

environmental management were of little significance compared with the need for a re-creation of a mythical pristine Nature.

Elements of this attitude, he suggested, might underlie some of the pressures which discourage the prescribed burning of National Parks and State Forests.

Whether this hypothesis proves valid or not, there is little doubt that the management of Australia's parks, forests and other public lands will come under greater scrutiny as a result of the horrific fires of 2003. The scale of damage—human, economic and environmental—is such that at least three separate inquiries, Federal, Victorian and from the ACT, have already been proposed.

The overwhelming view of delegates at the IPA forum—as reflected in questions from the floor and in post-conference discussions—was that only a Federal inquiry is likely to achieve an adequate result. This is because State and Territory Governments, in their role as land managers, must share direct responsibility for any lack of prescribed burning and other forms of hazard reduction that might have contributed to these fires. This means that they could potentially face hugely expensive legal claims and that, as a result, there could be pressure on them to manipulate terms of reference and other criteria to diminish scrutiny of these important issues.

Even if this concern proves utterly unfounded, the public perception could still linger that any such investigation was a State Government inquiry into a matter in which the State had a very real vested interest. For these reasons, a Federal inquiry would have greater credibility, and is in fact essential, if we are to come to a comprehensive understanding of the causes of last summer's catastrophic bushfires.

Graham White is an issues management consultant who chaired a session of the IPA bushfires forum.

IPA

Deceit in the Name of Conservation?

JENNIFER MAROHASY

ON 28 January, the Queensland Government released *Report on the study of land-sourced pollutants and their impacts on water quality in and adjacent to the Great Barrier Reef*. In the associated media release, the Queensland Premier Peter Beattie said, 'Now the report is in, work on the Great Barrier Reef Water Quality Protection Plan will continue without arguments about whether land activities harm the Reef. The report is the adjudicator's decision, and is based on the best available science'.

The report, written by a panel of scientists chaired by Queensland's Chief Scientist Dr Joe Baker, makes several key findings regarding impacts of land-based pollution on the reef. A key allegation in the report's summary, highlighted in the Premier's media release, is that elevated concentrations of pesticide residue have been found in dugongs.

Since publication of the book *Silent Spring* by Rachel Carson in 1962, there has been concern that pesticides can bio-accumulate in the fat tissue of animals. Prior to 1987, organochlorine pesticides (for example, DDT) were used in Great Barrier Reef catchments, including for sugarcane production. These chemicals have since been banned due to global concerns about their persistence in the environment and their capacity to bio-accumulate.

I first became aware of the specific issue of pesticide in dugongs in August 1998. A senior officer with the Great Barrier Reef Marine Park Authority (GBRMPA) phoned me with the news that a soon-to-be-

published research study had found that elevated levels of pesticide residue, most likely from cane farming, were accumulating in the fat tissue of dugongs. Media headlines followed, including *Pesticide in reef creatures* and *Cane burning link with dioxin in dugong*.

I obtained a copy of the study and found it was primarily an analysis of the type and quantity of dioxins found in the fat tissue of dugong carcasses that had been killed in fishing nets.¹ Dioxins are a group of organochlorine compounds commonly associated with industrial waste incineration. The research paper made reference to a different study that had analyzed the dioxins found in soils under sugarcane cultivation and commented that the cane-land soils and dugong fat samples both had elevated levels of the same type of dioxins.

Concerned by this news, I contacted a dioxin expert at the University of Queensland. Dr Brian Stanmore informed me that the type of dioxin considered by the GBRMPA to be elevated in the dugongs was common and the least toxic of all dioxins. Furthermore Dr Stanmore indicated that the level of dioxins found in the dugongs was less than the national average in people in the United States. He commented that 'it looks like the dugong is better off than we are'.

