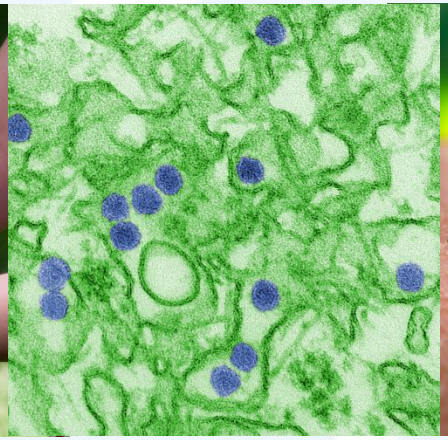
U.S. Department of Labor
Occupational Safety and Health Administration

OSHA Worker Safety and Health Activities and the Ongoing Zika Virus Outbreak

Updated: June 3, 2016



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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.

Zika virus background

- Viral disease mainly transmitted by mosquitoes
  - Various *Aedes* species (*aegypti* and *albopictus)*

A. aegypti

A. albopictus

- In some instances, may be also spread via
  - Bloodborne (contact) transmission
  - Aerosol exposure (in labs, based on animal models)
  - Sexual transmission (male to partner)

Source: CDC. All countries and territories with active Zika virus transmission. Atlanta, GA: US Department of Health and Human Services, CDC; 2016. http://www.cdc.gov/zika/geo/active-countries.html

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Zika virus background

- Zika virus first described in 1964[1]
  - Laboratory-acquired case in Uganda
- Other cases have been associated with outbreaks in Africa, Asia, and Pacific Islands over the last ~50 years
- Some occupational cases
  - 1972 - Lab worker[2]
  - 2008 - Scientists exposed to mosquitoes[3]

[1] Simpson, D. I. H. (1964). Zika virus infection in man. *Transactions of the Royal Society of Tropical Medicine and Hygiene*, *58*(4), 339-348.
[2] Filipe, A. R., Martins, C. M. V., & Rocha, H. (1973). Laboratory infection with Zika virus after vaccination against yellow fever. *Archiv für die gesamte Virusforschung*, *43*(4), 315-319.
[3] Foy, B. D., Kobylinski, K. C., Chilson Foy, J. L., Blitvich, B. J., Travassos da Rosa, A., Haddow, A. D., ... & Tesh, R. B. (2011). Probable non-vector-borne transmission of Zika virus, Colorado, USA. *Emerg Infect Dis*, *17*(5), 880-2.

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Current outbreak

- Affecting countries throughout Central and South America and Pacific Islands (especially Brazil)
- Active transmission in U.S. territories
  - 1,072 cases in Puerto Rico (plus 3 travel-acquired)
  - 21 cases in USVI (plus 25 travel-acquired)
  - 17 cases in American Samoa
- **No active transmission in U.S. states**
  - 618 travel-associated cases + 11 sexually transmitted
- No occupational cases reported

Source: CDC. All countries and territories with active Zika virus transmission. Atlanta, GA: US Department of Health and Human Services, CDC; 2016. http://www.cdc.gov/zika/geo/active-countries.html; CDC. Zika virus disease in the United States, 2015–2016. Atlanta, GA: US Department of Health and Human Services, CDC; 2016. http://www.cdc.gov/zika/geo/united-states.html

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Signs and Symptoms

- Approximately **1 in 5 infected people develop signs and symptoms**
  - Usually mild
  - Typically begin 2-7 days after exposure
  - Generally last 2-7 days
- Generally include **fever, rash, joint pain and red or pink eyes**[1]
- Muscle pain and headache, in some cases[2]
- **No specific treatment or vaccine** (yet)

[1] Duffy MR, Chen T-H, Hancock WT, et al. Zika virus outbreak on Yap Island, Federated States of Micronesia. N Engl J Med 2009;360:2536– 43. http://dx.doi.org/10.1056/NEJMoa0805715

[2] Campos, G. S., Bandeira, A. C., & Sardi, S. I. (2015). Zika virus outbreak, Bahia, Brazil. *Emerg Infect Dis*, *21*(10), 1885.

