

# **INTERSUN**

**The International Project on Health,  
Solar UV and Environmental Change**

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## **Minutes of the INTERSUN Inaugural Meeting**

National Radiological Protection Board,  
United Kingdom  
21-22 October 1999



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## **Introduction**

At the United Nations Conference on the Environment and Development (UNCED) in 1992 it was declared under Agenda 21 that there should be activities on the effects of ultraviolet (UV) radiation. Specifically:

- undertake as a matter of urgency, research on the effects on human health of increasing UV reaching the earth's surface as a consequence of depletion of the stratospheric ozone layer;
- on the basis of the outcome of this research, consider taking appropriate remedial measures to mitigate the above mentioned effects on human beings.

In response to Agenda 21, WHO in collaboration with the United Nations Environment Programme (UNEP), the World Meteorological Organization (WMO), the International Agency on Cancer Research (IARC) and the International Commission on Non-Ionizing Radiation Protection (ICNIRP) published the environmental health criteria (EHC) monograph #160 in 1994. This monograph identifies gaps in knowledge about UV exposure and its impacts on health and the environment, recommends research needs to fill these gaps, and provides an updated assessment of health hazards from UV exposure. EHC monograph #160 forms the scientific basis for WHO's INTERSUN UV Project. It has been followed by various publications on UV-induced health risks, sun protection programmes and public education.

The task group finalizing the monograph recognized specific activities and research needs in the areas of exposure assessment, effects of UV on terrestrial plants, aquatic ecosystems, and human health effects related to the skin, immune system and eye. Many of these could be accomplished under the umbrella of INTERSUN, while some, at least initially, would require more basic laboratory research to be undertaken.

## **INTERSUN objectives**

Objectives of INTERSUN are to:

- collaborate with specialist agencies to implement the key research and other recommendations of the WHO/UNEP/ICNIRP task group, as outlined in WHO EHC monograph #160;
- develop reliable predictions of health and environmental consequences of changes in UV exposure with stratospheric ozone depletion;
- develop practical ways of monitoring change in UV-induced health effects over time in relation to environmental and behavioural change; and
- provide practical advice and information to national authorities on:
  - i) health and environmental effects of UV exposure;
  - ii) means of efficiently disseminating this information; and
  - iii) measures to protect the general public, workers and the environment against the adverse effects of increased UV exposure.

Key health impacts resulting from this programme:

- reduced incidence of UV-induced morbidity such as cataracts and other eye diseases, erythema and sunburn, melanoma and non-melanoma skin cancers and skin ageing;
- information on UV-induced immune suppression effects on HIV AIDS patients, susceptibility to infection, and autoimmune diseases; and
- information on whether UV reduces the effectiveness of vaccination programmes, and on potential improvements in efficacy through optimal scheduling of immunization campaigns.

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## **1. Opening**

Dr Repacholi welcomed the attendees on behalf of the WHO INTERSUN Project and noted the presence of representatives of several key collaborative groups (see Appendix C). He stressed that the meeting was to remain informal and focus on the development of a co-ordinated approach to protection from UV radiation worldwide. This meeting represented the first in a series of annual INTERSUN meetings during which the agencies, institutions and organizations collaborating on the programme would identify issues that need to be addressed and provide a collaborative approach to deal with them.

The focus of the first annual meeting was the re-definition/ re-launch of the INTERSUN Project. Future activities could build on the WHO Occupational Hygiene programme as a model for networking and profit from experience gained during the course of the successful International Electromagnetic Fields (EMF) Project and should adhere to the WHO's recently announced "Make a Difference" criterion. In addition to these minutes, a brief report summarizing what needs to be done in the context of UV was to be produced. Dr Repacholi suggested the following topics as a starting point for further discussions:

- develop agreement on the highest priority areas for UV;
- increase co-ordination among existing national programmes, particularly in the area of UV protection messages;
- explore ways to standardize the presentation and utilization of the Global Solar UV Index and the associated messages for the public; and
- outline approaches to the initiation and organization of public sun protection programmes.

For the benefit of attendees who were not already acquainted with all of those present, Dr Repacholi invited everyone to state their name and briefly describe their affiliation and activities. He also asked each attendee to provide a short written summary for inclusion in the minutes.

## **2. General Discussion**

The floor was opened to an initial round of general discussion. The following points were raised under a few main headings but their order of appearance does not reflect either the temporal order of the discussions or any order of priority.

## **Representation**

The INTERSUN Project should seek

- wider, more global representation, e.g. India, Asia;
- support from the European Commission, DG 12; Dr Webb mentioned that she had a list of DG 12 contacts;
- formal representation of the International Commission on Illumination (CIE) (ACTION: Dr Repacholi); and
- the addition of the European Committee for Standardization (CEN) as a collaborating partner (ACTION: Dr J-P Césarini).

