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news feature

Toxicological and ecological aspects of fluorescent whitening agents[1]

H.D. BOUVENG, Swedish Water and Air Pollution Research Laboratory, Drottning Kristinas Vag 470 D, Box 5607, S-114 86, Stockholm, Sweden, and
G. DURIG, CIBA-GEIGY AG, CH 4002, Basel, Switzerland

In the last few years, interest in the environmental impact of fluorescent whitening agents (FWA) in consumer products has surged. Interest has been stimulated by published data which were especially negative; however, specialists realized that the data usually were based upon experimental conditions which were unrealistic and irrelevant.

At the invitation of the Swedish Center for Environmental Sciences and the National Swedish Environmental Protection Board, approximately 100 representatives of Scandinavian state institutions, research centers, and consumer industries met with other scientists and representatives of FWA suppliers.

Conclusions of the symposium are summarized below.

The mode of action of FWAs consist of converting light of short wave length into visible blue light which has less energy. Of the hundreds of suitable candidate compounds, only 50 different chemicals currently are used as FWAs. In Sweden the choice narrows to products drawn from 8 different structure classes. The reason for this restriction lies in the strict toxicological and ecological specifications which the leading producers of FWAs are following. Not 1 of the many tested FWAs has proved carcinogenic.

The most recent, comprehensive studies by F. Urbach (Skin and Cancer Hospital Temple University, Philadelphia) prove that the FWAs which he tested have no photocarcinogenic effect. He also demonstrated that the studies published in 1970 by E. Bingham (Department of Environmental Health, University of Cincinnati) and H.L. Falk (Nationall Cancer Institute, Maryland) were not carried out under realistic conditions. For example, an intrinsically harmful solvent was used and the UV radiation was not a type naturally occurring on earth. The latest study by these 2 authors also seems subject to question, because in a telegram to the symposium, Bingham corrected the text of an article published in a Swedish journal and amended the final conclusions.

Again, B. Gillberg (Uppsala, Sweden) could not reproduce the mutagenicity tests which he originally reported, nor could other workers. His speculative interpretation of these first results will not stand up to scientific testing. B.J. Kilbey (Department of Genetics, University of Edinburgh, Scotland) corroborated this with his investigations. From the data presented at the symposium, it was apparent that the FWAs used now have not been found to be mutagenic and also show no signs of any teratogenic effect.

P.E. Osmundsen (Skin Clinic, Finsen Institute, Copenhagen, Denmark) referred to cases of "contact dermatitis" in Denmark and Spain that could be attributed to an FWA. This finding led to the withdraw of this FWA from the market.

The disclosures made at the symposium indicate that the principal FWAs currently being used cause no irritation or sensitization of the skin. Furthermore, as shown by photographs taken using a fluorescence microscope, FWAs in wash liquors do not penetrate skin which they contact.

In addition to toxicology of FWAs, the symposium also studied water pollution by FWAs. Analyses of river water in Europe and elsewhere showed that FWAs caused no real pollution. In all major rivers tested, FWA concentrations were below 0.5 μg/l water (0.000 000 5 g/l) with a sensitivity limit of 0.25 μg/l. Although FWAs are broken down only slowly by the microorganisms in biological purification plants, a major percentage adheres to the sludge and is essentially eliminated from the effluent.

Summarizing, the symposium concluded that FWAs now are some of the best tested chemicals used in industry. The toxicological and ecological data presented indicate that the leading industry is capable of producing FWAs of high technical acceptability which constitute no known hazard to man, animals, or the environment. It should be noted that the representatives from the FWA-producing industry at the symposium seemed to agree to refrain from recommending FWAs in areas where they would be of little use or where there is no technical need, e.g., cosmetics, ointments, foodstuffs, etc.

The individual papers presented at the symposium are to be published in English in the journal *MVC Rapport, Miljövardscentrum, Techniska Högskolan, Stockholm.* Copies can be ordered from Miljövardscentrum, Drottning Kristines Väg 30, 10044 Stockholm 70, Sweden.

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[1]Symposium held at the Royal Institute of Technology Stockholm, April 11, 1973.

Kaunitz presented Philippine medal

Hans Kaunitz, clinical professor, Department of Pathology, College of Physicians and Surgeons, Columbia University, New York, N.Y., recently was presented the Philippine Presidential Medal of Merit with Citation.

He received the medal while in the Philippines on an invitational lecture tour. He spoke to a joint gathering of members of the Chemical Society of the Philippines, the Philippine Association of Nutrition, the Dietetic Association of the Philippines, and the National Institute of Science and Technology.

Kaunitz also was invited to lecture in Japan where he spoke before the Japanese Society of Food and Nutrition and the Japan Oil Chemists' Society.

Among other topics, Kaunitz spoke on dietary fats and aging and on MCT. Most of his lectures were based largely upon articles which appeared in *JAOCS* and *Lipids*. ■