

## EXECUTIVE SUMMARY

This report outlines the proceedings and findings of a workshop on contaminants in waters of the Great Barrier Reef (henceforth GBR), held at Griffith University on Saturday, 26th May 1984. The workshop focussed on the three broad contaminant groups of heavy metals, polychlorinated biphenyls (PCBs) and other organochlorines and hydrocarbons.

Table 1 below summarises the broad findings of the workshop with respect to each of the three groups. It is based largely upon the plenary summary prepared by the session Chairman, Dr J. T. Baker.

The workshop participants noted that measured levels of substances within each contaminant group do not pose an immediate threat to human health, individual organisms or the GBR system as a whole. This finding was made subject to the recognition that only limited sampling has been undertaken in waters of the Great Barrier Reef. Measured levels of most contaminants within the reef waters proper are generally close to the lower limits of detection, although in some adjacent coastal waters (particularly harbours), concentrations indicative of low to moderate pollution levels equivalent to those found elsewhere in Australia and overseas, have been recorded.

In attempting to assign priorities to areas of further research, participants noted that other contaminants such as sediments and nutrients were more likely to be of greater concern than the three contaminant groups considered at this workshop. On that basis the five broad priority areas for further research were considered to be (in order):

- a) Sediments, particularly sediment export from mainland rivers and sediment movement within the GBR system and how both influence the GBR system.
- b) Methods for investigating and responding to accidental events and disasters, e.g.. oil spills, toxic chemical releases, and other leakages from grounded vessels.
- c) Effects of agricultural fertilisers and other nutrients exported to the GBR from the mainland.
- d) Effects of pesticides, especially organochlorines.
- e) Ecotoxicity of sub-lethal effects of heavy metals, PCBs and hydrocarbons.

From the workshop, a number of proposals for consideration by the Marine Park Authority have been derived. These include both short and long term actions, although it was noted that no priority response is required by the Great Barrier Reef Marine Park Authority in view of the generally low degree of threat posed by the contaminants considered at the workshop.

TABLE 1: SUMMARY OF WORKSHOP DISCUSSIONS

ISSUE	CONTAMINANT GROUP		
	HEAVY METALS	PCBs AND OTHER ORGANOCHLORINES	HYDROCARBONS
Current Knowledge	.some water sampling .clams are main source of data .some WQC information available	.sampling of diff-species - causes intercalibration problems	.methods used to date adequate
Available Information	.need to collate existing information .more information needed on tin	.Olafson results contrast with Waid/Smillie results .more information on pesticides needed	.generally adequate, but collation would be useful
International Standards	.no comment	.UNEP procedures should be adopted*	.no comment
Identification of Problem	.need for info. on sub-lethal effects .more study of bio-indicators required	.no problem at current levels	.no problem at current levels
Degree of Threat	.no threat to human health or individual organisms .insufficient information to predict effect on total ecosystem	.no problem at current levels .further study on sub-lethal effects desirable	.no problem at current measured levels .threat from oil spills potentially high
Sample Design /Methods	.agreement needed on size/age of specimens and types of organs to be used .stratified sampling recommended	.studies should be reproduceable	.stratification needed
Analytical Techniques	.generally adequate but problem with low levels .stressed need for pure solvents and clear apparatus	.adoption of UNEP procedures desirable .need for test laboratories	.current techniques adequate

Comparative Levels	.generally low	.at lower range of detection	.aliphatics lower than overseas .aromatics much lower but some coastal locations as high as overseas
Types of Pollutants of Concern	.copper, cadmium, zinc, lead, mercury and nickel studied .more information on tin needed	.PCB use declining .more research effort needed on Lindane and pesticides	.oil spills the major input threat
Source of Pollutants	.little reliable information .anthropogenic hard to distinguish from biogenic	.pesticides from mainland agriculture .PCBs from atmosphere (?)	.local sources - resorts, boats, etc
Level of Pollutants	.relatively high in some locations (e.g. Townsville Harbour), but seem low in main reef area	.no high levels, although limited reef-wide data	.no high levels reported, however concentrations elevated in some locations
Fate of Pollutants	.little information .nothing of predictive value	.some biodegradation .compounds persistent-monitoring required	.further study required-particularly in anoxic conditions
Potential Problems	.oil-shale mining on large scale	.inadequate supply of ecotoxicologists	.oil spills from tankers .oilshale mining
Current State of Problem	.localised, but more info on reef-wide distribution needed	.no significant problem, but concern about potential effects on reproduction and photosynthesis	.chronic low level pollution adjacent to resorts

Future  
Directions

- |  |   |   |
|--|---|---|
| .systems approach preferred                            | .systems approach supported                                 | .coordinate chemical and microbiological approaches   |
| .interdisciplinary studies                             | .ecotoxicological training needed                           | .intercalibration exercises between laboratories beneficial   |
| .multi-institutional interaction                       | .standardise procedures using UNEP guidelines (or similar)* | .oil spill counter disaster plan needed   |
| .need to identify "hot spots" for more intensive study | .need M.S.coupled to G-C for analysis                       | .more research on toxic effects of hydrocarbons needed.   |
|  | .multiple analysis of samples more cost-effective           | .water-sediment interface a research need   |
|  | .link with DHAE national monitoring program recommended     | .capability to mobilise scientific effort needed in event of oil spill-post spill assessment also important |

---

\* UNEP procedures are the preferred basis for standardisation.