Dr Driscoll raised the problem that he cannot find a group that will take UV "seriously" on its own merits rather than as a part of ozone hole problems or as a skin carcinogen.

Dr Repacholi suggested to develop further the co-operation with NGOs such as EUROSKIN and cancer charities like Europe Against Cancer, given that they play an active role in skin cancer prevention. Dr McKinlay, a member of the EUROSKIN Board of Directors, added that EUROSKIN is based in Europe and currently funded by German cancer charities but is aiming to connect with a wider range of cancer prevention organizations in Germany and Europe.

## **Gaps in Knowledge**

Research needs will evolve from the workshops associated with the International Meeting on Ultraviolet Radiation Exposure, Measurement and Protection at St. Catherine's College, Oxford (18-20 October 1999). Note: The proceedings have now been published (A.F. McKinlay and M.H. Repacholi (eds.) Ultraviolet Radiation exposure, measurement and protection, Radiation Protection Dosimetry Vol. 91 (1-3), 2000). WHO will prioritize the gaps raised and set out an agenda to improve health risk assessment for UV radiation.

## **Funding**

The INTERSUN Project can assist agencies to receive recognition with national governments since WHO deals with the various ministries at the highest level. It was noted that at this stage any information about potential funding agencies would be welcome and that funding under the European Commission DG 12's 5<sup>th</sup> Framework programme should be looked into.

Dr Mariutti pointed out that decisions by the European Commission strongly depend on the European Parliament. He proposed to write to the Chairman of the Commission on Health to formally inform the European Parliament about the existence and activities of the WHO INTERSUN Project. (ACTION: Dr Mariutti)

The question was put to Dr Fanton d'Andon about how the Ultraviolet Forecasting Operational System (UFOS) had managed to obtain funding. She explained that UFOS itself is funded under the EC DG 13. The proposed application for INTERSUN funding from the EC should take place under a broad umbrella of environmental and agricultural aspects and be extended to health issues for contribution from the DG 12. Collaborations with WHO and the World Meteorological Organization (WMO) would be extremely important. Dr Mangin underscored that the combination of environmental and health aspects was a very strong point in favour of Analytical and Computational Research, Inc (ACRI) with regards to funding. Dr Driscoll also emphasized the need for co-ordinated projects that will pull together aspects from various disciplines so that wider coverage can be put forth to larger funding bodies like the European Commission.

Dr Repacholi raised the issue of involving cancer charities and non-governmental agencies like EUROSUN that are heavily involved in the area of UV radiation and sun protection. He was hoping to expand NGO representation but proposed to concentrate on international rather than national organizations.

### **Terms of Reference**

Dr McKinlay stressed that the terms of reference should be set out clearly when dealing with "technical" agencies, especially the focus on health aspects.

Dr Mariutti pointed out the need to retain a clear focus on health aspects as a lot of confusion can arise, when different aspects are not kept clear.

### **Priority Areas for INTERSUN**

- Improved co-ordination among the collaborating partners through
  - i) linking up with each others' web sites,
  - ii) updating mailing lists,
  - iii) communicating regularly, and
  - iv) assigning activities.
- Organization of a meeting for 4-7 December 2000 by the German government through ICNIRP.
- Work in break-out groups on drafts for comment and review at the meeting due in Germany.
- Preparation of a brochure outlining the elements of the INTERSUN programme and identifying additional collaborating institutions.

## **Other Topics**

Dr P Césarini informed the attendees about the upcoming 5<sup>th</sup> anniversary of the founding of Sécurité Solaire and the associated press conference.

Professor Breitbart reported on the EUROSkin meeting in Hamburg, scheduled for 2-5 May 2000, which among other topics would look into the effects of UV on the skin and recommendations on the use of sunbeds. Otherwise these issues may be covered at the December meeting on the UV Index in Munich.

Attention was drawn to the International Ozone Day in mid-September 2000.

Dr Sliney pointed out the meeting of the International Photobiology Society from 1-6 July 2000.

Dr P Césarini recommended making more information available on the Internet and suggested making access to information easier through a web "ring" concept.

Dr Wester wanted the participants to consider the application of the UV Index to the labelling of artificial sources.

Dr J-P Césarini wondered whether information on sunscreens and the SPF was part of the "mandate". Dr Repacholi indicated that it was and should be dealt with in some depth. Dr J-P Césarini noted that there was effectively no standard, not even based on Solar Simulator sources. It would be preferable to use a CIE standard source. Dr McKinlay pointed out that regardless of the standard used for deriving sunscreen labelling, the stated number bore little resemblance to what is achieved when people apply the sunscreen. From a health point of view the effective value was a factor of 3 or 4 less than shown on the bottle. This issue was suggested as a topic for a WHO fact sheet. Dr McKinlay expressed the opinion that INTERSUN should work at attempting to change the number displayed on the bottle/package.

