

## **REPORT ON PANEL DISCUSSION “SCOPE FOR REGIONAL AND INTERNATIONAL COOPERATION”**

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A panel discussion as the final session of the Regional Symposium was chaired by Dr G. Thyagarajan. He made an introductory statement concerning hazard analysis, limits of detection in the measurement of environmental constituents, scope for regional and international cooperation and possible support from the Commonwealth Science Council.

Besides looking at the basic scientific aspects of the chemistry of the environment, the regional symposium was also expected to delineate the scope for regional and international cooperation. A position paper presented by Dr M.N.G.A. Khan and Mr K.N. Johry initiated discussions in this regard. He pointed out the regional activities of existing agencies, the need for political awareness as well as a new regional initiative on chemistry and the environment. Dr Khan drew attention to many issues of current concern such as, the greenhouse effect, acidity in freshwater and the depletion of the ozone layer. The importance of political awareness, particularly in the developing countries, was emphasized. However, the greatest need was seen to be generation of regional and international collaboration on environmental issues aimed at developing an appropriate framework with emphasis on both policy and scientific goals. Dr Khan suggested that the Commonwealth Science Council could play a useful role in promoting scientific collaboration between countries both within and beyond the Commonwealth. Such an Asia-Pacific network could operate for 10 years with 3-5 yearly reviews. Dr Thyagarajan invited proposals focussed on developing cheaper but effective techniques and training of personnel for the same.

An example of such a cooperative research proposal was then provided by Dr A.G. Darnley. He argued that there should be specific, identifiable projects such as a study of resource use and management. The importance and relevance of the International Geochemical Mapping Project was emphasized earlier by Dr Darnley in his presentation. Dr Darnley suggested that the Project could consider regional

and international cooperation within its framework and deal with specific identifiable problems associated with resource use and management. He suggested that UNDP could be approached for this purpose.

The specific objectives of Geochemical Mapping Project relevant to the Asia-Pacific region could be:

- (i) To enable less developed countries to know and understand the geochemistry of the natural surficial environment;
- (ii) To facilitate the comparison of geochemical information between countries (and regions); and
- (iii) To build scientific knowledge-base and competence through international linkages.

Data from such geochemical mapping provide a sound basis for gaining an understanding of the environmental processes and actions needed to protect the environment.

Following the above discussion Dr Thyagarajan invited participants to state the position of their respective countries on these issues.

Dr C. Kaluwin (Papua New Guinea) described the functions of the Papua New Guinea Environmental Awareness Programme and its role in attempting to control soil degradation and other environmental changes arising from afforestation, agriculture and mining. He pointed out that necessary legislation now exists to deal with environmental problems. This was essential as the country relies heavily on the environment for economic progress. Various government and university groups are looking after the environmental matter. Mining is an important activity in the country and the ventures at Ok Tedi and Bouganville have resulted in the transfer of significant amounts of chemicals and sediments to the aquatic system. The introduction of pesticides to control insects has been followed-up with effective monitoring mechanisms to determine safe application levels. In a number of instances, the pristine environment has been extensively modified requiring rehabilitation. Monitoring of sea level rise is being undertaken, presumably taking into account land rise from the sea due to volcanic activity.

Dr M. Mohinder Singh (Malaysia) observed that the position paper outlined by Dr Khan, though comprehensive, was rather broad in scope. He felt that such a programme would be difficult to implement because handling of environmental issues requires clear identification of problems and specific attention of small groups of countries or sub-regional groups. Dr Mohinder Singh commented that the Federation of Asian Chemical Societies (FACS) has a Working Group on the Environment which has not functioned very well. However, the Asian Network for Analytical and Inorganic Chemistry (ANAIC), a joint network activity of the FACS and UNESCO, was very effective because of the specific focus on activities. These areas of expertise need to be recognised in order to develop an effective regional environmental programme.

