Protect Yourself Against Ultraviolet Radiation Meeting Kit

ULTRAVIOLET RADIATION

Ultraviolet (UV) radiation is similar to visible light in all physical aspects, except that it does not enable us to see things. The light that enables us to see things is referred to as visible light and is composed of the colors we see in a rainbow. The ultraviolet region starts right after the violet end of the rainbow.

In scientific terms, UV radiation is electromagnetic radiation just like visible light, radar signals and radio broadcast signals. Electromagnetic radiation is transmitted in the form of waves. The waves can be described by their wavelength or frequency and their amplitude (the strength or intensity of the wave). Wavelength is the length of one complete wave cycle. For radiation in the UV region of the spectrum, wavelengths are measured in nanometers (nm), where 1 nm = one millionth of a millimeter.

THREE TYPES OF UV RADIATION RAYS

UV radiation is classified into three primary types: ultraviolet A (UVA), ultraviolet B (UVB), and ultraviolet C (UVC). These groups are based on the measure of their wavelength, which is measured in nanometers (nm= 0.000000001 meters or 1×10-9 meters).

Wave Type	UVA	UVB	UVC
Wavelength	315- 399 nm	280-314 nm	100-279 nm

SOURCES OF ULTRAVIOLET RADIATION

Sunlight is the greatest source of UV radiation.

THE OZONE LAYER/EXPOSURE/UV RADIATION

Certain industrial chemical pollutants in the atmosphere are gradually eroding earth's protective shield (ozone layer) which stops the sun's UV radiation from reaching the earth. There has been growing concern about increasing levels of UV radiation in the sunlight, especially during the summer months. Excessive exposure to ultraviolet rays can cause skin cancer and eye cataracts.

ARTIFICIAL SOURCES OF UV RADIATION INCLUDE:

- Tanning beds
- Mercury vapor lighting (often found in stadiums and school gyms)
- Some halogen, fluorescent, and incandescent lights
- Some types of lase

BENEFITS OF UV RADIATION

Beneficial effects of UV radiation include the production of vitamin D, a vitamin essential to human health. Vitamin D helps the body absorb calcium and phosphorus from food and assists bone development. The World Health Organization (WHO) recommends 5 to 15 minutes of sun exposure 2 to 3 times a week.

CANCER RISK

- The two most common types of skin cancer are basal cell cancer and squamous cell cancer. They form on the head, face, neck, hands, and arms. Most cases of melanoma, the

deadliest kind of skin cancer, are caused by exposure to UV radiation.

Skin Cancer Is More Common In People Who:

- Spend a lot of time in the sun or have been sunburned.
- Have light-color skin, hair, and eyes.
- Have a family member with skin cancer.
- Are over age 50.

OTHER HEALTH ISSUES RELATED TO UV RADIATION

- UV rays, either from the sun or from artificial sources like tanning beds, can cause **sunburn.**
- Exposure to UV rays causes **premature aging of the skin.**
- UV rays can cause the cornea (on the front of the eye) to become inflamed or burned. They can also lead to the formation of cataracts.
- Exposure to UV rays can **weaken the immune system**, so the body has a hard time fending off infections.

- **Oral and topical medicines**, like antibiotics, birth control pills, increase skin and eye sensitivity to UV in skin types.

WORKER PROTECTION BEST PRACTICES

UV radiation is invisible. It does not stimulate the natural defenses of the eyes. Workers must use eye and skin protection while working with UV radiation sources. The selection of eye protection depends on the type and intensity of the UV source. **Shielding** is usually easy to design. Mercury lamps and metal halide lamps have an outer glass cover to stop UV radiation, and are designed such that if the outer glass is broken, the lamp ceases to function.

OUTDOOR WORKER RECOMMENDATIONS

- Avoid midday sun (10:00 a.m. – 3:00 p.m.).
- Wear a broad-brimmed hat that will shade your face, neck, and ears.
- Use UV protection sunglasses.

- Protective clothing can include long pants, hats, and long-sleeved shirts.
- Physical sunscreens (e.g., zinc oxide and titanium dioxide) are opaque products that reflect or block both UVA and UVB. Chemical sunscreens are non-opaque. They absorb UVA, UVB, or both. Broad spectrum sunscreens are intended to block both types of UV radiation.

FINAL WORD

Ultraviolet radiation is a version of DR. Jekyll and Mr. Hyde. It is used in industrial processes, medical and dental practices such as killing bacteria, curing ink and resins, phototherapy. But uncontrolled and not understood, ultraviolet radiation is a killer.