Dr Repacholi expressed the desire to focus the current meeting on policy and planning for the INTERSUN Project and the way forward for the UV Index and sunscreens, rather than getting involved with specific technical details which the preceding days' workshops had already dealt with.

Dr Saunders enquired whether risk estimates as in ionizing radiation would need to be developed? Dr Repacholi stated that before that could occur, the basic information required would have to be determined. Is there enough information already or are there major gaps? Trends should also be looked at. Dr McKinlay remarked that the main missing data were biological since the physical measurements are reasonably clear already. He noted that the situation with squamous cell carcinoma is fairly well established while there were still significant gaps with malignant melanoma and UV effects on the eye.

Dr Mariutti suggested that WHO's main message should be that health effects from UV can be prevented, but that it is a matter of personal responsibility and not beyond individual control like ozone or local power lines.

Dr Roy noted that there were major gaps in knowledge about exposure history and that actual exposures are not well determined.

### **3. Overview of activities by collaborating organizations**

#### **International Commission on Non-Ionizing Radiation Protection (ICNIRP) Professor Jürgen Bernhardt**

ICNIRP started its work on UV radiation issues in 1977, which culminated in the establishment of the UV Criteria in 1979 and the EHC Monograph #160 in 1994. Furthermore, ICNIRP issued a statement on sunbeds in 1991, published the UV Index in 1995 and UV guides in 1996. The Environmental Health Criteria are being updated regularly through the work of SC IV. ICNIRP aims to generalize the recommendations on sunbed use to include all types of UV radiation and not just UV-A. With respect to the protection of workers from UV radiation, ICNIRP collaborates with the International Labour Organization (ILO). ICNIRP is also making progress on updating the UV Index.

#### **United Nations Environment Programme (UNEP) Dr Frank de Gruijl**

UNEP has been involved with ozone depletion problems since the early 1970s, but only with the Montreal Protocol in 1987 the official UNEP programme was launched and mandated to provide a report every four years. The most recent report was issued in 1998. UNEP has focused its efforts on developing projections of UV levels worldwide and on researching their relevance to effects on human, terrestrial and marine ecosystems, on air quality and materials. Developments are monitored at their annual meeting. Dr Repacholi added that health aspects are published in the Journal of Photobiology and Photochemistry. Copies are available from UNEP, Nairobi and on the CORDIS web site.

#### **World Meteorological Organization (WMO) Dr Ann Webb**

The WMO's interest in UV radiation dates back to the 1950s; the organization has 185 member countries. Focal point for its activities are the World Weather Watch (WWW) and the Global Atmosphere Watch (GAW). Specifically with regard to UV there is involvement in measuring and monitoring, data QA/QC and the establishment of guidelines for instrumentation. Furthermore, the WMO performs intercomparisons of results between monitoring sites, develops requirements for UV data and promotes the communications of results within and between countries. With respect to the UV Index, the WMO held the 1994 meeting at Les Diablerets, organized training in South America in 1994, assisted in establishing the UVI and was responsible for a second meeting at Les Diablerets in 1997, where recommendations on how to refine the UVI were passed. Instrumentation issues appear to be well in hand as far as recommendations for spectral instrumentation are concerned. Work on broad band instrumentation is still in progress.

Dr Driscoll raised the question of personal dosimetry. Dr Sliney replied that there is a CIE technical committee on personal dosimeters, and that new developments could be noted in the area. The International Society of Biomechanics (ISB) in Belgium had recently set up intercomparisons but there had been difficulties with respect to the different types of action spectra associated with DNA, spores, etc.

### **Ultraviolet Forecasting Operational System (UFOS)**

#### **Dr Antoine Mangin**

UFOS is partly funded by the EC DG 13. The work is carried out by the French company Analytical and Computational Research, Inc (ACRI), which applies space-based monitoring, and concentrates its activities on Europe. It has been developing medium- and long-term uses of UV data focusing on stratospheric ozone. The company's aim is to deliver products that are consistent with WHO recommendations and also relevant to WMO and IASB. Experimental aspects focus on the validation of space-based measurements with ground-based results.

