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# MOSQUITO CONTROL

## Mosquitos Under High Tech Attack

### GPS Technology on the Ground and in the Air

The City of Grand Forks has improved the effectiveness of the mosquito control program by expanding their use of high-tech equipment. Many of the Ultra Low Volume sprayers (foggers) are equipped with variable flow spray systems and GPS (geographical positioning system) equipment. GPS and variable flow technology have been used for many years in the aviation and agricultural arenas and now the mosquito control industry has modified that technology to improve mosquito control operations.

This technology improves the safety of adult mosquito control and provides an outstanding management tool for training and improving the adulticide (fogging) program.

A brief description of how it works: Equipment is calibrated for speed and the recommended amount of product to be sprayed. The variable flow system will adjust the amount of product output according to the speed. If the vehicle slows down the flow rate is reduced; if it speeds up, the flow rate is increased. The GPS captures accurate reporting of location, speed, flow rate, and much more.

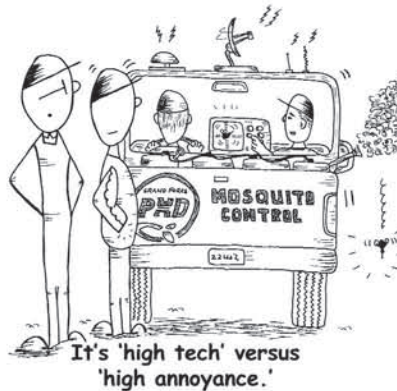
Today, we are more concerned about our environment. Thus the industry has developed safer and more effective products and equipment. Expanded training for mosquito control also helps reduce negative impact on our environment.

### How Mosquitoes Choose Who To Bite

If two people are outside together one person usually gets more bites than the other. Why is this? Mosquitoes are attracted by the CO2 (carbon dioxide) we exhale while breathing, our body heat, and movement. When the female mosquito get close she makes her final choice based on skin temperature, odor (perfumes and colognes may also work as attractants) and other chemical or visual factors. Dark colored clothing also attracts mosquitoes more than light colored clothing.

**Tip:** When outdoors in the presence of mosquitoes, wear light colored clothing and don't wear perfumes or colognes.

### It Could Be Worse...



### Symptoms of West Nile Encephalitis

- Fever
- Headache
- Body aches
- Swollen lymph glands
- Body rash

About 80% of the people infected with West Nile virus will not have any symptoms, or the symptoms may be mild.

Encephalitis develops in less than 1% of infected people, with severe symptoms that include **headache, high fever, neck stiffness, disorientation, tremors, convulsions, paralysis, and coma.** If you experience these symptoms, contact a physician or hospital immediately. Occasionally, death can occur. The elderly are most at risk of death due to encephalitis.

For information on daily trap counts and ground spraying, call the Mosquito Control Information Line at 701-787-8144.

### How the Percentage of DEET in a Product Relates to Protection Time

A recent study indicates the following:

- A product containing 23.8% DEET provided an average of 5 hours of protection from mosquito bites.
- A product containing 20% DEET provided almost 4 hours of protection.
- A product with 6.65% DEET provided almost 2 hours of protection.
- Products with 4.75% DEET and 2% soybean oil were both able to provide roughly 90 minutes of protection.

This information and more good information about mosquitoes is available at [www.cdc.gov](http://www.cdc.gov)

### Mosquito Trivia

1. How fast can a mosquito fly?
  - a. 1—1.5 mph
  - b. 4—5 mph
  - c. 5—10 mph
  - d. Faster than 10 mph
2. How many species of mosquitoes have been identified as positive carriers of West Nile virus?:
  - a. 9
  - b. 21
  - c. 43
  - d. 72
3. Can you get West Nile virus directly from birds?
  - a. Yes
  - b. No

(See back page for trivia answers)

## “Larvicides” and “Adulticides”

**Larvicides** are products used to kill immature mosquitoes. They can be either biological (such as toxin from specific bacteria that is lethal to mosquito larvae but not to other organisms), or chemical products, such as insect growth regulators, surface films, or organophosphates. Larvicides are applied directly to water sources that hold mosquito eggs or larvae. When used properly, larvicides can help to reduce the overall mosquito population by limiting the number of new mosquitoes that are produced.

