Witco, Gulf and Procter and Gamble. Applications were according to the following groupings.

Group I, 20% AOS (red label), (based on C_{14-18} α-olefin from Mitsubishi, sulfonated and hydrolyzed by Lion Corporation); Group II, 25% AOS (same as group I); Group III, 20% AOS (black label), (based on C_{14-16} α-olefin from Ethyl, sulfonated and hydrolyzed by Colgate-Palmolive); Group IV, 25% AOS (same as Group III); Group V, 6.7% C_{16} 1,4-sultone (Gulf/Henkel); Group VI, 8.3% C_{16} 1,4-sultone (Gulf/Henkel); Group VII, untreated control; Group VIII, water control; and Group IX, acetone control.

Treatments were carried out three times weekly for 92 weeks with a volume of 0.02 mL of test material applied to approximately 1 sq cm of exposed skin. Final necropsies were conducted at a mean survival of 30% per group (~19 mos). Again, histopathology failed to demonstrate carcinogenicity for either sample of AOS or for the 1,4-sultones (9).

Eppley Institute also carried out a rat feeding study. Five hundred male and 500 female Wistar rats were divided into eleven groups. There were 100 control males and females and 40 males and females in each treatment group and the extra control group. The rats were fed the materials in the diet as shown:

Group I, control; Group II, 1% red label; Group III, 0.75% red label; Group IV, 0.17% black label; Group V, 0.75% black label; Group VI, 0.33% C_{16} 1,4-sultone; Group VII, 0.25% C_{16} 1,4-sultone; Group VIII, 0.5% red label; Group IX, 0.5% black label; Group X, 0.16% C_{16} 1,4-sultone; and Group XI, extra control.

There was no evidence at any treatment level that AOS caused excess tumors compared to controls (9).

AOS has had limited use in the United States and Europe and extensive use in Japan in household detergents without any reports of problems. The data indicate that AOS can be safely used as a surfactant in personal care and household products.

Summary

Studies show AOS to have a very low acute oral and dermal toxicity. A lifetime study feeding AOS to rats at levels in the diet up to 5,000 ppm showed little effect. This study indicates repeated exposure of AOS to humans would create no hazard. Four separate studies, carried out for the lifetime of rats and mice to evaluate the potential of AOS to cause tumors were completed without effect. Rats, mice and rabbits have been dosed with AOS to study teratogenic effects. At levels not toxic to the mother, there was no evidence of an embryo toxic or teratogenic effect. Guinea pig skin sensitization tests show commercial AOS to be without sensitization potential. It is possible through improper hypochlorite bleaching techniques to produce 1,3-sultones that can cause sensitization. Human patch tests have shown that commercially prepared AOS does not cause sensitization. AOS detergents improperly used with hypochlorite bleach have the potential to produce 1,3-sultones which could cause human sensitization. AOS has been used safely for many years in Japan and to a lesser extent in the U.S.A. and Europe. There have been no reports of adverse health effects during this time.

REFERENCES

1. Draize, H.H., G. Woodard and H.O. Calvery, J. Pharmacol. Exp. Ther. 92:377 (1944).
2. Iimori, M., T. Ogata and K. Kudo, Yukagaku 21:46 (1972).
3. Iimori, M., T. Ogata and K. Kudo, Ibid. 21:334 (1972).
4. Palmer, A.K., M.A. Readshaw and A.M. Neuff, Toxicology 3: 107 (1975).
5. Magnusson, B., and A.M. Kligman, J. Invest. Dermatol. 53:268 (1969).
6. Hunter, B., and H.G. Benson, Toxicology 5:359 (1976).
7. A Twenty-Four Month Dermal Carcinogenicity Study of Experimental Sulfonated Compounds in Rats. Project 74-1094, Biodynamics, Inc., East Millstone, NJ, 1979. Submitted to The Soap and Detergent Association, New York.
8. Ibid. Project 74-1172, Bio-dynamics, Inc., East Millstone, N.J., 1979. Submitted to Colgate Palmolive Company, Piscataway, NJ.
9. Evaluation of the Carcinogenicity of Two Alpha Olefin Sulphonates and One Sultone. Epply Institute for Research in Cancer, University of Nebraska Medical Center, 1980.

Calendar

AOCS NATIONAL MEETINGS

May

Annual Meeting, 1983: May 8-12, Chicago Marriott, Chicago, IL.

Social Night, Midwest Chapter, Society of Cosmetic Chemists, week of May 23, 1983, to be announced. Contact: Kathleen A. Kochevar, Midwest Chapter, SCC, Jerome Laboratories Inc., 95 E. Bradrock Dr., Des Plaines, IL 60018.

October

Midwest Chapter meeting, Society of Cosmetic Chemists, Oct. 11, 1983, Museum of Science & Industry, Chicago, IL. Program speaker Dr. Derek R. Highley, Mary Kay Cosmetics. Contact: Kathleen A. Kochevar, Midwest Chapter, SCC, Jerome Laboratories Inc., 95 E. Bradrock Dr., Des Plaines, IL 60018.

1984

"Surfactants in Our World—Today and Tomorrow," CESIO Surfactant World Conference, May 6-10, 1984, Munich, Germany. Contact: CESIO, Avenue Louise 250, Boite 102, 1050 Brussels, Belgium.