems in BC. She advised that oak trees are the moth's preferred food source, but the larvae are known to eat the leaves of over 300 tree species including alder, apple, apricot, ash, beech, birch, cherry, chestnut, dogwood, Douglas fir, elm, hawthorn, hazelnut, hemlock, holly juniper, larch, linden, maple, oak, pine, peach, pear, plum, poplars and redwood. While they prefer deciduous trees, they will also feed on some coniferous trees when necessary such as some cedars, and some true fir. If populations are allowed to grow, Ms. Burleigh states that the Garry oak on Vancouver Island are at risk. The moth larvae are voracious feeders and, if left untreated, she states that they

will defoliate large numbers of trees. This places extreme stress on a tree since leaves play a major role in food production for a tree. After repeated defoliation, the tree will die or become weak and vulnerable to other pest infestations.

[110] Ms. Burleigh also described the economic impact to the Province should an infestation occur. She notes that the CFIA could declare "a regulated area" which will place restrictions on the movement of lumber, nursery stock and other products leaving the regulated area, which increases costs to local producers.

[111] As an example of what can occur, Ms. Burleigh refers to a failed attempt to eradicate the moth population on southern Vancouver Island in 1998 through a ground spray program. The moth population increased and expanded in area to Nanaimo. The CFIA imposed a large quarantine zone, covering 139,600 hectares in Victoria and 9,900 hectares in Duncan, affecting a large number of industries including Christmas trees, nursery stock, non-propagative forest products with bark attached, outdoor household articles, military vehicles and equipment and recreational and personal vehicles and equipment.

[112] Because BC's major trading partners in western North America are currently free of the gypsy moth, and wish to maintain this status, the impact on trade resulting from the establishment of the gypsy moth in BC is said to be "substantially greater than the impact realized in eastern Canada, where the gypsy moth is established" but is also established on the land base of many of its trading partners.

[113] Ms. Burleigh states that if spraying does not proceed this spring and the gypsy moth population is permitted to increase, BC will face imposition of a quarantine order by the CFIA to prevent the spread of the moth to other areas of North America that are currently uninfested.

DISCUSSION AND ANALYSIS

1. Whether paragraphs I, J and K of the Permit are appealable "terms and conditions" under section 14(1)(b) of the *Integrated Pest Management Act*.

[114] The subject paragraphs I, J and K of the Permit are as follows:

Authorized Pesticides

I. The pesticide listed below is approved for use under the terms of this permit. Application rates indicated are maximums per application. Lower rates must be used where project objectives may still be achieved.

Trade Name	Active Ingredient (a.i.)	Product P.C.P. #	Application Rate (litres/ha per each of 4 uses)	Maximum Area of Pesticide Use per Application (ha.)	Maximum Quantity of Product to be Used per Application (litres)
Foray 48B	Bacillus thuringiensis var. kurstaki	24977	4.0 (50 BIU/ha)	776	9312

Target Pest Species, Treatment Area and Purpose

J. Aerial pesticide use is permitted on or over lands that are within the boundaries delineated on the map accompanying this permit where permission has been granted by the land owner, the land holder, an Order in Council or other legal instrument.

K. Pesticide use shall be for the purpose of eradicating the introduced population of the Gypsy Moth *(Lymantria dispar)* from the location referred to in Condition H above.

[115] The Permit Holder argues that the principal ground for the appeal is that, "The use of Foray 48B is not reasonable given the significant threats to health, to the rights of property owners and individuals and the environmental impacts." It also points out that the Appellants do not seek to vary any of the terms and conditions of the Permit specifically; rather, they ask the Board to set aside the Permit. Given that only the terms and conditions specified by the administrator are appealable under section 14 of the *Act*, the Permit Holder argues that there is no basis to appeal the decision to issue the Permit. On this point, the Board has already agreed.

[116] The Permit Holder submits, however, that if the only "decision" under appeal is the decision to impose certain terms and conditions, it would be nonsensical for the Board to deal with the aerial spraying of Foray 48B over a part of Richmond between April 15 and June 30th as terms or conditions, since they are at the very core, or substance of the Permit. It submits that if the Board decided to reverse those provisions, "Technically there is still a Permit, but it permits nothing." It submits:

> This makes nonsense of the deliberate inclusion in the legislation of the right to appeal against a refusal to issue a permit, and the deliberate omission of the right to appeal against the issue of a permit. It ignores the scheme of section 6 of the *Act*, which in two places distinguishes between a permit, and the terms and conditions in or attached to a permit. In section 6(1) a person may hold a permit, and separately must comply with the terms and conditions in or attached to that permit.

[117] The Permit Holder further states that the date the permit expires is not a term or condition, but is a core part of the Permit itself. Section 6(3) of the *Act* states that the administrator may issue a permit. Section 6(4) then states:

> (4) The administrator may specify in a permit issued under subsection (3)
>
> (a) the date the permit expires, and
>
> (b) terms and conditions that
>
> (i) are not inconsistent with the terms and conditions prescribed by the administrator, ….
>
> [Emphasis added]

[118] It argues, that the Permit exists with or without terms and conditions, and the date is specified not as a term or condition, but as part of the core of the Permit.

[119] Since the *Act* does not give a right of appeal against the decision to issue a permit under section 6, the Permit Holder submits that there is also no right to consider, among other things, whether the pesticide use authorized by the Permit will cause an unreasonable effect contrary to section 6(3)(d).

