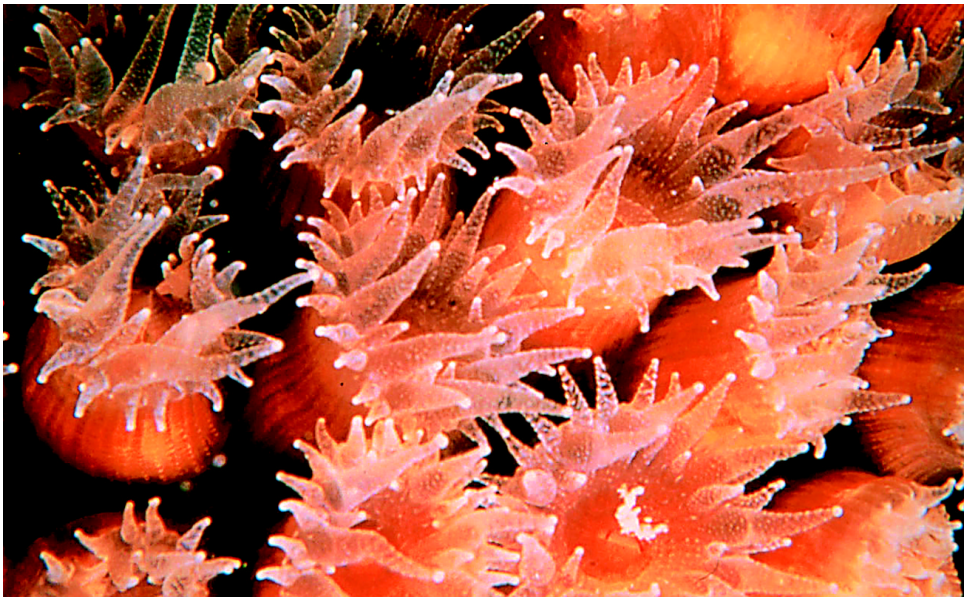
Oil Spills in Coral Reefs



PLANNING & RESPONSE CONSIDERATIONS

National Oceanic and Atmospheric Administration • National Ocean Service • Office of Response and Restoration

Oil Spills in Coral Reefs: Planning and Response Considerations

Hazardous Materials Response Division
Office of Response and Restoration
NOAA

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Introduction

This guide is intended to serve several functions and several audiences. We hope that resource agency personnel, state and federal agencies, and responders of all types working in or planning for response in coral reef regions will find useful information here. It is not intended to be a specific guide for choosing cleanup methods, as many good versions of these exist already. Rather, we summarize current research on coral reefs from the perspective of those who may need to make decisions about response in these regions and present the information in an accessible format for people with some science or response background. Experienced responders unfamiliar with coral reefs may want background on coral ecology and terminology; biologists may want an overview of toxicity issues related to coral and response and cleanup applied to coral reefs in particular. We have organized the topics by chapters, each of which can be read as a stand alone, with additional references provided at the end of each chapter.

Chapter 1, on coral reef ecology, introduces pertinent aspects of this unique ecosystem. A glossary defines specialized terms. Environmental impacts on coral from anthropogenic and natural causes are increasing at rapid rates, so we have summarized these in Chapter 2, to help readers understand the background conditions of coral reefs today. Chapter 3, on oil toxicity, is a current review of the research available on oil toxicity to coral. We also address how to evaluate scientific studies that attempt to measure oil toxicity in laboratories or field settings. In Chapter 4, we discuss general guidance for responding to spills in coral reefs and provide specific considerations for open-water cleanup measures. Chapter 5 discusses the emerging science of restoration of damaged reefs, and presents data on recovery patterns and rates from a variety of impacts in coral habitats. Lastly, we have compiled several case studies that illustrate a range of issues—some spills seem to have had very little impact on coral while others inflicted severe and long-lasting damage on nearshore resources. Some remote spills had long-term impacts to the entire ecosystem. On a more positive note, several cases illustrate new technologies being used to restore coral reefs. Each chapter provides additional references and, at the end of the report, we present a list of web sites that link to useful data on reefs.