

INTRODUCTION

This Regional Symposium began as an initiative of Dr G. Thyagarajan, Secretary Commonwealth Science Council, at the 5th meeting of the Asian Coordinating Group for Chemistry (ACGC V) held at Bombay, 8-10 February 1988. Dr Thyagarajan together with Drs Mohinder Singh and J. Webb suggested an Asian initiative in a global perspective, by organising a regional workshop/symposium, dealing with chemical constituents in the environment.

This could help in the formulation of effective strategies for containing environmental problems. This could also provide required answers to the following questions:

- (i) What are the undesirable or potentially undesirable substances present in air, water, soil and food ?
- (ii) How did these originate ?
- (iii) What in quantitative terms is the effect of the undesirable constituents on living beings ? and
- (iv) What mitigative strategies are feasible?

In understanding the cause-effect relationship, identifying the problem molecules or elements and estimating their concentrations at parts-per-million/billion levels are essential. This calls for a pivotal role for chemical investigations. In particular it is necessary to develop sensitive and selective analytical chemical techniques. Analytical chemistry also has to interface with meteorology, oceanography, climatology, biology and hydrology for probing the sources of these contaminants. This requires a detailed study of the reactions and interactions of chemical species in the environment. Management and regulatory options depend upon reliable scientific inputs and a sufficiently large knowledge base. Monitoring tools have to be usable and easy to operate and maintain. Research on multi-stage techniques for chemical separations need to consider: (i) selective and scientific detection techniques (laser and chemiluminescence based); (ii) ease of environmental sampling and analysis to minimize effect of movement and time delays; (iii) the chemical state of environmental constituents (e.g. hexavalent chromium is toxic while trivalent chromium is not); and (iv) that research on environmental problems generates massive amounts of data requiring methods and possible further studies on how to interpret and transfer information.

The Regional Symposium was therefore thought necessary to: (i) take stock of the state of the art; (ii) identify priority areas and programmes for action at national

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and regional levels; (iii) create increased awareness of the presence of chemical constituents in our environment and options for containing and managing them; and (iv) establish a network approach, if necessary, to mount a continuing programme of action.

The Regional Symposium was proposed to be sponsored by the Commonwealth Science Council and UNESCO and was to be an activity of ANAIC.

Dr G. Thyagarajan together with Dr T. Ramasami and Dr M.S. Chadha then prepared a background paper entitled "Chemistry and the Environment" available as a CSC Technical Publication [No. CSC (88) 156-35]. Dr M.S. Chadha was authorized by the Commonwealth Science Council to act as Co-ordinator on its behalf for the Regional Symposium. It was proposed by Dr B.N. Noller, Secretary, 3rd Asian Chemical Congress that the Regional Symposium be held at Brisbane, Australia, in conjunction with the 3rd Asian Chemical Congress during the period 28 August-2 September 1989. Drs Chadha and Noller met at ACGC VI on 30 January 1989, at Djakarta, Indonesia, and prepared a programme based on the CSC Technical Publication [No. CSC (88) 156-35] identifying possible speakers. This tentative programme was approved by ACGC VI. Nominated speakers were invited by Dr G. Thyagarajan to participate in the Regional Symposium; all invited speakers with a few exceptions accepted the invitation to attend the 2 day Regional Symposium held during 1-2 September 1989 in conjunction with the 3rd Asian Chemical Congress. Drs Chadha and Noller were asked to be the co-organizers of the Regional Symposium.

There was an overwhelming and enthusiastic response to the Regional Symposium in spite of an air strike. The Symposium was inaugurated by Dr G. Thyagarajan. Dr T. Spurling, President, Federation Asian Chemical Societies and Professor H. Thier, Director of the Chemicals Education for Public Understanding Project, University of California, Berkeley made brief remarks at the opening session. Dr D. Connell, Chairman, Environmental Chemistry Division, Royal Australian Chemical Institute welcomed the participants.

The proceedings of the Regional Symposium are based on manuscripts supplied by the authors; their adherence to the rather stiff deadlines is highly appreciated. Minor editorial modifications are made as was felt to be appropriate. Those who could not participate in person were kind enough to provide their papers for this publication.

The essential idea in publishing these proceedings is to catalyse activities in the Region which not only faces the same problems as the rest of the globe but also has to contend with high population and uncontrolled generation of pollutants. The important issues in the Region today are associated with the large population centres in Asia and the resulting pressures on the environment in Asia. The success of the Regional Symposium and publication of its proceedings would be judged by the nature of the relevant programmes which evolve in the Region. We hope that the publication of the proceedings will catalyse programmes in the region which could possibly get support from international agencies engaged in similar pursuits.

REGIONAL SYMPOSIUM

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Permission to reproduce some of the figures and use of the published data by authors is gratefully acknowledged.

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Our endeavour to bring out the proceedings within a short span of time may have resulted in some errors remaining uncorrected for which we crave the readers' indulgence. As the authors are from different countries, the use of English language including spellings has been left unchanged!

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