1. Record Nr. UNINA9910366642703321

Titolo	Deep Oil Spills : Facts, Fate, and Effects / / edited by Steven A. Murawski, Cameron H. Ainsworth, Sherryl Gilbert, David J. Hollander, Claire B. Paris, Michael Schlüter, Dana L. Wetzel
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2020
Edizione	[1st ed. 2020.]
Descrizione fisica	1 online resource (XIV, 611 p. 152 illus., 110 illus. in color.)
Disciplina	551.4 628.16833
Soggetti	Marine sciences Freshwater Water quality Water pollution Aquatic ecology Environmental chemistry Environmental management Environmental engineering Biotechnology Marine & Freshwater Sciences Water Quality/Water Pollution Freshwater & Marine Ecology Environmental Chemistry Environmental Management Environmental Engineering/Biotechnology
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Section I. Introduction -- 1. Introduction to the Volume -- Section II. Physics and Chemistry of Deep Oil Well Blowouts -- 2. The importance of understanding fundamental physics and chemistry of deep oil blowouts -- 3. Physical and chemical properties of oil and gas under reservoir and deep-sea conditions -- 4. Jet formation at the blowout

site -- 5. Behavior of rising droplets and bubbles – impact on the physics of deep-sea blowouts and oil fate -- Section III. Transport and Degradation of Oil and Gas from Deep Spills -- 6. The importance of understanding transport and degradation of oil and gasses from deep sea blowouts -- 7. Biodegradation of petroleum hydrocarbons in the deep sea -- 8 Partitioning of organics between oil and water phases with and without the application of dispersants -- 9. Dynamic coupling of near-field and far-field models -- 10. Effects of oil properties and slick thickness on dispersant field effectiveness and oil fate -- 11. Far-field modeling of a deep-sea blowout: sensitivity studies of initial conditions, biodegradation, sedimentation and sub-surface dispersant injection on surface slicks and oil plume concentrations -- Section IV. Oil Spill Records in Deep Sea Sediments -- 12. Formation and sinking of MOSSFA (Marine Oil Snow Sedimentation and Flocculent Accumulation) events: Past and Present -- 13. The sedimentary record of MOSSFA events in the Gulf of Mexico: A comparison of the Deepwater Horizon (2010) and Ixtoc 1 (1979) oil spills -- 14. Characterization of the sedimentation associated with the Deepwater Horizon blowout: depositional pulse, initial response, and stabilization -- 15. Applications of FTICR-MS in oil spill studies -- 16. Changes in redox conditions of surface sediments following the Deepwater Horizon and Ixtoc 1 events -- 17. Long-term preservation of oil spill events in sediments: the case for the Deepwater Horizon spill in the northern Gulf of Mexico -- 18. Effect of marine snow on microbial oil degradation -- 19. Molecular legacy of the 1979 Ixtoc 1 oil spill in deep-sea sediments of the southern Gulf of Mexico -- 20. 40 years of weathering of coastal oil residues in the southern Gulf of Mexico -- Section V. Impacts of Deep Spills on Plankton, Fishes, and Protected Resources -- 21. Overview of ecological impacts of deep spills -- 22. Deep-sea benthic faunal impacts and community evolution before, during and after the Deepwater Horizon event -- 23. Impact and resilience of benthic foraminifera in the aftermath of the Deepwater Horizon and Ixtoc 1 oil spills -- 24. Chronic sublethal effects observed in wild caught fish following two major oil spills in the Gulf of Mexico: Deepwater Horizon and Ixtoc 1 -- 25. Impacts of deep spills on fish and fisheries -- 26. Impacts of the Deepwater Horizon oil spill on marine mammals and sea turtles -- Section VI. Toxicology of Deep Oil Spills -- 27. Ecotoxicology of deep ocean spills -- 28 A synthesis of Deepwater Horizon oil, chemical dispersant and chemically dispersed oil aquatic standard laboratory acute and chronic toxicity studies -- 29. Digging deeper than LC/EC50: non-traditional endpoints and non-model species in oil spill toxicology -- 30. Genetics and oil: transcriptomics, epigenetics and population genomics as tools to understand animal responses to exposure across different time scales -- Section VI. I Ecosystem-level modeling of deep oil spill impacts -- 31. A synthesis of top down and bottom up impacts of the Deepwater Horizon oil spill using ecosystem modeling -- 32. Comparing ecosystem model outcomes between Ixtoc 1 and Deepwater Horizon oil spills -- 33. Effects of the Deepwater Horizon oil spill on Human Communities: Catch and Economic Impacts -- Section VIII. Summary -- 34. Summary of Major Themes – Deep Oil Spills -- Index.

Sommario/riassunto

The demand for oil and gas has brought exploration and production to unprecedented depths of the world’s oceans. Currently, over 50% of the oil from the Gulf of Mexico now comes from waters in excess of 1,500 meters (one mile) deep, where no oil was produced just 20 years ago. The Deepwater Horizon oil spill blowout did much to change the perception of oil spills as coming just from tanker accidents, train derailments, and pipeline ruptures. In fact, beginning with the Ixtoc 1

spill off Campeche, Mexico in 1979-1980, there have been a series of large spill events originating at the sea bottom and creating a myriad of new environmental and well control challenges. This volume explores the physics, chemistry, sub-surface oil deposition and environmental impacts of deep oil spills. Key lessons learned from the responses to previous deep spills, as well as unresolved scientific questions for additional research are highlighted, all of which are appropriate for governmental regulators, politicians, industry decision-makers, first responders, researchers and students wanting an incisive overview of issues surrounding deep-water oil and gas production.