

Interim Guidance for Protecting Workers from Occupational Exposure to Zika Virus

The Occupational Safety and Health Administration (OSHA) and the National Institute for Occupational Safety and Health (NIOSH) are monitoring the impact of the Zika virus on U.S. states and territories, Central and South America, Mexico, and parts of the Caribbean. For the most up-to-date information, check the Centers for Disease Control and Prevention (CDC) [Zika website](#) frequently.

Vectors that can transmit Zika virus are or have been previously found in U.S. territories and some U.S. states. Although active Zika virus transmission has been detected in some areas of the United States, most cases of Zika virus have been travel-associated. Workers who are exposed on the job to mosquitoes or the blood or other body fluids of infected individuals may be at risk for occupationally acquired Zika virus infection. This interim guidance provides employers and workers, including workers who are or may become pregnant or whose sexual partners are or may become pregnant, with information and guidance on preventing occupational exposure to the Zika virus. The guidance may be updated as additional information becomes available.

Introduction

Zika virus is primarily spread through the bites of infected mosquitoes. Mosquitoes can become infected when they bite infected people and can then spread the Zika virus to other people they subsequently bite. Many people infected with Zika virus won't have symptoms or will only have mild symptoms; however, Zika infection during pregnancy can cause serious birth defects.

Zika virus historically has been found in Africa, Southeast Asia, and the Pacific Islands. The first case was identified in the Zika Forest in Uganda in 1947.¹ In 2015, cases of Zika virus were reported in the Americas and the Caribbean.

Visit the CDC [Areas with Zika website](#) to learn where cases of local mosquito-borne transmission of Zika virus disease have been reported and where there is active transmission.

Zika virus has the potential to spread anywhere that mosquitoes capable of transmitting the virus are found. *Aedes* species mosquitoes are the principal vectors (i.e., carriers) of Zika virus in the



Credit: CDC / James Gathany

Aedes aegypti mosquitoes, like the one pictured, can become infected when they bite infected persons and can then spread the Zika virus to other persons they subsequently bite.

U.S. *Aedes aegypti* (commonly known as yellow fever mosquitoes) are typically concentrated in the southern U.S. as well as parts of the Southwest. Another vector for Zika virus is *Aedes albopictus* (commonly known as Asian Tiger mosquitoes), which are found in much of the southern and eastern part of the U.S. *Aedes aegypti* mosquitoes are more likely to spread Zika, dengue and chikungunya viruses than are other mosquito species, including *Aedes albopictus*. CDC provides information about mosquito control, including the

1. Hayes, Edward B. (1994). [Zika Virus Outside Africa](#). *Emerging Infectious Diseases*, 15(9), 1347–1350.

[potential range](#) of *Aedes aegypti* and *Aedes albopictus* in the U.S., on its website. In addition, meteorological conditions, the number of people travelling from areas with ongoing transmission, and socioeconomic factors play a role in Zika transmission in the contiguous U.S. (the lower 48 states).² For example, *Aedes aegypti* can thrive in many areas during summer months (July-September) but are only active in winter months (December-March) in areas where temperatures do not fall below 10° C (50° F). The mosquitoes that spread Zika usually do not live at elevations above 2,000 meters (6,562 feet).³

Zika Virus Infection in Humans

Many people infected with Zika virus will not have symptoms or will only have mild symptoms. Exactly how often people have Zika virus infections without symptoms is not known. When people do experience symptoms, they usually begin about 3-14 days after the bite of an infected mosquito, are usually mild, and typically last 2-7 days. The most common symptoms of Zika virus infection are fever, rash, joint pain and red or pink eyes. Other symptoms include myalgia (muscle pain) and headache. These symptoms are similar to those of dengue fever or chikungunya. Neurological and autoimmune complications are infrequent but have been described in outbreaks in Polynesia and, more recently, in the Americas.

In most people, during the first 1-2 weeks of infection, Zika virus can be detected in the blood and is capable of being spread from an infected person to a mosquito that feeds on that person. Direct contact with infectious blood or other body fluids (such as semen through sexual contact or exposure by a needlestick or other sharps injury) of an infected person can result in transmission of the virus.

Zika virus can be spread from a pregnant woman to her fetus and is a cause of serious birth defects of the brain in fetuses and infants, which includes [microcephaly and other problems](#). Other problems have been detected among fetuses and infants infected with Zika virus before birth, such as absent or poorly developed brain structures, defects of the eye, hearing deficits and impaired growth.