Dr Driscoll wondered whether UFOS were providing any useful extensions to the information that is available from satellite monitoring already in progress in other countries. Were they to incorporate information on cloud cover, which is critical for UV Index reporting and forecasting? Dr Mangin noted that ACRI was investigating global mapping as well but for the time being was focusing attention on Europe. Dr Webb added that a programme for the compilation of a solar irradiation atlas was being supported by the EC, which looks at visible light as well as UV radiation. Mr Santinelli suggested that global mapping data could be relevant to countries such as Mexico and that these may be interested to get involved.

Dr Mariutti asked how much of the effort was related to health issues, i.e. whether ozone was of interest because of health issues or whether there were many other underlying reasons. Dr Mangin responded that measurements had been under way for some time so that historical data could be extracted for indicators like the UV Index. These could then be related to exposure estimations in order to determine associations with health effects.

### **Collaborating Centres**

#### **US Army Center for Health Promotion & Preventive Medicine (USACHPPM)**

##### **Dr Dave Sliney**

The USACHPPM developed fact sheets on UV radiation and sun safety. They participated in various intercomparisons of instruments and reviewed ophthalmologic dosimetry. Furthermore, two years ago they hosted a meeting on UV public education programmes, and co-operated with the National Institute of Standards and Technology (NIST) to organize a workshop on UV measurements. More recently, they hosted a meeting on UV radiation and cataracts. The International Commission on Illumination (CIE) comprises 40 committees that issue reports on health aspects in various areas. Currently, a number of reports are in preparation within CIE, among these a document on the UV Index. Once the CIE has finished its work the reports are passed on to the IEC and the International Organization for Standardization (ISO) and so reach an international audience.

**Bundesamt für Strahlenschutz (BfS)**  
**Dr Roger Matthes**

As a collaborating centre the BfS has the role to help promote the WHO programme and to ensure that German ideas and interests are acknowledged and taken into consideration for ongoing activities. In 1993, the BfS started a continuous solar monitoring programme to collect full spectral information in all major regions of Germany. Since 1995 it has achieved an almost complete record for all sites of data every five minutes. Based on these data the UVI is provided to the public on a routine basis. The UVI has been adopted throughout Germany and is provided as part of weekend and weekday forecasts. Initially, the BfS sent out information on the UVI to all media outlets, however, this turned out to be too expensive. Instead they attempted to send out faxes on demand but the service was overloaded whenever it was really needed. Now the BfS provides UVI information on its web site.

One example for BfS's continuing support for the INTERSUN programme are the efforts to organize the UV Index meeting in December. The collaborating centre also issues fact sheets and provides translations of WHO web site materials in German. It can influence the German national research planning process but the funding available is limited and tends to be targeted to applied research. The BfS is also working towards establishing guidelines for public and occupational exposure.

Dr Driscoll noted that Germany had both ozone-based and health-based UV monitoring programmes in operation and enquired what the current status of these programmes was. Dr Matthes indicated that ozone-based monitoring was being discontinued for lack of further funding.

**Association Sécurité Solaire**  
**Dr Pierre Césarini**

Association Sécurité Solaire is supported by the French government and several private organizations. In the past year the association experienced a 20% growth due to new media customers. It publishes pedagogical tools on sun safety that mainly target children as well as teenagers. They are also exploring ways to evaluate the effectiveness of education and dissemination programmes.

Dr Hooker wondered what the impact of sun protection programmes was in France. Dr P Césarini reported that they did not really know their effects except through indirect indicators, e.g. the rise in sunscreen sales.

**Australian Radiation Protection & Nuclear Safety Agency (ARPANSA)**  
**Dr Colin Roy**

ARPANSA has a range of activities similar to those reported by the other centres. Five people work on UV, among them Dr Roy and Dr Gies who started work in the UV area in the early 1980s. A network of broadband monitors is deployed but spectral measurements are also carried out at some sites. Furthermore, a portable spectrometer is available. Co-ordinated efforts validate satellite data with ground-based measurements.

ARPANSA has been providing UV-related information to the media since the early 1990s and started using the UVI as it was developed. Furthermore, they are expanding personal dosimetry to supplement the UVI to develop a better indicator of "available" UV. The agency generates income and improves UV protection with instrument calibrations, protection factor measurements, etc. They also carry out development and revision of Australian standards and work closely with CIE, ICNIRP and other international organizations and agencies. They collaborate with UV educational programmes throughout Australia. ARPANSA hosted a meeting on the use of the UV Index with participation from the Australian Cancer Council that may represent a precursor of the upcoming meetings in Hamburg and Munich

**United States Environmental Protection Agency (EPA)  
Drusilla Hufford**

In the United States, the UVI has been in place since about 1994 and the communication responsibility lies with the EPA. The most frequently visited section on the National Weather Service web site is the one on the UV Index. The Centre for Disease Control (CDC) will be evaluating the impact of public communication programmes on awareness and behaviour. The pilot launch of the EPA's Sunwise school programme took place this past spring (1999), and attention has been growing rapidly with many requests for participation from schools outside the pilot area. A group at Boston University is being considered for carrying out the evaluation of the school programme's impact. Beyond looking at the students themselves, the evaluation considers extending the surveys to include parents, teachers and care-providers. A peer-reviewed one-hour teaching unit has been developed for teachers. Additional information is available at the EPA web site on <http://www.epa.gov/ozone>. A new National Council on Skin Cancer has been established and will also be working towards developing effective prevention programmes.