[120] Regarding paragraphs M and Q of the Permit, the Permit Holder agrees that they impose terms and conditions but submit that the Appellants have not sought any relief from these terms and conditions. Instead, they have asked the Board to either set aside the Permit or order alternative methods of gypsy moth control. The Permit Holder submits that alternative methods of gypsy moth control are not the proper subject of an appeal of the Permit.

[121] The Appellants made no submissions on this issue.

The Panel's Findings

[122] Section 6(1) of the *Act* requires a person to obtain a permit only in certain cases, one of which is when the pesticide is to be applied via aerial spray (section 18(2)(a) of the *Integrated Pest Management Regulation*). Section 6(1) of the *Act* states:

> **6** (1) A person must not use or authorize the use of a prescribed pesticide or class of pesticides or a pesticide for a prescribed use [e.g., aerial spraying] unless the person
>
> (a) holds the permit that is, under the regulations, required for that purpose, and
>
> (b) complies with the terms and conditions in or attached to that permit.
>
> [Emphasis added]

[123] The only terms and conditions that are authorized in section 6 are those set out in section 6(4)(b) which are of two types: those prescribed in section 57 of the *Regulation*, and those terms or conditions that are specified in a permit pursuant to the administrator's general discretion under this section.

[124] The Panel finds that all of the main elements of the Permit at issue in this appeal are terms or conditions of the Permit not covered by section 57 of the *Regulation*. The Permit authorizes the application of Foray 48B, specifies the amount to be used per litre per hectare (4.0 or 50 BIU/ha), the area to be applied (776 hectares), the maximum quantity of the pesticide (9312 litres), the boundaries of the area to be sprayed, its purpose and the number of applications of the pesticide allowed. The Panel finds that these are all terms or conditions added to the Permit at the discretion of the Administrator. These are also terms and conditions that are appealable under section 14(1)(b) of the *Act*.

[125] Although not determinative, the Panel also notes that the opening words of the Permit itself state that the Permit Holder "is authorized to use pesticides subject

to the conditions listed below. Contravention of any of these conditions is a violation of the *Integrated Pest Management Act* and may result in prosecution." [Emphasis added] All of the relevant conditions have been listed by the Administrator and constitute appealable decisions under section 14(1)(b) of the *Act*.

[126] The Panel finds that section 6 does not distinguish between some "core" elements of the Permit and the terms and conditions of the Permit. Accordingly, the Panel finds that the terms and conditions of primary concern to the Appellants, including conditions I, J and K, are within the Board's jurisdiction to consider in this appeal. There is no dispute that conditions M and Q are also appealable conditions. They appear in the Permit under the heading "Restrictions" and, for convenience, are set out below:

M. The permittee shall take steps, to the satisfaction of the administrator, to mitigate spray related impacts on any population(s) of pesticide-sensitive rare and endangered species found to exist within the treatment area and the primary zone of spray drift deposition.

Q. A maximum of four aerial and/or ground-based treatments may be applied to any given area.

2. If the Board has jurisdiction over paragraphs I, J and K, as well as M and Q, what are the appropriate principles or considerations to be applied to the terms and conditions?

[127] As a starting point, the Panel will clarify what is not a relevant consideration. The Panel finds that the Nuremberg Code principles referenced by the Appellants do not apply in this case. Although the Appellants believe that they, and the general public, are being treated as human subjects in an experiment, this is simply an incorrect characterization of the application of a pesticide approved by a permit.

[128] The Nuremburg Code issues directives for human experimentation. While data collected by various agencies following the application of a pesticide is accessed and studied by many different people for many different purposes, that does not make the spraying itself a human experiment. If that were the case, each and every emission to air, land or water that is authorized by government would require the informed consent of every citizen. The fact that citizens are asked to report symptoms does not make this a "field experiment". The Panel further rejects the suggestion that the spray program is somehow akin to, or condones, bio-terrorism experiments on the public.

[129] To determine the applicable principles and/or considerations, the Panel has considered the wording of the *Act* itself. Section 6(4)(b) allows the administrator to specify terms and conditions in a permit. There are two limitations or qualifications on this power. The first is that those terms or conditions not be inconsistent with the terms and conditions prescribed in the *Regulation*. This is not at issue. The second is that "the administrator considers them appropriate in the circumstances." Thus the test is whether, on a subjective assessment, the administrator believes that the terms and conditions are appropriate in the circumstances. In the Panel's view, "appropriateness" in this context must be linked to the general requirement in section 6(3) that the Permit not cause an unreasonable adverse effect. Therefore,

the question is whether the terms and conditions are appropriate in that, at a minimum, they do not cause an unreasonable adverse effect.

[130] Although this is framed as a subjective test, on appeal, the Board stands in the Administrator's "shoes" given that it has the power to "make any decision that the person whose decision is appealed could have made and that the board considers appropriate in the circumstances" (section 14(8)).

3. Should the terms and conditions be rescinded or varied?

Conditions I, J, K and Q

[131] These conditions set out the main authorizations at issue in the appeal. They set out the details of the pesticide use such as what may be applied and in what quantities, where it may be applied, how often it may be applied and the method of application. Since many of the arguments in relation to these conditions overlap, the Panel has considered them together. The general question raised by these conditions may be framed as, whether the conditions in the Permit allowing the aerial spraying of Foray 48B, in the specified quantities, over the designated area within Richmond, BC, in a maximum of 4 applications, are appropriate in the circumstances; meaning, at a minimum, they will not cause an unreasonable adverse effect.

