



Re-evaluation Decision

RVD2025-08

# Heptyl Butyrate, Disposable Yellowjacket Trap-W, Yellowjacket Trap Cartridge Refill, and Yellowjacket Trap

*Final decision*

*(publié aussi en français)*

**12 September 2025**

This document is published by the Health Canada Pest Management Regulatory Agency.  
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ISSN: 1925-1017 (print)  
1925-1025 (online)

Catalogue number: H113-28/2025-8E (print version)  
H113-28/2025-8E-PDF (PDF version)

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# Overview

## Proposed registration decision for heptyl butyrate

Health Canada's Pest Management Regulatory Agency (PMRA), under the authority of the *Pest Control Products Act*, is proposing registration for the sale and use of Rescue Yellowjacket Technical, Disposable Yellowjacket Trap-W, Yellowjacket Trap Cartridge Refill, and Yellowjacket Trap, containing the technical grade active ingredient heptyl butyrate, to control yellowjackets in urban and rural residential and recreational areas.

An evaluation of available scientific information found that, under the approved conditions of use, the health and environmental risks and the value of the pest control products are acceptable.

This Overview describes the key points of the evaluation, while the Science Evaluation provides detailed technical information on the human health, environmental and value assessments of heptyl butyrate and Disposable Yellowjacket Trap-W, Yellowjacket Trap Cartridge Refill, and Yellowjacket Trap.

## What does Health Canada consider when making a registration decision?

The key objective of the *Pest Control Products Act* is to prevent unacceptable risks to individuals and the environment from the use of pest control products. Health or environmental risk is considered acceptable<sup>1</sup> if there is reasonable certainty that no harm to human health, future generations or the environment will result from use or exposure to the product under its proposed conditions of registration. The Act also requires that products have value<sup>2</sup> when used according to the label directions. Conditions of registration may include precautionary measures on the product label to further reduce risk.

To reach its decisions, the PMRA applies modern, rigorous risk-assessment methods and policies. These methods consider the unique characteristics of sensitive subpopulations in humans (for example, children). They also consider the unique characteristics of organisms in the environment. These methods and policies also consider the nature of the effects observed and the uncertainties when predicting the impact of pesticides. For more information on how Health Canada regulates pesticides, the assessment process and risk-reduction programs, please visit the Pesticides and Pest Management portion of the Canada.ca website.

Before making a final registration decision on heptyl butyrate, Rescue Yellowjacket Technical, Disposable Yellowjacket Trap-W, Yellowjacket Trap Cartridge Refill, and Yellowjacket Trap, Health Canada's PMRA will consider any written comments received from the public directly

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<sup>1</sup> "Acceptable risks" as defined by subsection 2(2) of the *Pest Control Products Act*.

<sup>2</sup> "Value" as defined by subsection 2(1) of the *Pest Control Products Act*: "the product's actual or potential contribution to pest management, taking into account its conditions or proposed conditions of registration, and includes the product's (a) efficacy; (b) effect on host organisms in connection with which it is intended to be used; and (c) health, safety and environmental benefits and social and economic impact."

related to the proposed decision in this consultation document.<sup>3</sup> Health Canada will then publish a Registration Decision<sup>4</sup> on heptyl butyrate, Rescue Yellowjacket Technical, Disposable Yellowjacket Trap-W, Yellowjacket Trap Cartridge Refill, and Yellowjacket Trap, which will include the decision, the reasons for it, a summary of comments received on the proposed registration decision and Health Canada's response to these comments.

For more details on the information presented in this Overview, please refer to the Science Evaluation of this consultation document.

## **What is heptyl butyrate?**

Heptyl butyrate is a non-conventional, colourless liquid with a fruity/floral scent. It is found naturally in apples and plums and is classified as a food-grade edible.<sup>5</sup> Heptyl butyrate is used as a yellowjacket attractant (bait), luring the insects towards the traps by scent.

## **Health considerations**

### **Can approved uses of heptyl butyrate affect human health?**

#### **Heptyl butyrate is unlikely to affect human health when used according to label directions.**

Potential exposure to heptyl butyrate may occur when handling products, including during set-up and disposal, or when standing close enough to inhale the scent from the traps once they are hanging outdoors.

Toxicology studies in laboratory animals describe potential health effects from varying levels of exposure to a chemical and identify the dose where no effects are observed. When assessing health risks, two key factors are considered: the levels where no health effects occur and the levels to which people may be exposed. The levels used to assess risks are established to protect the most sensitive human population (for example, children and nursing mothers). As such, sex and gender are taken into account in the risk assessment. Only uses for which the exposure is well below levels that cause no effects in animal testing are considered acceptable for registration.

Publicly available toxicology information on heptyl butyrate and its analogs was used to address the toxicity of heptyl butyrate. Heptyl butyrate is considered to be of low acute toxicity by the oral route, slightly acutely toxic by the inhalation route, mildly irritating to skin, and is minimally irritating to eyes. Heptyl butyrate is not expected to be a dermal sensitizer and is not considered to be mutagenic or genotoxic.

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<sup>3</sup> "Consultation statement" as required by subsection 28(2) of the *Pest Control Products Act*.

<sup>4</sup> "Decision statement" as required by subsection 28(5) of the *Pest Control Products Act*.

<sup>5</sup> The technical grade active ingredient source complies with all pertinent regulations of the Canada Food and Drug Act and meets the requirements of the United States Food and Drug Administration for classification as a food-grade edible.