Dr T. Clarkson (New Zealand) made a number of comments noting that the Asia-Pacific region has many environmental problems. Dr Clarkson referred to the Montreal Protocol as an example of a global strategy for dealing with a significant environmental problem. This could set a precedent as the Protocol has been ratified by a large number of countries.

Dr Clarkson saw the following major problems in managing the environment:

- (i) Difficulties in the transfer of information between developed and developing countries including low consumption rate countries;
- (ii) A need to develop high quality data base;
- (iii) Handling of information technology transfer and other criteria related to establishing environmental protection infrastructure;
- (iv) The need to interact with existing programmes; and
- (v) The need for sharing of knowledge and literature through conferences and meetings which could be less technical in content.

An important point raised during the discussions leading to the formulation of the Montreal Protocol was : "How to initiate technology transfer?" Dr Clarkson's view was that informal networks have real value and he urged scientists to establish such informal networks.

Dr G. Sidhu (India) observed that the effectiveness of the programme such as the one outlined by Dr Khan depended upon good data collection and proper development strategy. Both of these criteria were directly related to the subject of the Regional Symposium. Dr Sidhu felt that perhaps atmospheric studies were overemphasized. He was of the opinion that there is an acute need for research on converting carbon dioxide back to carbon via carbon monoxide. Also alternatives to chlorofluorocarbons (CFC's) are required for use as degreasing fluids. He was optimistic that the synthetic organic chemists have the competence to meet the challenge. Adequate financial resources would have to be generated to pay for research on disposal of organic wastes and reutilization of biomass wastes. Dr Sidhu saw the Commonwealth Science Council as essentially playing a catalytic role with particular attention to the preparation of discussion papers.

Dr Jayamane (Sri Lanka) elaborated on a specific problem in Sri Lanka which is probably quite general in the Asia-Pacific region. An increase in the industrial activities in Sri Lanka has led to an increase in the effluents and environmental pollution. Dr Jayamane saw that the real problem was, how to achieve development without pollution.

Dr R. Adhikari (Nepal) saw the most basic problem in his country as land degradation. Lack of direction with respect to forest conservation has led to soil erosion. Continual felling of trees has caused scarcity of basic fuel resulting in further exploitation of trees. Nepal has imported cheaper technology and has been adversely

affected by having to use poor quality equipment. Water pollution is a big problem in Nepal because of lack of adequate treatment facilities.

Dr H.L. Bami (India) emphasised the importance of environmental regulations and averred that the crux of the problem lies in building the technical infrastructure for enforcing the environmental regulations. Agreement on data between laboratories, he felt, is of considerable importance and he strongly stressed the need to ensure that such agreement is maintained.

Dr Shafiqul Alam (Bangladesh) emphasised the role of analytical chemistry in understanding environmental problems. Dr Bilqis Haque (Bangladesh) pleaded that Bangladesh be included in any regional programmes because of the environmental devastation affecting her country. Bangladesh, like many other countries in the world, is completely at the mercy of nature.

Dr B.N. Noller (Australia) outlined a possible role of the Federation of Asian Chemical Societies (FACS) and the Asian Coordinating Group for Chemistry (ACGC) in tackling regional environmental problems. The FACS, through its Working Group on the Environment, has interest in both water quality and atmospheric pollution and through the Asian Network for Analytical and Inorganic Chemistry is involved with marine analysis, quality assurance and food analysis apart from analytical chemistry itself. He saw the role of legislation in controlling environmental pollution as being of prime importance. In Australia, it has been possible to totally control the impact of mining on the surrounding environment through the application of very specific legislation. Such an example is the control of uranium mining on the Alligator Rivers Region, Northern Australia. This point regarding legislation has been mentioned previously but must be seen as the necessary first step in protecting the environment.

After some concluding comments by Dr Thyagarajan, Dr M.S. Chadha highlighted the possible future dividends arising from the Regional Symposium and proposed a vote of thanks to all the participants.