[132] In considering what is meant by "unreasonable adverse effect", the Panel finds that the two step process identified by the BC Supreme Court in *Islands Protection Society* v*. British Columbia Environmental Appeal Board* (1988), 3 C.E.L.R. (N.S.) 185 [*Islands Protection Society*] is still applicable, despite the fact that the legislation at issue then was the *Pesticide Control Act* and it is now the *Integrated Pest Management Act*. The Panel notes that the definition of "adverse effect" has not changed, and the ultimate consideration under both pieces of legislation is one of unreasonable adverse effect.

[133] In *Islands Protection Society*, the Court concluded that the first step was to determine if there is any adverse effect at all. If the answer is "yes", the decision-maker must then undertake a risk-benefit analysis to ascertain whether that adverse effect is reasonable.

[134] The Court of Appeal decision in *Canadian Earthcare Society* v*. Environmental Appeal Board* (1988), 3 C.E.L.R. (N.S.) 55 (B.C.C.A.) [*Canadian Earthcare*] supported the Court's finding in *Islands Protection Society* and held that:

> Should the Board find an adverse effect (i.e. some risk) it must weigh that adverse effect against the intended benefit. Only by making a comparison of risk and benefit can the Board determine if the anticipated risk is reasonable or unreasonable. …. Evidence of alternative methods will also be relevant to the issue of reasonableness. If the same benefits could be achieved by an alternative risk free method then surely the use of the risk method would be considered unreasonable.

Whether the conditions will have an adverse effect on humans, animals or the environment?

Humans

[135] Foray 48B has been registered for many years and there is significant legal authority for the proposition that the Board can consider a registered pesticide to

be generally safe when used in accordance with the label (*Canadian Earthcare)*. The Panel has considered the evidence presented by the Appellants raising concerns about this registration and about the application of Foray 48B in this particular urban context, and notes as follows:

- This pesticide was re-evaluated by the PMRA in 2008. Although some changes were made to the label, the ultimate decision was to continue to register the product for sale and use in Canada. PMRA states:

  > An evaluation of available scientific information found that products containing *Bacillus thuringiensis* do not present unacceptable risks to human health or the environment when used according to label directions.

  In relation to the potential toxicity of Bt (and relevant to some of the Appellants' evidence and concerns), PMRA states:

  > Certain strains of Bt have been found to produce *B. cereus*-like enterotoxins. Despite uncertainty over whether registered strains produce such toxins in their biologically active forms, there is a level of comfort with currently registered strains due to their long history of safe use.

  Regarding urban use, the label states:

  > Residential Use: Aerial Application
  >
  > …. Foray 48B may be used for aerial application in urban areas for treatment of residential areas and municipal recreational areas (including parks, parkland, vacant lots, shelterbelts, and rights off way under municipal jurisdiction).

  The Panel also notes that the PMRA does not require a buffer zone for Bt products, including the aerial application of Bt.

- The conditions of the Permit specifying the application rate of 50 BIU per hectare (4.0 litres per hectare), as well as the number of aerial applications (4), are all consistent with the product label specifications.

Although the Appellants submit that it is not reasonable to rely on Health Canada or PMRA appovals, the Courts have found to the contrary. Further, the PMRA re-evaluation is the most recent review of scientific and technical information before the Panel. While the Appellants allege that much of the Government's information is not subject to the high standards of professional publications in journals, such as peer review, the Panel also notes that many of the studies referred to and relied upon by the Appellants do not meet those standards. The Panel accepts that the role of PMRA, when considering a pesticide for registration, is to determine if proposed pesticides can be used safely when label directions are followed and will be effective for their intended use. PMRA's public commitment is that, "If there is reasonable certainty from scientific evaluation that no harm to human health, future generations or the environment will result from exposure to or use of a pesticide, its registration for use in Canada will be approved." The use of Foray 48B has a lenthy track record in Canada which has successfully avoided risks to health and the environment.

[136] Regarding the Appellants' evidence of potential health effects, the Panel accepts the Appellants evidence that they live within the target spray area and that they have various health conditions that make them more susceptible to impaired environmental conditions than others in the general population. However, the evidence provided by the Permit Holder and Respondent does not support a conclusion that people with allergies, asthma and compromised immune systems are likely to be affected by the permitted spray. For those individuals concerned that there may be such impacts, Health Canada suggests that "people with asthma or other health concerns may follow the same precautions they would on poor air quality days, by staying indoors with doors and windows closed during the spray period and a few hours thereafter in order to reduce exposure."

[137] The Appellants argue that this suggestion ignores research from the University of British Columbia that indoor concentrations of Btk to rise after spraying, in contrast to outdoor concentrations. They submitted one page from the May 2000 "final report to the Capital Health Region" titled *Airborn Exposures to* Bacillus thuringiensis *var.* kurstaki *During Gypsy Moth Eradication*, by these researchers which states, in part:

> During the spray period, staying indoors with all doors and windows closed resulted in exposures lower than those outdoors. However, exposures indoors increased within 3 hours after spraying and were higher than outdoor concentrations by 5 to 6 hours after spraying began. Indoor concentrations appeared to dissipate much more slowly than outdoor concentrations.

[138] The Panel notes that there is some disagreement in the evidence about the reliability of this finding, and given that only one page of the report was provided, the Panel has no information about the study itself, the actual concentrations found indoors, the number of houses tested, or any other information that would be relevant to understanding the basis for this conclusion. However, the finding referred to above only states that the indoor concentrations were above the outdoor concentrations after a number of hours. There is no indication that the concentrations were unsafe, or anywhere close to those that would be considered unsafe for humans by the regulator.