Publicly available toxicology information indicates that when animals were given repeated high doses of a compound similar to heptyl butyrate by the oral route of exposure, females exhibited increased kidney weight.

Publicly available toxicological information from compounds similar to heptyl butyrate indicates that pregnant animals exposed by the oral route of exposure had reduced body weight at doses which caused some fetal variations. Local respiratory effects occurred via the inhalation route. The young were not more sensitive than the adult animal.

### **End-use products**

The end-use products, Disposable Yellowjacket Trap-W, Yellowjacket Trap Cartridge Refill and Yellowjacket Trap, contain heptyl butyrate as a wasp attractant (bait). Published scientific literature and publicly available information for the active ingredient was used to inform the toxicology profile of the end-use products. Disposable Yellowjacket Trap-W, Yellowjacket Trap Cartridge Refill and Yellowjacket Trap are of low acute oral toxicity, slightly acutely toxic by the inhalation route, mildly irritating to skin, and minimally irritating to eyes. The end-use products are not expected to be dermal sensitizers.

### **Residues in food and drinking water**

#### **Dietary risks from food and drinking water are acceptable.**

The end-use products, Disposable Yellowjacket Trap-W, Yellowjacket Trap Cartridge Refill and Yellowjacket Trap, are not proposed for food or feed uses. Dietary exposure, including drinking water, is not expected from the proposed use of heptyl butyrate as a wasp attractant (bait). Consequently, a dietary risk assessment is not required.

### **Risks in residential and other non-occupational environments**

#### **Estimated risk for residential and other non-occupational exposure is acceptable.**

Disposable Yellowjacket Trap-W, Yellowjacket Trap Cartridge Refill and Yellowjacket Trap are domestic-class products proposed for outdoor use to trap yellowjacket wasps on residential properties. Disposable Yellowjacket Trap-W is a disposable trap that contains a water-soluble bait pouch and can be disposed of in the garbage. Yellowjacket Trap Cartridge Refill is a sealed cartridge containing a piece of felt infused with the attractant while the Yellowjacket Trap is a refill tube containing the attractant. The refills can be used to rebait the reusable version of the wasp trap.

The product labels will include measures to reduce user and residential bystander (including children and companion animals) exposure such as instructions to keep children away from the product and to use scissors when opening the attractant packet/tube of the Yellowjacket Trap. Furthermore, the trap is used outdoors only.

Overall, residential and non-occupational exposure to Disposable Yellowjacket Trap-W, Yellowjacket Trap Cartridge Refill, and Yellowjacket Trap is expected to be low when label directions are observed. Consequently, the health risk to residents and the general public is acceptable.

**Occupational risk assessments are not required for Disposable Yellowjacket Trap-W, Yellowjacket Trap Cartridge Refill and Yellowjacket Trap.**

Since Disposable Yellowjacket Trap-W, Yellowjacket Trap Cartridge Refill, and Yellowjacket Trap are domestic products, an occupational risk assessment is not required.

**Environmental considerations**

**What Happens When Heptyl Butyrate Is Introduced Into the Environment?**

**When used according to label directions, the risks associated with the use of heptyl butyrate in yellowjacket trap products are acceptable from the viewpoint of environmental protection.**

Disposable Yellowjacket Trap-W contains heptyl butyrate in a water-soluble pouch (solubag) contained within a plastic bag trap. Water must be added to activate the trap. The reusable Yellowjacket Trap is a rigid plastic trap that can be baited using the Yellowjacket Trap Cartridge Refill or the Yellowjacket Trap. The traps are hung around human residential areas in which yellowjackets are a nuisance. Heptyl butyrate is used as an attractant and has a non-toxic mode of action; as it volatilizes, yellowjackets are attracted into the traps, which have a conical one-way entrance that prevents escape from the traps. Field studies show that non-target organisms, including bees and other beneficial arthropods, do not enter the traps. Because the active ingredient is contained within the traps, there is also limited potential for exposure of non-target organisms in adjacent aquatic and terrestrial habitats. The primary route of environmental exposure is via volatilization. Heptyl butyrate is not persistent in the atmosphere, and volatilized heptyl butyrate will quickly dissipate. Therefore, the environmental risks associated with the yellowjacket trap products are acceptable when they are used according to label directions.

**Value considerations**

**What is the value of Disposable Yellowjacket Trap-W, Yellowjacket Trap Cartridge Refill, and Yellowjacket Trap?**

**The trap and associated refill products can be used to attract, trap, and subsequently reduce populations of nuisance yellowjackets.**

The registration of Disposable Yellowjacket Trap-W, Yellowjacket Trap Cartridge Refill, and Yellowjacket Trap will provide Canadians with a non-conventional method of reducing nuisance yellowjackets in urban and rural residential and recreational areas compared to sprays or baits with conventional insecticides. Due to the non-conventional mode of action of this product, resistance is very unlikely to occur and therefore these products may aid in reducing insecticide resistance in yellowjacket populations.

## **Measures to minimize risk**

Labels of registered pesticide products include specific instructions for use. Directions include risk-reduction measures to protect human and environmental health. These directions must be followed by law.

The key risk-reduction measures being proposed on the label of Rescue Yellowjacket Technical, Disposable Yellowjacket Trap-W, Yellowjacket Trap Cartridge Refill, and Yellowjacket Trap to address the potential risks identified in this assessment are as follows.