2. Monaghan, A. J., Morin, C. W., Steinhoff, D. F., Wilhelmi, O., Hayden, M., Quattrochi, D. A. & Scalf, P. E. (2016). [On the seasonal occurrence and abundance of the Zika virus vector mosquito *Aedes aegypti* in the contiguous United States](#). *PLoS Currents Outbreaks*, 8(1).

3. Cetron, M. (2016). [Revision to CDC's Zika travel notices: Minimal likelihood for mosquito-borne Zika virus transmission at elevations above 2,000 meters](#). *MMWR. Morbidity and Mortality Weekly Report*, 65(10), 267-268.

Control & Prevention

CDC recommendations for preventing Zika virus infection, include special precautions, such as avoiding or delaying travel to Zika-affected areas for women who are or may become pregnant and for people with sexual partners who are or may become pregnant. In areas affected by Zika virus transmission, protect yourself and others from possible exposure to Zika virus by always taking steps to [prevent mosquito bites](#). There is no approved vaccine to prevent Zika virus and there is no specific treatment for individuals who become infected.

Although Zika virus is primarily spread through the bites of infected mosquitos, exposure to an infected person's blood or other body fluids (such as semen through sexual contact or exposure by a needlestick or other sharps injury) may also result in transmission. Employers should train workers about their risks of exposure to Zika virus through mosquito bites and contact with infectious blood and other potentially infectious materials and how to protect themselves. Employers should also provide information about the risk of Zika virus exposure and infection to workers who are pregnant or may become pregnant or whose sexual partners are or may become pregnant. For workers with potential exposure, this should include information on modes of transmission and the adverse birth outcomes caused by infection during pregnancy.

Depending on workers' exposure, job tasks and the controls necessary to protect them, employers must comply with the provisions of applicable OSHA requirements, including:

- the Personal Protective Equipment (PPE) standards ([29 CFR 1910 Subpart I and, for construction, 29 CFR 1926 Subpart E](#)), such as when workers need wearable mosquito netting or other PPE;
- the Bloodborne Pathogens (BBP) standard ([29 CFR 1910.1030](#)), when workers have exposure to blood or other potentially infectious materials; and
- paragraph (b)(4) of the Safety Training and Education standard ([29 CFR 1926.21](#)) when construction workers are in job site areas where harmful animals are present (e.g., mosquitoes that could spread the Zika virus).

Additional information for specific types of workers is below. Consult the [CDC Zika website](#) for the most up-to-date information to help employers implement effective worker protections.

Outdoor workers

Recommended employer actions:

- Inform workers about their risks of exposure to Zika virus through mosquito bites and train them on how to protect themselves. Check the [CDC Zika website](#) to find Zika-affected areas.
- Provide insect repellents, encourage their use, and train workers to use them according to the guidance below.
- Ensure that workers wear clothing that covers their hands, arms, legs and other exposed skin. Employers may need to provide workers with hats with mosquito netting to protect the face and neck.
- In warm weather, encourage workers to wear lightweight, loose-fitting clothing. This type of clothing protects workers against the sun's harmful rays and can help prevent (although it may not fully prevent) mosquitoes from biting bare skin. Always provide workers with adequate water, rest and shade, and monitor workers for signs and symptoms of [heat illness](#).
- Periodically inspect worksites to identify and get rid of sources of standing water (e.g., tires, buckets, cans, bottles, barrels, clogged gutters) whenever possible to reduce or eliminate places where mosquitoes lay their eggs. Train workers about the importance of eliminating these areas at the worksite.
- If requested by a worker who is pregnant or whose sexual partner is pregnant or may become pregnant, consider reassigning the worker to indoor tasks to reduce their risk of mosquito bites.

Recommended worker actions:

- Use insect repellents according to the guidance below.
- Wear clothing that covers hands, arms, legs and other exposed skin. Wear hats with mosquito netting to protect the face and neck. Wear socks that cover the ankles and lower legs.
- In warm weather, wear lightweight, loose-fitting clothing. This type of clothing protects against the sun's harmful rays and can help provide a barrier to mosquitoes. Consider spraying light weight, loose-fitting clothing with permethrin for additional protection. Drink plenty of water, take rest breaks in shaded areas and watch for signs and symptoms of [heat illness](#), including in coworkers.
- Get rid of sources of standing water (e.g., tires, buckets, cans, bottles, barrels, clogged gutters) whenever possible to reduce or eliminate places where mosquitoes lay their eggs.

