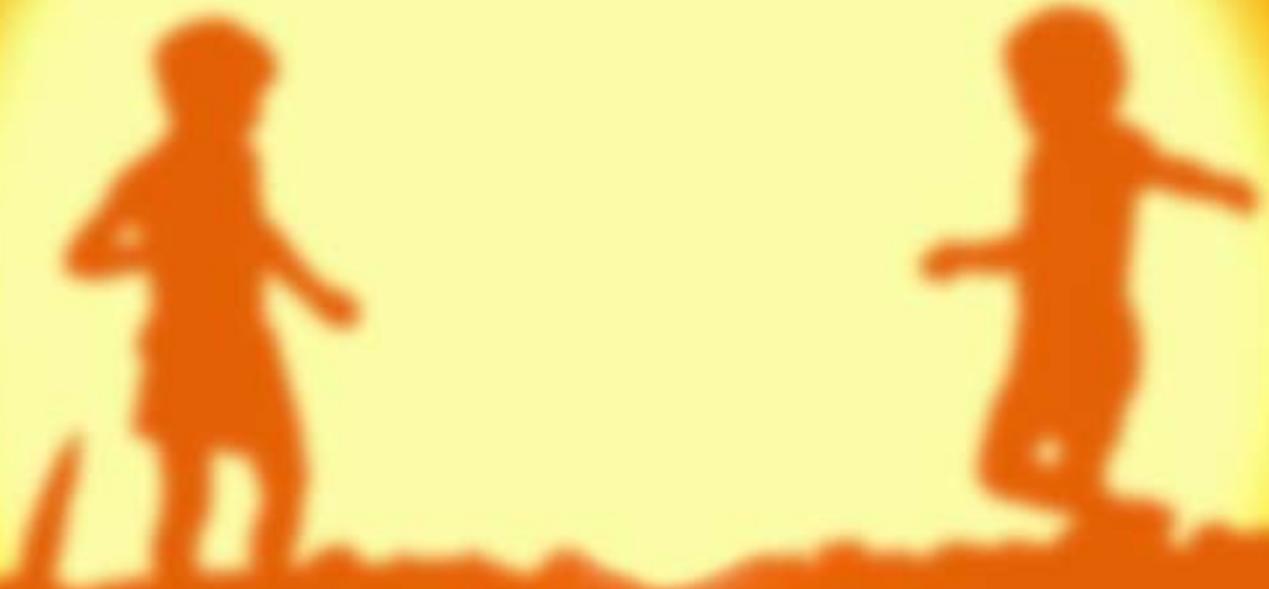




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SUN PROTECTION AND SCHOOLS

How to Make a Difference





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PREFACE

Overexposure to ultraviolet (UV) radiation from the sun and artificial sources is of considerable public health concern. It plays an important role in the development of skin cancer and eye damage (particularly cataracts), and suppresses the immune system.

Children are particularly at risk as (i) sun exposure during childhood and adolescence appears to set the stage for the development of both melanoma and non-melanoma skin cancers in later life, (ii) a significant part of a person's lifetime exposure occurs before age 18, and (iii) children have more time to develop diseases with long latency, more years of life to be lost and more suffering to be endured as a result of impaired health.

Prevention efforts in schools to change children's knowledge, attitudes and behaviour regarding sun protection can significantly decrease adverse health effects and health care costs.

Experts worldwide participated in the International Workshop on Children's Sun Protection Education, organized by the World Health Organization (WHO), held in Orvieto, Italy, on 4 October 2001.

Based on the outcomes of this workshop, WHO has developed a comprehensive package of materials for children's sun protection education.

This includes:

- *Sun Protection and Schools: How to Make a Difference*, which describes the importance of sun protection in schools, and outlines necessary steps for establishing a school programme.

- *Sun Protection: A Primary Teaching Resource*, which is for primary school teachers and provides suggestions and ready-made teaching activities.
- *Evaluating School Programmes to Promote Sun Protection*, which is for schools, and educational and health authorities.

This document, prepared by Drusilla Hufford, United States Environmental Protection Agency, and Eva Rehfuess, WHO, is intended for Ministries of Health and Education, as well as national and local authorities and non-governmental organizations active in the area of health promotion and sun protection programmes.

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WHY HAVE SUN PROTECTION PROGRAMMES IN SCHOOLS?

Overexposure to UV radiation causes serious health effects

The sun emits light, warmth, and ultraviolet (UV) radiation. It is a vital source of energy for all life on Earth, and without the sun, life as we know it could not be sustained.