[139] Nevertheless, in response to such concerns, the "Commonly Asked Questions" document states that after 5-6 hours, people with asthma or other health concerns may want to open windows and doors to "air out" any concentration of Btk that may have entered the house through air vents or other openings. The Panel finds this a reasonable recommendation. Perhaps this is information that should be provided by the Permit Holder on its 24 hour, toll free telephone line (identified in paragraph E of the Permit).

[140] While there is no evidence that the spraying will cause long-term adverse health effects, the evidence establishes that persons who are directly exposed to higher concentrations of the pesticide (users/applicators), and those who reside in the spray areas and have pre-existing environmental sensitivities, such as the Appellants, should take reasonable precautions during the course of the treatment program. However, in spite of the fact that there are individuals who may be sensitive to unusual environmental situations, and who will take reasonable precautions at these times, the Panel is not satisfied that the permitted spray will cause an adverse effect to humans.

Animals and Environment

[141] Similar to the findings of the Board on previous appeals, the evidence indicates that there may be a short-term adverse environmental effect as a result of the proposed spraying. Specifically, the Technical Report and Ms. Burleigh's evidence acknowledge that Btk will kill non-target *Lepidoptera* that are in similar life stages as the gypsy moth at the time of spraying. Local populations of non-target *Lepidoptera* are likely to be impacted and suffer reduced populations or even extirpation in the spray area for a period of time, perhaps a few years. The evidence from the Respondent and the Permit Holder is that it is unlikely that there are any rare or endangered *Lepidoptera* in the spray area, and local populations of non-target *Lepidoptera* will repopulate the area over time.

[142] The Appellants state in their reply, however, that this evidence ignores the information they submitted on the Lulu Island Bog and the Richmond Nature Park which identified a potentially rare ground beetle, an unidentified species or a rare genus of mayflies, Beaverpond Baskettail, blue listed Autumn Meadowlark, a Barn owl and, of particular relevance, a Yellow Banded Day Sphinx which is reported in the Inventory to be an "extremely rare moth".

[143] Although the spraying will have an adverse effect on local populations of non-target *Lepidoptera* located within the areas to be sprayed, the historical evidence is that this will be temporary. In regards to the Lulu Island Bog Inventory, the most compelling evidence before the Panel is that Btk infects a narrow range of insect species such as caterpillars that have a strongly alkaline digestive tract with particular enzymes that activate the toxic crystal. Btk does not infect earthworms, honeybees, spiders or other non-*Lepidopteran* insects, nor does it harm birds, snakes or other animals that eat pests, nor does it harm fish or amphibians.

[144] In relation to the Yellow Banded Day Sphinx, the Panel notes that the Inventory states "only known on Lulu Island from one record". There is no evidence that there is any population of this moth at risk of being impacted by the spray. However, should this be incorrect, there is provision in the Permit, condition M, which applies.

[145] In summary, the Panel finds that there is evidence that the use of Foray 48B, as authorized by the Permit, may have an adverse effect on the environment, i.e., non-target moths and butterflies in the spray zone.

[146] As stated in *Canadian Earthcare*, if the Panel finds an adverse effect, i.e., "some risk", it must then enter into a comparison of the risks and benefits, weighing the adverse effect against the intended benefit of the pesticide application and considering alternative pest control methods, to determine whether the adverse effects are unreasonable.

Whether conditions are reasonable?

[147] The Panel accepts the evidence of the Permit Holder and the Respondent regarding the presence of gypsy moths in certain areas of Richmond. It also accepts the evidence regarding the consequences, both environmental and economic, of allowing these moths to gain a foothold in British Columbia. There is clearly a benefit to the Province generally, and the local community specifically, in pursuing a gypsy moth eradication program. While the Appellants' reply submissions note that trade with the U.S. in both the forestry and nursery sectors

has been significantly reduced over the past few years due to the world wide economic downturn, the Panel is of the view that an increase in trade restrictions during such difficult economic times could result in further reductions in trade.

[148] Based on the Technical Report and the affidavit of Ms. Burleigh, the Panel concludes that aerial spraying of Foray 48B is the most appropriate and effective method for eradicating local breeding populations of gypsy moths in the target area. The Panel accepts the evidence of Ms. Burleigh regarding the limitations of ground-based applications, and notes her evidence that ground applications can increase the volume of pesticide being sprayed and the potential exposure to residents and applicators as compared with aerial spraying.

[149] Alternative methods are useful for monitoring and detection, and are used for control where the moth population is small and isolated or the goal is not eradication but merely to control or slow the spread of established populations. Here the goal is eradication. Further, the Panel accepts the Permit Holder's evidence regarding the failed attempts to eradicate gypsy moth populations from other areas (southern Vancouver Island and Delta) via alternative treatments such as ground-based applications. When ground spraying is used and fails, the public is faced with a situation where the moth population expands and an application for aerial spraying is required, and often approved. The public is then exposed to multiple exposures over a larger land base.

[150] The Panel accepts the evidence of Ms. Burleigh regarding the use of alternative biological methods such as fungus and sterilization, among others, and finds it persuasive. The Panel finds that such a program will not be effective for the gypsy moth in Richmond for the reasons previously provided by Ms. Burleigh: such programs require an established population of the pest at issue for the program to be effective, these programs are not designed to eradicate, and the use of fungus is not permitted in Canada.

