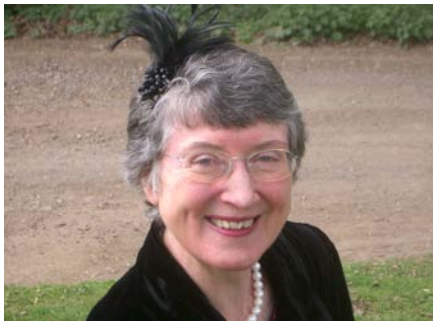
CSIR Natural Resources and the Environment cordially invites you to a public seminar:

**Crafting a road map for research on sun exposure and health in South Africa**
29 and 30 May 2012
CSIR Knowledge Commons, Meiring Naude Road, Pretoria

**Background**
The National Department of Health aims to achieve a long and healthy life for all South Africans by striving to increase life expectancy; decrease maternal and child mortality; combat HIV and AIDS and decrease the burden of disease from TB; and strengthen health system effectiveness. Environmental factors have a role to play in four of these goals. Clean drinking water, for example, is a pre-requisite for a healthy immune system.
Environmental health focuses on prevention and elimination of risk of exposure prior to the onset of disease and illness. In the past two decades, a large effort to address environmental health factors related to malaria, diarrhoea, cholera and respiratory illnesses has been made in South Africa through implementation of, among others, various anti-malaria campaigns and spraying, water quality guidelines, and air quality priority areas, respectively. However, little attention has been paid to the human health impacts of sun exposure, specifically solar ultraviolet (UV) radiation exposure, and appropriate measures to prevent them in South Africa. This despite evidence to suggest that a significant number of South Africans suffer from skin cancers, cortical cataracts and pterygia.

**Impacts of sun exposure on human health**
The main health effects of solar UV radiation are skin cancers, ocular diseases and immune suppression. International statistics suggest that between two and three million non-melanoma skin cancers and 132 000 melanoma skin cancers occur globally each year. Approximately one in three cancers diagnosed is a skin cancer. Worldwide about 18 million people are blind as a result of cataracts and 5% of this cataract disease burden is directly attributable to sun exposure. A third impact of excess sun exposure on human health is immune suppression. In a recent review paper, the consequences of immunosuppression induced by UV radiation on human health were explained to be both positive and negative. Negative impacts included increased prevalence of skin cancer, possibly infectious diseases and impacts on vaccination (vaccines may be less effective following excess sun exposure); while positive impacts include increased vitamin D production and a feeling of wellbeing. There are many unanswered questions in this area of research, especially in Africa among different ethnic groups, for example the implications for HIV and AIDS.
Children and young adults are particularly susceptible to the effects of sun exposure, both acute and chronic effects, where studies have shown that too much sun exposure during childhood and adolescence may enhance risk of adverse health effects during adulthood. Introducing positive sun behaviour and risk-averse sun attitudes early in life through targeted awareness programmes may be an effective preventive measure in the long term.
The two-day seminar will mark the launch of this research programme in South Africa and will comprise a public seminar on day one, followed by a round table discussion on the second day. On the first day, research partners and interested stakeholders will contribute research interests, trends, gaps and strengths from their respective sun-related discipline and how it fits in to the broader knowledge field. Ample time will be given for questions and discussion through audience and participant involvement. On the second day, project partners, including scientists, professional organisations, government and non-governmental organisations will meet for the round table discussion to work towards the development of a research road map for this knowledge field in South Africa. Please take note that participation in the round table discussion on day two is by invitation only.

**Topics and speakers**
**The consequences of sun exposure for human health – Prof Mary Norval**



*Solar ultraviolet radiation confers both beneficial and adverse effects on health. Both aspects will be considered in this presentation with the emphasis on suppression of immune responses. The situation in South Africa with respect to various diseases associated with sun exposure will be summarised, and gaps in knowledge identified.*
Prof Mary Norval, PhD DSc, is Professor Emeritus at the University of Edinburgh in Scotland. She has major research interests in the outcomes of ultraviolet radiation on human health, especially immunological aspects. She has published more than 250 papers and

reviews in this field and is a member of the United Nations Environment Panel that annually assesses the environmental effects of ozone depletion and its interactions with climate change.