Exposure to UV radiation also enables the human body to produce vitamin D, which plays a crucial role in skeletal development, immune function, and blood cell formation.

However, UV radiation is also of considerable public health concern. In the short term, overexposure to UV radiation causes tanning, sunburn, pain, and in severe cases, blistering of the skin. In the long term, UV radiation exposure accelerates skin ageing, and can lead to skin cancer and even death.

Sun exposure can also cause damage to the eyes, such as contributing to the development of cataracts. A further reason for concern is that UV radiation suppresses immune function, which may compromise the body's ability to resist disease.

Skin cancer

Between two and three million non-melanoma skin cancers and approximately 132 000 malignant melanomas occur globally each year. One in every three cancers diagnosed worldwide is skin cancer.

Currently, one in five North Americans will develop some form of skin cancer in their lifetime, and since the early 1970s, the incidence of skin cancer has increased by as much as 4% per year in the United States alone.

Eye damage

Cataracts have blinded some 12 to 15 million people

worldwide. According to WHO estimates, up to 20% of these may have been caused or enhanced by sun exposure, especially in countries close to the equator, such as India and Pakistan.

Suppression of the immune system

UV radiation exposure suppresses the human immune system, potentially increasing the risk of infection and reducing the efficacy of immunization programmes. This could have serious implications, especially for children living in countries located close to the equator.

Children are at particular risk

Many believe that only fair-skinned people need to be concerned about overexposure to the sun. High levels of the skin pigment melanin reduce the risk of common skin cancers for people with darker skin.

However, even though the incidence of skin cancers is lower in dark-skinned people, skin cancers that do occur are often detected at a later, more dangerous, stage.

The risk of other health effects related to sun exposure, such as eye damage, premature ageing of the skin, and immunosuppression, is independent of skin colour.

Children are particularly at risk, as sun exposure during childhood and adolescence appears to set the stage for the development of both melanoma and non-melanoma skin cancers later in life. They also have more time to develop diseases with long latency, more years of life to be lost, and more suffering to be endured as a result of impaired health and potential disfigurement, as in many cases skin cancer treatment can involve the removal of facial lesions.

Skin cancer rates have been rising at an alarming rate in all fair-skinned populations. Much of this rise is behaviourally driven, and four out of five cases of skin cancer are preventable by sensible behaviour, especially during childhood.

Therefore, prevention efforts represent an opportunity to save lives, to improve quality of life, and to reduce avoidable costs from treatment of skin cancers.

School programmes are the key to prevention

Schools are an excellent place to teach healthy behaviours that can prevent overexposure to UV radiation.

- Children spend much time in school, and UV radiation exposure during the school years contributes significantly to total lifetime sun exposure.
- School children are especially susceptible to fashion trends and peer pressure suggesting that a suntan is healthy.
- Schools provide an environment that is geared towards learning and practising new skills, including “sunsafe” behaviours.
- Teachers play a major role in influencing children’s knowledge, attitudes, and behaviour regarding sun protection, and can make a major contribution to the long-term health of their students.
- Schools can provide highly cost-effective interventions that result in decreased costs in the health system.

An effective campaign can have an enormous impact on public health: the SunSmart Campaign of

The Cancer Council Victoria, Australia, has made significant achievements in raising awareness of the issues of sun protection and skin cancer as well as encouraging changes in sun-related lifestyle.

Recent evaluations of the programme show that fewer people see tanning as desirable or attractive and more people are wearing hats, using sunscreen, and covering up to avoid the sun.

Most significantly, research over the past decade has revealed an 11% decrease in the incidence of common skin cancers among people aged 14 to 49 years.

Education programmes can reduce health care costs

Beyond the health benefits, effective education programmes can significantly reduce costs in the health system and strengthen the economy.

Current prevention campaigns in Australia invest approximately US\$0.08 per person per year, while the direct annual costs of skin cancer treatment have been estimated at US\$5.70 per person.

ESSENTIAL ELEMENTS

A comprehensive approach to sun protection

A school programme on sun protection should adopt an integrated approach to help students, teachers, staff, and the wider community to avoid health risks of UV radiation exposure during school hours and beyond. Important elements include sun protection education, a healthy school environment, a school-endorsed sun protection policy, and community and family involvement. Not all schools will have the resources to integrate sun protection into all of these components. It is more important to start with small, feasible changes than to wait until resources become available to address all components simultaneously.