[151] The Panel has also considered the damage that can be caused to the environment by the moth, when its population is allowed to expand. Many of the environmental values that are sought to be protected, are placed at risk. The damage of defoliation on trees on private property, in parks (such as the Richmond Nature Park) and public areas, as well as the insects and animals that depend on the trees for various purposes, should be factored into the risk-benefit analysis.

[152] Based on the best evidence before the Board on these alternative methods, the Panel finds that they are not appropriate in this circumstance. The Panel finds that aerial spraying is the most effective treatment method to deal with the gypsy moth population identified in Richmond.

[153] The Panel is also satisfied, based on the Technical Report, the study referred in the Technical Report, and the evidence of Ms. Burleigh, that the harm to the environment will be limited to non-target *Lepidoptera* and will be temporary. The Panel finds that those adverse effects do not outweigh the potential economic harm to the environment and the economy if a gypsy moth population becomes established. Therefore, there is no unreasonable adverse effect.

[154] In summary, after taking into consideration alternatives to aerial spraying of Foray 48B, the Panel finds that the benefits of eradicating the gypsy moth through aerial spraying in accordance with the Permit, outweigh the potential adverse

effects to the environment. Accordingly, the Panel finds that conditions I, J, K and Q of the Permit allowing the aerial spraying of Foray 48B, in the specified quantities, over the designated area within Richmond, BC, in a maximum of 4 applications, are appropriate in the circumstances.

Condition M

[155] Paragraph M of the Permit requires the Permit Holder to "take steps, to the satisfaction of the administrator, to mitigate spray related impacts on any population(s) of pesticide-sensitive rare and endangered species found to exist within the treatment area and the primary zone of spray drift deposition."

[156] The Appellants submit that there are a number of rare aquatic beetles and water boatmen in Richmond Nature Park, and a Yellow Banded Sphinx was on the inventory record for the Lulu Bog, which are not properly protected contrary to this clause. If this is so, this condition is an important one in the Permit.

[157] It is clear from the comments from the referral agencies that the impact on rare or endangered species was one of the items considered by referral agencies. The Ministry of Environment Invertebrate Specialist, Jennifer Heron, advised that there are no known occurrences of rare or endangered *Lepidoptera* in the spray block or buffer area. There was no expected impact to the Dun Skipper and no other invertebrate species of concern were identified in the treatment area.

[158] Although there is said to be a potential for the habitat of the Red-legged Frog to be impacted, there is no information before the Panel suggesting that any of these frogs have been located. If they are, this condition requires the Administrator to be notified and for him to determine how to mitigate any impacts. Further, the evidence is that reptiles and amphibians are not affected by Btk.

[159] Although the Appellants refer to rare aquatic beetles and water boatmen in the Nature Park, these were not referenced in the Ecosystems Branch letter. The majority of the literature before the Panel is that this pesticide is not toxic to creatures other than *Lepidoptera*. Further, if there are rare or endangered aquatic species in the spray or drift zone, this condition may be used to ensure they are addressed.

[160] The Appellants did not make any suggested amendments to this condition. In the circumstances, the Panel agrees that it is a relevant and appropriate condition for the Permit.

Condition Q

[161] This condition states that the applications shall be conducted in daylight morning hours and shall be completed on or before 7:30 am.

[162] The Panel notes that the Permit Holder applied for an 8 am completion time, but at least one referral agency asks for an earlier deadline in order to end the spraying before people were "out and about".

[163] The Panel finds that this condition is reasonable and appropriate.

4. Whether any of the additional orders sought by the Appellants should be granted in the circumstances?

[164] In their Notice of Appeal, the Appellants asked the Board to order the Permit Holder to cover their legal costs to bring the appeal forward. In their later submissions, they also advised that, should spraying be allowed to take place, the Appellants ask the Board to make the following orders:

a. The Permit Holder must obtain informed consent from the population of experimental subjects within the aerial spray zones.

b. The Respondent must acknowledge its legal duties under the Nuremberg Code and provide accommodation (cost) or otherwise for those who are deemed to be at risk within the spray zone.

c. In anticipation of possible future aerial spray events, the other parties are asked to obtain, from PMRA, detailed information about the strain used in the Foray 48B solution for the benefit of treating physicians.

d. Require the PMRA to obtain disclosure of the inert ingredients within the Foray 48B pesticide formulas for the benefit of treating physicians.

e. Require Permit Holder to provide a warranty/guarantee to the Appellants stating that they will not experience any adverse affects, be injured, disabled or experience a fatality, in the short or long term, because of the application of aerial spray Foray 48B, a microbiological product containing a novel bacterium, to the City of Richmond, if the Appellants should lose their appeal.

f. The Permit Holder must cover the costs of the Appellants moving to an alternative accommodation from April 15 to July 8th, the proposed period of spray application.

[165] The Appellants also ask the Board to recommend that an independent advisory committee composed of non-governmental doctors, toxicologists, microbiologists, immunologists and zoologists, be set up to evaluate the risks to human health and rare and endangered species affected by aerial pesticide spray programs of Foray 48B.

[166] The Respondent and the Permit Holder made no comment regarding these other orders.

The Panel's Findings

[167] The Panel has already ruled that the aerial spay permitted by the Permit is not an experiment and that the Nuremburg Code does not apply. Therefore, requests (a) and (b) are denied.

[168] Items (c) and (d) are not within the jurisdiction of the Board to order.

[169] Regarding item (e), the Board has no jurisdiction to order the Permit Holder to provide warranties or guarantees.

[170] Regarding item (f), the Board has previously advised the Appellants that their request for relocation and accommodation outside of the treatment area was beyond the Board's jurisdiction.