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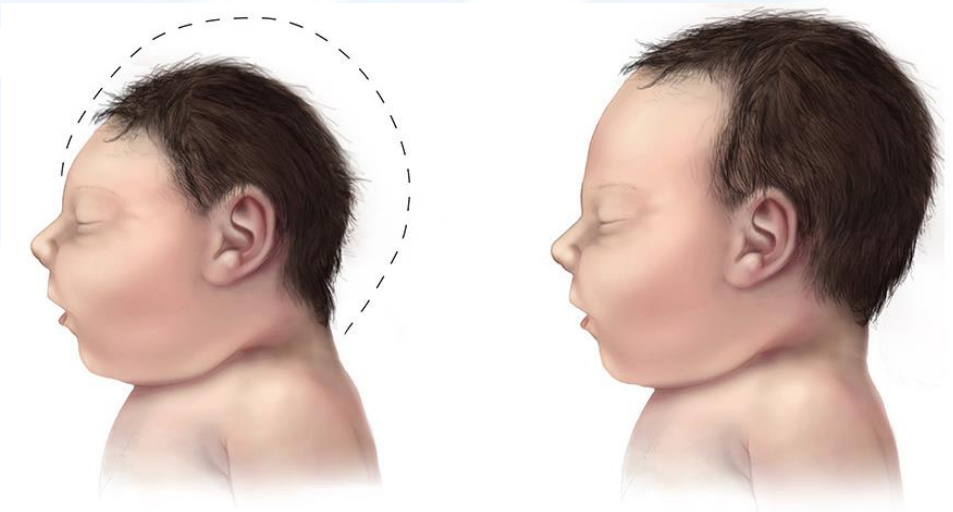
Reproductive effects

- **Microcephaly**[1]
  - Linked to Zika virus infection preceding or during pregnancy
  - Developmental disorder characterized by **smaller-than-expected head size, brain underdevelopment, and neurocognitive problems** in newborns

Newborn with microcephaly



Newborn with expected head size, normal brain development

[1] Cauchemez, S., Besnard, M., Bompard, P., Dub, T., Guillemette-Artur, P., Eyrolle-Guignot, D., ... & Fontanet, A. (2016). Association between Zika virus and microcephaly in French Polynesia, 2013–15: a retrospective study. *The Lancet*.

Photo credit: CDC

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Other health effects

- **Guillain-Barré syndrome (GBS)**[1]
  - Autoimmune disorder often marked by weakness, paralysis, and respiratory impairment
- **Thrombocytopenia**[2]
  - Low platelet count in blood
  - Bleeding into the tissues, bruising, slow blood clotting after injury
- **Death** (in extreme circumstances)
  - Associated with bleeding from severe thrombocytopenia

[1] Smith, D. W., & Mackenzie, J. (2016). Zika virus and Guillain-Barré syndrome: another viral cause to add to the list. *The Lancet*, *387*(10027), 1486-1488.
[2] Karimi, O., Goorhuis, A., Schinkel, J., Codrington, J., Vreden, S. G. S., Vermaat, J. S., ... & Grobusch, M. P. (2016). Thrombocytopenia and subcutaneous bleedings in a patient with Zika virus infection. *The Lancet*, *387*(10022), 939-940.

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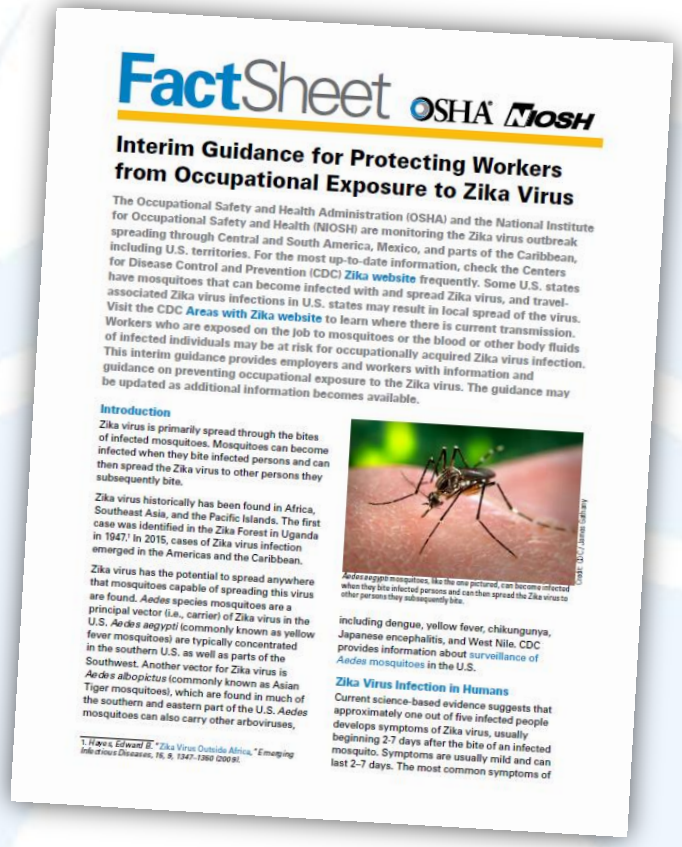
What is OSHA doing?