- Talk to your supervisor(s) about any outdoor work assignment(s) if you are or may become pregnant or if your sexual partner is or may become pregnant. Such workers should be familiar with CDC information on [Zika virus and pregnancy](#).
- If symptoms develop, seek medical attention promptly. Discuss any possible exposure to mosquitoes or infections spread by mosquitoes with a healthcare provider.

Guidance on use of insect repellents for employers and workers:

- Always follow label precautions when using insect repellent.
- Use insect repellent containing an [EPA-registered active ingredient](#). All of the EPA-registered active ingredients have demonstrated repellency, but some provide longer-lasting protection than others. Research suggests that repellents containing DEET (N,N-diethyl-m-toluamide) or picaridin (KBR 3023) typically provide longer-lasting protection than the other products, and oil of lemon eucalyptus (p-menthane-3,8-diol) provides longer-lasting protection than other plant-based repellents. Permethrin is another long-lasting repellent that is intended for application to clothing and gear, but not directly to skin.
- Choose a repellent that will protect against mosquito bites for the amount of time that you will be outdoors. In general, the more active ingredient (higher concentration) a repellent contains, the longer it will protect against mosquito bites. For example, the more DEET a repellent contains, the longer it can protect you from mosquito bites. If using DEET-containing products, choose one with at least 20 percent DEET as its active ingredient and re-apply every four hours. Note: Products with more than 50 percent DEET may not offer a marked increase in protection.
- To avoid reaction to DEET or other ingredients in insect repellents, read and follow the directions on all insect repellents before use.
- Spray insect repellent (permethrin) on the outside of clothing to help prevent mosquitoes from biting through clothing. Mosquitoes may be able to bite through thin clothing or clothing made of certain types of loosely woven fabrics.
- Avoid spraying DEET on garments made of synthetic fabrics, as it may damage or dissolve the fabric.⁴

4. Fradin, M. S., & Day, J. F. (2002). [Comparative efficacy of insect repellents against mosquito bites](#). *New England Journal of Medicine*, 347(1), 13-18.

- Do NOT spray insect repellent on skin that is under clothing.
- Do NOT apply insect repellent to skin that is already irritated, or to cuts/lacerations.
- Do NOT spray aerosol or pump products in enclosed areas. Do NOT spray a pump or aerosol product directly on the face. First spray it on hands and then carefully spread it on the face (do not allow insect repellent to contact eyes or mouth).
- After returning indoors and before eating, use soap and water to wash skin, such as the hands, arms, and face, that has been treated with insect repellent. Reapply repellent when returning outdoors or after eating.
- Outdoor workers may need to use sunscreen in conjunction with insect repellent. Repellents that are applied according to label instructions may be used with sunscreen with no reduction in repellent activity. However, limited data show a one-third decrease in the sun protection factor (SPF) of sunscreens when DEET-containing insect repellents are used after a sunscreen is applied. Products that combine sunscreen and repellent are not recommended, because sunscreen may need to be reapplied more often and in larger amounts than needed for the repellent component to provide protection from biting insects. The best option is to use separate products, applying sunscreen first and then applying the repellent. Due to the decrease in SPF when using a DEET-containing insect repellent after applying sunscreen, users may need to reapply the sunscreen more frequently.⁵
- Stop using insect repellent and/or sunscreen if a rash or other adverse symptoms develop. Wash skin with soap and water. Consult a healthcare provider or poison control center for further guidance. Be sure to inform the healthcare provider or poison control center about the insect repellent used (e.g., type, when and where applied). Take other actions described in this guidance to avoid mosquito bites if insect repellent cannot be used.

Healthcare and laboratory workers

Employers and workers in healthcare (including those who handle human remains) and biomedical laboratories (including clinical and research facilities) should follow required and recommended infection prevention and biosafety practices to prevent or minimize the risk of transmission of infectious agents (e.g., Zika virus).

5. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, "[CDC Health Information for International Travel, 2016 \(Yellow Book\)](#)."

Employers must comply with applicable requirements in the BBP standard ([29 CFR 1910.1030](#)) whenever workers may be exposed to human blood or other potentially infectious materials. Employers must also comply with OSHA's PPE ([29 CFR 1910.132](#)) and Respiratory Protection ([29 CFR 1910.134](#)) standards, among other OSHA requirements.