[171] The proposed recommendation for an independent advisory committee is also beyond the jurisdiction of the Board. Further, the work of such a committee would be costly and any recommendation made by the committee would be unenforceable. This request is denied.

[172] In their reply submissions, the Appellants submitted a number of new requests for orders should their appeal fail. In particular, they ask the Board to vary/suspend the date of the Permit until:

(a) a non-governmental independent body can be formed to properly assess and evaluation the risk of adverse health effects among the general population; and

(b) the Respondents provide accurate and technical information to the public.

[173] They also ask for the spray zone boundaries to be varied to remove the Richmond Nature Park from the spray program due to the potential presence of sensitive species.

[174] Finally, the Appellants ask the Board to require the government agencies involved to educate the public as to the necessity of mechanical means of control of gypsy moth within their own private properties and to implement a campaign to support this initiative.

[175] Because these were requested in reply submissions, the other parties have not had an opportunity to comment on these requests. In light of this, as well as the Board's findings in this decision generally, and on adverse effects specifically, these requests are denied.

Costs

[176] Finally, the Panel notes the Appellants' application for costs. The Appellants requested an order requiring the Permit Holder to cover "legal costs to bring the appeal forward". No further information on these costs was provided nor were there any further submissions on this request in the Appellants' written argument or reply submissions.

[177] Although the Board has the authority to award costs, its policy is to award costs only where there are "special circumstances". Those circumstances include:

(a) where, having regard to all of the circumstances, an appeal is brought for improper reasons or is frivolous or vexatious in nature;
(b) where the action of a party, or the failure of a party to act in a timely manner, results in prejudice to any of the other parties;
(c) where a party, without prior notice to the Board, fails to attend a hearing or to send a representative to a hearing when properly served with a "notice of hearing";
(d) where a party unreasonably delays the proceeding;
(e) where a party's failure to comply with an order or direction of the Board, or a panel, has resulted in prejudice to another party; and
(f) where a party has continued to deal with issues which the Board has advised are irrelevant.

[178] While the Appellants have put a great deal of effort into their appeal and have done so within a short period of time, the Panel finds that there are no special

circumstances present in this case, as set out in the Board's policy, to warrant an order of costs against the Respondent or the Third Party.

[179] The application for costs is denied.

RECOMMENDATION

[180] Although the Appellants have been unsuccessful in this appeal, the Panel is satisfied that the Appellants have a sincere and honestly held belief that the application of Btk under the Permit will have a severe and devastating effect on their health and on the environment. As a result, they have made it clear from the beginning that they will vacate their house during the course of the treatment program. The Panel recommends that the Permit Holder provide these Appellants with the most recent information that it has regarding the date for commencement of the aerial spray program and the conclusion of spraying. This updated information shall be provided to the Appellants and updated as necessary so that they will be inconvenienced as little as possible.

DECISION

[181] A great deal of documentation was provided by the parties. The Panel appreciates the extraordinary efforts made by all parties to provide such thorough and extensive submissions and responses within a very compressed time frame.

[182] In making this decision, the Panel of the Environmental Appeal Board has carefully considered all of the submissions and evidence placed before it by the parties, whether or not specifically referred to here.

[183] For the reasons provided above, the appeal is dismissed.

[184] The application for costs is denied.

"Alan Andison"

Alan Andison, Chair
Environmental Appeal Board

April 14, 2010

BRITISH COLUMBIA
The Best Place on Earth

APPENDIX 1

MINISTRY OF ENVIRONMENT
PESTICIDE USE PERMIT
No. 738-0013-2010/2010

Pursuant to Section 6 of the Integrated Pest Management Act

British Columbia Minister of Forests
Forest Practices Branch
P.O. Box 9513 Stn. Prov. Govt.
Victoria, B.C. V8W 9C2

is authorized to use pesticides subject to the conditions listed below. Contravention of any of these conditions is a violation of the *Integrated Pest Management Act* and may result in prosecution.

Treatment Dates

A. The pesticide use described herein may be conducted on or between April 15, 2010 and June 30, 2010 when the permit expires.

Notifications

B. To allow inspection by the public, the permittee shall, within 7 days of permit issuance, post a copy of the permit with relevant maps at the Ministry of Forests – Forest Practices Branch in Victoria and the City of Richmond municipal hall or alternative sites to the satisfaction of the Senior Pesticide Management Officer, Lower Mainland and Vancouver Island Region. The posted permit and maps shall remain at these locations until one week after all pesticide spray activities under the permit have ceased.

C. Within 15 days of issuance of the permit, the permittee shall publish a notice in at least one community newspaper circulated within the treatment area. The published notice shall contain the following information:

(a) Name, address and telephone number of the permit holder,
(b) Permit number,
(c) Purpose of pesticide use,
(d) Pesticide used (trade name, P.C.P. No. and active ingredient),
(e) Method of pesticide application,
(f) A map showing the location of the treatment area and primary zone of spray drift deposition,

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(g) Date of project commencement and completion,
(h) Information on where copies of the permit and map of the treatment area may be examined in detail,
(i) Information on how and when telephone support lines can be accessed by the public to obtain spray-related information or to discuss health-related concerns associated with the pesticide use.