### **Key risk-reduction measures**

#### **Human health**

The following signal words and hazard statements are required on the label for Rescue Yellowjacket Technical, and the end-use products, Disposable Yellowjacket Trap-W, Yellowjacket Trap Cartridge Refill, and Yellowjacket Trap :

- “CAUTION – POISON” and “SKIN IRRITANT”

Additionally, standard hazard and precautionary statements are required on the technical and end-use product labels to inform users that products can be harmful if inhaled, to avoid contact with skin and “Keep out of the reach of children.” The use of scissors to open the attractant packet/tube for Yellowjacket Trap will also be indicated on the label to minimize the risk of exposure.

#### **Environment**

The environmental risks associated with the use of heptyl butyrate as an attractant in traps to control yellowjackets were determined to be acceptable without the need for additional risk mitigation measures.

### **Next steps**

Before making a final registration decision on heptyl butyrate, Rescue Yellowjacket Technical, Disposable Yellowjacket Trap-W, Yellowjacket Trap Cartridge Refill, and Yellowjacket Trap, Health Canada’s PMRA will consider any written comments received from the public that are directly related to this proposed decision, such as comments directed to the science evaluation, in response to this consultation document up to 30 days from the date of publication (12 September 2025) of this document. If more time is required to provide comments, a request for an extension of up to 15 days can be made before the end of the original 30-day consultation period. Please forward all comments to PMRA Publications, through the Public Engagement Portal (Public Engagement Forms – Consultation Comment).. Health Canada will then publish a Registration Decision, which will include its decision, the reasons for it, a summary of comments received on the proposed decision and Health Canada’s response to these comments.

## **Other information**

When Health Canada makes its registration decision, it will publish a Registration Decision on heptyl butyrate, Rescue Yellowjacket Technical, Disposable Yellowjacket Trap-W, Yellowjacket Trap Cartridge Refill, and Yellowjacket Trap (based on the Science Evaluation section of this consultation document). In addition, the test data referenced in this consultation document will be available for public inspection, upon application, in the PMRA's Reading Room. For more information, please contact the PMRA's Pest Management Information Service.

## Science evaluation

### Heptyl butyrate, Disposable Yellowjacket Trap-W, Yellowjacket Trap Cartridge Refill, and Yellowjacket Trap

#### 1.0 The active ingredient, its properties and uses

##### 1.1 Identity of the active ingredient

Active substance Heptyl butyrate

Function Insecticide

##### Chemical name

1. International Union of Pure and Applied Chemistry (IUPAC) Heptyl butanoate

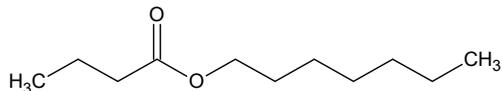
2. Chemical Abstracts Service (CAS) Heptyl butyrate

CAS number 5870-93-9

Molecular formula  $C_{11}H_{22}O_2$

Molecular weight 186.29

##### Structural formula



Purity of the active ingredient 99.8%

##### 1.2 Physical and chemical properties of the active ingredients and end-use product

##### Technical product—Rescue Yellowjacket Technical

Property	Result
Colour and physical state	Colourless liquid
Odour	Slightly tea like odour
Specific gravity	0.86-0.864 at 25°C
Vapour pressure at 20°C	12959 mPa (0.0972 mmHg)
Solubility in water at 20°C	Insoluble in water.
<i>n</i> -Octanol-water partition coefficient ( $K_{ow}$ )	$\log K_{ow} = 4.30$
Stability (temperature, metal)	The requirement is waived.

**End-use product—Disposable Yellowjacket Trap-W**

<b>Property</b>	<b>Result</b>
Colour	Clear
Odour	Odourless
Physical state	Solid
Formulation type	Solid
Label concentration	Heptyl butyrate....20%
Container material and description	Plastic bags: 10–20 g
Density	0.53-0.57 g/cm <sup>3</sup> at 20°C
pH of 1% dispersion in water	5.6
Oxidizing or reducing action	Not applicable
Storage stability	The active ingredient was stable when the EP was stored for 14 days at 54°C.
Corrosion characteristics	The active ingredient was not corrosive to packaging material when the end-use product was stored for 14 days at 54°C.
Explodability	The end-use product is not expected to be explosive in nature.

**End-use product—Yellowjacket Trap Cartridge Refill**

<b>Property</b>	<b>Result</b>
Colour	Clear
Odour	Odourless
Physical state	Solid
Formulation type	Impregnated fabric
Label concentration	Heptyl butyrate....63.9%
Container material and description	Plastic sealed cartridge: 10–20 g
Density	0.8600-0.8640 g/cm <sup>3</sup> at 25°C
pH of 1% dispersion in water	5.6
Oxidizing or reducing action	Not applicable
Storage stability	The active ingredient was stable when the end-use product was stored for 14 days at 54°C.
Corrosion characteristics	The active ingredient was not corrosive to packaging material when the end-use product was stored for 14 days at 54°C.
Explodability	The end-use product is not expected to be explosive in nature.

## End-use product —Yellowjacket Trap

Property	Result
Colour	Colourless
Odour	Slightly tea like odour
Physical state	Liquid
Formulation type	Liquid
Label concentration	Heptyl butyrate...99.8%
Container material and description	Plastic sealed tube: 10–20 g
Density	0.8600-0.8640 g/cm <sup>3</sup> at 25°C
pH of 1% dispersion in water	5.6
Oxidizing or reducing action	Not applicable
Storage stability	The active ingredient was stable when the end-use product was stored for 14 days at 54°C.
Corrosion characteristics	The active ingredient was not corrosive to packaging material when the end-use product was stored for 14 days at 54°C.
Explodability	The end-use product is not expected to be explosive in nature.

