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Environmental risk assessment: An Australian perspective

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Foreword

During 1994 the Department of Environment, Sport & Territories advertised a need for policy advice on a risk assessment review of national environment priorities. Two people undertook this task. Dr Tom Beer was appointed to a six months term as Science Adviser to the Environment Protection Agency (EPA), an agency of the Federal Environment Department and Dr Frank Ziolkowski, an officer of the EPA who was designated as an EPA Fellow during this period.

Our initial response to the assignment was that the brief is akin to being asked to use agricultural science to improve farm productivity. The topic is extraordinarily wide, its method of implementation will differ from area to area and there is a myriad of tools that could be used.

Further, there are three observations that need to be made:

The topic of risk can be likened to an onion. It is composed of many layers, each subsuming the underneath layers. It is fascinating, however, to find that it is a topic in which each single layer of the onion believes itself to be the whole onion.

In American English, the word pavement refers to the roadway. In Australian English, pavement refers to the footpath. In a similar manner, American English and Australian English reverse the meanings of the words risk assessment and risk analysis. In the United States, risk assessment refers to the component of the overall process that is devoted to the calculations, whereas risk analysis is the overall process which includes risk assessment, risk management, risk perception and risk communication. In Australia, risk analysis is widely used to describe the component that is devoted to calculations, whereas risk assessment is understood to be the overall process. The remainder of this document will follow Australian usage, except in direct quotes from US sources.

Risk assessment is a tool to facilitate informed decision making. The decision facing Australian environmental agencies is whether to introduce a process of formalised risk assessment; and if so, how should it be done, and what should be its scope. This document is the first step in this process. The next step will be a conference on risk and uncertainty in environmental management.

Acknowledgments

Mr Barry Carbon, Executive Director, EPA provided his guidance on the topic in general. Mr Stewart Needham and Mr John Whitelaw provided the requisite administrative support to the science adviser and EPA fellow respectively. In addition, we would like to acknowledge our many colleagues, too numerous to mention, who assisted with advice and information.

Preface

Dr Tom Beer, on secondment from CSIRO's Division of Atmospheric Research, was appointed from December 1994 to June 1995 as Science Adviser to the Environment Protection Agency (EPA) of the Department of the Environment, Sport and Territories (DEST) to investigate and recommend on a risk assessment review of national environmental priorities. Dr Frank Ziolkowski, an EPA Fellow, assisted him during this period.

Environmental risk assessment can be used as a strategic tool to set environmental priorities and as a tactical tool to set environmental standards.

This report is designed to inform Australian environmental managers about the techniques and applications of environmental risk assessment and to familiarise risk analysts with some of the issues that are of concern to environmental managers.

The use of risk assessment is illustrated by applying its techniques to five case studies. Then, by considering Australian and overseas practice, a generic framework is presented within which environmental risk assessment in Australia can be undertaken, and possible methods of implementation are discussed.

A companion document to this report will be prepared in early 1996 which will canvass the options for applying risk assessment to the activities of the DEST portfolio.