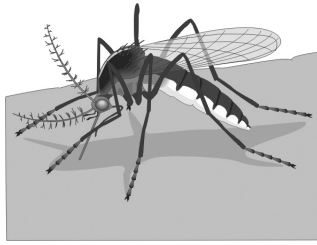


# West Nile Virus FactSheet

HS02-030C (4-07)

The West Nile Virus (WNV) is a virus transmitted by mosquitoes. Commonly found in Africa, West Asia, and the Middle East, the disease was first reported in the United States in New York State in the summer of 1999. As of November 16, 2004, it had been detected in 44 States and the District of Columbia. The geographic range of WNV within the United States has expanded each year.



Although the virus normally cycles between mosquitoes and birds, if a WNV-infected mosquito bites a person or animal, the virus may be transmitted to them. Most human WNV infections cause either no symptoms or a mild flu-like illness. The most severely affected patients may develop an inflammation of the brain called encephalitis although severe cases are very rare. Persons over age 50 are at higher risk of severe illness following infection.

Workers at highest risk of exposure to WNV are those working outdoors when mosquitoes are actively biting. Occupations at risk include farmers, foresters, landscapers, groundskeepers, painters, roofers, road pavers, construction workers, and other outdoor workers.

In one confirmed case, a single organ donor transmitted the WNV to four recipients. The donor had previously received numerous blood transfusions but it is not known how the donor contracted the virus. As of November 2004, no recorded cases of WNV have been transmitted via transfusion. The CDC is now investigating whether WNV can be transmitted in this way since it is theoretically possible. Transmission via needle sticks, other sharps injuries, or blood splashes is also possible. There is not yet a test for screening donated blood for the WNV.

Animal-to-human transmission of WNV is not known to occur. In a recent study, workers in direct contact with sick geese were at increased risk of infection with WNV. Whether this was due to direct contact with the birds or to increased exposure to infected mosquitoes is unknown. It is recommended that health care and animal husbandry workers use standard infection control precautions when working with sharps, laboratory specimens, or with humans or animals suspected or known to be infected with WNV. Also wear protective gloves if it is necessary to handle dead animals.

## Which Working Environments May Increase Exposure to Mosquitoes?

Mosquitoes may breed in any puddle of water that stands for more than 4 days. Workers at sites near stagnant pools, ponds, watering troughs, irrigation ditches, rain barrels, manure lagoons, or any other stagnant bodies of water may be at increased risk of mosquito exposure. Equipment such as tarps, buckets, barrels, and wheelbarrows may allow mosquito larvae to develop if water accumulates in them. Even water-filled ruts on the ground attract mosquitoes.

Many mosquitoes bite people most actively at dusk and dawn, therefore when possible avoid working outdoors at those times. Some mosquitoes are active during the day—particularly in weedy, bushy, and wooded or shaded areas. When it is necessary to work in those areas, be sure to apply all appropriate personal protection measures. In a small way, our jobs are made easier by the fact that mosquitoes do not leave the WNV on surfaces they touch.

## Recommendations for Employers

Employers can help protect outdoor workers by implementing the environmental control measures listed below. These measures are recommended regardless of other controls that may be in place, such as local integrated vector management programs

- When possible, schedule work to avoid having workers outdoors when mosquitoes are most active and biting.
- Eliminate as many sources of standing water as possible to eliminate mosquito-breeding areas. Take the following steps to decrease mosquito populations:
  - Prevent stagnant water in animal drinking troughs, ponds, and other standing bodies of water by changing the water every few days or aerating it.
  - Turn over, cover, or remove equipment such as tarps, buckets, barrels, and wheelbarrows that accumulate water.
  - Discard old tires, buckets, cans, and containers that litter the area.
  - Place drain holes in containers that cannot be discarded.
  - Clean out rain gutters and ditches to get rid of standing water.
  - Fill in ruts and other areas that accumulate water.

## Recommendations for Workers

Outdoors workers can decrease their risk of WNV infection by reducing their contact with mosquitoes through the use of the personal protective measures listed below.

Workers should take the following steps when working at sites where mosquitoes may be actively biting:

- Wear long-sleeved shirts, long pants, and socks .
- Spray exposed skin with insect repellents.  
READ AND FOLLOW LABEL DIRECTIONS FOR REPELLENT USE.
  - Use repellents at the lowest effective concentration.
  - Use DEET (N-N-diethyl-3-methylbenzamide or N,N-diethylmetatoluamide) at concentrations of 35 percent or less.
  - Do not apply repellents to cuts, wounds, or irritated skin.
  - When needed, reapply repellents according to label directions.
- Spray clothing with products containing DEET or permethrin, since mosquitoes may bite through thin clothing.
  - Wash treated clothing before wearing it again.
  - Do not apply repellents under clothing.

## What are the Signs and Symptoms of WNV Infection in Humans?

Most people who become infected with WNV never have any symptoms of the disease. Some will have mild symptoms, such as fever, fatigue, headache, and muscle or joint pain. A study conducted in New York City following the 1999 outbreak indicated that less than 1 percent of WNV infections resulted in severe neurological disease [Mostashari et al. 2001, The Lancet, 358: 261-264\*]. Signs of severe infection include high fever, stiff neck, disorientation, tremors, muscle weakness, and paralysis. A small number of cases have been fatal. The time of incubation from mosquito bite to clinical symptoms varies, but it is usually from 3 to 14 days.

## What Should Workers Do Who Suspect They Have Been Infected with WNV?

Any worker who has health concerns should contact his or her health care provider. If the worker is at risk of

WNV infection and shows signs of WNV infection, a blood sample may be sent to a laboratory for testing. Although, no specific treatment exists for WNV infection, it may be necessary to provide supportive care for the individual. Treatment consists of supportive care for the individual. In severe cases this may involve support of the circulatory, respiratory, renal, and other vital systems. Currently, no approved vaccine exists to prevent WNV infection in humans.

## Links to Sites with WNV and Pesticide Information

CDC West Nile Virus Home Page

<http://www.cdc.gov/ncidod/dvbid/westnile>

CDC Morbidity and Mortality Weekly Reports, West Nile Virus articles

<http://www.cdc.gov/mmwr>

CDC Public Health Image Library, West Nile Virus mosquito photographs

<http://phil.cdc.gov/Phil>

U.S. Department of Agriculture Animal and Plant Health Inspection Service, West Nile Virus Site

<http://www.aphis.usda.gov/oa/wnv>

U.S. Geological Survey National Wildlife Health Center, West Nile Virus Site

[http://www.nwhc.usgs.gov/research/west\\_nile/west\\_nile.html](http://www.nwhc.usgs.gov/research/west_nile/west_nile.html)

West Nile Virus: Detection, Surveillance and Control

<http://www.annalsnyas.org/content/vol951/issue1/>

National Library of Medicine, Medlineplus West Nile Virus Site

<http://www.nlm.nih.gov/medlineplus/westnilevirus.html>

International Society for Infectious Diseases, ProMED-mail

<http://www.promedmail.org>

National Pesticide Information Center Web Site, West Nile Virus Resource Guide

<http://npic.orst.edu/wnv>

The Texas Department of Insurance,  
Division of Workers' Compensation (TDI/DWC)  
E-mail [resourcecenter@tdi.state.tx.us](mailto:resourcecenter@tdi.state.tx.us)  
or call 1-800-687-7080 for more information.

*Safety Violations Hotline*  
**1-800-452-9595**  
**[safetyhotline@tdi.state.tx.us](mailto:safetyhotline@tdi.state.tx.us)**