**National Radiological Protection Board (NRPB)  
Dr Alastair McKinlay/ Dr Colin Driscoll**

Dr McKinlay reported that the NRPB had been working closely with WHO and ICNIRP for some time already. In the UK, the NRPB is outside the government but has a statutory relationship with it as an advisory body. It also provides advice to the industry and is heavily involved in providing information to the public at large. Dr McKinlay noted that in the context of all non-ionizing radiation (NIR) it was sometimes difficult to deal with the contradiction implied by the proven cancer aspects of UV compared to the rest of the NIR range. NRPB works with both the Health and Safety Executive (HSE) and the Department of Environment. For NIR alone, they handle 6 000 enquiries per year; two thirds of the 50 000 to 60 000 hits per month at the NRPB web site are on NIR and among those the interest in electromagnetic fields dominates.

Dr Driscoll outlined that the NRPB co-ordinates measurement aspects, hazard assessment and protection. They operate six UV measurement sites in the UK, a further two in Iceland, and one Danish site in the arctic. The one site in the Falkland Islands consistently shows 25% higher UV levels than are observed at comparable latitudes north. The NRPB advocates intercomparisons but these are not as "routine" as would be

desirable. Hazard assessments mainly take place in occupational circumstances. Protection activities focus on clothing, while sunscreens are being widely and better evaluated elsewhere. He concluded with the hope to see more collaboration and communication.

### **Swedish Radiation Protection Institute (SSI)**

**Dr Ulf Wester**

The SSI is under the Ministry of Environment and works closely with behavioural scientists to improve prospects of changing attitudes to UV exposure (tanning). The UV Index has been employed as one tool of several. Sweden has daily UVI forecasts that are published on the internet. Since their launch in 1993 the media interest in UVI-forecasts has been variable. A recent information initiative is the "Interactive Sun Advice" programme on the SSI web site which was developed from the educational multimedia CD-Rom "Malignant Melanoma", originally funded by the EC and published in English, Swedish and German. The internet version is available in Swedish only and provides extensive sun protection information for the general public and worldwide travel advice based on the UVI. An English version of this programme would require additional funding.

The SSI also deals with questions of legislation and standardization, and issues regulations on sunbeds. Major problems have occurred with the replacement of sunbed lamps with other than the original models, resulting in accidents due to the inadequate labelling of the lamps. The SSI advocates the labelling of lamps with the UVI and the percentage of UV-B radiation or a similar indication to reduce the risk of inappropriate lamps being used as replacements.

### **Ministry of Education, Mexico**

**Miguel Angel Santinelli-Ramos**

The WHO collaborating centre has been monitoring UV for approximately five years and started a national programme three years ago. However, the programme still does not receive sufficient support from the Ministry of Environment or the Ministry of Education. The media are involved but their activity and interest has been declining over time and attempts are being made to rekindle their interest. The Ministry of Tourism is not involved at all and does not participate in promoting the UV Index in vacation areas.

### **General Comments**

Dr Repacholi suggested that the INTERSUN Project could develop some material targeting tourist areas which receive visitors from more northern locations, where UV concerns are correspondingly lower.

Dr J-P Césarini wanted to draw attention to the conflict of interest that arises between sunscreen manufacturers and any promotional efforts in support of the UV Index or between other more general "health" requirements at public swimming pools, where sunscreen application or the wearing of T-shirts may be forbidden.

## **5. INTERSUN's objectives, activities, scope and programme**

To focus discussion on the objectives for the WHO INTERSUN Project, Dr Repacholi had prepared a working draft that was circulated to the attendees and modified during the course of the discussion. The final version was given the title "**THE INTERSUN PROGRAMME**" and is shown in full in Appendix A. Some of the points of discussion are outlined below.

Dr Mariutti noted that while, in principle, ozone depletion plays a role in determining UV exposures at ground level, its effects in practice are minimal. Dr Repacholi agreed that it would appear that increases in other forms of air pollution are counteracting ozone-related effects. In this context consideration should be given to broadening the scope of effects to include climate change in general inasmuch as global warming would give rise to higher temperatures in mid and higher latitudes with concomitant increases in outdoor activities among the generally more fair-skinned, more northern populations.

