HEALTH PHYSICS SOCIETY

# ULTRAVIOLET RADIATION AND PUBLIC HEALTH

## POSITION STATEMENT OF THE HEALTH PHYSICS SOCIETY*

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One in five persons will be diagnosed with skin cancer sometime in their lifetime. Nearly one million new skin cancers are diagnosed each year in the United States, and more than 40,000 of these cases are melanoma. Annually, nearly 10,000 people die of skin cancer including over 7,000 from melanoma. Many of these cancers can be prevented by reducing exposure to ultraviolet radiation.

Most human exposure to ultraviolet comes from the sun. Light rays from the sun are comprised of several different bands including UVA, UVB, and UVC. UVA constitutes the majority of the ultraviolet light that reaches the earth's surface. UVA has little effect on the skin, but it can trigger phototoxic or photoallergic reactions associated with certain medications or illnesses such as Lupus. UVB makes up only 10% of the ultraviolet light that reaches the earth's surface, but it is nearly 1,000 times more efficient than UVA in causing a sun tan and associated skin damage. UVB causes burning and damage to the skin, including increased risk of skin cancer. UVC, used in germicidal lamps, causes almost no damage because of its low penetration of the skin.

The atmosphere, especially the ozone layer, filters ultraviolet light and is most effective in early morning and late afternoon. Ultraviolet penetration is greatest between the hours of 10:00 a.m. and 4:00 p.m. UVB intensity increases about 3% for every thousand feet in elevation and, like light, is reflected variously from most objects. Sand may reflect about 1/3 of the UVB and snow, ice, and water may reflect up to 100%. Ironically, water vapor neither adsorbs nor reflects very much UVB; consequently, cloudy days offer no protection from UVB.

The primary source of artificially produced UVB is tanning booths. The American Academy of Dermatology estimates that one million Americans visit tanning salons every day and that the average 15 to 30 minute visit is equivalent to an entire day at the beach. The tanning bed light can burn both skin and eyes and can increase the risk of skin cancer. Public health experts and medical professionals continue to warn people that even moderate use of tanning beds may cause skin cancer including melanoma. The Food and Drug Administration and the Centers for Disease Control and Prevention encourage people to avoid use of tanning beds and sun lamps.

The Health Physics Society advocates that the public be provided adequate information to understand the potential risks from ultraviolet radiation and to make decisions that decrease their risk of skin cancer. The Society supports and urges public agencies, including local agencies, to take a more active role in educating the public on these risks and in methods to reduce risk. To assist the public, health officials, and the media, the Society offers the following recommendations to reduce the risk of cancer from exposure to ultraviolet radiation.

1. **Avoid the use of tanning beds or sun lamps.** Unless directed by a physician, people should not use tanning equipment. Such equipment offers no health benefit and significantly increases the risk of skin cancer.
2. **Protect yourself from the sun.** To reduce exposure to harmful UVB radiation, people should practice the following:

    - Minimize exposure to the sun between 10 a.m. and 4 p.m., when the sun's rays are strongest. If your shadow is shorter than you are, seek the shade.
    - Apply a broad-spectrum sunscreen that protects against UVA and UVB and has a Sun Protection Factor (SPF) of at least 15.
    - Reapply sunscreen every 2 hours, even on cloudy days. Reapply after swimming or perspiring.
    - Wear a wide-brimmed hat and sunglasses.
    - Avoid reflective surfaces.

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* The Health Physics Society is a non profit scientific professional organization whose mission is to promote the practice of radiation safety. Since its formation in 1956, the Society has grown to approximately 6,000 scientists, physicians, engineers, lawyers, and other professionals representing academia, industry, government, national laboratories, the department of defense, and other organizations. Society activities include encouraging research in radiation science, developing standards, and disseminating radiation safety information. Society members are involved in understanding, evaluating, and controlling the potential risks from radiation relative to the benefits. Official position statements are prepared and adopted in accordance with standard policies and procedures of the Society. The Society may be contacted at: 1313 Dolley Madison Blvd,. Suite 402, McLean, VA 22101; phone: 703-790-1745; FAX: 703-790-2672; email: HPS@BurkInc.com.