### 1.3 Directions for use

The two traps are comprised of two distinct parts: the physical trap body of either a flexible yet durable plastic bag-style design or a rigid plastic tube-style design and a liquid attractant formulation of heptyl butyrate. The Disposable Yellowjacket Trap-W and Yellowjacket Trap have claims of attracting yellowjacket (Family: Vespidae) queens and workers via heptyl butyrate. The Disposable Yellowjacket Trap has a self-contained attractant pouch (solubag) within its plastic collection bag. The heptyl butyrate is absorbed into silica gel (74.5% w/w), which is water-activated. Vapours emitted from the silica beads lure yellowjackets into the one-way trap entrance. Once inside, the yellowjackets perish and are collected in the water in the trap bag. The Yellowjacket Trap is a rigid plastic dry trap system. Heptyl butyrate is provided in a sealed tube, which the user dispenses onto a cotton pad held securely inside the base of the rigid trap. Heptyl butyrate vapours lure yellowjackets to the conical, one-way trap entrance and they remain trapped in the device where they perish. The Yellowjacket Trap can be emptied of captured pests and refilled with attractant using either a new Yellowjacket Trap refill tube (2-week efficacy) or baited with a Yellowjacket Trap Cartridge Refill (10-week efficacy). In both trap systems, yellowjackets are attracted to the trap by heptyl butyrate and once yellowjackets pass through the conical, one-way trap, the pests are unable to escape.

## **1.4 Mode of action**

These three end-use products do not have an insecticidal mode of action (i.e. IRAC) because they are non-conventional trapping products and attractants. The active ingredient in these products release volatile compounds which are attractive to yellowjackets looking to feed. The yellowjackets enter the one-way entrances and eventually perish in the liquid at the bottom of the disposable trap or dehydrate in the reusable trap.

## **2.0 Methods of analysis**

### **2.1 Methods for analysis of the active ingredient**

No methods are required to quantify the active ingredient, heptyl butyrate, because there are no proposed food uses.

### **2.2 Methods for formulation analysis**

No methods are required to quantify the formulation of heptyl butyrate because there are no proposed food uses.

### **2.3 Methods for residue analysis**

No methods are required to quantify residues of heptyl butyrate because there are no proposed food uses.

## **3.0 Impact on human and animal health**

### **3.1 Toxicology summary**

A detailed review of toxicology information was conducted in support of the technical grade active ingredient, Rescue Yellowjacket Technical and the end-use products Yellowjacket Disposable-W, Yellowjacket Trap Cartridge Refill, and Yellowjacket Trap. The data package for the technical grade active ingredient and end-use products is considered acceptable (Appendix I, Table 1) to assess the toxic effects that may result from exposure to heptyl butyrate for use in the associated end-use products. The toxicological database for the technical grade active ingredient and end-use products consists of an in vivo eye irritation study with heptyl butyrate, as well as publicly available toxicity information and foreign reviews on heptyl butyrate or pertinent analogs (n-butyl acetate, ethyl butyrate, hexyl isobutyrate, octyl acetate, and propyl propionate). Chemicals that share structural similarities and belong in the same molecular category (for example, esters) and/or have comparable metabolism profile to heptyl butyrate served as surrogate molecules. The combined data forms a weight of evidence that is considered sufficient to characterize the toxicity of heptyl butyrate for use in the associated wasp trap and refill products.

Rescue Yellowjacket Technical is considered to be of low acute oral toxicity by the oral route, slightly acutely toxic by the inhalation route, mildly irritating to skin, and minimally irritating to eyes and it is not considered to be a dermal sensitizer.

In a 13-week oral (gavage) toxicity study in Sprague Dawley rats, relative kidney weights among high-dose females (1000 mg/kg bw/day) were statistically significantly increased compared to controls following administration of octyl acetate. The Research Institute for Fragrance Materials (RIFM) review of this study reported the NOAEL to be 500 mg/kg bw/day.

Prenatal developmental toxicity was addressed with publicly available information from a study conducted with octyl acetate. Female mated Sprague Dawley rats were gavaged on gestation days (GDs) 6–15 at doses of 0, 100, 500, or 1000 mg/kg bw neat (not diluted). On gestation day 20 the dams were sacrificed and the fetuses were examined for external, visceral, and skeletal malformations and variations. The NOAEL for maternal toxicity was determined to be 100 mg/kg/day, based on reduced body weight at 500 mg/kg bw/day. At  $\geq 1000$  mg/kg bw/day, there were clinical signs of toxicity. The developmental NOAEL was 500 mg/kg bw/day, based on anomalies observed in fetuses of the highest dose group (incomplete ossifications and dilated lateral cerebral ventricles). There is no evidence of sensitivity of the young.

The European Chemicals Agency (ECHA) database included a summary of a combined Repeated Dose Toxicity Study with the Reproduction/ Developmental Toxicity Screening Test (OECD 422) conducted with propyl propionate. Male and female rats were exposed to propyl propionate via whole-body inhalation exposure, prior to breeding, through breeding, and through gestation day 20 (females). There were several local respiratory effects including degeneration of the olfactory epithelium of the nasal turbinates (very slight in degree, focal or multifocal and unilateral or bilateral in distribution), but no systemic toxicity reported for parental animals. The parental NOAEL was 500 ppm (616 mg/kg bw/day, the highest dose tested). There were no treatment-related adverse effects on reproductive performance or survival and growth of pups. The reproductive and developmental NOAEL was also 500 ppm (616 mg/kg bw/day).