The order of appearance of activities in the list was discussed since it implies priority. It was suggested that measurement and exposure assessments should appear ahead of human health-related matters and that advisory matters should remain at the end of the list. The issue of harmonization was raised again, particularly with regard to the protection messages that accompany different UVI values.

Dr Mariutti suggested that a regular evaluation and validation of the effectiveness of the INTERSUN Project should be specified but it was felt that regular (nominally yearly) meetings of the representatives of interested member countries and collaborating agencies, organizations and institutions do serve exactly that purpose.

It was decided to include specific mission and scope statements for the INTERSUN Project. The final versions appear in Appendix A.

The responsibilities of individual members were discussed, i.e. the specific roles of WHO, country representatives, collaborating centres, WHO Regional Offices and NGOs, but these were not delineated in detail.

The programme of meetings and planned documentation was discussed in considerable detail and is laid out in Appendix A.

Dr Mariutti noted that the carcinogenic aspects of UV are stochastic in nature but efforts at protection focus on the prevention of acute effects. It was felt that such issues would be dealt with during the course of the various scientific and technical meetings included in the programme.

While many of the participants and representatives were already acquainted with each other it was also recognized that as additional or new countries, agencies, organizations or institutions become involved, an updated and current database of contact information would be essential. Maintaining such a database would be one of the key duties of the INTERSUN Project. (ACTION: Dr Repacholi)

Finally, discussion reverted to the issue of funding sources, and specific activities related to that matter were added to the INTERSUN programme (see Appendix A).

## **6. Adjournment**

The meeting was adjourned for the day at approximately 1730 h with instructions to re-convene at 0900 h the next morning.

## **7. Opening of second day**

Dr Repacholi re-convened the meeting at 0915 h and opened the discussion with a request for propositions as to which other agencies or organizations might be invited to participate as collaborating centres. A list was prepared from the suggestions made by the attendees (see Appendix B).

## **8. Break-out groups**

Dr Repacholi suggested that two break-out groups be formed to carry out focused discussions, one on the UV Index and the other on sunbeds with both considering sunscreens insofar as they might be relevant. Future workshops would bring together information on risk levels associated with various exposure situations. Targeting specific messages to various skin type groups would need to be considered. The possibility of setting a dose limit such as 1 MED per day should be explored. Could a scientific basis be established for such a limit? Should there be a binary approach? Was there a scientific basis for sun protection messages? What were the differences in protective measures for long-term versus short-term exposures? What kind of simplified messages would be appropriate for promotion of sun safe behaviours? How could safety measures be "sold"?

Dr Mariutti pointed out that if something like 1 MED were to be proposed, there would be difficulties in dealing with the situation of outdoor workers.

As a summary, the participants agreed on the following statement:

***There is wide agreement that excessive exposure to ultraviolet radiation is detrimental to human health. The most common effect is sunburn (erythema). Another major concern is skin cancer, which in recent years has been growing in incidence among the world's fair-skinned populations.***

Dr Wester again raised the question of using the UVI for rating sunbeds and labelling sunbed lamps, especially those intended as replacements. Problems have arisen from changes to inappropriate lamps and accidents have occurred. Since the UVI is based on the cutaneous erythematous action spectrum it would allow sunbeds to be rated in a way that in peoples' minds is comparable to solar exposure. However, it was recognized that such a use of the UVI might alter peoples' perception of outdoor solar exposure. Dr de Gruijl questioned whether distance needed to be taken into account if the UVI were to be used for labelling lamps. The issue of "pure" UV-A lamps was also raised, i.e. the relative

accuracy of simulating solar exposure by a given lamp type and the appropriateness of the UVI in such cases. Overall it was felt that such labelling would create confusion and that it is preferable to develop a different kind of indicator for such labelling. It should also be emphasized to technical bodies like the IEC that they should avoid addressing health issues.

Upon conclusion of this discussion two break-out groups were formed: a UVI Group chaired by Dr Colin Roy and a Sunbeds Group chaired by Dr Ulf Wester. The attendees divided themselves between the two groups according to their preference and spent the remainder of the morning exploring the issues outlined below.

UV Index Group (Chair: Dr Colin Roy)

- What should INTERSUN be saying about the UVI?
- How should the UV Index be used for promoting sun safety?
- What should be brought forward to the Munich meeting?
- How can harmonization be achieved between various countries?

Sunbeds Group (Chair: Dr Ulf Wester)

- Should there be a recommendation that sunbeds should not be used at all?
- If they are to be used, how can they be used safely?
- Should there be a statement or standard from ICNIRP?
- What about age limitations? No Children? Skin Types?

