

Campbell River Environmental Committee (CREC)  
PO Box 20092 STN. A, Campbell River, BC V9W 7Z5

Dr. Charmaine Enns  
355 - 11th Street  
Courtenay, BC  
V9N 1S4

**SENT VIA EMAIL**

March 15, 2023

Dear Dr. Enns,

**RE: HEALTH RISKS OF SPRAYING FORAY 48B IN URBAN AREAS**

After researching the effects on human health of aerial spraying with Foray 48B, the Campbell River Environmental Committee (CREC) requests you undertake the following actions based on reports, Health Canada Foray 48B Incident Reports, and doctors' letters to the Ministry of Forests regarding the Ministry of Forest's spray application of the biological insecticide Foray 48B, which includes *Bacillus thuringiensis* subspecies *Kustaki* (Btk) at 12.65% and non-disclosed proprietary ingredients at 87.35%:

- an electronic meeting between you and CREC regarding the risks of spraying with Foray 48B in urban areas;
- a discussion of these associated risks with the Ministry of Environment and the Ministry of Forests; and
- now that the Province has approved the permit, you provide adequate public warning of the health risks of aerial spraying with toxic and carcinogenic ingredients and evacuate the public from targeted spray areas on the three occasions when aerial spraying is taking place.

Information provided by the Province at its 2023 Spongy Moth Virtual Open Houses regarding Foray 48B biological insecticide stated that:

"No known toxic effects on humans, other mammals, plants, birds, fish or non-target insects (moths/butterflies can be impacted)" [https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/forestry/forest-health/forest-health-docs/gypsy-moth-docs/openhouse\\_cr\\_pa\\_court\\_jan23\\_provincialent\\_presentation.pdf](https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/forestry/forest-health/forest-health-docs/gypsy-moth-docs/openhouse_cr_pa_court_jan23_provincialent_presentation.pdf)

1. In her February 21, 2023 letter to the Ministry of Forests, Dr. Jennifer Tynan wrote:  
"The research now demonstrates effects on non-target species: Bt has been shown to produce 'membrane damaging toxins that act on mammalian cells' and to cause 'various infectious diseases in humans.'"
2. In his February 17, 2023 letter to the Ministry of Forests, Dr. Stephen King, Ph.D., M.P.H., Toxicologist & Epidemiologist wrote on page 2 of his letter:

"With respect to inert or other ingredients, in a United States Forest Service report on the "Control/Eradication Agents for the Gypsy Moth...", dated June 8, 2004 (USFS 2004), the report provided in a table, "Table 3-2: Partially available information on inerts used in B.t.k. formulations," which included Foray 48B as mentioned in the body of the report. The table listed the following inert ingredients: benzoic acid/sodium benzoate, hydrochloric acid, methyl paraben (methyl hydroxybenzoate), phosphoric acid, polyacrylic acid (carbopol), potassium phosphate, potassium sorbate, propylene glycol, sodium hydroxide, sodium sulfide, sorbitol, and sulfuric acid (USFS 2004).

Of the inert ingredients identified in Table 3-2, **hydrochloric acid and sulfuric acid are very toxic substances and even at low exposure concentrations to humans in the form of mists can cause adverse health effects (respiratory, dermatological, et al.) (IARC 2012). According to the Internal Agency for Research on Cancer (IARC), mists from strong organic acids including hydrochloric acid and sulfuric acid, respectively, have been classified as carcinogenic to humans (Group 1) (IARC 2012).** In addition to the acids, sodium hydroxide is another very toxic inert in B.t.k. formulations. Sodium hydroxide is corrosive to all body tissues and concentrated vapors cause serious damage to the eyes and respiratory system. Contact with the skin can result in dermatitis, loss of hair, and necrosis due to irritation (NRC 1984). Foray 48B is usually applied in an aerosol spray or mist which contains not only the active ingredient, BT, but also the inert ingredients. Exposure to the inert ingredients may be responsible for some of the reported health issues from members of the public in the past."

In addition, inert ingredients in Foray 48B are also provided in a US 2012 report titled "Gypsy Moth Management in the United States: a cooperative approach" in table 3.2 (p. 132/571) <https://cms.agr.wa.gov/getmedia/563dd666-85bc-459e-a7e6-705a1d9cc801/finalsupplementaleisvolumeiii.pdf>

3. In a February 17, 2023 letter to the Ministry of Forests, Per Einar Granum, PhD Professor and Member of The Norwegian Academy of Science and Letters wrote on p. 2 and 3 of his letter: "In another combat, in 2000, to fight the Asian Gypsy Moth, Foray 48B was aerielly applied three times over parts of Seattle, Washington. This resulted in: "Adverse effects reported by 59 individuals following the sprayings including: cough, wheezing, headache, trouble breathing, sore throat, nasal congestion, irritated eyes, skin rashes, upper respiratory and nasal symptoms, flu-like or viral symptoms, worsening asthma and/or asthma attacks, and allergic bronchitis" (Washington State Dept. of Health 2001)..." and;

"Another scientific paper reported that: 'Repeated low dose aerosol exposures to commercial Bt based biopesticides can induce sub-chronic lung inflammation in mice, which may be the first step in the development of chronic lung diseases'."

4. Health Canada Foray 48B Incident Reports identify health issues that the actual concentrations used when spraying with Foray 48B have caused; these can be found at:

[https://pr-rp.hc-sc.gc.ca/pi-ip/result-eng.php?1=0&2=65&3=ir&4=a&5=1&6=DESC&7=BACILLUS%20THURINGIENSIS%20SUBSPECIES%20KURSTAKI%20\(ALL%20STRAINS\)&8=E](https://pr-rp.hc-sc.gc.ca/pi-ip/result-eng.php?1=0&2=65&3=ir&4=a&5=1&6=DESC&7=BACILLUS%20THURINGIENSIS%20SUBSPECIES%20KURSTAKI%20(ALL%20STRAINS)&8=E)

CREC looks forward to meeting with you regarding the risks of aerial spraying in urban areas. Please consider that this is a time-sensitive issue as spraying appears to be imminent.

Sincerely,

Campbell River Environment Committee

LeRoy McFarlane, President

Leona Adams, Vice-President