- **Technical support and assistance**, as requested, to federal, state, local and other levels of government
- Other federal interagency coordination
- Direct support to **private sector employers' and worker groups' questions**
- Coordinating with OSHA NY regional office (including R2 staff in Puerto Rico) to ensure **guidance materials available in Spanish**

What is OSHA doing?

- Published joint recommendations with NIOSH
  - Available as an **OSHA-NIOSH FactSheet**
  - **English** and **Spanish**
  - Webpage format at www.osha.gov/zika
- Guidance covers **outdoor, healthcare, laboratory, and traveling workers**
- Advisory in nature, but OSHA standards still apply



FactSheet OSHA NIOSH

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 Zika virus outbreak spreading through Central and South America, Mexico, and parts of the Caribbean, including U.S. territories. For the most up-to-date information, check the Centers for Disease Control and Prevention (CDC) Zika website frequently. Some U.S. states have mosquitoes that can become infected with and spread Zika virus, and travel-associated Zika virus infections in U.S. states may result in local spread of the virus. Visit the CDC Areas with Zika website to learn where there is current transmission. 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 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 persons and can then spread the Zika virus to other persons they subsequently bite.

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 infection emerged in the Americas and the Caribbean.

Zika virus has the potential to spread anywhere that mosquitoes capable of spreading this virus are found. *Aedes* species mosquitoes are a principal vector (i.e., carrier) of Zika virus in the 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* mosquitoes can also carry other arboviruses,

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.

including dengue, yellow fever, chikungunya, Japanese encephalitis, and West Nile. CDC provides information about surveillance of *Aedes* mosquitoes in the U.S.

Zika Virus Infection in Humans

Current science-based evidence suggests that approximately one out of five infected people develops symptoms of Zika virus, usually beginning 2-7 days after the bite of an infected mosquito. Symptoms are usually mild and can last 2–7 days. The most common symptoms of

1. Hayes, Edward B. "Zika Virus Outside Africa," *Emerging Infectious Diseases*, 15, 9, 1347-1350 (2009).

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General recommendations

- If requested by a worker and if feasible, employers may **consider reassigning** anyone who indicates she is or may become pregnant, or who is male and has a sexual partner who is or may become pregnant, to indoor tasks to reduce their risk of mosquito bites.
  - Buildings with screened windows and doors
  - Air conditioning
- If job functions preclude reassignment, may be possible to **rotate workers between job duties**
  - Lessen time each worker spends outdoors

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General recommendations

- May not always be possible to re-assign workers, especially if job is outside:
  - Construction and agriculture industries together make up about 5.5 percent of total U.S. employment.[1]
  - Other outdoor workers may include:
    - public works and services
    - public safety
    - oil and gas extraction (excluding off-shore drilling operations)
    - amusement parks
    - travel and transportation operations
    - many others

[1] BLS. Employment by major industry sector. Washington, DC: US Department of Labor, Bureau of Labor Statistics; 2015. http://www.bls.gov/emp/ep_table_201.htm

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General recommendations

- Mosquitoes lay eggs in standing water, including around worksites
- Whenever possible, **get rid of standing water**
  - Buckets
  - Bottles
  - Barrels
  - Tires
  - Drain pipes
  - Gutters

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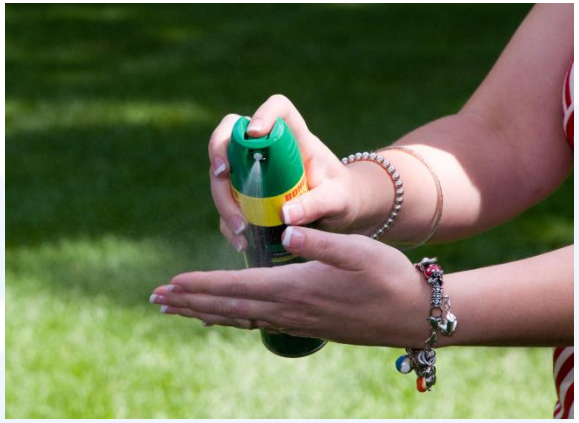
General recommendations

- Provide **insect repellent** to workers who may be bitten by mosquitoes
  - Use according to manufacturer instructions
  - Also follow OSHA/NIOSH guidance for reapplication and use with sun screens



  - Choose repellent with EPA-registered active ingredient (e.g., DEET, picaridin)
  - The more active ingredient, the longer the protection time (up to a point)
  - Only apply permethrin to clothing, not directly to skin

