

**MOSQUIRON®**  
**VECTOR MOSQUITO LARVACIDE**  
**OPPORTUNITIES FOR PARTNERS/DISTRIBUTORS**  
**OUTSIDE OF NORTH AMERICA**

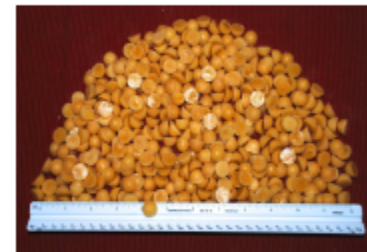


# **MOSQUIRON®** **NEW** Mosquito Larvicide Formulations

Canadian Developed • Registered in the U.S.A. • Available for Sale Globally



Safe, Effective Biological Control of  
**DENGUE & MALARIA MOSQUITOES**  
Range of Dengue and Malaria



**OPPORTUNITIES FOR PARTNERS/DISTRIBUTORS**

**OUTSIDE OF NORTH AMERICA**

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## Pestalto Environmental Health Services Inc.



Dr. Barry Tyler is an applied economic entomologist with skill and experience in the management of mosquitoes that infect people with diseases.

Dr. Tyler is president of Pestalto, a Canadian company, formed in 1999 to address the mosquito borne West Nile virus in Ontario.

He has provided leadership and developed and implemented Integrated Vector Control strategies that are environmentally compatible and effective against West Nile virus in Canada.

Malaria and Dengue are two diseases that adversely impact on human health and the economies of countries in sub-tropical and tropical regions of the world. Between 300 to 500 million people are affected by Malaria and one to 3 million die; 2.5 billion people in Asia and Latin America (over 40% of the world's population) are at risk of contracting Dengue. These diseases are carried by adult mosquitoes that infect people and to date they have not been effectively controlled.

Mosquitoes lay their eggs on or around water and the immature stages grow in the water including drinking water in containers as well as in other artificial and natural sites.

In 2004, the World Health Organization reported on the success of a new material, novaluron, for the control of mosquito larvae that would prevent their emergence as biting adults that would infect people. WHO recommended that novaluron be formulated as a solid and be registered for use in drinking water.

In 2005, Dr. Tyler started work on the development of a controlled release, long lasting novaluron formulation to control mosquito larvae, trade named Mosquiron. This new larvicide is superior to the original liquid formulation and exceeds the WHO recommendations for improvement.


In 2012, Mosquiron products were successfully registered in the U.S.A. and are approved for application to drinking water.

The time has come to introduce Mosquiron to those parts of the world plagued by death and sickness caused by Malaria and Dengue.

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## Mosquiron 2010 Field Trials in Canada and the United States

Trials were conducted in Marshall, Wisconsin; Meansville, Georgia; Panama City, Florida; Portage La Prairie, Manitoba; and Abbotsford, British Columbia.

Applications of Mosquiron at the label rate provided season-long control and no adult mosquitoes emerged from the treated containers.

Heavy rains caused the containers to overflow in the Panama City trial which interfered with in season control; however, control was exhibited the following spring.



## Mosquiron 2011/2012 Field Mesocosm Study at the University of Guelph, Canada

The label rate of Mosquiron 0.12P, regardless of organic matter, provided at least 95% inhibition of adult emergence 318 days after application (winter months included).

## MOSQUIRON FIELD TRIALS IN 2013

BY

## POTENTIAL BUYERS IN 2014

- 
- United States**
- Florida, Anastasia Mosquito Abatement District - Catch Basins
  - Michigan, Midland County Mosquito Control District - Used Tire Piles
  - Saginaw County Mosquito Abatement Commission- Tire Piles, Abandoned swimming pools
  - Utah, Salt Lake City Mosquito Abatement District - Tree Holes
  - Texas, Wichita County Environmental Division - Problem Sites
- U.S. Military**
- Navy Entomology Center of Excellence,- Plastic Water Containers
- Brazil**
- Ministry of Health - Potable Water Containers
- Canada**
- City of Winnipeg - Standing Water
- Ecuador**
- Ministry of Health - Potable Water Containers
- OTHER RESEARCH**
- Malaysia**
- University - Potable Water containers



