

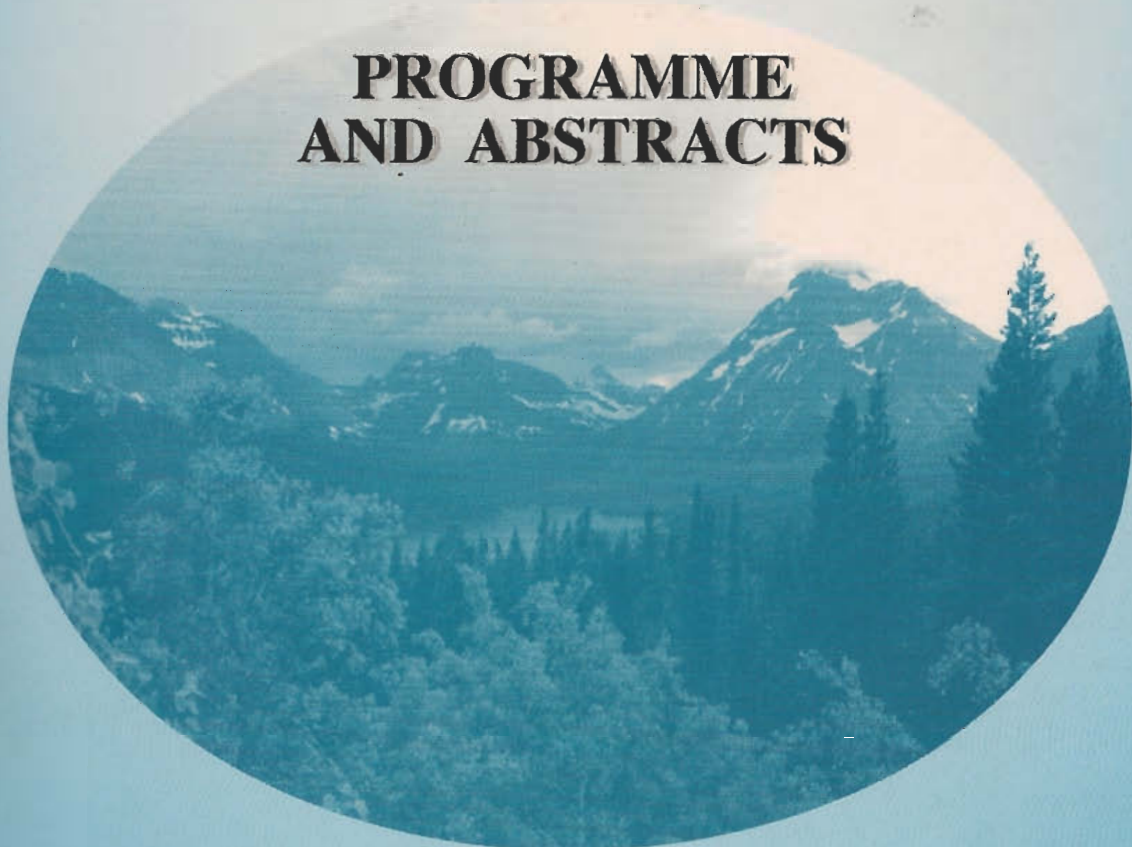
**INDO-US WORKSHOP ON APPLICATIONS
OF BIOTECHNOLOGY
FOR CLEAN ENVIRONMENT & ENERGY**

August 5 - 8, 1998

Organised by
BANGALORE UNIVERSITY, BANGALORE
in Co-operation with
Florida Center for Environmental Studies,
Florida Atlantic University, USA
and University of Florida, Gainesville, USA.

SOUVENIR

**PROGRAMME
AND ABSTRACTS**



Venue : National Institute of Advanced Studies (NIAS)
Bangalore - 560 012.

RECENT DEVELOPMENTS IN BIOTECHNOLOGICAL MANAGEMENT OF HCH RESIDUE PROBLEMS

KUNHI A.A.M.

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

About 48% of the total of approximately 90,000 MT of pesticides produced in India belong to organochlorine group, of which technical-BHC (hexachlorocyclohexane) is the major one. Extensive and indiscriminate use of these in agriculture and public health programmes has resulted in widespread contamination of the environment. Residues of BHC has been detected in soil, water and air. Due to their recalcitrance they accumulate in the environment and enter the food chain. They reach human body in bioconcentrated forms through the food chain. Human adipose tissue, breast milk and almost all items of food have been shown to contain high concentrations of HCH residues. This is not only a threat to health, but also has adversely affected export market. Microbial degradation has shown great potentials for eliminating hazardous chemicals from industry effluents, waste dump sites, soil, water bodies etc. In recent years there have been reports from all over the world on isolation of microbial strains that can degrade one or more of different isomers of HCH. A few laboratories in India also have successfully isolated of HCH degrading *Pseudomonas* and *Sphingomonas* strains. In our laboratory microbial mixed cultures have been isolated which on acclimation have shown the ability to degrade fairly high concentrations of all the four major isomers viz. alpha-, beta-, gamma- and delta-HCH, that generally constitute the commercial preparations. Upto 100 ppm of alpha- or gamma-HCH was mineralized, within 72 to 96 h and upto 25 ppm of beta- or delta-HCH was degraded within the same time. Information on the degradative pathways of different isomers of HCH and their genetics is rather scanty. Japanese workers have identified several enzymes of catabolism of gamma-HCH by *S.paucimobilis* strain and the genes encoding a few of them have been cloned.