In healthcare and when workers are handling human remains (regardless of suspected or confirmed Zika infection status), standard precautions are used to expand the universal precautions required by the BBP standard ([29 CFR 1910.1030](#)) whenever workers may be exposed to human blood or other potentially infectious materials. CDC-recommended standard precautions include hand hygiene, injection safety and the use of PPE to avoid direct contact with blood and other potentially infectious materials, including laboratory specimens/samples.⁶ PPE may include gloves, gowns, masks, and eye protection.

Hand hygiene consists of washing with soap and water or using alcohol-based hand rubs containing at least 60 percent alcohol.⁷ Soap and water are best for hands that are visibly soiled. Perform hand hygiene before and after any contact with a patient, after any contact with potentially infectious material and before putting on and promptly after removing PPE, including gloves. For workers with exposure to human blood and other potentially infectious materials, the BBP standard ([29 CFR 1910.1030](#)) requires hand washing after removal of PPE.

Laboratories should ensure that their facilities and practices meet the appropriate Biosafety Level (BSL) for the type of work being conducted (including the specific biological agents – in this case, Zika virus) in the laboratory. CDC has [guidance](#) for transporting specimens and working with Zika virus in the laboratory. The [Biosafety in Microbiological and Biomedical Laboratories \(BMBL\), 5th Edition](#) also provides detailed biosafety guidance for working with arboviruses, including Zika, in Section VIII – F: Arboviruses and Related Zoonotic Viruses. Laboratories should handle Zika virus at BSL-2, including limiting access to laboratories and other work areas when work is occurring and conducting certain procedures in biosafety cabinets or other containment

6. Healthcare Infection Control Practices Advisory Committee, "[2007 Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings](#)," Centers for Disease Control and Prevention (CDC), U.S. Department of Health and Human Services (HHS).

7. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, "[Show Me the Science – When & How to Use Hand Sanitizer](#)."

equipment. Some procedures may require BSL-3 precautions, including additional respiratory protection, based on the risk assessment of the proposed work.⁸ The BMBL guidance also describes BSLs in [Section IV - Laboratory Biosafety Level Criteria](#).

Additionally, employers should ensure that workers:

- Follow workplace standard operating procedures (e.g., workplace exposure control plans) and use the engineering controls and work practices available in the workplace to prevent exposure to blood or other potentially infectious materials. See [29 CFR 1910.1030](#).
- Do NOT bend, recap, or remove contaminated needles or other contaminated sharps. Properly dispose of these items in closable, puncture-resistant, leakproof, and labeled or color-coded containers. See [29 CFR 1910.1030\(d\)\(2\)\(vii\)](#) and [\(viii\)](#).
- Use sharps with engineered sharps injury protection (SESIP) to avoid sharps-related injuries. See [29 CFR 1910.1030\(d\)\(2\)](#).
- Report all needlesticks, lacerations, and other exposure incidents to supervisors as soon as possible.

There is limited evidence that Zika virus may be transmitted through aerosol exposure in laboratories.⁹ Minimizing the aerosolization of blood or body fluids as much as possible during laboratory tasks will help prevent laboratory workers from being exposed to Zika virus and other pathogens. Although there is no evidence that the Zika virus spreads by aerosols in clinical settings, minimizing the aerosolization of blood or body fluids as much as possible during patient care tasks will help prevent healthcare workers from being exposed to Zika virus and other pathogens.

Employers should consider additional protections, including engineering controls to ensure containment of pathogens or enhanced PPE to prevent or reduce exposure where workers are at increased risk of exposure to Zika virus or other hazards (e.g. working with concentrated specimens of Zika virus).

Mosquito control workers

When working outdoors, follow the same precautions recommended above for general outdoor workers for protection against mosquito bites.

Workers entering or working around areas with dense mosquito populations of *Aedes* mosquitoes likely will need enhanced skin protection to prevent mosquito bites. Employers should assess such workers' risks of mosquito bites, provide any additional protective clothing or equipment to protect workers' exposed skin and ensure workers wear or use it correctly.

Workers who mix, load, apply or perform other tasks involving wide-area (or area) insecticides may need additional protection to prevent or reduce exposure to hazardous chemicals. These protections include pesticide safety training, notification of pesticide applications, PPE (potentially including respirators), restricted entry intervals after pesticide application, decontamination supplies and access to emergency medical assistance. The EPA [Agricultural Worker Protection Standard \(WPS\)](#), which regulates pesticide safety, and the EPA WPS page provide more information about these types of protections. Although the WPS is a regulation for agricultural pesticides aimed at reducing the risk of pesticide poisonings and injuries among agricultural workers and pesticide handlers, its requirements may provide a model for protecting workers using insecticides in mosquito control operations.