# MOSQUITO LARVAL HABITATS SUITABLE FOR TREATMENT WITH MOSQUIRON



## OTHER LARVACIDE PRODUCTS

Trade Name: **VectoBac**

Active Ingredient: Bacterium, *Bacillus thuringiensis israeliensis*

Formulations: Liquid 1200L Target: Surface Standing Water

Granular 200G Target: Surface Standing Water

Liquid carrier contains water, stabilizers & suspensions

agents, Granular carrier is ground corn cob and vegetable oil

Attributes: Considered environmentally safe to non-targets; specific to mosquito larvae; kills all stages of mosquito larvae within 2 hours

Drawbacks: Short residual activity, typically less than 24 hours; continuous retreatment required, every 7 days

Not registered for use in drinking water (Cuban formulation

used in Ecuador in drinking water containers); fish odour; expensive

Comment: Little penetration into international markets for malaria and dengue control; trials in Africa

Trade Name : **VectoLex**

Active Ingredient: Bacterium, *Bacillus sphaericus*

Formulations: Granular CG Target: Surface Standing Water

WSP Target: Catch Basins

Ground corn cob carrier with vegetable oil

Attributes: Considered environmentally safe to non-targets; specific to mosquitoes; slow to kill larvae except at high label rates

Drawbacks: Short residual activity; typically less than 45 days

Not registered for drinking water; expensive

Comment: Performed poorly in African trials; little penetration into international market for malaria and dengue control

Trade Name: **Abate**

Active Ingredient: Temephos

Formulation: Granular 10SG Target: Standing Water

Clay based granule

Attributes: Short residual activity in North American situations, 3 days; but reputed to last 30 days in tropics; inexpensive; Midges on label

Drawbacks: Impacts on non-targets including birds and fish

Will not be re-registered in the U.S. in 2014

Wide spread resistance developed by mosquito species

Comment: Good penetration into the international market for use in drinking water. Mosquito larvae have developed resistance to temephos in countries where it has been overused, e.g. Brazil

## OTHER LARVACIDE PRODUCTS (CONT'D)

Trade Name: **Altosid (Main Potential Competition)**

Active Ingredient: Insect Growth Regulator, Juvenile Hormone Mimic,  
Methoprene

Formulations: Briquets, XR      Target: Same targets larval habitats as  
Mosquiron

Pellets      Target: Primarily standing water with high  
organic matter such as sewage lagoons

Attributes: Briquet Products - labeled at 30, 120 & 150 day residual activity  
Effectiveness will continue with alternate wetting and drying  
events

Pellets - labeled at 30 day residual activity

Odorless and safe to handle

Despite being a broad spectrum aquatic larvicide; manufacturer  
has justified its use in environmentally sensitive areas

Drawbacks: None appear to work for the stated residual activity period  
e.g. the 120 day briquette last 95 days under Ontario  
conditions

Impact on arthropod non-targets

Most formulations dusty and dirty to handle

Not registered for drinking water

Mortality occurs when adults try to emerge as adults from pupae

Expensive

Comment: Good penetration in the U.S. markets; manufacturer sells direct as  
well as through the main U.S. distributors to the commercial  
market.

Main use is catch basin treatment in the U.S.

Little penetration into international markets for malaria and  
dengue control



## MOSQUIRON

Active Ingredient: Insect Growth Regulator, Chitin Synthesis Inhibitor,  
Novaluron

Formulations: 0.12CRD, 0.12Pastilles

Target Mosquito Larval Habitats: Catch basins, uncultivated agricultural and non-agricultural non-food areas, dredging spoil sites, ditches, waste water treatment facilities, dairy or poultry lagoons, other animal waste lagoons, livestock runoff lagoons, sewage effluent, retention ponds, harvested timber stacks, swales, storm water drainage areas, sewers, tree holes, bird baths, landfills, rain barrels, flooded roof tops, abandoned swimming pools, gutters, junk yards, abandoned vehicles, water-holding receptacles, e.g. tires, urns, flower pots, cans & other containers), **potable water containers** and other natural and manmade depressions.

