

The Richmond Pesticide Awareness Coalition (RPAC) recommends that the Amendment to the Pesticide Use Control Bylaw is not accepted for the following reasons:

- It asks for an exclusion for a person to use a pesticide to control or eradicate an infestation with the provision for pests which threaten a sensitive ecosystem.
We often do not know what the results will be when pesticides or insecticides are introduced into an ecosystem. Two recent studies that I just found show that pesticides (notably Round Up) used in sensitive ecosystems can cause much more harm than good.
 - One study found that Round Up was highly lethal to amphibians. In addition, the study's author noted a pond's entire community of 25 species responded to the addition of herbicides and insecticides. He thought that Round Up would kill the algae that feeds the frogs but, ironically, he found out that Round Up instead killed the frogs which led to the proliferation of algae, which would effect even more organisms.
 - Another recent study found that glyphosate (an ingredient in Round Up) had a synergistic effect with a parasite that caused it to wreck more havoc on the fish than it would have on its own, "greatly reducing" fish survival. (see attached)For an example of this, I was recently told by someone that they had asked city workers a few years ago what they were using to control Purple Loosestrife near or in the water and they said at the time that they were using Round Up.
 - Loosestrife is an alien invasive that is easily controlled biologically with a type of beetle that only eats purple loosestrife and not any other plant or animal or cause any other damage to the natural environment. Even Ducks Unlimited states that they do not approve any herbicides to control purple loosestrife and they also recommend this biological control of beetles. (see attached)Pesticides effect biodiversity by causing detriment to non-target organisms. There are biological controls that can assist us without damaging our natural environment.
- We, along with the Canadian Cancer Society have made it clear that pesticide exposure has inherent risks. These risks are greatest for those applying pesticides and their families that they carry residues home to. It puts them at greater risk for various cancers and lung diseases.
There is also a risk to our community as pesticides can enter our water supply and can even effect the salmon we eat.
- There are many other municipalities that do not allow the exemptions that are being presented in this amendment. As city staff have stated, only 6 bylaws out of 31 have exemptions for alien invasives and sensitive ecosystems. Whistler and Burnaby are local examples, which present simple and effective bylaws, without exemptions of this kind. Burnaby does note an exemption for infestations related to structural damage, which is already written into the Community Charter, so is allowed for all municipalities and does not require an additional exemption.
- PESTICIDE exposure causes undue risks to our environment and health.
Please do not support any amendment to this bylaw.

Roundup(reg) highly lethal to amphibians, finds University of Pittsburgh researcher

03 Apr 2005

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The herbicide Roundup(reg) is widely used to eradicate weeds. But a study published today by a University of Pittsburgh researcher finds that the chemical may be eradicating much more than that.

Pitt assistant professor of biology Rick Relyea found that Roundup(reg), the second most commonly applied herbicide in the United States, is "extremely lethal" to amphibians. This field experiment is one of the most extensive studies on the effects of pesticides on nontarget organisms in a natural setting, and the results may provide a key link to global amphibian declines.

In a paper titled "The Impact of Insecticides and Herbicides on the Biodiversity and Productivity of Aquatic Communities," published in the journal *Ecological Applications*, Relyea examined how a pond's entire community--25 species, including crustaceans, insects, snails, and tadpoles--responded to the addition of the manufacturers' recommended doses of two insecticides--Sevin(reg) (carbaryl) and malathion--and two herbicides--Roundup(reg) (glyphosate) and 2,4-D.

Relyea found that Roundup(reg) caused a 70 percent decline in amphibian biodiversity and an 86 percent decline in the total mass of tadpoles. Leopard frog tadpoles and gray tree frog tadpoles were completely eliminated and wood frog tadpoles and toad tadpoles were nearly eliminated. One species of frog, spring peepers, was unaffected.

"The most shocking insight coming out of this was that Roundup(reg), something designed to kill plants, was extremely lethal to amphibians," said Relyea, who conducted the research at Pitt's Pymatuning Laboratory of Ecology. "We added Roundup(reg), and the next day we looked in the tanks and there were dead tadpoles all over the bottom."

