

Meetings

Chemical Disinfection in Industry, Food, and Agriculture

The comprehensive topic of disinfection was the subject of the summer conference of the Society of Applied Bacteriology held at Durham, England, 12-14 July 1966. Over 100 participants came from Australia, the United States, the Netherlands, Scandinavia, the United Kingdom, and Canada. In addition to the principal conference topic, the Society provided one session for contributed papers by its members on any subject.

G. Sykes (Microbiology Division, Boots, Ltd.) led off the conference with a general review of the need, use, and conditions for disinfection. H. S. Bean (Chelsea School of Pharmacy) made a presentation of the types and characteristics of disinfectants. His contribution recalled what many ignore or do not consider: the calculation and meaning of the exponent n in the equation $C^nt = K$, where C is the concentration of a disinfectant, n a constant varying with each disinfectant, and t the time needed for disinfection. If n were 6 for phenol and 1 for $HgCl_2$, then a doubling of the concentration of $HgCl_2$ will halve the time of the reaction; but doubling the phenol concentration will decrease it 64 times. A substance with a high value of n requires a small degree of dilution to lose its potency, while a disinfectant with a low value of n continues to exert bacteriostatic effects even at high dilution. If this were better understood and more widely applied, greater benefits would ensue.

W. B. Hugo (Nottingham University) described the most recent experiments on modes of disinfection of various chemical agents. His electron micrographs of treated cells were highly instructive.

The position taken by the Ministry of Health on the use of disinfectants, the difficulties encountered in preparing regulations, and the historical developments were presented by J. M. Ross.

R. E. M. Thompson (Bland-Sutton Institute of Pathology) suggested in his

paper on the "Site of Action of Phenol" that the point of division of two bacterial cells was a "weak" point and offered an ideal area for penetration by the disinfectant. Evidence in support of this theory is not yet available. M. A. Benarde (Rutgers University) described a series of experiments on the effects of temperature on chlorine dioxide disinfection. His group obtains samples at intervals of 5 seconds, which enables them to obtain reliable rate data. It was found that disinfection efficiency varies directly with temperature. At concentrations as low as 0.25 mg/liter, it required 110 seconds at 5°C and 16 seconds at 30°C to obtain 99 percent removal. In addition, deviations from plots of first-order kinetics were obtained. Suppression of protein synthesis appeared to be the mechanism of action of chlorine dioxide.

A session was devoted to "Disinfection of Hard Surfaces" (A. H. Walters, London), "Evaluation of Skin Germicides" (B. M. Gibbs, Unilever), "Biocidal Activity of Glutaraldehyde" (S. D. Rubbo), and "The Evaluation of Fungicides in Building Materials" (J. G. Savory). Meyrath (University of Strathclyde) discussed the germicidal activity of ozone.

J. C. Kelsey (Central Public Health Laboratory) presented a review of the use of gases for disinfection, with emphasis on ethylene oxide. Of special interest to food processors who might consider its use with bulk items was the finding that ethylene oxide in the presence of certain foods can yield epichlorhydrin, a toxic end product. Irradiation of polyvinyl chloride yields small amounts of HCl, which in the presence of ethylene oxide and water can yield epichlorhydrin. These reactions can limit the use of ethylene oxide, depending upon specific conditions. The problems of microbial spoilage and the need for proper handling of process equipment in the soft-drink industry was well brought out by F. G. Rice (Schweppes). John C. Ayers (Iowa State University) has been concerned with the sanitation problems in egg handling and breaking plants. His stud-

ies showed that the shell is the primary source of microbial contamination in liquid eggs and that available sanitizers apparently do not reduce shell contamination. It appears that British egg handling and processing is far advanced over that practiced in the United States. In Britain, eggs used for baking must be of the same quality as eggs offered for sale to the public in retail stores.

L. F. L. Clegg (University of Alberta), well known for his long-time interest in chemical disinfection, surveyed the needs and developments in the dairy industry. Clegg's wide knowledge of the broad area of disinfection was demonstrated time and again during the questioning periods.

J. K. Burnett presented a paper on a rapid procedure for identification of yeasts. For identification as far as genus, Lodder's book on classification of yeasts is consulted for final identification. H. S. Goldberg (University of Missouri School of Medicine) discussed the antibiotic Tylosin. He indicated that bacterial cross-resistance with other macrolide antibiotics probably precludes the use of Tylosin as a food preservative unless it could be used to eliminate *Clostridium botulinum*.

The conference was planned by Ella M. Barnes (Low Temperature Research Station, Cambridge).

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Forthcoming Events

February

1-3. Southwestern Federation of Geological Soc., Hobbs, N.M. (American Assoc. of Petroleum Geologists, P.O. Box 979, Tulsa, Okla. 74101)

1-3. Neural Regulation of Food and Water Intake, conf., New York, N.Y. (P. J. Morgane, Communication Research Inst., 3430 Main Highway, Miami, Fla. 33133)

4-11. Pan American Medical Women's Alliance, 10th congr., Lima, Peru. (R. Quiroz B., Los Castanos 395, San Isidro, Lima)

5-6. American Soc. for Testing and Materials, natl. symp., Toronto, Ont., Canada. (ASTM, 1916 Race St., Philadelphia, Pa.)

5-10. American Soc. for Testing and Materials, winter mtg., Detroit, Mich. (ASTM, 1916 Race St., Philadelphia, Pa.)