OSHA Training Toolbox Talk: Biological Hazards – Brief Descriptions of Bacteria and Viruses

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

Bacteria and viruses; These are but two of the categories of biologically active hazardous agents, or Biohazards, that can lead to the development of various diseases in humans. The purpose of this toolbox talk is to provide you with a simple explanation about bacteria and viruses, so you will have a better understanding of these types of Biohazards when we have more specific discussions about how to avoid contracting or spreading an infectious disease caused by them.

- **Bacteria** – Bacteria are tiny, single cell microbes that can be found most everywhere in our world. They can be found in our water, in our food, in plants and animals, as well as in and all over our bodies. Bacteria differ from single cell plants in that they do not produce chlorophyll, and they do not contain a nucleus like most plants and animal cells. The vast majority of bacteria do not cause infectious diseases in humans; in fact, many bacteria are actually beneficial to man. But several types of bacteria can cause infectious diseases that you may have heard of, such as, but not limited to, pneumonia, cholera, E. coli, and tuberculosis. While the body's immune system is capable of fighting off many bacterial infections, sometimes antibiotics are utilized in treating patients with bacterial diseases.

- **Viruses** – Viruses are not even considered to be a living cell, but rather ultra-tiny particles of genetic material, either DNA or RNA. But many viruses can actually infect living cells in an animal or a plant, causing those cells to mutate and multiply, possibly leading to the development of a disease. Examples of common viruses include those that cause the common cold, fever blisters, influenza, and even warts. More severe diseases caused by viruses include hepatitis, rabies, and polio. The human immunodeficiency virus, referred to as HIV, is the virus that can even lead to Acquired Immunodeficiency Syndrome, or AIDS. And most everyone is now aware of the coronavirus called SARS-CoV-2 that is currently wreaking havoc around the world, as it can lead to a disease known as COVID-19. There are also what are known as **Arboviruses**, which are a subset of viruses carried and transmitted by ticks and some flying insects. These types of viruses may lead to the development of diseases such as West Nile, Zika, and Malaria. The body's immune system can fight off many, but not all, viral infections. And antibiotics are NOT helpful in treating patients suffering from a viral infection.

There are also a few other types of Biological Hazards that can lead to diseases in humans, such as, but not limited to, fungi, which include some molds and yeasts, and parasites, which live in host animals and can spread to humans through ingestion or invasion. But the primary purpose of this particular toolbox talk is to help us establish a basic knowledge about bacteria and viruses. Then, perhaps, we can better understand how they can be carried, spread, contracted, and cause diseases in humans, as well as how we can try to prevent that from happening at work or at home.

Does anyone have questions about today's toolbox talk about the basics of bacteria and viruses? Thank you for your attendance today. Please be to sign your name on the training certification form so you get credit for attending this OSHA toolbox training session.

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