Relyea initially conducted the experiment to see whether the Roundup(reg) would have an indirect effect on the frogs by killing their food source, the algae. However, he found that Roundup(reg), although an herbicide, actually increased the amount of algae in the pond because it killed most of the frogs.

"It's like killing all the cows in a field and seeing that the field has more grass in it--not because you made the grass grow better, but because you killed everything that eats grass," he said.

Previous research had found that the lethal ingredient in Roundup(reg) was not the herbicide itself, glyphosate, but rather the surfactant, or detergent, that allows the herbicide to penetrate the waxy surfaces of plants. In Roundup(reg), that surfactant is a chemical called polyethoxylated tallowamine. Other herbicides have less dangerous surfactants: For example, Relyea's study found that 2,4-D had no effect on tadpoles.

"We've repeated the experiment, so we're confident that this is, in fact, a repeatable result that we see," said Relyea. "It's fair to say that nobody would have guessed Roundup(reg) was going to be so lethal to amphibians."

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Synergistic effects of glyphosate formulation and parasite infection on fish malformations and survival

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KEYWORDS

disease • fish populations • glyphosate • malformation • multiple stressors • parasite • Roundup • toxicity tests

ABSTRACT

1. Anthropogenic pollution and disease can cause both lethal and sub-lethal effects in aquatic species but our understanding of how these stressors interact is often not known. Contaminants can reduce host resistance to disease, but whether hosts are impacted at environmentally relevant concentrations is poorly understood.

2. We investigated the independent and combined effects of exposure to the common herbicide glyphosate and the trematode parasite *Telogaster opisthorchis* on survival and the development of spinal malformations in juvenile *Galaxias anomalus*, a New Zealand freshwater fish. We then investigated how exposure to a glyphosate concentration gradient (0.36, 3.6, 36 mg active ingredient (a.i.) L⁻¹) affected the production and release of the infective cercarial stage of the parasite by its snail intermediate host *Potamopyrgus antipodarum*.

3. Survival of juvenile fish was unaffected by exposure to glyphosate alone (at an environmentally relevant concentration; 0.36 mg a.i. L⁻¹) or by *T. opisthorchis* infection alone. However, simultaneous exposure to infection and glyphosate significantly reduced fish survival.

4. Juvenile fish developed spinal malformations when exposed either to infections alone or to infections and glyphosate, with a trend towards greater severity of spinal malformation after exposure to both stressors.

5. All snails exposed to the highest glyphosate concentration (36 mg a.i. L⁻¹) died within 24 h. Snails exposed to a moderate concentration (3.6 mg a.i. L⁻¹) produced significantly more *T. opisthorchis* cercariae than snails in the control group or the low concentration group (0.36 mg a.i. L⁻¹; the same concentration as in the fish experiment).

6. *Synthesis and applications.* This is the first study to show that parasites and glyphosate can act synergistically on aquatic vertebrates at environmentally relevant concentrations, and that glyphosate might increase the risk of disease in fish. Our results have important implications when identifying risks to aquatic communities and suggest that threshold levels of glyphosate currently set by regulatory authorities do not adequately protect freshwater systems.

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Conserving Canada's Wetlands

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Invasive Species Control—Purple Loosestrife ↵

The majority of Ducks Unlimited Canada's (DUC) efforts regarding invasive species control are directed towards the biological control of purple loosestrife. DUC has been involved with a purple loosestrife control program in the Maritimes since 1996.

Purple loosestrife originated in Europe and was accidentally introduced into North America in the early 1800s as a contaminant in ship ballast and as a medical herb. It has taken many years for this weed to impact our area, but it is now present in many regions. Also known as the beautiful killer, marsh monster and exotic invader, purple loosestrife establishes itself in a variety of urban and rural wetland habitats.

Purple Loosestrife greatly reduces biodiversity in the wetland, dominate and eliminate many valuable plant species. The displacement of native vegetation by purple loosestrife reduces the value of wetlands and has far reaching ecological implications, many of which are still unknown.