Overall, based on the collective evidence from relevant analogs of heptyl butyrate, there is no evidence to suggest that the young may be more sensitive than the adult animal.

Genotoxicity and mutagenicity testing was addressed with publicly available information from in vitro bacterial genotoxicity testing and cell mutagenicity testing in mammalian test systems with pertinent analogs of heptyl butyrate: ethyl butyrate, hexyl isobutyrate and n-butyl acetate. All the results were negative. Therefore, heptyl butyrate is not considered to be genotoxic or mutagenic.

### **Disposable Yellowjacket Trap-W, Yellowjacket Trap Cartridge Refill and Yellowjacket Trap (end-use products)**

Acute toxicology information reviewed for the active ingredient and information on the other components of the end-use products were used to inform the toxicology profile of the end-use products. Consequently, Disposable Yellowjacket Trap-W, Yellowjacket Trap Cartridge Refill and Yellowjacket Trap are expected to be of low acute toxicity by the oral route, slightly acutely toxic by the inhalation route, mildly irritating to skin, and minimally irritating to eyes. The end-use products are not expected to be dermal sensitizers.

## **3.2 Occupational, residential and bystander exposure and risk assessment**

### **3.2.1 Use description**

Disposable Yellowjacket Trap-W, and the refills, Yellowjacket Trap Cartridge Refill and Yellowjacket Trap, are domestic-class products proposed for outdoor use to trap yellowjacket wasps on residential properties. A maximum of two disposable traps are permitted on residential properties up to two times per year. Disposable Yellowjacket Trap-W consists of a water-soluble pouch (solubag) containing the attractant that is packaged within a larger plastic bag (~ 1 L capacity). The plastic bag serves as the trap which will be hung outside to attract wasps. Water (about 800 mL) is added up to a fill line and the trap is hung outdoors. The water-soluble pouch dissolves within two to five hours, creating an odour attractive to yellowjacket wasps. The traps are designed such that the wasps can enter but not exit. Fully disposable traps or the contents of reusable traps are emptied into the garbage. Traps are replaced when full, when the liquid contents dry out, or after 30 days. When full of wasps, reusable traps are emptied and rebaited with either Yellowjacket Trap Cartridge Refill, which comes as a sealed cartridge containing a piece of felt infused with the attractant, or Yellowjacket Trap refill tube, which is a refill tube containing the attractant (bait). A maximum of one cartridge or four refill tubes is permitted to rebait a reusable trap per yellowjacket season.

### **3.2.2 Occupational exposure and risk assessment**

There is no potential for occupational exposure since Disposable Yellowjacket Trap-W, Yellowjacket Trap Cartridge Refill, and Rescue Yellowjacket Trap are domestic-class products.

### **3.2.3 Residential and bystander exposure and risk**

Disposable Yellowjacket Trap-W, Yellowjacket Trap Cartridge Refill, and Yellowjacket Trap are proposed for domestic use only. When traps are used according to label directions, exposure to residential users is characterized as short-term in duration. Given the very low exposure anticipated from the use of the end-use products, a qualitative exposure assessment was considered appropriate. User exposure will occur primarily by the inhalation route, with limited potential for dermal exposure.

For Disposable Yellowjacket Trap-W, the user does not directly handle the active ingredient as it is contained in a solubag that is inside the trap. For Yellowjacket Trap Cartridge Refill, the user does not directly handle the active ingredient as the piece of felt that is infused with the active ingredient is inside the plastic cartridge and is not accessible to the user.

For the Yellowjacket Trap, the user does not directly handle the active ingredient as the active ingredient is poured directly onto the cotton ball in the attractant cup which is then covered with a cone; thus, preventing direct access to the soaked cotton ball. There is a possibility that dermal exposure may occur when opening the attractant packet; however, it is expected to be low. Additionally, cutting the attractant packet/tube using scissors is indicated as part of the directions when baiting the trap which will minimize dermal exposure to the user.

Exposure to individuals in residential areas will be mitigated by the inclusion of the precautionary label statements that the traps are to be hung outdoors (at least 6 m away from human activity) and kept out of the reach of children (to be hung at 1–1.5 m high).

Overall, precautionary statements on the end-use product labels aimed at mitigating exposure are adequate to protect individuals from risk due to user exposure. Consequently, the health risks to users, individuals in residential areas, and companion animals from the use of Disposable Yellowjacket Trap-W, Yellowjacket Trap Cartridge Refill, and Yellowjacket Trap are acceptable when the precautionary statements on the labels are followed.

### **3.3 Dietary exposure and risk assessment**

#### **3.3.1 Food**

Disposable Yellowjacket Trap-W, Yellowjacket Trap Cartridge Refill and Yellowjacket Trap are not proposed for food or feed use. Consequently, dietary exposure to heptyl butyrate from the proposed use is not of concern and a dietary risk assessment is not required.

#### **3.3.2 Drinking water**

Based on the proposed use description (see Section 3.2.1), exposure from drinking water is not expected. The labels have the necessary mitigative measures to prevent contamination of drinking water from the proposed use of heptyl butyrate. Consequently, health risks from residues of heptyl butyrate in drinking water are not of concern.

#### **3.3.3 Acute and chronic dietary risks for sensitive subpopulations**

As noted above, when the end-use products are used as directed on the label, dietary exposure is not expected. Therefore, the health risks are not of concern for the general population, including infants and children.

