



# VECTOR

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# VISION

## VBC Product Serves as Model for First WHO Microbial Pesticide Specifications

For the first time in its history, the World Health Organization (WHO) has published pesticide specifications for a microbial product designed for the Public Health industry.

The specifications are for the microbial larvicide *Bacillus thuringiensis israelensis* (Bti) strain AM65-52, and the water dispersible granule formulation WG. The specifications are based on Valent BioSciences Corporation's (VBC) manufacturing and quality control process for the Bti technical active ingredient and the product VectoBac® WG. Pesticide specifications are required by many governments to qualify products for use in Public Health vector control programs.

According to Dr. Steve Krause, Global Business Development Manager for VBC Public Health products, VBC worked directly with the WHO throughout this multi-year project.

"The WHO and VBC worked very closely to develop the specifications for the Public Health market that is in need of additional active ingredients such as Bti to control vector populations and manage mosquito

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resistance to long-used chemical insecticides. Because WHO had never before developed specifications for a microbial product, VBC was involved throughout the process to develop industry standards for product safety, quality and use," says Krause. "For example, a key specification is the method used to establish product potency. Potency of chemical insecticides is determined using analytical methods, which are not applicable to organisms such as bacteria. In this case, a bioassay method is used to determine potency. Product quality standards were written based on food quality standards, ensuring that all Bti WG formulations must meet the high quality of VectoBac WG."

VBC has a long, collaborative history working with the WHO regarding pesticides for Public Health programs. Publication of the WHO specifications sets the standard for other *Bacillus thuringiensis israelensis* based water dispersible granules in the marketplace. A copy of the publication can be found at the WHOPES website: <http://www.who.int/whopes/quality/newspecif/en/>



Larvicide application. A Winnipeg insect control branch staffer applies liquid larvicide at a site near the city zoo.

## Insect Control Profile *Winnipeg, Manitoba*

### Gateway to Canada's Pacific Coast Also Home of Largest Municipal Mosquito Control Program

Located on an ancient flood plain at the confluence of the Red and Assiniboine rivers near the eastern edge of Canada's Great Plains, Winnipeg is the province of Manitoba's capital and its largest city.

Since the days of the voyageurs, the geographic and geologic features that caused the city to be known as the "gateway to Canada's Pacific Coast" also create conditions that are perfect for the development of insect pests. Early settlers remarked about the large numbers of mosquitoes they encountered in the region. Today, Winnipeg is home to Canada's largest municipal mosquito control program.

Overseeing the program is Taz Stuart, the city entomologist, who works in the Insect Control Branch of the Winnipeg Community Services Department.

"We deal with all the urban pests – cankerworms, aphids, wasps, ants, cockroaches, hornets, elm bark beetles to prevent Dutch elm disease and the like – but control of mosquitoes is our major emphasis," Stuart explains. "We have heavy clay-loam soils that retain water very well and make a fine larval habitat. Depending on precipitation amounts and intensity, we can have many thousands of hectares of water area to deal with."

Stuart joined the Winnipeg program in 2004 after a dozen years in a similar position at Regina, Saskatchewan. He immediately began working with city officials to change a mosquito control program that had been heavily reliant on chemicals to an integrated pest management (IPM) approach, founded on a biological-based larviciding program.

#### With IPM Comes Initial Criticism

Phased implementation began in 2005 – along with a deluge of precipitation and significant public criticism.

"We had just ideal conditions for the development of a very large nuisance mosquito issue, especially with *Aedes vexans*, *Ochlerotatus dorsalis*, *Oc. sticticus*, *Culex tarsalis* and *Coquillettidia perturbans*," Stuart recalls. "We had rain on, rain off and rain on again, in pretty large

volumes with lots of heat and high humidity. We ended up dealing with about 34,000 hectares of standing water during the season, when 10,000 hectares would be more typical. The local press and some citizens had a pretty good time with me. They weren't happy with the insect control strategy's changes and suggested that biological larvicides were a waste of time and money."

With strong support from city fathers, Stuart persevered through the year. A public education program that emphasizes neighborhood-level information about the mosquito effort has helped citizens of the Winnipeg region become more comfortable with the IPM approach. The Insect Control Branch website ([www.winnipeg.ca/bugline](http://www.winnipeg.ca/bugline)) carries detailed information about mosquito populations and environmental conditions that contribute to outbreaks.

#### Public Health Issues, Too

While nuisance mosquitoes are a major focus of Stuart's program, the summer conditions residents of Winnipeg face also bring the threat of West Nile Virus. "Our primary vectors are *Culex tarsalis* and *Cx. restuans*. A public health order was issued July 5 this year and so far we have had 58 human cases of WNV. As it is still early in our season, I expect we might break our 2003 record of 148 cases."

Stuart says larviciding efforts include the use of *Bt* products such as VectoBac in temporary larval development sites, and VectoLex in more permanent areas where the persistence of *B. sphaericus* is valuable.

"We know that biologicals are a little more costly and involve a bit more labor," Stuart explains. "But the city is committed to reducing its use of chemicals and adulticiding. We have about 150 employees, four helicopters and a wide variety of tools that enable us to make the biological approach work. By the end of 2007 we will be at a 50:50 ratio of chemical and biological products. Our plan is to be completely biological by the end of 2009."

## Waste Materials Score Well in “Best/Worst” Photo Contest

Discarded tires, garbage, sewage, matted vegetation and more junk tires – those wouldn’t seem to be the best subjects for award-winning photos.

But they are the kinds of environments mosquito control professionals must deal with frequently, and they also gave rise to the winning entries in the 2007 “Best in the Worst Conditions” photo contest.

VBC sponsored the “Best/Worst” contest so professionals could “show off” the types of environments where they take full advantage of the long-lasting control provided by VectoLex® CG – the *Bacillus sphaericus*-based larvicide.

Producing the winning entries (see photos) were: Kirk Mitchell of the Missouri Division of Environmental Quality; Karen Mellor of the Antelope Valley (California) Mosquito & Vector Control District, and Mike Mancuso of the Northwest Mosquito Abatement District in Illinois. All three of the organizations they represent will receive a Garmin® hand-held GPS unit.

Thanks to all the entrants for participating in the 2007 contest.



**Junk tires in a wetland.** Thousands of discarded junk tires strewn about a small creek and wetland in rural Missouri posed significant challenges to removal and eliminating mosquito breeding habitat. Submitted by Kirk Mitchell, Division of Environmental Quality, Missouri Department of Natural Resources.



**Mosquitoes in sewage effluent.** The photo was taken in a 160-acre field that was flood-irrigated with effluent from a sewage treatment plant at the edge of Palmdale, California. VectoLex CG distributed with a backpack blower killed mosquitoes around the field perimeter but the field center was inaccessible. Eventually, sanitation district personnel were convinced to change irrigation practices and now grow alfalfa instead of mosquitoes and cattails. Submitted by Karen Mellor, Antelope Valley Mosquito & Vector Control District, California.



**Junkyard breeders.** A construction company dump near Hoffman Estates, Illinois, always has an abundant supply of tires, water and debris that make it an excellent location for mosquito breeding. Bulldozers continually push the garbage around, making source location a daily cat-and-mouse game. Plus, the site smells terrible. Submitted by Mike Mancuso, Northwest Mosquito Abatement District, Wheeling, Illinois.



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