With no enemies in Canada it has been difficult to control the spread of purple loosestrife here. No herbicides are approved for use to control purple loosestrife growing in or around waterways. Hand digging is an option for small outbreaks, but this method is too time consuming and costly for larger outbreaks and is not viable as a long term solution since only a small piece of root is needed for the plant to regenerate.

The only approach that has demonstrated real success is the use of insects to control the spread of purple loosestrife. These insects are also non-native to Canada, but have been approved for release to combat purple loosestrife. The insects that DUC uses in the Maritimes are two leaf eating beetles called *Galerucella calmariensis* and *Galerucella pusilla*. These specialized plant eating insects do not eat any other plant or harm our natural environment.

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RESORT MUNICIPALITY OF WHISTLER

BYLAW NO 1822, 2007

A BYLAW TO REGULATE THE NONESSENTIAL AND COSMETIC USE OF PESTICIDES
WITHIN THE RESORT MUNICIPALITY OF WHISTLER

WHEREAS The Council of the Resort Municipality of Whistler has the authority pursuant to Section 8(3) of the *Community Charter* to enact bylaws which provide for the protection of the “health, safety and well-being” of residents;

AND WHEREAS Council desires to respond to the concerns expressed by residents about the risks to ecological integrity and biodiversity associated with the use of pesticides;

AND WHEREAS the application of pesticides contributes to the cumulative chemical load absorbed by the natural environment, and avoiding unnecessary exposure to pesticides conforms to the precautionary principle;

AND WHEREAS regulating the non-essential and cosmetic use of pesticides will help to promote and protect the public health of Municipal residents and visitors.

NOW THEREFORE the Council of the Resort Municipality of Whistler, in open meeting assembled, ENACTS AS FOLLOWS

1. **TITLE**

1.1. This bylaw may be cited for all purposes as “Pesticide Use Regulation Bylaw No.1822, 2007”.

2. **DEFINITIONS**

2.1. In this bylaw:

biological control means the use of natural agents such as insects, nematodes, fungi, viruses, fish or animals to control pests;

cosmetic purposes means for the purpose of maintaining outdoor trees, shrubs, flowers, ornamental plants, or turf;

Integrated Pest Management means an ecologically based pest-control strategy that relies on natural mortality factors, such as natural enemies, weather, cultural control methods, and carefully applied doses of pesticides with an emphasis on methods that are least injurious to the environment and human health and most specific to the particular pest;

permitted pesticide means a pesticide listed in Schedule 2 of the *Integrated Pest Management Regulation*, included for reference as Schedule A of this Bylaw;

pest means an injurious, noxious or troublesome living organism, but does not include a virus, bacteria, fungus, or internal parasite that exists on or in humans or animals;

pesticide – means a micro-organism, or material that is represented, sold, used or intended to be used to prevent, destroy, repel, or mitigate a pest and includes but is not limited to:

- a. a plant growth regulator, plant defoliator or plant desiccant, and
- b. a control product as defined in the *Pest Control Products Act (Canada)*,
- c. a substance that is classified as a pesticide by the *Integrated Pest Management Act (British Columbia)*;

private land means a parcel of land that is used partially or entirely for residential purposes and includes any parcel where a residential use is permitted pursuant to the Parking and Zoning Bylaw or a Land Use Contract, and for greater clarity includes all common property in a strata development with a residential component;

public land means all property held entirely or in part by the Resort Municipality of Whistler;

3. **PROHIBITION**

- 3.1. Unless permitted or exempted in accordance with this bylaw, no person shall apply or cause or permit the application or use of a pesticide on *private lands* or *public lands* for *cosmetic purposes* within the boundaries of the Resort Municipality of Whistler.