### **3.4 Aggregate exposure and risk**

Aggregate exposure is the total exposure to a single pesticide that may occur from food, drinking water, residential and other non-occupational sources, and from all known or plausible exposure routes (oral, dermal and inhalation).

In an aggregate risk assessment, the combined potential risk associated with food, drinking water and various residential exposure pathways is assessed. A major consideration is the likelihood of co-occurrence of exposures. Additionally, only exposures from routes that share common toxicological endpoints can be aggregated.

The end-use products are limited to use as domestic products, are not proposed for food use and will not be applied near, or to, drinking water. Furthermore, non-occupational exposure will be low when Disposable Yellowjacket Trap-W, Yellowjacket Trap Cartridge Refill, and Yellowjacket Trap are used as directed on the label.

When the end-use products are used as labelled, there is reasonable certainty that no harm will result from aggregate exposure of residues of heptyl butyrate. This includes all anticipated dietary (food and drinking water) exposures and all other non-occupational exposures (dermal and inhalation) for which there is reliable information.

### **3.5 Cumulative assessment**

The *Pest Control Products Act* requires that the PMRA consider the cumulative non-occupational exposure to pesticides with a common mechanism of toxicity, based on the likelihood that people may be exposed to more than one of these pesticides at the same time. Accordingly, assessments of potential common mechanisms of toxicity with other pesticides were undertaken for heptyl butyrate.

Under the proposed conditions of use there is no anticipated dietary exposure. Furthermore, due to the design of the end-use products, and use scenarios, non-occupational exposure will be low when the products (Disposable Yellowjacket Trap-W, Yellowjacket Trap Cartridge Refill, and Rescue Yellowjacket Trap) are used as directed on the label.

For the current evaluation, the PMRA did not identify information indicating that heptyl butyrate share a common mechanism of toxicity with other registered pest control products. Therefore, a cumulative risk assessment is not required for heptyl butyrate.

### **3.6 Maximum residue limits**

The specification of maximum residue limits for heptyl butyrate is not required for the proposed non-food use of the end-use products.

### **3.7 Health incident reports**

As of 24 April 2025, no incidents involving human or domestic animal incidents involving the active ingredient heptyl butyrate were submitted to the PMRA.

## **4.0 Impact on the environment**

### **4.1 Fate and behaviour in the environment**

Heptyl butyrate is a fatty acid ester naturally occurring in plums and apples and is classified as a food-grade edible.<sup>6</sup> Heptyl butyrate is insoluble in water, soluble in organic solvents, and volatile. The proposed use as an attractant in yellowjacket traps results in negligible exposure to non-target organisms in the environment. Heptyl butyrate is not persistent in the atmosphere; it quickly dissipates after volatilizing from the traps.

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<sup>6</sup> The technical grade active ingredient source complies with all pertinent regulations of the Canada *Food and Drugs Act* and meets the requirements of the United States Food and Drug Administration for classification as a food-grade edible.

## **4.2 Environmental risk characterization**

Environmental exposure to heptyl butyrate and any transformation products is expected to be negligible considering the design of the end-use products and their localized use in areas where yellowjackets are a nuisance to humans. Heptyl butyrate within the traps volatilizes, attracting yellowjackets in through a one-way opening from which they cannot escape. Field studies conducted with yellowjacket traps baited with both fresh and aged heptyl butyrate during the periods in which insects are most active (May to October) showed that several species of yellowjackets were trapped, while no non-target organisms (including bees and other beneficial terrestrial arthropods) were trapped. Given the non-toxic mode of action and negligible potential for environmental exposure, the environmental risks associated with the end-use products are acceptable when the products are used according to label directions.

### **4.2.1 Environmental incident reports**

As of 24 April 2025, no environmental incident reports involving heptyl butyrate were submitted to the PMRA.

## **5.0 Value**

Three laboratory and three field studies addressed the claims of longevity of the heptyl butyrate lures. Five field experiments were conducted using the traps to assess the trap efficacy and capture of worker and queen yellowjackets. Seven published scientific articles were submitted to support the efficacy claims of heptyl butyrate as a yellowjacket queen and worker attractant and also provided support for the use patterns. The submitted value information was sufficient to support claims that the Disposable Yellowjacket Trap-W and the reusable Yellowjacket Trap refills, attract yellowjacket (Family: Vespidae) workers and queens via the food-fragrance attractant heptyl butyrate, whether in each of the two refill forms (refill tube or cartridge refill) or in-place within the trap system as in the Disposable Yellowjacket Trap when placed at a rate of 2 to 4 traps per 930 sq metres, hung at least 1m to 1.5m high. Both traps and the two refills provide a non-conventional method of reducing yellowjacket populations in treated areas.

## **6.0 Pest control product policy considerations**

### **6.1 Toxic substances management policy considerations**

The Toxic Substances Management Policy (TSMP) is a federal government policy developed to provide direction on the management of substances of concern that are released into the environment. The TSMP calls for the virtual elimination of Track 1 substances, i.e., those that meet all four criteria outlined in the policy: persistent (in air, soil, water and/or sediment), bio-accumulative, primarily a result of human activity and toxic as defined by the *Canadian Environmental Protection Act*. The *Pest Control Products Act* requires that the TSMP be given effect in evaluating the risks of a product.