Employers also must comply with any applicable requirements in OSHA's PPE standards ([29 CFR 1910 Subpart I](#)), including when workers need gloves or eye protection, among other OSHA requirements. Respirators must be used in accordance with the respirator selection, medical clearance, fit-testing and other requirements of OSHA's Respiratory Protection standard ([29 CFR 1910.134](#)). Employers should monitor the use of respirators by any worker who must drive vehicles (e.g., trucks used for insecticide application) to ensure that respirator use does not restrict the worker's ability to operate the vehicle safely. OSHA's [Safety and Health Topics page on Respiratory Protection](#) provides general information on respirator use and OSHA standards that may apply to the use of chemicals.

Suspected or Confirmed Zika: General Guidance for Workers and Employers

CDC advises individuals, including workers, infected with Zika virus to¹⁰:

- Get plenty of rest.
- Drink fluids to prevent dehydration.

8. U.S. Department of Health and Human Services, "[Biosafety in Microbiological and Biomedical Laboratories \(BMBL\), 5th ed.](#)"

9. Scherer, W. F. (1980). Laboratory safety for arboviruses and certain other viruses of vertebrates. *American Journal of Tropical Medicine and Hygiene*, 29(6), 1359-1381.

10. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, "[Zika Virus – Symptoms, diagnosis, & Treatment.](#)"

- Take medicine such as acetaminophen to reduce fever and pain.
- Do not take aspirin, ibuprofen, naproxen, or other non-steroidal anti-inflammatory drugs unless your healthcare provider tells you it is okay to do so. These medications can increase the risk of bleeding if your symptoms are caused by infection with dengue virus.
- Talk to a healthcare provider before taking any other medications, including prescriptions, for other medical conditions.
- To help prevent others from getting sick, avoid mosquito bites during the first week of infection. Wearing clothing that covers skin and using insect repellents can help prevent mosquito bites.
- To help prevent transmission to partners via sexual contact, abstain from vaginal, anal and oral sexual activity, or use condoms correctly every time you have sex. See the [CDC Zika and Sexual Transmission website](#) and the [CDC Testing for Zika website](#) for more information.

Employers should:

- Ensure that supervisors and all potentially exposed workers are aware of the symptoms of Zika.
- Train workers to seek medical evaluation if they develop symptoms of Zika.
- Assure that workers receive prompt and appropriate medical evaluation and follow-up after a suspected exposure to Zika virus. If the exposure is to human blood or other potentially infectious materials and falls under OSHA's BBP standard ([29 CFR 1910.1030](#)), employers must comply with medical evaluation and follow-up requirements in the standard. See 29 CFR 1910.1030(f).
- Consider options for granting sick leave during the infectious period. CDC describes [steps employers and employees can take to protect others](#) during the first week of Zika virus illness.

[Section 11\(c\)](#) of the Occupational Safety and Health Act, 29 USC 660(c), prohibits employers from retaliating against workers for such things as raising concerns about safety and health conditions. OSHA encourages workers who suffer such discrimination to [submit a complaint to OSHA](#). Workers have 30 days from an alleged reprisal to file their complaints.

Travel to Zika-affected areas

CDC recommends that pregnant women in any trimester not travel to an area with active Zika virus transmission. Employers should consider allowing flexibility in required travel, including delaying travel to Zika-affected areas, for workers who are

concerned about Zika virus exposure and especially for workers who are or may become pregnant or whose sexual partners are or may become pregnant. Flexible travel and leave policies may help control the spread of Zika virus, including to workers who are concerned about reproductive effects potentially associated with Zika virus infection.

When traveling to or through Zika-affected areas, follow the precautions described in the "Control and Prevention" section for specific work activities. CDC guidance for travel to Zika-affected areas may also help employers and workers in travel-related operations, such as airline crew members and cruise line workers, to take appropriate protective actions.

CDC has published [Zika Travel Information](#) by region, which may assist workers and employers in making travel-related decisions or implementing precautions when traveling. Pregnant women, women who may become pregnant and people with sexual partners who are or may become pregnant should consult with their healthcare providers about risks associated with Zika virus infection during pregnancy. More information can also be found on the CDC [Zika and Pregnancy website](#).