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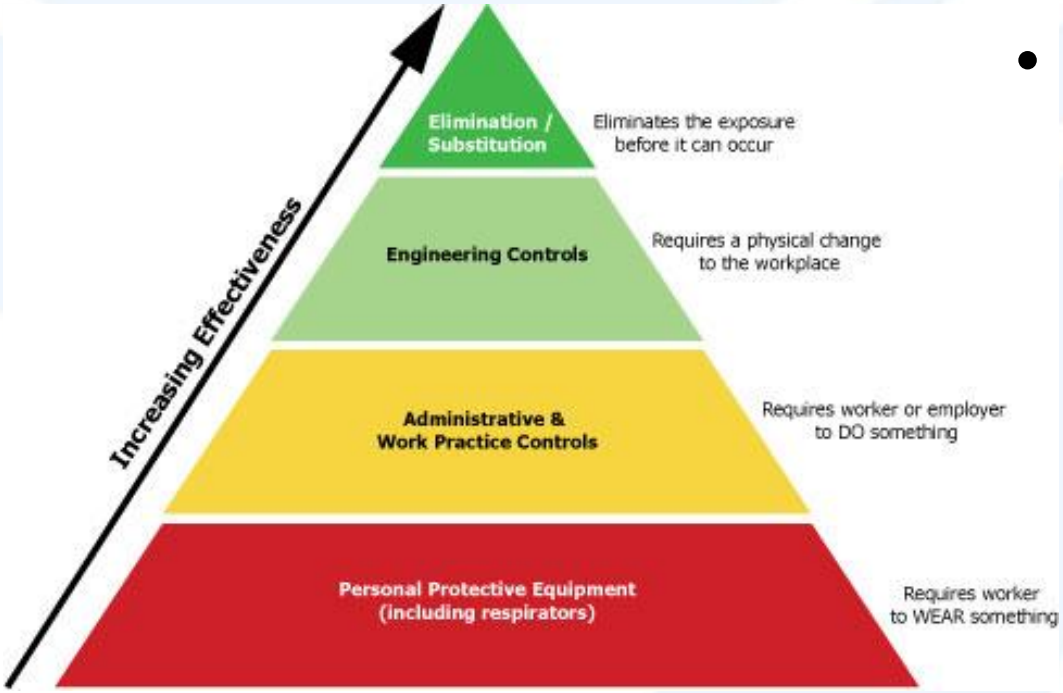
Other controls…

- Follow the **hierarchy of controls** to help reduce or eliminate worker exposures to Zika virus
  - In conjunction with preventive actions, and especially when preventive actions (like reassignment) are not possible



- Focus on **preventing mosquito bites** and other potential sources of exposure

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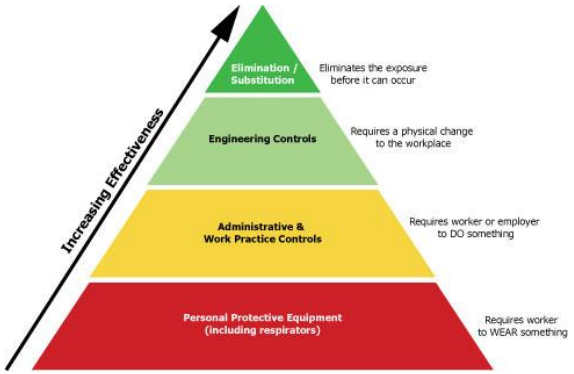
Engineering controls

- Built into a worker's physical environment
- Provide protection without the worker having to do anything specific
- Examples:
  - Enclosures (operator booth of amusement park ride, cab of construction or agricultural equipment)
  - In healthcare: needles/syringes, IV administration kits, etc. with engineered sharps injury protection
  - In laboratories: biosafety cabinets



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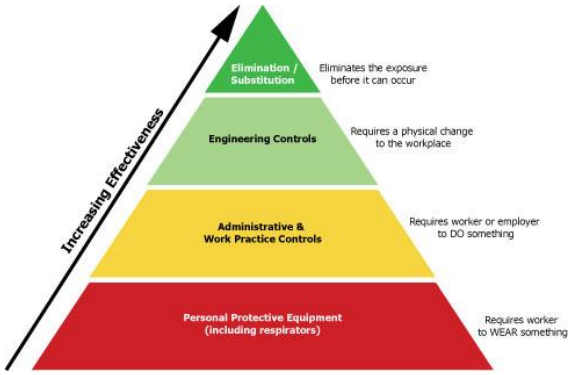
Admin Controls / Work Practices

- Require an employer or worker to do something in order to achieve the intended protection
- Examples:
  - Implementing hand hygiene protocols, and providing facilities for workers to wash up after removing PPE, after using bug spray
  - In healthcare and labs: implementing **universal and standard precautions**
  - In healthcare and labs: avoiding work tasks that contribute to the generation of bioaerosols or droplet sprays



Strictly speaking, reassignment / rotating duties are also administrative controls.