During the review process, heptyl butyrate was assessed in accordance with the PMRA Regulatory Directive DIR99-03<sup>7</sup> and evaluated against the Track 1 criteria. Health Canada has reached the conclusion that heptyl butyrate does not meet all of the TSMP Track 1 criteria because heptyl butyrate is made from natural materials, is not expected to bioaccumulate (in accordance with PMRA's *Guidance for the Registration of Non-Conventional Pest Control Uses* (24 March 2023)), and is not expected to form any transformation products that meet all of the TSMP Track 1 criteria.

## 6.2 Formulants and contaminants of health or environmental concern

During the review process, contaminants in the active ingredient as well as formulants and contaminants in the end-use products are compared against Parts 1 and 3 of the *List of Pest Control Product Formulants and Contaminants of Health or Environmental Concern*.<sup>8</sup> The list is used as described in the PMRA Science Policy Note SPN2020-01<sup>9</sup> and is based on existing policies and regulations, including the *Toxic Substance Management Policy and Formulants Policy*,<sup>10</sup> and taking into consideration the *Ozone-depleting Substances and Halocarbon Alternatives Regulations* under the *Canadian Environmental Protection Act, 1999*, (substances designated under the *Montreal Protocol*).

Health Canada has reached the conclusion that Rescue Yellowjacket Technical and its end-use products, Disposable Yellowjacket Trap-W, Yellowjacket Trap Cartridge Refill, and Yellowjacket Trap, do not contain any formulants or contaminants identified in the *List of Pest Control Product Formulants and Contaminants of Health or Environmental Concern*.

The use of formulants in registered pest control products is assessed on an ongoing basis through PMRA formulant initiatives and Regulatory Directive DIR2006-02.

## 7.0 Proposed regulatory decision

Health Canada's PMRA, under the authority of the *Pest Control Products Act*, is proposing registration for the sale and use of Rescue Yellowjacket Technical, Disposable Yellowjacket Trap-W, Yellowjacket Trap Cartridge Refill, and Yellowjacket Trap, containing the technical grade active ingredient heptyl butyrate, to control yellowjackets in urban and rural residential and recreational areas.

An evaluation of available scientific information found that, under the approved conditions of use, the health and environmental risks and the value of the pest control products are acceptable

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<sup>7</sup> DIR99-03, *The Pest Management Regulatory Agency's Strategy for Implementing the Toxic Substances Management Policy*

<sup>8</sup> SI/2005-114, last amended on June 24, 2020. See Justice Laws website, Consolidated Regulations, *List of Pest Control Product Formulants and Contaminants of Health or Environmental Concern*.

<sup>9</sup> PMRA's Science Policy Note SPN2020-01, *Policy on the List of Pest Control Product Formulants and Contaminants of Health or Environmental Concern* under paragraph 43(5)(b) of the *Pest Control Products Act*

<sup>10</sup> DIR2006-02, *Formulants Policy and Implementation Guidance Document*

**List of abbreviations**

°C	degrees centigrade
bw	body weight
CAS	Chemical Abstracts Service
cm <sup>3</sup>	cubic centimetres
DACO	data code
DIR	directive
ECHA	European Chemicals Agency
g	gram
GD	gestation days
ha	hectare
Hg	mercury
hr	hour
IUPAC	International Union of Pure and Applied Chemistry
IRAC	Insecticides Resistance Action Committee
kg	kilogram
<i>K</i> <sub>ow</sub>	<i>n</i> -octanol-water partition coefficient
L	litre
MAS	maximum average score
MIS	maximum irritation score
mg	milligram
mL	millilitre
mm	millimetre
NOAEL	no observed adverse effect level
NZW	New Zealand white
OECD	Organisation for Economic Co-operation and Development
Pa	Pascal
PMRA	Pest Management Regulatory Agency
ppm	parts per million
SPN	Science Policy Note
TSMP	Toxic Substances Management Policy
w/w	weight for weight

**Appendix I Tables and figures****Table 1 Toxicity profile of heptyl butyrate (HPB)**

(Effects are known or assumed to occur in both sexes unless otherwise noted)

<b>Study Type / Animal / PMRA Number</b>	<b>Study Results</b>
<b>Acute Toxicity Studies</b>	
Primary Eye irritation NZW rabbits PMRA No. 3399871	MAS (24, 48, 72 hr) = 0.4/110 MIS = 2.67 (at 1 hr) Minimally irritating

## References

### A. List of studies/Information submitted by registrant

#### 1.0 Chemistry

PMRA Document Number	Reference
3629117	2024, Storage Stability Study of RESCUE! Yellowjacket Trap Attractant (YJTA) for the Reusable Yellowjacket Trap or Refill, DACO: 3.5.10