**Adulticides** are products used to kill adult mosquitoes. Adulticides can be applied from hand-held sprayers, truck-mounted sprayers, or airplanes. Adulticides, when used properly, can have an immediate impact to reduce the number of adult mosquitoes in an area, with the goal of reducing the number of mosquitoes that can bite people and possibly transmit the West Nile virus disease. Both larvicides and adulticides are regulated by the US Environmental Protection Agency. All employees in the Grand Forks Mosquito Control Program are certified by the North Dakota Department of Agriculture

### Alternative To DEET

For years the CDC (Centers for Disease Control and Prevention) has promoted the chemical DEET as the best repellent against mosquitoes. Now they're adding the use of two other repellents. Repellents containing the active ingredient “picaridin” or “oil of lemon eucalyptus” may offer long lasting protection against mosquito bites. Consumers tend to like picaridin repellents because they are more pleasant to the skin and don't have the odor that DEET repellents have. Oil of lemon eucalyptus is a natural ingredient, appealing to those who don't like to put chemicals on their skin. These products are now available and sold at many common retail stores. Some of the common names are “OFF! Botanicals,” which contains eucalyptus oil, and “Cutters Advance,” containing the active ingredient picaridin.

### Do You Work Outdoors?

If you work outdoors, you can decrease your risk of getting West Nile virus or other mosquito borne disease by following some simple personal protective measures. Workers should follow these steps when working at sites where mosquitoes are actively biting:

1. Wear long-sleeved shirts and pants when possible.
2. Wear light colored clothing.
3. Spray exposed skin with an insect repellent.
4. Read and follow label directions for repellent use.
5. When needed, reapply repellents according to label directions.
6. Wash treated skin with soap and water after returning indoors.
7. Spray clothing with products containing DEET, Permethrin, Picaridin, or the Oil of Lemon Eucalyptus.
8. Permethrin should only be used on clothing; do not apply it directly to skin.
9. Wash treated clothing before wearing it again.
10. Do not apply repellent to skin that is under clothing.

### QUIZ ANSWERS

(from page 1)

1. **A.** An estimated 1—1.5 mile per hour.
2. **B.** 43.
3. **No.** There is no evidence that a person can get the virus from handling live or dead infected birds. However, persons should avoid bare-handed contact when handling any dead animals and use gloves or double plastic bags to place the carcass in a garbage can.

### West Nile Virus and Dead Birds

West Nile virus (WNV) activity usually shows up in the bird population first. Therefore, dead bird surveillance is helpful in identifying WNV activity in our region. The Corvid species (crows, ravens, blue jays, magpies) are more susceptible to die from WNV than other bird species. This year the Grand Forks Public Health Department, together with the North Dakota Department of Health, will be collecting and testing dead birds from the corvid species and raptors (hawks, owls, eagles, falcons, osprey, etc.) for WNV. After the Health Departments have sufficiently established that the virus is in an area, testing of dead birds will be discontinued. Shifting resources away from testing of dead birds allows those resources to be devoted elsewhere in surveillance and control.

### Protect Yourself from Bites

Even though your property may be fairly mosquito-free, mosquitoes can travel several miles from their breeding site in search of a blood meal. Therefore, it may be necessary to supplement larval control with other control measures directed at adult mosquitoes. The following tips can help reduce your risk of being bitten.

- Make sure window and door screens are “bug tight.”
- Use proper lighting outside: incandescent lights attract mosquitoes, whereas fluorescent lights neither attract nor repel mosquitoes.
- Stay indoors at dawn, dusk, and early evening when mosquitoes are most active. If you go outdoors, wear a long-sleeved shirt and long pants.
- Insect repellents, when applied (sparingly) to exposed skin, deter mosquito bites. Spray thin clothing with repellents, as mosquitoes can bite through thin clothing. The American Academy of Pediatrics recommends that repellents used on children contain no more than 10 % DEET, the active ingredient in mosquito repellents. Be sure to follow all directions on product labels.

## What Can I Do To Reduce The Number of Mosquitoes In My Neighborhood?

1. Dispose of all water-holding containers, such as plastic jugs, empty barrels, tin cans, buckets, bottles, garbage, etc.
2. Dispose of old tires. Old tires have become one of the most productive breeding sites in this country.
3. Turn over canoes and small boats, or cover them with a tarp. If covering with a tarp, make sure tarp does not sag down and collect water.
4. Cover trash containers, or drill holes in the bottom of recycle containers to keep rain water out.
5. Empty wading pools weekly, or store them inside when not in use.
6. Change water in birdbaths weekly.
7. Keep drains and ditches clean so water will drain properly.
8. Fill in any ruts or low spots that could collect and hold water for more than one week.
9. If storing wheelbarrows outside, store upside down, or cover with a tarp.
10. Keep grass cut short and shrubbery trimmed so adult mosquitoes don't hide in the shaded areas during the day.
11. Fill in hollow stumps with sand or concrete.
12. Inspect eave troughs to assure water is draining properly.
13. Aerate ornamental pools, or stock them with fish. Water gardens may become major mosquito producers if allowed to stagnate.
14. Report to your local Health Department, any standing bodies of water in your neighborhood that you suspect are not being treated by mosquito control personnel.

If you have any questions or concerns about mosquito control, please call Todd Hanson at 787-8110, or email [thanson@grandforksgov.com](mailto:thanson@grandforksgov.com).