Skills-based health education

Skills-based health education helps individuals to develop knowledge, attitudes, values, and life skills that are needed to make positive health-related decisions, and to put these into daily practice. Therefore, sun protection education must be culturally and geographically relevant, and should have an immediate connection with the structural and social environment children live in. Sun protection education can be integrated into a range of curriculum areas, such as science, mathematics, environmental studies, and the arts. In this way, learning experiences can reinforce and complement one another. Sun protection education should be combined with efforts addressing other health issues, as appropriate. For example, a primary school programme on safety could include such topics as road safety, hygiene, and safe behaviour in the sun.

Box 1: Developing healthy habits

Preventive health habits developed at a young age are likely to continue into adulthood. Sun protection strategies are relatively easy to adopt and incorporate into a daily routine. Knowing how to prevent sunburn and being able to practise sun-protective behaviours can provide children with a sense of control over their own well-being. Unlike other preventive measures, where the effects may not become evident for several years, the symptoms of sunburn are immediate, enabling children to relate behaviour (lack of sun protection) to outcome (sunburn).

It is important to reach children at an early age, when they tend to be most receptive to the need for sun protection. During adolescence, attitudes and behaviour are strongly influenced by peers and fashion, and a tan may be viewed as healthy and attractive. Once peer attitudes factor into decisions, good habits tend to be replaced by sun-seeking behaviours, echoing other risky behaviours such as unprotected sex and smoking.

A supportive environment

A substantial portion of children's time is spent at school or participating in school-based activities. Outdoor activities such as break times, lunch, and sporting events frequently occur at times when UV radiation levels are highest. Thus, the school environment and the manner in which a school operates can have a significant impact on children's UV radiation exposure. While it is a personal decision to adopt sensible sun behaviour, positive choices can be supported through adequate structural and policy measures. The availability of shade structures at schools and day care centres is likely to reduce children's UV radiation dose significantly. A sun protection policy expresses a school's commitment to

sun protection, and may address the use of clothing and sunscreen, the scheduling of outdoor activities, and the provision of shade on the school grounds.

Box 2: Role modelling

Teachers, coaches and school staff have a prime opportunity to reach children when they are at their most impressionable age. Role modelling of appropriate sun behaviour by staff is a vital element in educating students and parents as well as protecting staff from excessive sun exposure. The school can also become a role model for families and other community organizations, such as sporting clubs or kindergartens. Planning for sun protection at school can make it easier for parents and students to plan for sun protection during activities outside the school environment.

Parent and community involvement

Healthy sun-protective practices are more likely to take place if there is consistent information and support from the family, the school, and the community. While improving parents' behaviour can help promote sun protection for their children, the reverse may also be true: the messages children take home can encourage parents to adopt more sun-protective behaviours themselves. Schools are often the hub of their communities as a venue for local events, as well as a meeting point for parents, and sun-protective interventions can be a means of involving the broader community in school-based activities. Community members who have themselves experienced health problems relating to UV radiation exposure are often willing to provide first hand accounts to others. Sports days and school fairs are ideal opportunities for the school to showcase its sun

protection strategies and act as a model. Schools can also provide ways to introduce new partnerships with local organizations and businesses, which can benefit all members of the community. For example, a local business may offer discounts on sunscreen and hats in return for promotion through school newsletters and bulletins.

Box 3: Some key elements of effective sun-protective interventions in schools

- **A comprehensive sun protection policy**
Involving parents and students in the policy development process is important to secure their support and improve their understanding of the need for sun protection strategies.
- **Strategies to promote sun protection through appropriate behaviour, the school environment, and curriculum activities**
These should reflect the local climate and school community, and should include clothing (of both students and staff), particularly hats, scheduling of outdoor activities, shade provision and use, sunscreen, and curriculum activities.
- **A regular review process**
The review should evaluate the effectiveness of the implementation of these strategies as well as the effectiveness of the programme in changing knowledge, attitudes, and behaviour to allow continued improvement of the programme.

Practices that minimize exposure to UV radiation

The key element of sun protection is minimizing the amount of time spent in the sun, particularly during the period of each day when UV radiation is at its most intense. In temperate climates this generally refers to the four-hour period around solar noon. Closer to the equator this period may be longer. When outdoors, shade, protective clothing, and sunscreen can help to reduce exposure to harmful UV radiation.

