

# NRPA Bulletin

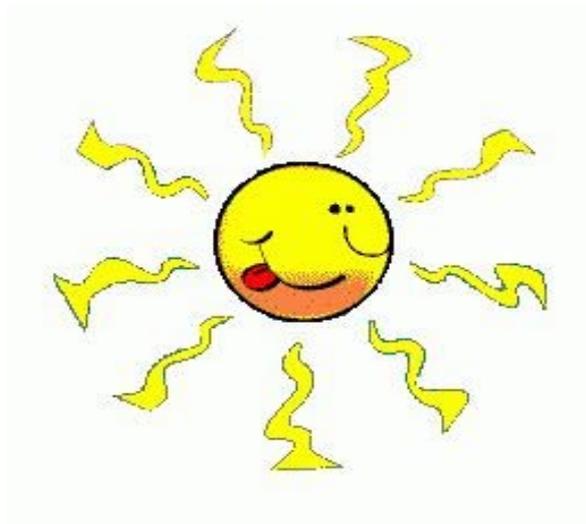
## Toxicity and phototoxicity of chemical sun filters

### New results from the studies on chemical sun filters.

A research group at NRPA has studied the properties of sunscreens and chemical sun filters from a number of years. Early results have been published at several conferences and in the Journal of the Norwegian medical association (Kirsti Bredholt, Terje Christensen, Merete Hannevik, Bjørn Johnsen, Jo Seim and Jon B. Reitan, Tidsskr. Nor. Laegeforen. No. 17, 1998, pp. 2640-2645). Our main conclusions are that some sunscreens are not stable when irradiated with simulated sunlight. The photostability differs is very different for different products.

Two chemical sun filters have been tested for their dark toxicity and possible toxicity to mouse cells in a cell culture after UV-irradiation of the filters. Increased toxicity as result of breakdown of a UVB-filter, octyl methoxycinnemate, was observed. UV radiation absorbed in the filter will lead to the formation of breakdown products that are different from the original filter molecules and may have different toxicity and other chemical properties. The UVA filter included in our tests, butyl methoxydibenzoylmethane, was also toxic in the dark, however, it was more chemically stable to UV-irradiation, and was not broken down efficiently by simulated sunlight (20 h). Its toxicity did not change significantly after irradiation.

It can be concluded that the two sun filters in concentrations of 5 – 10 parts per million are toxic in the dark to mouse cells under our particular laboratory conditions, and that the toxicity may increase after UV-irradiation of the most unstable filter. The biological role or medical effect of these observations are not known and extrapolation from the laboratory experiments to the use of sunscreens in humans must be done with caution.



**Ref.:**

New Scientist 7. October 2000, Shamas T. Butt and Terje Christensen, Radiat. Prot. Dosimetry vol 91, p 83, 2000