D. **A press release** providing details of pending local pesticide use shall be sent at least one week prior to commencement of the **first pesticide spray** to a minimum of one community newspaper circulated within the treatment area and primary zone of spray drift deposition. **The press release** shall contain at least the following, or comparable, wording:

> The **first** in a series of aerial spray operations using the pesticide product Foray 48B (active ingredient Btk) to control introduced populations of the Gypsy Moth may commence as early as *insert date here.* A maximum of four spray applications will take place at about ten day intervals until June 30, 2010. Each application is expected to commence at sunrise and take about *insert duration here* minutes to complete on each of *insert number of days per spray application here* mornings. People who wish to minimize their exposure may remain indoors with their windows and doors closed during the spraying and for at least 30 minutes thereafter. Changes in weather conditions may cause proposed applications to be cancelled or delayed with little advance notice.
>
> Notification (written if possible) shall be provided to the persons listed below, or their representatives, at least 24 hours before commencement of each spray application. Immediate notification will be provided to these persons when a pending spray application has been cancelled, delayed or deferred. Notification will include estimates of how long the impending spray will likely take to be completed, when a deferred application has been rescheduled or, when the next spray is likely to occur.
>
> The following persons or their appropriate representatives are to be directly notified:
>
> - the Medical Health Officer for the Coastal Health Authority,
> - the Principals of all schools within the treatment area and primary zone of spray drift deposition,
> - the owners or managers of any licensed care facilities within the authorized spray area and primary zone of spray drift deposition,
> - the holders of known surface intakes for domestic and agricultural water uses, within the treatment area and primary zone of spray drift deposition,
> - the Mayor of the City of Richmond, and
> - the Senior Pesticide Management Officer, Lower Mainland and Vancouver Island Region.

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Additional notification shall be given to the news directors of at least two media stations (in each of the following categories) that have regularly scheduled news broadcasts and serve the treatment areas as well as adjacent communities:

- locally broadcast AM radio station(s),
- locally broadcast FM radio station(s),
- locally broadcast TV station(s).

The notification provided to radio and TV stations identified above shall contain the following, or comparable, wording:

Recorded information on gypsy moth spray dates and times can be obtained 24 hours a day by calling *insert toll-free number here*. The information on planned treatments will become progressively more specific as the spray dates near. Up to date treatment information will be available immediately before, during, and until 1630 hr on each day of spray operations. Information on how concerned citizens can address their health concerns regarding spray activities can be obtained 24 hours a day by calling *insert toll –free number here.*

E. All available information on public health concerns raised and addressed through the above mentioned health lines shall be recorded and reported on within 15 days of each period of pesticide use. A final report summarizing all collected information shall be submitted, to the satisfaction of the Senior Pesticide Management Officer, within 30 days of the last day of pesticide use.

F. The permittee shall develop, maintain and implement a location-specific plan for communicating details to the public, relevant health authorities, government agencies and local government regarding the proposed and completed pesticide uses. Such information shall be readily available on an internet web site.

G. Prior to any pesticide use, the Senior Pesticide Management Officer, Lower Mainland and Vancouver Island Region shall be given written notification of the name, licence number and valid British Columbia Pesticide Applicator Certificate numbers of any contractors applying pesticides under this permit. Any pilot that will be directly involved in aerial based pesticide applications shall possess a valid pesticide applicator certificate.

H. All personnel involved in the project shall be notified of the terms and conditions of the permit and any permit amendments prior to pesticide use.

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Authorized Pesticides

I. The pesticide listed below is approved for use under the terms of this permit. Application rates indicated are maximums per application. Lower rates must be used where project objectives may still be achieved.

Trade Name	Active Ingredient (a.i.)	Product P.C.P. #.	Application Rate (litres/ha per each of 4 uses)	Maximum Area of Pesticide Use per Application (ha.)	Maximum Quantity of Product to be Used per Application (litres)
Foray 48B	Bacillus thuringiensis var. kurstaki	24977	4.0 (50 BIU/ha)	776	9312

Target Pest Species, Treatment Area and Purpose

J. Aerial pesticide use is permitted on or over lands that are within the boundaries delineated on the map accompanying this permit where permission has been granted by the land owner, the land holder, an Order In Council or other legal instrument.

K. Pesticide use shall be for the purpose of eradicating the introduced population of the Gypsy Moth (*Lymantria dispar*) from the location referred to in Condition H above.

Monitoring

L. The permittee shall use spray monitoring devices, to determine the uniformity of coverage of the spray treatment and spray drift into the primary zone of spray drift deposition. Upon completion, the monitoring results shall be submitted to the Senior Pesticide Management Officer, Lower Mainland and Vancouver Island Region.

Restrictions

M. The permittee shall take steps, to the satisfaction of the administrator, to mitigate spray related impacts on any population(s) of pesticide-sensitive rare and endangered species found to exist within the treatment area and the primary zone of spray drift deposition.

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N. Pesticides shall not be applied in areas where wind speeds are greater than 8 km/hr. Application equipment and droplet size shall be selected to minimise drift while still achieving the primary treatment objective of Gypsy Moth eradication.

O. Aerial applications shall be conducted in the daylight morning hours and shall be completed on or before 0730 hours.

P. At all times during aerial operations, the pilot(s) must be in continuous radio contact with ground-based personnel that are familiar with the permit and treatment area(s).

Q. A maximum of four aerial and/or ground–based treatments may be applied to any given area.

R. All spray equipment shall be properly calibrated prior to use.

S. All pesticide products and application equipment used shall be maintained in secure conditions that prevent tampering or the introduction of spray contaminants.

