

NIOSH Safety and Health Topic:

West Nile Virus

Recommendations to Protect Outdoor Workers from West Nile Virus Exposure



Occupational Risk

The most likely way humans become infected with WNV is through the bite of an infected mosquito. Workers at risk of WNV exposure include those working outdoors when mosquitoes are actively biting—farmers, foresters, landscapers, groundskeepers and gardeners, painters, roofers, pavers, construction workers, laborers, mechanics, and other outdoor workers.

Workers at risk should receive training that describes and reinforces the potential occupational hazards and risks of WNV exposure and infection. The importance of timely reporting of all injuries and illnesses of suspected occupational origin should be emphasized. A medical surveillance system should be in place which includes the reporting of symptoms consistent with WNV infection and employee absenteeism due to WNV infection.

Recommendations for employers

Employers can help protect outdoor workers by implementing the control measures listed below:

- When possible, schedule work to avoid having workers outdoors when mosquitoes are most active and biting, most often from dusk to dawn.
- Make insect repellents available to workers.
 - DEET, picaridin, and oil of lemon eucalyptus are effective repellents.
- Recommend that outdoor workers wear long-sleeved shirts, long pants, and socks when possible.
 - If employee uniforms are provided include long-sleeved shirts and long pants among uniform options.
- Eliminate as many sources of standing water as possible to eliminate mosquito breeding areas. Mosquitoes may be produced in any puddle or water that stands for more than four days. Take the following steps to decrease mosquito populations:
 - Change the water twice a week in animal drinking troughs, birdbaths, and other water containers.

- Add an aerator to ponds and water gardens to keep the water circulating or add fish that will eat the mosquito larvae or adults.
- Remove discarded tires from the worksite.
- Turn over, cover, or remove equipment such as tarps, buckets, barrels, wheel barrows and containers that accumulate water.
- Discard tires, buckets, cans, and containers in the area.
- Place drain holes in containers that collect water and cannot be discarded.
- Clean out rain gutters to get rid of standing water.
- Remove debris—leaves, twigs, trash—from ditches.
- Fill in or drain ruts and other areas that accumulate water.



Remove discarded tires from the worksite.

Recommendations for workers

Outdoor 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 when possible.
- Spray exposed skin with an insect repellent.
 - DEET, picaridin, and oil of lemon eucalyptus are effective repellents
 - READ AND FOLLOW LABEL DIRECTIONS FOR REPELLENT USE.
 - Do not apply pump or aerosol products directly to the face. These products should be sprayed onto the hands and then carefully rubbed over the face, avoiding the eyes and mouth.
 - Use repellents at the lowest effective concentration.
 - Do not apply repellents to cuts, wounds, or irritated skin.
 - When needed, reapply repellents according to label directions.
- Wash treated skin with soap and water after returning indoors.
- Spray clothing with products containing DEET or permethrin, as mosquitoes may bite through thin clothing.
 - Permethrin should only be used on clothing; do not apply it directly to skin.
 - Wash treated clothing before wearing it again.
 - Do not apply repellent to skin that is under clothing.

For more information about insect repellents, link to these Web sites:

CDC: Updated Information Regarding Insect Repellents
<http://www.cdc.gov/ncidod/dvbid/westnile/RepellentUpdates.htm>

CDC: Insect Repellent Use and Safety
http://www.cdc.gov/ncidod/dvbid/westnile/qa/insect_repellent.htm

U.S. EPA: How to Use Insect Repellents Safely
 External Link: <http://www.epa.gov/pesticides/factsheets/insectrpt.htm>

The National Pesticide Information Center (NPIC) can be contacted by telephone at 1-800-858-PEST (1-800-858-7378), 9:30 a.m. to 7:30 p.m. eastern standard time, 7 days/week, or link to the NPIC Web site: <http://npic.orst.edu>



Avoid being bitten by mosquitoes to protect against WNV infection.