# Protect Yourself Against UV Radiation Meeting Kit

## WHAT'S AT STAKE

**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.

**SOURCES OF ULTRAVIOLET RADIATION**

Sunlight is the greatest source of UV radiation. Man-made ultraviolet sources include several types of UV lamps, arc welding, and mercury vapour lamps.

UV radiation is widely used in industrial processes and in medical and dental practices for a variety of purposes, such as killing bacteria, creating fluorescent effects, curing inks and resins, phototherapy and suntanning. Different UV wavelengths and intensities are used for different purposes.

**THE OZONE LAYER AND 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. In recent years, 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.

# WHAT’S THE DANGER

### HEALTH EFFECTS OF EXPOSURE TO UV RADIATION

Some UV exposure is essential for good health. It stimulates vitamin D production in the body. In medical practice, one example is UV lamps can be used for treating psoriasis (a condition causing itchy, scaly red patches on the skin).

In addition to **skin cancer**, exposure to UV rays can cause other health problems:

- UV rays, either from the sun or from artificial sources like tanning beds, can cause **sunburn**.
- Exposure to UV rays can cause **premature aging of the skin and signs of sun damage** such as wrinkles, leathery skin, liver spots, actinic keratosis, and solar elastosis.
- UV rays can also cause **eye problems**. They can cause the cornea (on the front of the eye) to become inflamed or burned. They can also lead to the formation of cataracts (clouding of the lens of the eye) and pterygium (tissue growth on the surface of the eye), both of which can impair vision.
- Exposure to UV rays can also **weaken the immune system**, so that the body has a harder time fending off infections. This can lead to problems such as reactivation of herpes triggered by exposure to the sun or other sources of UV rays. It can also cause vaccines to be less effective.

### OTHER HAZARDS OF UV RADIATION

Besides direct sunlight, UV radiation exposure can occur via indirect routes. The following factors must be remembered in this

regard:

- Reflections from snow, sand and concrete increases the UV intensity.
- A light cloud cover does not block UV in the sunlight.
- Water reflects only a small amount of UV. The rest can penetrate below the water’s surface.

# HOW TO PROTECT YOURSELF

**BEST PROTECTION PRACTICES FOR UV RADIATION FROM THE SUN**

Ways to limit exposure to the sun’s UV radiation include avoiding working in the sun, wearing protective clothing and hats, and applying sunscreens.

Protective clothing can include long pants, hats, and long-sleeved shirts. Some newer, sun-resistant fabrics are more efficient in blocking UV radiation.

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 (i.e., you can see through them on your skin). They absorb UVA, UVB, or both. Broad spectrum sunscreens are intended to block both types of UV radiation.

Sunscreens are rated according to Sun Protection Factor (SPF), an index of protection against skin erythema (reddening of the skin). The higher the SPF is, the more protection it offers.

- SPF 15 sunscreen may absorb 93 percent of UVB radiation.
- SPF 30 sunscreen may absorb 97 percent of UVB radiation.

The Canadian Cancer Society recommends a broad-spectrum sunscreen (protects against UVA and UVB rays) with an SPF of 30 or higher. Follow the manufacturer’s directions. For example, sunscreens should be applied 20 minutes before going outdoors, and reapplied every two hours, or more often if perspiring (sweating), swimming, or working in water. Use a broad-spectrum lip balm with an SPF of 30 or higher as well.

**BEST SAFETY UV RADIATION TIPS WORKING OUTDOORS**

- Avoid the midday sun (10:00 a.m. – 3:00 p.m.).
- Wear clothing that is tightly woven to block sunlight.
- Wear a broad-brimmed hat that will shade your face, neck, and ears.
- Apply waterproof sunscreen with an SPF of 30 or higher to all sun exposed skin.
- Use UV protection sunglasses.
- minimize exposure to ultraviolet radiation,
- be aware of reflective surfaces while in the sun,
- wear protective clothing,
- avoid use of artificial tanning devices.

# FINAL WORD

UV radiation has shorter wavelengths (higher frequencies) compared to visible light but have longer wavelengths (lower frequencies) compared to X-rays.

Different wavelengths of electromagnetic radiation cause different types of effects on people. For example, gamma rays are used in cancer therapy to kill cancerous cells and infrared light can be used to keep you warm.