**Sun, Savvy and Skin: An Enlightening Review of Skin Cancer in South Africa and Beyond – Dr Lester M. Davids**

*This talk will highlight the current status of skin cancer in South Africa and the approaches in place to deal with a rise in the overall number of skin cancer cases due to sun exposure. In addition, it will explain the aetiology and mechanisms resulting in skin cancer and update the current biological approaches towards cancer prevention and treatment.*

Dr Lester M. Davids is a senior lecturer at the University of Cape Town. He runs the Redox Laboratory in the Department of Human Biology and his research focuses on the use of human skin as a model to understand the underlying biological mechanisms of skin cancers and depigmentary disorders such as vitiligo. He also investigates the effect of photodynamic therapy as a potential treatment modality for both melanoma and non-melanoma skin cancers.

**Sun exposure among South Africans - Dr Caradee Wright**

*In South Africa, subpopulations at risk of excess solar UV radiation exposure include, among others, schoolchildren, teenagers and outdoor workers where timing, duration and nature of activity are important factors. Excess sun exposure during childhood and adolescence is implicated in melanoma skin cancer development in later life. Chronic sun exposure, as experienced by outdoor workers, is implicated in non-melanoma skin cancer development and actinic damage. Recreational sun exposure resulting in sunburn is also a likely risk factor for skin cancer. This presentation will discuss patterns of exposure to solar UV radiation with specific mention of South African evidence to help inform future research efforts and public health campaigns.*

Dr Caradee Wright is a senior researcher with the CSIR Climate Studies, Modelling and Environmental Health Research Group. She runs the SunSmart Research Programme and Lab in South Africa and has carried out child solar UV radiation dosimetry studies in South Africa and New Zealand. She is co-chair of the South African Young Academy of Science and founder of the Environmental Health Research Network (www.ehrn.co.za).

**The effects of ultraviolet radiation on the eyes – Mark Nagle**

*A brief description of what UV light is and how UV exposure can lead to damage of the various structures of the eye. Public health issues resulting from loss of vision or blindness, as well as the burden on state medical facilities. The use of protective eyewear, as well as clothing and hats need to be worn for ultimate protection, however public education of the dangers of UV exposure is equally important.*

Dr Mark Nagle is an optometrist in full time private practice. He holds registration to practice optometry in South Africa and the United Kingdom. He has a post-graduate diploma in Sports Vision and is currently completing a Doctor of Optometry degree from Aston University in the UK.

**UV-B monitoring and research activities at the South African Weather Service – Katlego Ncongwane**

*Since 1994, the South African Weather Service maintains a routine program for monitoring erythemally-weighted UV-B radiation using cost-effective Solar Light Model 501 broadband instruments at six monitoring sites across South Africa. This presentation aims at providing information on the current and future research and monitoring activities.*

Ms Katlego Ncongwane is a scientist in the Global Atmospheric Watch group under the Climate and Environmental Research and Monitoring unit at the South African Weather Service. She holds a master's degree from the University of Stellenbosch and is currently pursuing a master's degree in atmospheric physics with the University of KwaZulu-Natal, focusing on stratospheric ozone in South Africa.

**Summary of key learning, ideas, issues, challenges - Prof Beverley Summers**

Prof Summers was born, schooled and obtained her first degree (B Pharm, Nottingham) in the United Kingdom. In 1983 she moved to South Africa with her husband, Prof Rob Summers. Her MSc (Med) and PhD in pharmacy were obtained at the Medical University of Southern Africa (MEDUNSA – now Medunsa Campus, University of Limpopo). Together, she and Rob established the first Sun Protection Factor testing facility in South Africa at the Photobiology Laboratory, MEDUNSA, in 1989. Since then the laboratory has grown to provide a range of skin- and hair-care claim substantiation and safety testing for local and international companies. Beverley is also a senior lecturer for postgraduate studies; she supervises Masters and Doctoral students in research on Pharmacy Practice, HIV/AIDS and Radiopharmacy projects. She has published widely on a variety of topics. She has presented over 120 papers at local and international conferences and has authored and co-authored over 70 publications. She has served for many years on working groups and committees for SA Bureau of Standards and pharmacy professional organisations. She is currently a member of the International Standards Organisation working group on Photoprotection. She is an honorary life member of the SA Society of Cosmetic Chemists.

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