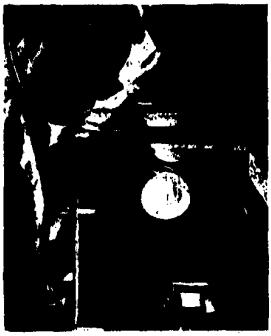
Chemical World This Week

SPECIALTIES:

Versatile polymer

Upjohn Co.'s fine chemical division has introduced Photoxid, a polymer combining UV-sensitive photobonding groups and dye receptor sites. The polymer bonds to varied materials such as plastics, metals, ceramics, paper, and glass. Upjohn says it should find many uses in the graphic arts, in the electronics industry, and as a "photo-glue" to bond difficult-to-join materials.

Photoxid is the reaction product of a maleic anhydride copolymer and a hydroxy-terminated arenesulfonyl azide. Typically, it is applied in a very thin (0.5 to 2.0 microns) film to a substrate, using conventional coating techniques. Irradiation for a fraction of a second with ultraviolet light decomposes the sulfonyl azide to yield, among other things, a highly reactive nitrene that not only cross-links with adjacent polymer chains but bonds with the substrate. Carboxyl groups serve as receptor sites for basic dyes.



Upjohn scientists test polymer

Dr. Henri Ulrich, manager of chemical research at Upjohn's Donald S. Gilmore Laboratories (North Haven, Conn.) and one of the discoverers of the polymer, explains that durable images are easily produced. A mask or negative is placed over the Photoxid-coated surface before it is exposed to UV light. After exposure, the unreacted (unexposed) polymer is washed off and a basic dye is applied to react with the remaining Photoxid. Multicolor images can be made with sequential exposures through different masks. Dr. Ulrich boasts that Photoxid offers higher resolution than silver halide systems. It needs no darkroom, he adds, and it can be used in aqueous media.

Potential applications in the graphic arts include decorating china, labeling glass and plastic containers, making transparencies, and improving the ink receptivity of low-polarity polymers.

Commercial development manager C. W. Stewart points out that the polymer can also be used as a negative photoresist for etching copper printing plates or electronic circuit boards, and to bond magnetic particles to polyester tape.

At present, the cost of Photoxid figures out to about 2 cents per square foot of coating; this relatively high price will probably limit Photoxid's use, initially, to those applications where it can provide some unique qualitative advantage. Mr. Stewart predicts, however, that economies of scale will eventually bring about lower prices.

PUBLIC HEALTH:

No threat from PCB's

The Government, basing its judgment on current knowledge, sees no imminent threat to the safety of the food supply or to the public health from polychlorinated biphenyls (PCB). Dr. Charles C. Edwards, spokesman for FDA, believes that the confusion over the danger from PCB's is being compounded by alarmists and "unbalanced reporting."

According to Dr. Edwards, the Government and industry have been actively eliminating potential and actual PCB contamination of the food supply since 1966. In spite of these efforts there have been some isolated instances of food contamination.

On behalf of FDA, Dr. Edwards rejects the idea that crisis headlines and demands for national health alerts are either justified or needed to meet the present situation. He observes that science does not support such actions and that FDA will continue to abide by the dictates of science in making regulatory judgments on behalf of the consumer.

In summarizing its actions on the PCB problem, FDA applauds the cooperation of industry. Specifically, Monsanto, the primary domestic producer of PCB's, is now selling PCB's only for nonfood uses. National Cash Register Co. has also stopped using PCB's for its carbonless carbon paper. The paper has been withdrawn from the production of recycled packaging materials.

Except for isolated incidents involving fish, FDA says that almost all of the high levels of PCB's found to date have been associated with accidents which FDA is working to prevent. FDA has also stepped up its surveillance of the food supply to detect PCB's and has entered into a coordinated government effort under the direction of the Office of Science and Technology and the Council on Environmental Quality to deal with the problem.

Dr. Albert C. Kolbye, deputy director of FDA's Bureau of Foods, classifies PCB's as moderately toxic, and certainly much less toxic than DDT. He observes that animal and human data point to 150 to 300 micrograms per day as being in the safe range as far as temporary dietary intake is concerned. According to Dr. Kolbye, FDA is not aware of any foods contaminated on a regular or consistent basis.

URANIUM TAILINGS:

No one's responsibility

In a controversy over the use of sandlike uranium mill tailings for construction purposes the Atomic Energy Commission and the state of Colorado over the past two weeks have been issuing disclaimers with ever-increasing frequency. The issue appears to be boiling down to a classic case of no one's wanting responsibility for the wastes left after extraction of a natural resource. The buck may well be passed on to owners of homes in which the radioactive, perhaps cancer-causing, material was used.

A federal-state interagency committee on the radiation problem associated with tailings recommended that all tailings be removed from within 10 feet of habitable structures. On the committee, the state health department and representatives of the federal Environmental Protection Agency voted in favor of the recommendation. AEC and U.S.

ACS Group Insurance

Payments deferments for unemployed members of the ACS Group Life Insurance Plan and an increase in benefits are described on page 53.

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