4. **EXCEPTIONS** - No additional exemptions

- 4.1. Notwithstanding section 3, it is permitted to apply or use a *pesticide* in the following cases:
 - 4.1.1. The use or application of *permitted pesticides*;
 - 4.1.2. In a public or private swimming pool;
 - 4.1.3. To purify water for human or animal use;
 - 4.1.4. To buildings or the inside of buildings;
 - 4.1.5. To control, destroy, reduce or repel, directly or indirectly, an animal, plant or other organism which is harmful to human health;
 - 4.1.6. Where permitted pursuant to s. 2(2) of *BC Regulation 144/2004*; and

- 4.1.7. To golf courses, only where the principals of *Integrated Pest Management* have been applied by a certified *Integrated Pest Management* practitioner with a valid pesticide applicators certificate, and the pesticide application is a last resort to avoid the loss of use of the facility.

5. ENFORCEMENT

- 5.1. This bylaw is designated under the provisions of Section 264 of the *Community Charter* as a bylaw that may be enforced by means of a ticket in the form prescribed, and in accordance with this bylaw.
- 5.2. Bylaw Enforcement Officers are designated to enforce this bylaw pursuant to Section 264(1)(b) of the *Community Charter*.

6. OFFENCE AND PENALTY

- 6.1. Any person who contravenes this bylaw is guilty of an offence and, upon conviction, is liable to a minimum penalty of \$250 and a maximum fine of \$5,000.
- 6.2. Each day a person applies or causes or permits the application of a *pesticide* within the boundaries of the Resort Municipality of Whistler that is not otherwise exempted shall constitute a separate offence.
- 6.3. Offences for which tickets can be issued and fines imposed are prescribed in the Ticket Information Utilization Bylaw No. 822, 1990.

7. EFFECTIVE DATE

- 7.1. This bylaw comes into force and effect:
 - 7.1.1. on *public lands* as of the date of adoption; and
 - 7.1.2. on *private lands* as of December 31st, 2008

8. SEVERANCE

- 8.1. If any section or other part of this bylaw is held invalid by a court, the invalid portion shall be severed.

READ A FIRST TIME this th day of, 2008.

READ A SECOND TIME this th day of, 2008.

READ A THIRD TIME this th day of, 2008.



Schedule A

Permitted Pesticides
as of November, 2007

As per Schedule 2 of British Columbia's Integrated Pest Management Regulation, the following substances are permitted pesticides and shall be excluded from the provisions of this Bylaw:

- | | | | |
|----|---|----|---|
| 1 | acetic acid (DOMESTIC) | 23 | laundry additives (DOMESTIC and COMMERCIAL) |
| 2 | animal repellents (DOMESTIC and COMMERCIAL) except thiram | 24 | material preservatives (DOMESTIC and COMMERCIAL) |
| 3 | anti-fouling paints (DOMESTIC and COMMERCIAL) | 25 | methoprene (DOMESTIC) |
| 4 | antispain wood preservatives used on private, industrial land owned by the company or person responsible for the application (COMMERCIAL) | 26 | mineral oils for insect and mite control (DOMESTIC) |
| 5 | asphalt solids (pruning paints) (DOMESTIC and COMMERCIAL) | 27 | n-octyl bicycloheptene dicarboximide (DOMESTIC) |
| 6 | bacillus thuringiensis kurstaki (Btk) (DOMESTIC) | 28 | naphthalene for fabric protection (DOMESTIC) |
| 7 | bactericides used in petroleum products (DOMESTIC and COMMERCIAL) | 29 | paradichlorobenzene for fabric protection (DOMESTIC) |
| 8 | boron compounds (DOMESTIC) | 30 | pesticides in aerosol containers (DOMESTIC) |
| 9 | boron compounds with up to 5% copper for insect control and wood preservation (COMMERCIAL) | 31 | pesticides registered under the federal Act for application to pets (DOMESTIC and COMMERCIAL) |
| 10 | capsaicin (DOMESTIC, COMMERCIAL and RESTRICTED) | 32 | piperonyl butoxide (DOMESTIC) |
| 11 | cleansers (DOMESTIC and COMMERCIAL) | 33 | plant growth regulators (DOMESTIC) |
| 12 | corn gluten meal (DOMESTIC and COMMERCIAL) | 34 | polybutene bird repellents (DOMESTIC and COMMERCIAL) |
| 13 | d-phenothryn (DOMESTIC) | 35 | pyrethrins (DOMESTIC) |
| 14 | d-trans-allethrin, also referred to as d-cis, trans allethrin (DOMESTIC) | 36 | resmethrin (DOMESTIC) |
| 15 | deodorizers (DOMESTIC and COMMERCIAL) | 37 | rotenone (DOMESTIC) |
| 16 | fatty acids (DOMESTIC) | 38 | silica aerogel, also referred to as silica gel, amorphous silica and amorphous silica gel (DOMESTIC and COMMERCIAL) |
| 17 | ferric phosphate (DOMESTIC and COMMERCIAL) | 39 | silicon dioxide, also referred to as "diatomaceous earth" (DOMESTIC and COMMERCIAL) |
| 18 | ferrous sulphate (DOMESTIC and COMMERCIAL) | 40 | slimicides (COMMERCIAL) |
| 19 | hard surface disinfectants (DOMESTIC and COMMERCIAL) | 41 | soaps (DOMESTIC and COMMERCIAL) |
| 20 | insect bait stations (DOMESTIC) | 42 | sulphur, including lime sulphur, sulphide sulphur and calcium polysulphide (DOMESTIC) |
| 21 | insect pheromones (DOMESTIC and COMMERCIAL) | 43 | surfactants (DOMESTIC and COMMERCIAL) |
| 22 | insect repellents (DOMESTIC) | 44 | swimming pool algicides and bactericides (DOMESTIC and COMMERCIAL) |
| | | 45 | tetramethrin (DOMESTIC) |
| | | 46 | wood preservatives (DOMESTIC) |

