OSHA Training Toolbox Talk: Biological Hazards – Primary Modes of Bacteria and Virus Transmission

[Reference: Paragraph (5)(a)(1) of OSHA Act of 1970 / Centers for Disease Control & Prevention (CDC) Guidelines]

To avoid contracting or spreading a bacterial or viral infection, it will help if you first understand the various ways bacteria and viruses are commonly transmitted.

- The first, and most common, form of **bacterial or viral transmission is through the air**. This typically occurs when someone who is already infected sneezes, coughs, or otherwise forcefully introduces bodily fluids into the air. The larger airborne droplets of fluid tend to settle to the ground or other surfaces within a few feet. However, the ultra-small particles of airborne liquid, called aerosols, can actually drift on air currents, staying aloft for a considerable period of time. Someone in close proximity can breathe in the infectious airborne particles in great enough quantity that they come into contact with the victim's lungs, mucous membranes, or other internal surfaces which are susceptible to infection. Bacteria and viruses such as those causing the common cold, influenza, Covid-19, and tuberculosis are examples of infectious agents commonly spread through the air.

- Another common mode of transmission of infectious bacteria and viruses is when matter such as salvia, mucus, or blood from a carrier of an **infectious agent is absorbed into our body** through direct contact with our non-intact skin or mucous membranes. Unbroken skin is actually an excellent barrier to infectious agents. However, open wounds, such as cuts, scraps, and broken cuticles, as well as pricking a finger on broken glass or another contaminated sharp object, provide a direct pathway for biological agents to be absorbed through the opening in the skin and into your body. The same is true when infectious fluids make contact with, and are absorbed through, mucous membranes, like those lining the inside of the mouth, nose, eyelids, and vagina. Similarly, exposure can occur when a person is bitten by an animal or insect that is carrying a virus or bacteria.

  Bloodborne pathogens such as the Hepatitis B, C, and the HIV virus are commonly spread when blood or other infectious materials, such as semen, vomitus, saliva, or other body fluid visibly contaminated with blood, make direct contact with broken skin, punctures, or mucous membranes. And the rabies virus is usually spread when an infected animal bites a person, while West Nile and Malaria viruses are typically transmitted by mosquitoes.

- Another prevalent pathway for infection is when food or beverages which are laden with **harmful infectious matter are swallowed**. Leafy vegetables and raw poultry that has not been well washed or otherwise cleaned and cooked are common sources of bacteria such as E. coli or Salmonella, which can lead to foodborne illnesses. Bacteria and viruses can also be ingested when someone touches a surface contaminated with infectious matter that gets on their hands, then that person picks up and eats food contaminated by their hands. Of course, biohazard ingestion can also occur when sharing food or beverages with an infectious person. Hepatitis A is often contracted by ingestion.

- One more pathway for bacteria or viruses to enter your body is when **blood or other material that is infectious is injected** into a person. Injection can occur purposely, such as during a blood transfusion, or unintentionally by being accidentally stuck by, or sharing, a dirty syringe needle. Bloodborne pathogens like Hepatitis C and HIV are viruses easily transmitted by injection.

Inhalation, absorption, ingestion, injection; by recognizing these four most common ways bacteria and viruses can be transmitted, we can better explain in future toolbox talks the various ways to protect ourselves from exposures to these infectious agents while at home and at work. Are there any questions about today's toolbox talk on common ways bacteria and viruses are spread? Thank you for your attendance, please sign your name on the training certification form to get credit for attending this toolbox training session.

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