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scientific studies of spill effects; 2.1 Introduction and overview; 2.2 The phases of an oil spill; 2.3 Studies in Phase 1: release and immediate response; 2.3.1 Issues addressed; 2.3.2 Data collection; 2.4 Studies in Phase 2: cleanup; 2.4.1 Issues addressed; 2.4.2 Data collection; 2.5 Studies in Phase 3: recovery; 2.5.1 Issues addressed; 2.5.2 Data collection; 2.6 Lessons learned; References; Part II Oil in the environment; Introduction; Chapter Three Oil in the water column; 3.1 Introduction
3.2 Overview of oil in the water column
3.2.1 Petroleum: chemicals, behavior, and key processes; 3.2.2 Release scenarios and ephemeral data; 3.2.3 Key processes and environmental factors; 3.2.4 Sampling strategies: the four-dimensional approach; 3.2.4.1 Selection of sampling locations; 3.2.4.2 Sampling baseline locations; 3.2.5 Sampling and data collection methods; 3.2.5.1 Oceanographic characterization; 3.2.5.2 Direct water sampling; 3.2.5.3 Passive samplers; 3.2.6 Analysis for hydrocarbons; 3.3 The Exxon Valdez oil spill; 3.3.1 Water sampling programs; 3.3.2 Data for water samples, 1989-2005
3.3.2.1 Data sources
3.3.2.2 Data presentation and discussion; 3.3.2.3 Estimated water TPAH concentrations from mussel-tissue data; 3.3.2.4 Baseline water TPAH; 3.3.2.5 Value of the water-sampling program; 3.4 Comparison with the Deepwater Horizon oil spill; 3.5 Lessons learned; References; Chapter Four Surveying oil on the shoreline; 4.1 Introduction; 4.2 Background and survey objectives; 4.3 The SCAT process; 4.3.1 Step 1: Detection and documentation of shoreline oiling in 1989; 4.3.1.1 Aerial reconnaissance and videotape mapping (April); 4.3.1.2 Detailed ground SCAT (April-September)
4.3.2 Step 2: SCAT support to shoreline cleanup in 1989
4.3.3 Step 3: Postcleanup shoreline inspections and monitoring in winter 1989/90; 4.4 Shoreline surveys 1990 and later; 4.5 The legacy: SCAT in 2011; 4.6 Lessons learned; In Memoriam; References; Chapter Five Ancient sites and emergency response: cultural resource protection; 5.1 Introduction; 5.2 The Exxon Cultural Resource Program; 5.2.1 A cooperative approach; 5.2.2 Cultural resource site data before 1989; 5.3 Methods; 5.3.1 Studies of ¹⁴C dating contamination by crude oil; 5.3.2 Cultural resource constraints
5.3.3 Training and educational programs

Sommario/riassunto

What light does nearly 25 years of scientific study of the Exxon Valdez oil spill shed on the fate and effects of a spill? How can the results help in assessing future spills? How can ecological risks be assessed and quantified? In this, the first book on the effects of Exxon Valdez in 15 years, scientists directly involved in studying the spill provide a comprehensive perspective on, and synthesis of, scientific information on long-term spill effects. The coverage is multidisciplinary, with chapters discussing a range of issues including effects on biota, successes and failures of post-spill studies and techniques, and areas of continued disagreement. An even-handed and critical examination of more than two decades of scientific study, this is an invaluable guide for studying future oil spills and, more broadly, for unraveling the consequences of any large environmental disruption. For access to a full bibliography of related publications, follow the Resources link at www.cambridge.org/9781107027176.