T. The permit holder must comply with all applicable provisions under the *Integrated Pest Management Act.*

Reporting

U. Follow-up reports shall be provided to the Senior Pesticide Management Officer, Lower Mainland and Vancouver Island Region on or before December 31, 2010. The reports shall include the quantities of pesticides used, the area treated (ha), a description of the timing of treatments, treatment efficacy information based on monitoring trap catches, all pertinent maps and recommended follow-up activities for the treatment area.

V. Pesticide spills that result in impacts not authorized by or consistent with this permit, shall be immediately reported to the Provincial Emergency Program at 1-800-663-3456. Spill affected areas shall be immediately cleaned-up and decontaminated. The Senior Pesticide Management Officer, Lower Mainland and Vancouver Island Region shall be provided with reports on the spill, clean-up activities and decontamination actions as soon as practicable.

W. Permit non-compliance that results in impacts not consistent with the intent of this permit shall be reported to the Senior Pesticide Management Officer, Lower Mainland and Vancouver Island Regions within 48 hours of the infraction's discovery. Actions, to the satisfaction of the Senior Pesticide Management Officer, Lower Mainland and Vancouver Island Region may be required to evaluate the potential impact of the non-compliance on human health and/or the environment.

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J.G. Fournier

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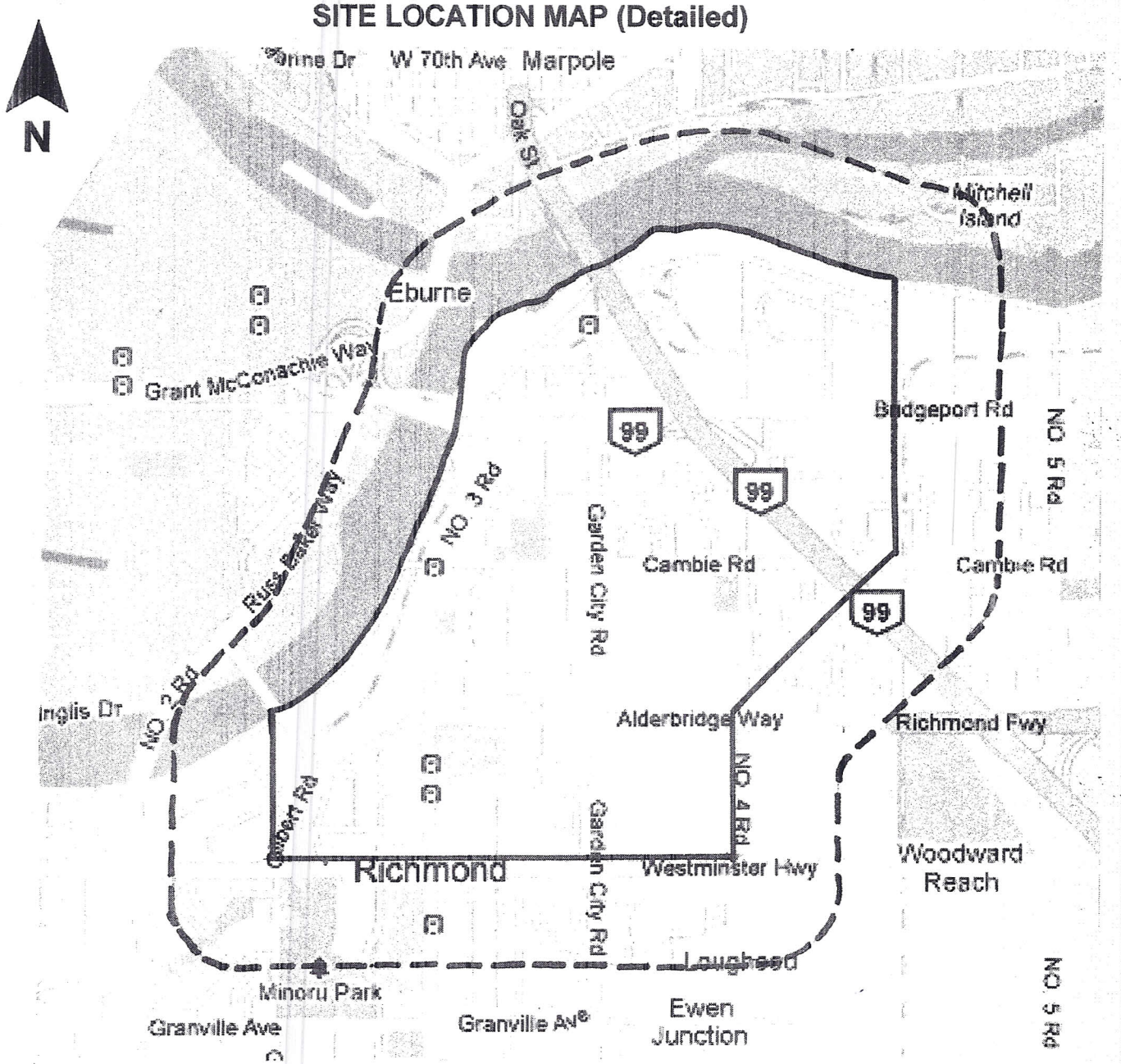
PROVINCE OF
BRITISH COLUMBIA

Pesticide Management

SITE LOCATION MAP (Detailed)



Approximate Scale: 1:33,000	PUP # 738-0013-2010/2010
Legend:	Date: FEB 17 2010
Richmond Gypsy Moth Treatment Area	
Treatment Area Boundary	J.G. Fournier Senior Pesticide Management Officer On behalf of the Administrator, *Integrated Pest Management Act*
Primary Spray Drift Deposition Boundary	