Travelers who have traveled to an area with Zika can use condoms or not have sex to protect their sexual partners. Women should consider using condoms every time they have sex or should not have sex for at least eight weeks after symptom onset (if symptomatic) or last possible exposure (if asymptomatic). Men should use condoms every time they have sex or should not have sex for at least six months after symptom onset (if they have symptoms) or last possible exposure (if no symptoms) to protect their sex partners; this period is longer for men because Zika stays in semen longer than in other body fluids. Women and men who have a pregnant sex partner should consistently and correctly use condoms to prevent Zika virus infection every time they have sex or should not have sex for the duration of the pregnancy. Even if they do not feel sick, travelers returning to the U.S. from an area with Zika should take steps to prevent being bitten by mosquitoes for three weeks so they do not pass Zika to mosquitoes that could spread the virus to other people. CDC provides information on [mosquito bite prevention for travelers](#).

Additional Resources

- [Zika Virus](#). Centers for Disease Control and Prevention (CDC), U.S. Department of Health and Human Services (HHS).
- [Zika Travel Information](#). Centers for Disease Control and Prevention (CDC), U.S. Department of Health and Human Services (HHS).

- [Zika Virus Protection for Outdoor Workers](#). Occupational Health and Safety Administration (OSHA), U.S. Department of Labor.
- [Zika: Protecting US Businesses and Business Travelers](#). National Institute for Occupational Safety and Health (NIOSH), Centers for Disease Control and Prevention (CDC), U.S. Department of Health and Human Services (HHS).
- [Zika: Protecting Healthcare and Laboratory Workers](#). National Institute for Occupational Safety and Health (NIOSH), Centers for Disease Control and Prevention (CDC), U.S. Department of Health and Human Services (HHS).
- [Zika: Protecting Outdoor Workers](#). National Institute for Occupational Safety and Health (NIOSH), Centers for Disease Control and Prevention (CDC), U.S. Department of Health and Human Services (HHS).
- [Laboratory Safety when Working with Zika Virus](#). Centers for Disease Control and Prevention (CDC), U.S. Department of Health and Human Services (HHS).
- [Mosquito-Borne Diseases](#). National Institute for Occupational Safety and Health (NIOSH), Centers for Disease Control and Prevention (CDC), U.S. Department of Health and Human Services.
- [Zika Virus Fact Sheet](#). World Health Organization (WHO).
- [Zika virus infection and Zika fever: Frequently Asked Questions](#). Pan American Health Organization (PAHO).
- [Mosquito Bite Prevention for Travelers](#) (PDF). Centers for Disease Control and Prevention (CDC), U.S. Department of Health and Human Services (HHS).
- [Zika information repository](#). Center for Infectious Disease Research and Policy (CIDRAP), University of Minnesota.
- [Rodents, Snakes and Insects QuickCard](#). Occupational Safety and Health Administration (OSHA), U.S. Department of Labor (DOL).
- [2007 Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings](#) (PDF). Healthcare Infection Control Practices Advisory Committee (HICPAC), Centers for Disease Control and Prevention (CDC), U.S. Department of Health and Human Services (HHS).
- [Safety and Health Information Bulletin: Workplace Precautions Against West Nile Virus](#). Occupational Safety and Health Administration (OSHA), U.S. Department of Labor (DOL). Provides related guidance for workers and employers that is also generally applicable to Zika virus and other mosquito-borne diseases.
- [West Nile Virus Fact Sheet](#) (PDF*). Occupational Safety and Health Administration (OSHA), U.S. Department of Labor (DOL). Provides related guidance for workers and employers that is also generally applicable to Zika virus and other mosquito-borne diseases.
- [West Nile Virus QuickCard](#). Occupational Safety and Health Administration (OSHA), U.S. Department of Labor (DOL). Provides related guidance for outdoor workers that is also generally applicable to Zika virus and other mosquito-borne diseases.
- Surveillance and Control of *Aedes aegypti* and *Aedes albopictus* in the United States. Centers for Disease Control and Prevention (CDC), U.S. Department of Health and Human Services (HHS).
- [Bloodborne Pathogens and Needlestick Prevention Safety and Health Topics](#). Occupational Safety and Health Administration (OSHA), U.S. Department of Labor (DOL).
- [West Nile Virus Prevention](#). National Institute for Occupational Safety and Health (NIOSH), Centers for Disease Control and Prevention (CDC), U.S. Department of Health and Human Services (HHS). Provides related guidance for workers and employers that is also generally applicable to Zika virus and other mosquito-borne diseases.
- [Fast Facts: Protecting Yourself from Ticks and Mosquitoes](#) (PDF). National Institute for Occupational Safety and Health (NIOSH), Centers for Disease Control and Prevention (CDC), U.S. Department of Health and Human Services (HHS).
- [Heat Stress Topic Page](#). National Institute for Occupational Safety and Health (NIOSH), Centers for Disease Control and Prevention (CDC), U.S. Department of Health and Human Services (HHS).
- [Fast Facts: Protecting Yourself from Heat Stress](#) (PDF). National Institute for Occupational Safety and Health (NIOSH), Centers for Disease Control and Prevention (CDC), U.S. Department of Health and Human Services (HHS).
- [Respirator Topic Page](#). National Institute for Occupational Safety and Health (NIOSH), Centers for Disease Control and Prevention (CDC), U.S. Department of Health and Human Services (HHS).
- [Preventing Transmission of Zika Virus in Labor and Delivery Settings Through Implementation of Standard Precautions – United States, 2016](#). Centers for Disease Control and Prevention (CDC), U.S. Department of Health and Human Services (HHS).

