

ENVIRONMENTAL SPECIMEN BANKING: A NEW CONCEPT FOR ENVIRONMENTAL MONITORING AND ASSESSMENT

by

Ranjith Jayasekera
Department of Botany, University of Kelaniya

Abstract

Impact of anthropogenic activities on the biosphere through different pathways, i.e. land, air and water, needs to be monitored because the implications of population pressure on natural resources rapidly increase. Concept of specimen banking as well as its application in environmental research and monitoring is discussed. Specimen banking is particularly advantageous for developing countries because public interest for environmental issues is not yet properly developed although acute regional contamination problems already exist. Developed nations should contribute towards the establishment of specimen banks in developing countries.

Introduction

With the ever-increasing human population in the world, the demands are increasing at an alarming rate which parallels the curve typical of population growth. As a result, the products of our existence are accumulating to harmful levels to be called pollutants. In any ecosystem, either terrestrial or aquatic, all species of plants and animals are potential resources, especially genetic resources which may be confined to a particular region and totally irreplaceable. Today marine resources are particularly vulnerable to the effects of overexploitation and pollution. If we are to achieve a sustainable development, we will have to care for and use our natural resources in an environmentally sound perspective. The environmental problems of the tropical countries are often of quite a different nature from those of the industrial countries where the environmental quality and human health are being increasingly threatened by the consequences of the technological revolution. Therefore, we in developing countries, have to take preventive measures to avoid the occurrences that have taken place in the industrial countries.

Most of the chemical compounds and their metabolites continuously being introduced by manifold human activities into the environment are hazardous for human health and the total environment. Thus, appropriate and effective strategies are essential for their long-term control and monitoring. The number of chemical substances and their metabolites that are being annually introduced into the environment lies in the magnitude of 1.10^5 to which about 1000 further substances add annually world-wide (Stoepler et al. 1989). Only about 5 to 8% of these substances are considered critical. Among others, dioxines, certain polycyclic hydrocarbons, and some heavy metals like lead, cadmium and mercury are particularly dangerous. There may be other highly toxic