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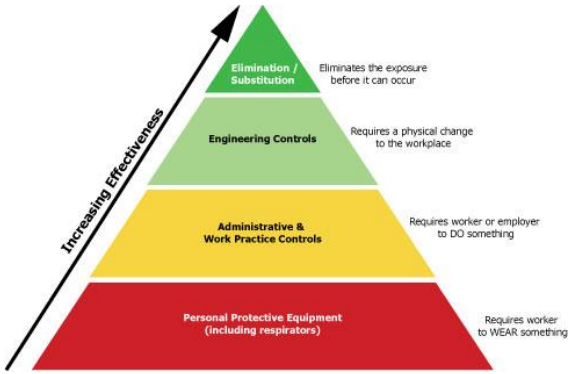
PPE

- Worker has to wear or use a garment or piece of equipment to achieve protection
- Examples:
  - When outdoors, **clothing to cover exposed skin**: Long pants, sleeves, hats with mosquito netting
    - Clothing treated with repellent (e.g., permethrin)
  - For workers with potential bloodborne exposures: Gloves, gowns, masks, face shields
  - Certain healthcare and lab tasks may require enhanced precautions.



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Additional guidance for specific worker groups

- Laboratory workers
  - Follow HHS “Biosafety in Microbiological and Biomedical Laboratories” guidance for arboviruses
- Workers conducting mosquito control operations
  - Consult EPA Worker Protection Standards that apply to insecticides
  - Implement controls appropriate for hazardous chemicals or areas with dense mosquito populations (e.g., respiratory protection, other enhanced PPE)

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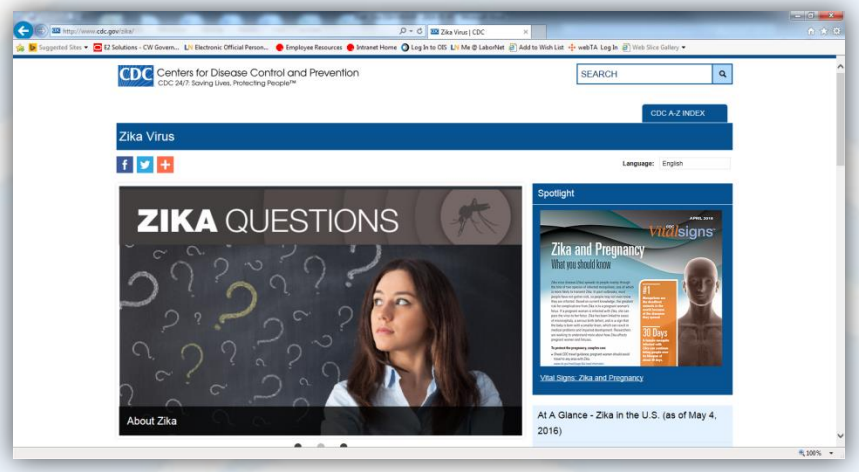
Additional information

- The OSHA/NIOSH guidance also presents CDC public health information in the context of workplace hazard prevention and control:
  - Recognizing and reporting symptoms of Zika
  - What to do if sick
  - Travel guidelines and warnings
  - Information about pregnancy and birth defects
- For more information:
  www.cdc.gov/zika
  www.cdc.gov/niosh



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Other recommended employer actions

- Conduct **hazard assessment,** select **appropriate controls**
  - May be required be some OSHA standards
- Consider offering **flexible sick leave** and **flexible travel policies**
- Provide **worker training**
  - On protective measures, PPE, insect repellent use, workplace flexibilities, etc.
  - May be required by some OSHA standards

Applicable Standards (29 CFR)

- 1910.132 – PPE General Requirements
- 1910.133 – Eye and Face Protection
- 1910.134 – Respiratory Protection
- 1910.138 – Hand Protection
- 1910.1030 – Bloodborne Pathogens
- 1910.1200 – Hazard Communication

Other requirements may apply in certain situations.

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Emergency Preparedness and Response Resources

- Click on "A to Z Index"
- Scroll to emergency topics in the list.

Visit OSHA's web site for additional information. The OSHA page links to many emergency preparedness and response resources.

www.osha.gov | www.osha.gov/SLTC/emergencypreparedness/

Questions?

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