- [Questions and Answers for Healthcare Providers Caring for Pregnant Women and Women of Reproductive Age with Possible Zika Virus Exposure](#). Centers for Disease Control and Prevention (CDC), U.S. Department of Health and Human Services (HHS).
- [Fast Facts: How to Prevent Needlestick and Sharps Injuries](#). National Institute for Occupational Safety and Health (NIOSH), Centers for Disease Control and Prevention (CDC), U.S. Department of Health and Human Services.
- [Suspected Female-to-Male Sexual Transmission of Zika Virus – New York City, 2016](#). Centers for Disease Control and Prevention (CDC), U.S. Department of Health and Human Services (HHS).
- [Brent, C., Dunn, A., Savage, H., Faraji, A., Rubin, M., Risk, I. Nakashima, A. \(2016\). Preliminary findings from an investigation of Zika virus infection in a patient with no known risk factors—Utah, 2016. *MMWR. Morbidity and Mortality Weekly Report*, 65\(36\), 981-982.](#)
- [Healthcare Exposure to Zika and Infection Control](#). Centers for Disease Control and Prevention (CDC). U.S. Department of Health and Human Services (HHS).
- [Update: Interim Guidance for Preconception Counseling and Prevention of Sexual Transmission of Zika virus for Persons with Possible Zika Virus Exposure – United States, September 2016](#). Centers for Disease Control and Prevention (CDC). U.S. Department of Health and Human Services (HHS).
- [Interim Guidance for Managing Occupational Exposures to Zika Virus for Healthcare Personnel](#). Centers for Disease Control and Prevention (CDC), U.S. Department of Health and Human Services (HHS).
- [Worker protections against occupational exposure to infectious diseases \(A comparison of universal precautions, standard precautions and transmission-based precautions\)](#). Occupational Safety and Health Administration (OSHA), U.S. Department of Labor (DOL).

***Accessibility Assistance:** Contact OSHA's [Directorate of Technical Support and Emergency Management](#) at (202) 693-2300 for assistance accessing PDF materials.

Disclaimer: This document is not a standard or regulation, and it creates no new legal obligations. It contains recommendations as well as descriptions of mandatory safety and health standards. The recommendations are advisory in nature, informational in content, and are intended to assist employers in providing a safe and healthful workplace. The *Occupational Safety and Health Act* requires employers to comply with safety and health standards and regulations promulgated by OSHA or by a state with an OSHA-approved state plan. In addition, the Act's General Duty Clause, Section 5(a)(1), requires employers to provide their employees with a workplace free from recognized hazards likely to cause death or serious physical harm.

This information will be made available to sensory-impaired individuals upon request. The voice phone is (202) 693-1999; teletypewriter (TTY) number: (877) 889-5627. For other requests or questions, contact OSHA at 1-800-321-OSHA (6742). To receive NIOSH documents or more information about occupational safety and health topics, contact NIOSH at 1-800-CDC-INFO (1-800-232-4636), TTY: 1-888-232-6348, web: www.cdc.gov/info, or visit the NIOSH website at www.cdc.gov/niosh.