Attributes: CRD - long lasting residual activity, 6 months+

Pastilles - long lasting residual activity, 6 months+

Effectiveness will continue with alternate wetting and drying events and with draw down from potable water containers

Odorless, clean and safe to handle

As long as concentration is maintained (3 ppb) Mosquiron inhibits egg hatch, kills all 4 larval stages and pupae; as concentration drops adults fail to emerge from pupal cases; when concentration drops further adults are inferior (not completely formed; can't mate)

Only product registered by U.S. for drinking water containers

Relatively inexpensive

Midges on label

Drawbacks: Labels are evolving; should not have a day description, e.g. "Labeled Re-treat at 90 to 120 days" but "re-treat as necessary  
Impact on arthropod non-targets (addressed by an environment fate study - 2013

Some countries with dengue and malaria problems will not use new larvacides until approved by WHO; country product registrations

Comment: Little penetration into international markets for malaria and dengue control, poorly networked internationally

**ECUADOR DISEASE INFORMATION 2012**

**Mosquito Borne Diseases: Dengue, Malaria, Yellow Fever**

**Country Population: 15.2 million**

**Population at Risk: 9.5 million**

**Budget for Mosquito Control (includes adulticiding):**

**\$9.4 million**

**Larvacide Applied: B.t.i. from Cuba**

**Treatment Interval: Theoretically every 2 weeks**

**Realistically every 4 weeks**

**Number of Cases: Dengue & Yellow Fever, 16,000 cases**

**Malaria, 800 cases**

**Comments: Malaria is declining, Dengue increasing**

**problem with vectors adapting to urban areas**



## **BRAZIL DISEASE INFORMATION 2010**

**Mosquito Borne Diseases: Dengue**

**Country Population: 182.9 million**

**Number of Dengue Cases: 1 Million**

**Cost per Case: \$1,272**

**Economic Impact: \$0.8 Billion**

**Budget for Mosquito Control (includes adulticiding):  
>\$0.5 Billion**

**Larvacide Applied: Rimon 10EC (Novaluron)**

**Treatment Interval: Theoretically every 4-5 months**

**Comments:**

- 1. Mosquitoes are becoming resistant to Abate in parts of the world**
- 2. Difficult and inefficient to use the Rimon liquid formulation; are testing the Mosquiron CRDs**

## **China tightens quarantine controls as malaria, dengue cases found**

BEIJING, March 26 (Xinhua) -- China has stepped up domestic quarantine controls to stop imported cases of malaria and dengue fever spreading.

From January to February, south China's Guangdong province reported five recent entrants into the country suffering from malaria and three from dengue fever. The entrants came from Vietnam, Malaysia, Thailand, Indonesia, Mozambique, Sudan and the Democratic Republic of Congo.

The General Administration of Quality Supervision, Inspection and Quarantine issued an alert Monday, asking local quarantine authorities to tighten medical inspections and temperature monitoring on visitors from those countries.

Entrants who reported fever, chills, headaches or other symptoms of the diseases should be treated immediately, according to the alert.

Malaria and dengue are mosquito-borne, potentially fatal diseases. Malaria claims more than 1 million lives annually across the globe, mainly African children under the age of five, according to the World Health Organization. Dengue affects between 50 and 100 million people in the tropics and subtropics each year, resulting in fever and muscle and joint aches.

Editor: Yamei Wang

[English.news.cn](http://English.news.cn) 2012-03-26 20:41:53



## **MARKETS AND DISTRIBUTORS**

### **UNITED STATES**

#### **Three Markets**

Home Garden: Through Big Box Stores & Web Sites

Commercial: Mosquito Abatement Districts & Military

Private Service Providers - Example, Clarke

#### **Distributors**

Home Garden: Contech Inc. (Exclusive)

Commercial - M.A.D.s - Pestalto (International Technical Sales Agent)

- Military - Contech Inc. (Exclusive)

Private Service Providers - Pestalto (International Technical Sales Agent)

**Contact Barry Tyler for Current Prices**

## **MARKETS AND DISTRIBUTORS**

### **INTERNATIONAL**

Brazil – Milenia Agrociencias SA

Vietnam – Song Phuong Trading and Service Company