Uv radiation - environment health

Literature, Russian Literature

UV RADIATION- ENVIRONMENTA HEALTH Institute UV Radiation - Environment Health Health effects that may result from exposure to UV radiation: Effects of UV rays on human skin range from sunburns to devastating skin cancers. There are three forms of skin cancer, Basal cell carcinoma, squamous cell carcinoma and melanoma. The former two are together referred to as non-melanoma skin cancers and are the most common type of skin cancer in white population, caused by exposure to UVB radiation. 80% of these are Basal cell carcinoma. Malignant melanoma is the most dangerous consequence and carries significant mortality, i. e. three times higher than non-melanoma cancers in Unites States. Color and contour changes in preexisting moles, increase in size and itching should raise the suspicion and immediate consult is advised to avoid fatal complications. UV rays also predispose to the cataract formation, which is the opacification of the crystalline lens of the eye. The rate at which cortical cataract develops is correlated with the annual UV exposure to UVB radiation. Health effects of UV radiations are not just limited to humans but also affect other forms of life. UV radiations decrease the yield from plants by damaging the nutrient distribution and hampering growth as the plants try to reduce their surface area exposure to radiations by decreasing their leafy surface area. UVB radiation is a hazard for marine life as it affects the reproductive capability of a number of organisms including fish, crab and Amphibians. Phytoplanktons which form the food for the aquatic organisms suffer damage as their mobility is impaired by the UV radiations. Thus, UV radiations cause damage to the marine life by not just destroying their food supply but also pose a global hazard as it is a threat to their reproductive ability. 2. The

environmental sources of exposure to UV radiation (Including the role of the ozone layer): Sunlight is the major source of Ultra violet radiation. These radiations are composed of UVA UVB and UVC rays. Health risks are posed by UVA and UVB rays, UVC rays do not reach the earth’s surface to cause any significant health effects. Owing to the deep penetrating power of UVA and UVB rays, every corner of the world, where sunlight falls, ecosystems face the consequence of exposure to these rays. Ozone (triatomic oxygen) layer in the stratosphere protects the life on earth by absorbing the bulk of these rays. Thinning of the ozone layer, especially in Antarctica has led to serious health concerns as the UV radiations can now pass unhindered to the surface of earth. Chlorofluorocarbons and other greenhouse gases are responsible for this destruction of the protective ozone layer. 3. Measures that could be suggested to the community to reduce the public's exposure to ultraviolet radiation: Prevention is better than cure. Avoiding sunlight during peak hours between 10am to 4pm, applying sunscreen with at least 15SPF, wearing tightly woven dark clothes, working in areas with dark terrain rather than light sand or snow are some general preventive strategies to minimize UV exposure. The outdoor occupations expose the workers to constant sun exposure like lifeguards, sportsmen, miners, farmers and construction workers. These people can minimize their sun exposure by spending the breaks indoor; choosing times more suitable, wearing sunglasses and wide brimmed hats. Reapplying sunscreen after certain time interval is important as it tends to wear off with wind and perspiration. Sunscreen should be applied generously to all the exposed areas of body especially face, neck and extremities. It should be kept in mind that the SPF formula protects against

UVB only, for protection against UVA, products containing mexoryl, titanium oxide and zinc oxide work best. Drugs like thiazide diuretics, nonsteroidal antiinflammatory drugs, tetracycline, doxycycline and sulfa drugs cause hypersensitivity to sunlight. Thus, people taking these drugs should be particularly careful about sun exposure. 4. How to disseminate this educational information to the public: After realizing the grave threat to the future of the planet, countries from all over the world came forward to adopt ‘ The Montreal Protocol on Substances that Deplete the Ozone Layer’ in the year 1987. It aims at keeping the air clean and developing strategies and innovations at reducing the global burden of ozone depleting gases. This is a global problem and its control is possible only if the masses realize its consequences. Mass awareness campaigns should be aimed at highlighting the health hazards of UV radiation and the ways of avoiding the exposure. Planting more tress and saying no to the use of products that release chlorofluorocarbons and demanding their substitution by products that less harmful gases are necessary. On a personal level, reducing gasoline consumption, unplugging the devices when not in use, and switching to the use of solar energy in the long run can make all the difference. References

American Cancer Society (2009). Cancer Facts & Figures 2009. Retrieved from: http://www. cancer. org/downloads/STT/500809web. pdf Broder, John M.(2008, November 8). A Novel Tactic in Climate Fight Gains Some Traction. The New York Times. Retrieved from: http://www. nytimes. com/2010/11/09/science/earth/09montreal. html? _r= 1 NIOSH (2009). Hazards to Outdoors Workers: UV Radiation. Retrieved from http://www. cdc. gov/niosh/topics/uvradiation/ Scotto, J., Fears, T. R., & Fraumeni, J. F. (1983).

Incidence of nonmelanoma skin cancer in the United States. U S Department of Health and Human Services. Taylor, H. R., West, S. K., Rosenthal, F. S., Mun? oz, B., Newland, H. S., Abbey, H., & Emmett, E. A. (January 01, 1988). Effect of ultraviolet radiation on cataract formation. The New England Journal of Medicine, 319, 22, 1429-33. United Nations Environment Programme (UNEP). (2010). 5 The Consequences and Effects 2: UV Radiation and Ecosystems. Retrieved from: http://www. grida. no/publications/vg/ozone/page/1389. aspx United State Environmental Protection Agency (2009). Health and Environmental Effects of Ozone Layer Depletion. Retrieved from: http://www. epa. gov/ozone/science/effects/index. html United State Environmental Protection Agency (2009). Ozone Layer Depletion: Basic Information. Retrieved from: http://www. epa. gov/ozone/basicinfo. html