CITY OF BURNABY

BYLAW NO. 12465

A Bylaw to regulate the use of pesticides for cosmetic purposes

The Council of the City of Burnaby ENACTS as follows:

1. This Bylaw may be cited as **BURNABY PESTICIDE USE CONTROL BYLAW, 2008.**

2. In this Bylaw:

“**biological control**” means the use of natural agents such as insects, nematodes, fungi, viruses or fish to control pests;

“**hard landscape**” means any constructed surface typically used for landscaping such as asphalt, concrete, rocks, gravel, treated wood or brick pavers;

* “**infestation**” means the presence of pests in numbers or under conditions that involves an immediate risk of structural damage to property or significant financial loss in respect of the use of property; *as allowed in the community charter of B.C. for all municipalities*

“**permitted pesticide**” means a pesticide listed in Schedule “A”;

“**pest**” means an animal, a plant or other organism that is injurious, noxious or troublesome, whether directly or indirectly, and an injurious, noxious or troublesome condition or organic function of an animal, a plant or other organism;

“**pesticide**” means a microorganism or material that is represented, sold, used or intended to be used to prevent, destroy, repel or mitigate a pest, and includes but is not limited to:

(a) a plant growth regulator, plant defoliator or plant desiccant;

- (b) a control product as defined in the *Pest Control Products Act* (Canada);
and
- (c) a substance that is classified as a pesticide by the *Integrated Pest Management Act* (British Columbia);

“private lands” means a parcel or part of a parcel if the parcel or part is used for residential purposes;

“public lands” means lands owned by the City.

3. Except as otherwise permitted under this Bylaw, no person shall apply or cause or permit to be applied a pesticide on private lands or public lands within the City of Burnaby.
4. This Bylaw shall not apply in respect of:
 - (a) the use or application of a permitted pesticide;
 - (b) the use of a pesticide in response to a danger to human or animal health;
 - (c) the use of a pesticide to disinfect a swimming pool, wading pool, whirlpool or ornamental water fountain;
 - (d) the use of a pesticide to purify water intended for human or animal consumption;
 - (e) the use of a biological control to destroy noxious pests, including rats and mice;
 - (f) the use of a pesticide to control an infestation; ^{as} defined above
 - (g) the use or application of a pesticide inside of a building;
 - (h) the use of a pesticide to control or destroy plants which constitute a danger for human beings who are allergic thereto; and