The GBRMPA study clearly stated, 'All (dugong) carcasses were in good condition at the time of sampling. All animal deaths were confirmed or suspected (fishing) net drowning.' However, instead of focusing on net fishing practices, the

GBRMPA subsequently provided funding for a full investigation by the National Research Centre for Environmental Toxicology (NRCET) into the likely origin of the dioxin considered to be at elevated levels in the dugong carcasses, including possible links with sugarcane production.

Two years later, the NRCET investigation concluded that the dioxin of concern to the GBRMPA was common in soils along the entire Queensland coastline, including in regions beyond sugarcane cultivation.² Analyses of dated marine sediment cores indicated that the chemical was present prior to European settlement in Queensland. In other words, the dioxin is a naturally occurring organochlorine and not a pesticide residue. There are, apparently, many naturally occurring non-toxic dioxins.

But what of the organochlorine insecticides used in the sugar industry from the late 1940s until they were banned in 1987? Have these pesticides been found in dugongs?

The GBRMPA and the Australian Institute of Marine Science (AIMS) have undertaken extensive surveys for traces of organochlorine insecticides, including an Australia-wide programme for collecting and testing samples from stranded or recently killed dugongs—from which the dioxins were isolated. While it was expected that these programmes would find persistent organochlorine pesticide, this has not been the case.

Estuarine and near-shore marine sediments have been extensively sampled on the basis that these areas are likely to contain the highest concentrations of contaminants from human activity in adjacent catchments. Trace amounts of some organochlorine insecticides have been found in sediment from a small number of river mouths.³ No organochlorine insecticides, however, have been found in near-shore marine sediments of the Great Barrier Reef.⁴ This finding has surprised

many researchers, some of whom have postulated that the absence of organochlorine contamination in the inner shelf is a consequence of enhanced degradation of the organochlorines in the aquatic system.

In late November 2002, I received a copy of the draft summary of the Baker report—the report subsequently described by the Premier as the best available science. I noticed the allegation of elevated concentrations of fat-soluble pesticide

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in dugongs. I emailed Dr Baker querying this and other allegations in the draft summary. Dr Baker replied that he would consult with the Science Panel and get back to me. The report was published two months later without any changes to the summary.

The reef pesticide research is well-documented and should be understood by members of the Science Panel. In fact, a member of the Science Panel communicated the findings from the NRCET investigation to me in September 2001. Why, then, was the allegation of pesticide in dugongs included in the original summary report? Why was the allegation not corrected after I brought

the error to Dr Baker's attention in December 2002?

Two years earlier, following pressure from the World Wide Fund for Nature (WWF) and as part of the Queensland government's reelection campaign, the Queensland Premier committed his government to saving the reef. Since this time it has been Queensland government policy that the reef is in trouble. The on-going deception is perhaps necessary to maintain the perception that the reef is in trouble.

NOTES

- 1 Haynes, D, Muller J. F & McLachlan M.S. (1999) 'Polychlorinated dibenzo-p-dioxins and dibenzofurans in Great Barrier Reef (Australia) Dugongs (*Dugong dugon*)' *Chemosphere*, **38**, pages 255–262.
- 2 Prange, J.A., Gaus, C., Papke, O. & Muller, J.F. (2002) 'Investigations into the PCDD contamination of topsoil, river sediments and kaolinite clay in Queensland, Australia.' *Chemosphere*, **46**, pages 1335–1342.
- 3 Haynes, D, Muller, J & Carter S. (2000) 'Pesticide and Herbicide Residue in Sediments and Seagrasses from the Great Barrier Reef World Heritage Area and Queensland Coast.' *Marine Pollution Bulletin*, **41**, pages 279–287.
- 4 Cavanagh, J.E, Burns, K. A., Brunskill, G.J. & Coventry, R.J. (1999) 'Organochlorine pesticide residues in soils and sediments of the Herbert and Burdekin River regions, north Queensland—implications for contamination of the Great Barrier Reef.' *Marine Pollution Bulletin*, **39**, pages 367–375.

Dr Jennifer Marohasy is Environment Manager with Queensland Canegrowers Organisation Ltd.

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REVIEW