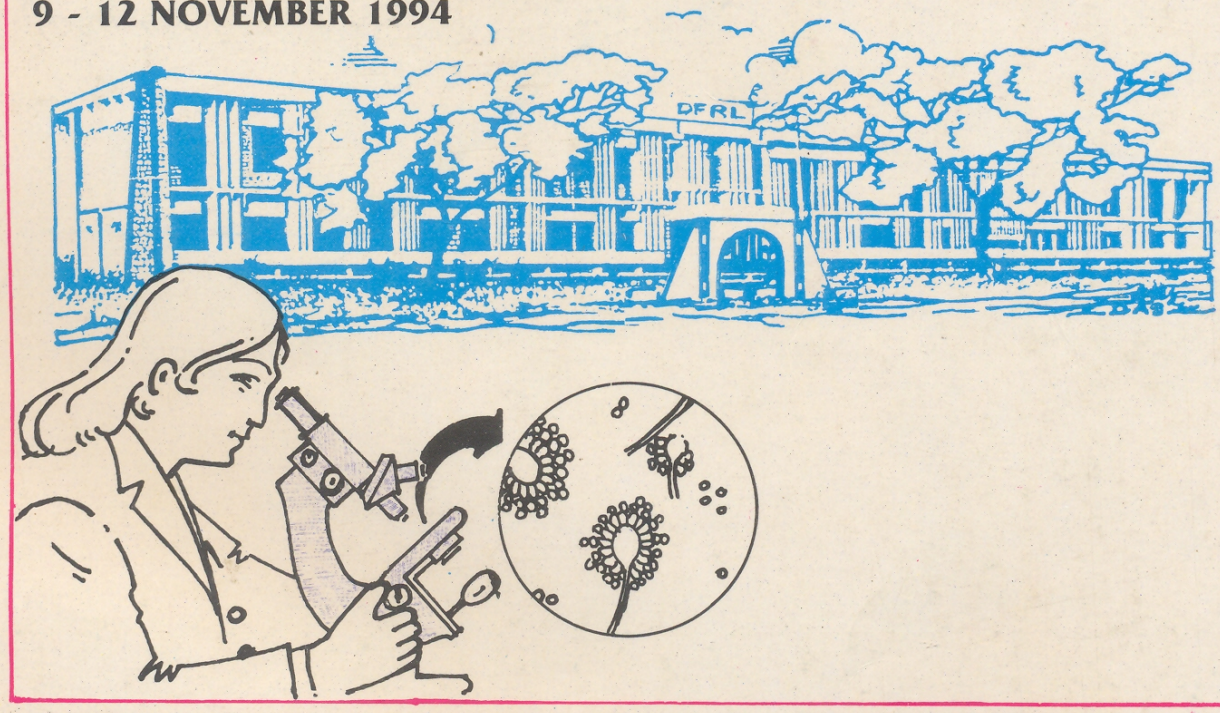
MICON 94

INTERNATIONAL

&

35TH ANNUAL CONFERENCE OF ASSOCIATION OF MICROBIOLOGISTS OF INDIA

9 - 12 NOVEMBER 1994



MICON INTERNATIONAL - 94 MYSORE

MICROBES FOR BETTER LIVING

INVITED PAPERS
POSTER ABSTRACTS
AND SOUVENIR

DEFENCE FOOD RESEARCH LABORATORY
SIDDARTHA NAGAR, MYSORE - 570 011 INDIA

Kunhi,A.A.M. 1994b. Aerobic biodegradation of hexachlorocyclohexane (HCH) isomers - its Biochemistry and Genetics, Abst. No.SAM-24, **Microbiol. Intl. Conference (MICON-94) and 35th Annual Conf. of the Association of Microbiologists of India,** 9-12 Nov 1994, Mysore, India, p. 122

SAM-24

Aerobic Biodegradation of Hexachlorocyclohexane (HCH) Isomers - Its Biochemistry and Genetics

A.A.M. Kunhi

Department of Microbiology
Central Food Technological Research Institute
Mysore - 570 013, India

Accumulation of high levels of organochlorine pesticide residues such as HCH and DDT in human adipose tissue has been reported in India and other developing countries. These toxic chemicals which have been found to cause a number of health problems including cancer, birth defects, nervous disorders pulmonary oedema, infertility etc. reach human body mainly through the food chain in bioconcentrated forms. Although this problem has created enough alarm among scientists and policy makers very little work has been done in developing technologies to eliminate them from the environment. This paper highlights the seriousness of the problem with respect to the levels of HCH residues found in human tissues as well as in foods and the work done on microbial degradation of different isomers of HCH with particular emphasis on the biochemistry and genetics of biodegradation. Most of the reports on biodegradation of HCH are by anaerobic processes in soil under flooded conditions. However, a few workers have shown aerobic biodegradation by bacterial strains of Pseudomonas, Sphingomonas as well as by bacterial consortia. Microbial consortia, capable of degrading the four major isomers of HCH at different concentrations viz. alpha-HCH (up to 50 ppm) beta-HCH (25 ppm) gamma-HCH (10 ppm) and delta-HCH (10 ppm) have been developed in our laboratory. Information available on the catabolic pathways and the genetic mechanisms involved have been compiled. The importance and necessity of improving HCH-degrading strains by genetic manipulation including recombinant DNA technology have been highlighted.