## 9. Reports of break-out groups

With the meeting re-convened in plenary session, the leaders of the two groups reported on the discussions that had taken place.

The **Sunbeds Group** had used the suggested points as a basis for discussion. Several summary statements and conclusions were compiled and were described by the Chair.

- Any suggested protective effect from a sunbed-acquired tan in the context of preparing for holidays was felt to be insignificant and cannot be recommended.
- Sunbeds are not necessary for maintaining essential vitamin D levels; it was felt that they may even be detrimental.
- Contrary to claims of stimulating the immune system it appears that UV suppresses it.
- The use of sunbeds should be actively discouraged.
- An age limit should be established since young skin is generally more vulnerable. Use by children should be discouraged.
- Use of unattended (e.g. coin-operated) sunbeds should be discouraged.
- Appropriate information should always be provided.

The Chair of the **UVI Group** noted that they would require at least a three-day workshop to reach any conclusions but although many unresolved issues remained, the following statements could be made.

- The UVI is useful in its present form and as good as or better than other possible contenders for conveying the desired messages about sun safety.
- The UVI should remain a part of the sun education scheme.
- It can only play a relatively minor role in programmes for children because of its numerical nature, but it is well suited for programmes aimed at adults.
- Much work still needs to be done on how to report it effectively and on what specific messages should be connected with various values or ranges.
- There is a great need to involve media and broadcasters more closely at all stages of programme development. In particular, it was noted that the reporting of the UVI depends on the whim of the weatherman at each local station and not on station policy or the meteorological service.
- Target exposure was discussed extensively. To support a target figure of some sort would be the subject of a workshop or a working paper that could form a basis for the discussion at the upcoming UVI conference.

## **10. Close of the meeting**

Dr Repacholi noted that the overall general structure of the INTERSUN Project had been agreed. He thanked the attendees for their dedicated and active participation in all the discussions and for the excellent guidance that had been developed for the project. It is anticipated that there will be a similar meeting at least once a year to review progress and provide continuing guidance. It will be attempted to schedule such meetings in conjunction with other major meetings such as the ones being planned in Germany next year (Hamburg in May; Munich in December). If experience with the International EMF Project is any indication, it is to be expected that there will be increasing participation in the activities of the INTERSUN Project with added funding flowing into related research areas.

Finally, he expressed WHO's, the INTERSUN Project's, his own and the attendees' thanks to Alastair McKinlay, Sarah Bullock, Colin Driscoll and their colleagues at NRPB for organizing and providing facilities for the meeting, and for their excellent and amiable hospitality over the past two days.

The meeting was closed at 1700 h, 22 October 1999.

## **Appendix A**

### **THE INTERSUN PROGRAMME**

#### **MISSION STATEMENT:**

To reduce the global burden of disease resulting from exposure to ultraviolet radiation.

#### **SCOPE:**

The scope of activities relates to impacts of all sources of UV exposure on public and occupational health and the environment. Although sunlight represents the greatest source of human exposure to UV, health risks from artificial sources are also considered.

#### **ACTIVITIES:**

1. Monitor and review the scientific research relating to health and the environment:
  - review and summarize the scientific literature,
  - conduct scientific meetings and workshops,
  - publish and update reports, and
  - identify gaps in knowledge.
2. Promote and co-ordinate high-quality research activities that will fill gaps to improve health risk assessment:
  - identify, prioritize and publish research needs,
  - encourage support for high-priority research needs,
  - facilitate communication between funding agencies and research groups,
  - provide information on potential funding sources, and
  - promote interdisciplinary activities through exchange of information, collaborative research and joint publications.
3. Identify, assess and quantify health risks:
  - update, when appropriate, the Environmental Health Criteria document, and
  - conduct meetings and the exchange of information.
4. Facilitate the implementation of public and occupational programmes to reduce health risks:
  - promote the exchange of experiences in education efforts,
  - provide advice, develop publications and disseminate information, and
  - localize and vitalize UV protection issues.
5. As appropriate, facilitate harmonization of national and co-ordination of international activities in the use of the Global Solar UV Index (UVI), educational programmes, and health protection.