Shade

While shade development is often costly, it can be incorporated in a broader environmental programme. For example, tree planting can be promoted not only as a means of improving shade, but also of enhancing the school's surroundings. Fundraising activities towards the development of shade structures can foster more active parental participation and can provide students with practical experience in setting and working towards shared goals. Participation in such activities at the school or community level can enhance students' sense of ownership of the outcome and help develop their confidence and communication skills.

Protective clothing

The use of sun-protective clothing by students, staff, and parents should be encouraged or required. Recommended items include broad-brimmed or legionnaire hats; shirts with collars and longer sleeves; longer-style shorts, skirts, or trousers; and wraparound sunglasses with UV-protective lenses. Clothing used for sporting activities is particularly important, as students are often outdoors for extended periods during such activities. Providing clothing can be

highly cost-effective, as school uniforms and dress codes can be changed over time to incorporate clothing that can be worn outside the school environment as well.

Sunscreen

Sunscreen should be used to protect those areas of the skin that cannot be adequately covered with clothing, such as the face, which is only partially protected by a hat. Even in the shade, indirect UV radiation levels can be sufficiently high to be harmful. A broad-spectrum sunscreen with a sun protection factor (SPF) of at least 15 provides adequate protection against UV radiation exposure. However, even when applied correctly, no sunscreen blocks UV radiation completely. Therefore, sunscreen should never be used as the first or only method of sun protection, or to extend the amount of time spent in the sun.

Scheduling

Where possible, outdoor activities should be scheduled to avoid peak UV radiation periods and to make the best possible use of shaded areas or indoor facilities. This is particularly important for the organization of sport events, where students and spectators spend extended periods of time outdoors. Beginning such events later in the day or conducting them over successive mornings can help to avoid excessive UV radiation exposure. Midday breaks can be shortened and morning or late afternoon breaks extended to minimize the amount of time spent outdoors during peak UV radiation periods. Changes to scheduling of outdoor activities can be achieved relatively cheaply or at no cost.

Curriculum

An interdisciplinary programme is very beneficial for teaching sun protection, as information will be reinforced through a variety of sources. For example, students can learn about the health effects of UV radiation in science classes, do word games about the sun in language classes, or learn about sun mythology in social studies. At the same time, sun protection can be used as a practical example to reinforce existing curriculum areas such as mathematics or environmental studies.

Curriculum programmes focusing on or incorporating sun protection education can help develop communication and life skills. Ideally, these form part of a comprehensive approach that aims to develop positive attitudes towards risk reduction and to promote responsible decision-making, skills essential for general health and well-being.

MAIN BARRIERS

While this document aims to provide general guidance, countries will face different types of problems when trying to establish sun protection programmes in schools. Some major barriers, as well as perspectives about what is important in framing programmes and communicating about sun exposure, are illustrated below. This should help policy-makers from the public health and education sectors to craft effective school-based sun protection programmes and foresee and overcome problems.

Geographic issues

For some countries, the paramount issue in designing sun protection programmes is geographic. In high-latitude countries, UV radiation levels are usually low and the potential for overexposure to the sun poses a health risk for only a short period of time each year. Nevertheless, the issue remains important because these countries may also have large populations with very fair skin, especially children. For example, the brief summers in Lapland limit overall exposures for the population, but can result in high intermittent exposures to the face and eyes from reflections off snow and water. High-latitude countries may use the travel theme as an entry point, as the increasing trend towards vacations in sunny countries can lead to intense UV radiation exposures.

Multiracial or multiethnic societies

Sun protection programmes in multiracial or multiethnic societies must make sure to craft an initiative that, through its approach and language, is respectful of the health implications of UV radiation exposure for all members of their population. While skin cancer is primarily a disease among fair-skinned people, eye damage and immune system suppression

occur independently of skin pigmentation. These are areas of great concern both for the health of the individual, and for the national health system, for example, due to the costs for treatment of cataracts.

Allocation of resources

Each country appropriately sets its own balance between investing in research and monitoring and funding practical interventions. In Australia, research has now demonstrated the effectiveness of health promotion programmes in reducing the actual incidence of skin cancer. This provides a strong argument for setting this balance in a way that values highly practical action to save lives. At the same time, countries will wish to allocate resources towards monitoring health outcomes and evaluating interventions over an extended period of time, as the effects on health outcomes will only become apparent after several years. These figures, in combination with the overall cost for the treatment of skin cancer and cataracts, will provide the basis for demonstrating cost effectiveness – the most compelling argument for governments to support a sun protection programme.