#### 2.0 Human and Animal Health

PMRA Document Number	Reference
3399869	2008, Heptyl Butyrate (99.8%): Acute Oral and Dermal Toxicity, DACO: 4.1,4.2.1,4.2.2
3399870	2008, Heptyl Butyrate (99.8%): Acute Inhalation, Eye Irritation, Dermal Irritation, Dermal Sensitization, Prenatal Development and Mutagenicity, DACO: 4.2.1,4.2.2,4.2.3,4.2.4,4.2.5,4.2.6,4.5.2,4.5.4,4.5.5
3399871	2009, Heptyl Butyrate, CAS No.: 5870-93-9, CAS Name: Butanoic acid, heptyl ester EPA Acute Eye Irritation Test, DACO: 4.2.4
3476434	2009, Heptyl Butyrate PC Code 1000247, DACO: 12.5.2,12.5.4,12.5.5,12.5.6,12.5.7,12.5.8,12.5.9
3476435	2022, Heptyl Butyrate PC Code 1000247. Interim Registration Review Decision Case Number 6305, DACO: 12.5.2,12.5.4,12.5.5,12.5.6,12.5.7,12.5.8,12.5.9
3648303	2024, Release Rate of Heptyl Butyrate in Yellowjacket Trap Cartridge Refill, Yellowjacket Refill Tube and Yellowjacket Trap Disposable-W formulations, DACO: 4.2.3
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3648306	Albert M. Kligman, 1966, The Identification of Contact Allergens by Human Assay I. A Critique of Standard Methods, DACO: 4.2.6
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PMRA Document Number	Reference
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3648310	A.M. Api, D. Belsito, D. Botelho, M. Bruze, G.A. Burton Jr., M.A. Cancellieri, H. Chon, M.L. Dagli, M. Date, W. Dekant, C. Deodhar, A.D. Fryer, L. Jones, K. Joshi, M. Kumar, A. Lapczynski, M. Lavelle, I. Lee, D.C. Liebler, H. Moustakas, M. Na, T.M. Penning, G. Ritacco, J. Romine, N. Sadekar, T.W. Schultz, D. Selechnik, F. Siddiqi, I.G. Sipes, G. Sullivan, Y. Thakkar, Y. Tokura, 2022, RIFM Fragrance Ingredient Safety Assessment, Ethyl Butyrate, CAS registry number 105-54-4, DACO: 4.2.6
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3648314	1988, Fragrance Raw Materials Monographs Heptyl Butyrate, DACO: 4.2.6
3675518	R.M. David, T.R. Tyler, R. Ouellette, W.D. Faber, M.I. Banton, 2001, Evaluation of subchronic toxicity of n-butyl acetate vapor, DACO: 4.2.3
3675519	Health Canada, 2023, Hazardous Substance Assessment - n-Butyl acetate, DACO: 4.2.3
3675520	J.C. Norris, D.J. Nachreiner, T.R. Tyler, H.J. Klinisch and D.D. Zimmerman, 1997, Acute Inhalation Toxicity Studies of n-butyl acetate, DACO: 4.2.3
3476031	2009, Heptyl Butyrate PC Code 1000247, DACO: 12.5.2,12.5.4,12.5.5,12.5.6,12.5.7,12.5.8,12.5.9
3476032	2022, Heptyl Butyrate PC Code 1000247. Interim Registration Review Decision Case Number 6305, DACO: 12.5.2,12.5.4,12.5.5,12.5.6,12.5.7,12.5.8,12.5.9
3399904	2022, Part 5 Exposure-Rescue Yellowjacket Trap-W-14june2022, DACO: 5.2

### 3.0 Environment

PMRA document Number	Reference
3399872	2008, Heptyl Butyrate [(99.8%), Cartridge and Disposable Trap]: Nontarget Organisms, DACO: 9.2,9.3,9.5.2.3,9.6.2.3,9.6.2.6,9.8.4
3399894	2008, Field Bioassays to Evaluate Efficacy and Effects on Non-Target Organisms, DACO: 10.2.3.3(C)

PMRA document Number	Reference
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#### 4.0 Value

PMRA document Number	Reference
3399893	2022, 10.1-Yellowjacket Trap Value Summary-14june2021, DACO: 10.1, 10.2.1, 10.2.2, 10.2.3.1, 10.2.4, 10.3.1,10.3.2,10.4,10.5,10.5.2,10.5.3,10.5.4
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3511558	1973, Attraction of Yellowjackets ( <i>Vespula</i> spp.) to Heptyl Butyrate in Washington State (Hymenoptera: Vespidae) I, DACO: 10.2.3.2,10.2.3.3
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3511564	2021, Comparison of Trap Collections and Cost of Commercially Available and Homemade Yellowjacket (Hymenoptera: Vespidae) Traps in Lake County, California, DACO: 10.2.3.2,10.2.3.3
3511565	1973, Perimeter Traps Baited with Synthetic Lures for Suppression of Yellowjackets in Fruit Orchards, DACO: 10.6
3511566	2008, Traps and Protein Bait to Suppress Populations of Yellowjackets (Hymenoptera: Vespidae), DACO: 10.6
3511567	2023, Value Summary for RESCUE!® Reusable Yellowjacket Disposable, Yellowjacket Refill Tube, and Yellowjacket Trap Cartridge Refill, DACO: 10.1,10.2,10.2.1,10.2.2,10.2.3,10.2.3.1, 10.2.3.2,10.2.3.3,10.2.3.4,10.2.4,10.3,10.3.1,10.3.2,10.3.3,10.4,10.5,10.5.1,10.5.2 ,10.5.3,10.5.4,10.5.5,10.6

**B. Additional information considered****i) Published information****1.0 Human and animal health**

<b>PMRA Document Number</b>	<b>Reference</b>
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3719075	ECHA, 2025, ECHA Dossier- Ethyl butyrate. Genetic toxicity in vitro, DACO: 4.5.6
3719076	Ishidate, M., JR, T. Sofuni, K. Yoshikawa, M. Hayashi, T. Nohmi, M. Sawada and A. Matsuoka, 1983, Primary Mutagenicity Screening of Food Additives Currently Used in Japan, <i>FD Chem. Toxic.</i> Vol. 22, No. 8, pp. 623=636, 1984, DACO: 4.5.4
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