## PROGRAMME PLANS FOR 2000-2001

1. Co-sponsor EUROSKIN meeting in Hamburg on primary and secondary prevention of skin cancer (2-5 May 2000). Dr Rüdiger Greinert, EUROSKIN
2. Inform research community about the INTERSUN Project at the International Congress on Photobiology, San Francisco (1-6 July 2000). Dr Michael Repacholi, WHO
3. Organize ICNIRP/WHO/WMO/UNEP/CIE meeting of experts on the UV Index (4-7 December 2000). Dr Roger Matthes, ICNIRP
4. Initiate children's UV Education and Protection Programme (implement recommendations of the scientific meeting). Drusilla Hufford, EPA
5. Prepare drafts of WHO/INTERISUN Fact Sheets on UV topics of concern based upon the best available knowledge. Coordinator: Dr Michael Repacholi, WHO (Initial draft from person listed in parentheses):
  - The INTERSUN Project (WHO)
  - Health Consequences to the Skin from UV Exposure (Prof. Rona MacKie)
  - Health Consequences to the Eye from UV Exposure (Dr John Marshall)
  - Health Consequences to the Immune System from UV Exposure (Dr Mary Norval and Prof. Antony Young)
  - UV Protection of Workers (Dr Colin Driscoll)
  - Sunbeds (Prof. Eckard Breitbart)
  - Outdoor Sun Protection: Good "Sun Sense" (Dr Dave Sliney)
  - Outdoor Sun Protection: Sunscreens (Dr Jean-Pierre Césarini)
  - The Global Solar UV Index (Dr Roger Matthes – after UVI Meeting)
  - Ozone Layer, Global Warming and UV Exposure (Prof. Ed de Fabo)
  - Beneficial Effects of UV Exposure: Facts and Fiction (Dr Michael Holick)
  - Children's UV Protection Programme (Drusilla Hufford)
  - UV Shading in Architecture and City Planning (Dr Peter Gies)
  - UV Exposure during International Travel and Tourism - A Global Map (Dr Colin Roy)
6. Hold a Workshop on "Attitudes and Behaviour: Risk Perception and Communication." This may take place as one or two workshops. Dr Michael Repacholi, WHO
7. Hold regional training workshops on UV protection. Dr Michael Repacholi, WHO

## **DESIRABLE COMMON ELEMENTS OF PARTICIPATING WEB SITES**

(All network members should have their web sites linked)

1. What is INTERSUN?
2. What is UV?
3. Sources of UV
4. A brief summary of the health effects of UV exposure.
5. Harmonize statements with WHO/INTERSUN Fact Sheets

## **COMMUNICATION BETWEEN INTERSUN PARTICIPANTS**

1. Provide list of e-mail, postal and fax addresses (Dr Michael Repacholi)
2. Develop a web-based INTERSUN Newsletter (Dr Colin Roy)
3. Provide a separate mailing list for all those interested in UV issues (for sending out the Newsletter and organizing meetings) (WHO)

## **IDENTIFYING FUNDING SOURCES**

1. Dr Michael Repacholi will follow his highly successful techniques of obtaining funds for the International EMF Project and apply these to the INTERSUN Programme.
2. The INTERSUN task will be to develop materials to raise the profile of concerns regarding the impact of UV health hazards in order to interest funding agencies (e.g. insurance companies, governmental agencies, the European Commission, health charities, national cancer societies, World Bank, UNICEF).

## **Appendix B**

### **POTENTIAL, ADDITIONAL COLLABORATING ORGANIZATIONS**

#### **International:**

International Commission on Illumination (CIE)

<http://members.eunet.at/cie/>

European Society for Photobiology

<http://www.pol-us.net/>

European Commission (DG 5 and Europe against Cancer, DG 12, DG 13)

<http://europa.eu.int/comm/index.htm>

International Union Against Cancer (UICC)

<http://www.uicc.ch/>

EUROSKIN

<http://www.euroskin.org>

Ophthalmology Societies and Associations

<http://www.il-st-acad-sci.org/health/eyesocs.html>

#### **For liaison regarding technical standards:**

International Electrotechnical Commission (IEC)

<http://www.iec.ch/>

European Committee for Electrotechnical Standardization (CENELEC)

<http://www.cenelec.org>

International Organization for Standardization (ISO)

<http://www.iso.ch>

European Committee for Standardization (CEN)

<http://www.cenorm.be/>

American National Standards Institute (ANSI)

<http://www.ansi.org/>

American Society for Testing and Materials (ASTM)

<http://www.astm.org/>

#### **National:**

Australian Cancer Society

<http://www.cancer.org.au/>

Anti-Cancer Council of Victoria (AUS)

<http://www.accv.org.au/>

American Academy of Ophthalmology

<http://www.eyenet.org/>

American Society for Photobiology

<http://www.pol-us.net/>

American Academy of Optometry

<http://www.aaopt.org/>

Cancer Research Campaign (UK)

<http://www.crc.org.uk/>

Imperial Cancer Research Fund (UK)

<http://www.icnet.uk/>

The League Against Cancer

<http://www.ligacontraelcancer.org>

Dutch Cancer Society (NL)

Swedish Working Group against Skin Cancer

## Appendix C

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