Entry points for a sun protection programme

Appropriate entry points for sun protection education may vary between different geographic and cultural settings. For example, in a country with deeply rooted environmental values, the connection with ozone layer destruction may be an important entry point for sun protection, promoting environmental responsibility at the same time. The importance of linking the sun protection message with the existing curriculum and disseminating it in an interdisciplinary approach has already been discussed.

Participatory approach

Involving members of the school and community will help to establish a school programme that responds to the school's needs and can be maintained with available resources and commitments. Student involvement is essential for the development of strategies that are relevant to student needs and concerns, and can generate a sense of ownership and personal responsibility. Groups or individuals outside the school, such as local government representatives, businesses, community youth agencies, non-governmental organizations, health service providers, and sporting groups can disseminate information about the need for sun protection throughout the community, help obtain resources and funding, and reinforce learning experiences provided in the school environment.

Motivating teachers

Health risks of UV radiation exposure are often not perceived as important or relevant in the school context. With an already packed curriculum, many teachers may decide to concentrate their limited time and resources on key curricular activities. However, they are usually happy to promote the message if ready-made lesson plans are provided as a sustainable resource and these are linked to key curricular areas. The simple suggestions provided in Box 4 may help to motivate teachers to be committed to integrating sun protection in their teaching.

Box 4: How to motivate teachers

- Clearly link opportunities for teaching sun protection to key curricular themes.
- Stick to approximately five simple key messages.
- Provide background information and ready-to-use resources to teachers.
- Organize short seminars for teachers and staff.
- Hold competitions to encourage participation by students and teachers.
- Identify a "champion" to take the message forward.
- Foster parent involvement.
- Recognize each school's efforts through an award system.

FURTHER INFORMATION

Sun Protection: A Primary Teaching Resource and *Evaluating School Programmes to Promote Sun Protection* complement this document, and all three taken together form a comprehensive package to facilitate the incorporation of sun protection into the primary school curriculum and health agenda. These documents can be downloaded from the website of WHO's Intersun Programme:

Intersun, The Global UV Project

Protection of the Human Environment
World Health Organization
1211 Geneva 27
Switzerland
<http://www.who.int/peh/uv>

School programmes on sun protection

The following websites provide information about school programmes and teaching resources.

Australia

SunSmart Campaign
The Cancer Council Victoria
1 Rathdowne Street
Carlton Vic 3053
<http://www.sunsmart.com.au/>

Cancer Foundation of Western Australia Inc.

46 Ventnor Ave
West Perth WA 6005
<http://www.cancerwa.asn.au>

Canada

Children's UV Index Sun Awareness Program

Meteorological Service of Canada
4905 Dufferin Street
Downsview
Ontario M3H 5T4
<http://www.msc-smc.ec.gc.ca/uvindex/>

France

Vivre avec le soleil

Sécurité Solaire
15 rue Manin
F-75019 Paris
<http://www.infosoleil.com/vivreaveclesoleil.php>

Germany

Deutsche Krebshilfe e.V.

Thomas-Mann-Str. 40
53111 Bonn
Postfach 1467
53004 Bonn
<http://www.krebshilfe.de>

Israel

Israeli Cancer Association

Revivim Street 7
P.O. Box 437
53104 Givatayim
<http://cancer.org.il/>

Northern Ireland

Care in the Sun

Green Park Healthcare Trust
Health Promotion Department
Musgrave Park Hospital
Stockman's Lane
Belfast BT9 7JB
<http://www.careinthesun.org/>

United Kingdom

Sunsafe

Department of Health
Richmond House
79 Whitehall
London SW1A 2NS
<http://www.doh.gov.uk/sunsafe>

United States

SunGuard Man Online

Coalition for Skin Cancer Prevention in Maryland
1211 Cathedral Street
Baltimore
Maryland 21201
<http://www.sunguardman.org>

The SunSafe Project

Norris Cotton Cancer Center, HB 7925
One Medical Center Drive
Lebanon, NH 03756
<http://www.dartmouth.edu/dms/sunSAFE/>

SunWise School Program

United States Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Mail Code 6205J
Washington, DC 20460
<http://www.epa.gov/sunwise/>

Sunwise Stampede

American Zoo and Aquarium Association
8403 Colesville Road
Suite 710
Silver Spring
MD 20910-3314
<http://www.foundation.sdsu.edu/sunwisestampede/>

