OIL POLLUTION ENVIRONMENTAL REVIEW ACT OF 2010

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H.R. 52: Oil Pollution Environmental Review Act

A Comprehensive Report on Offshore Drilling, Its Problems, and the Efforts to Remediate Them

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Abstract

The Oil Pollution Environmental Review Act, or OPERA, amends existing legislation so that drilling undertaken on continental shelf lands will be subject to greater scrutiny. Oil spills are harmful to the environment, causing short-term losses of animal life and human health, and having long-term effects that can persist for decades. If OPERA is successful in its goals, it will make fossil fuel production a smoother and safer process. As there are many factors that determine the effectiveness of regulatory oversight, it will be difficult to determine how successful OPERA will be until decades after its passage. Discussion over this issue is often clouded by political biases. The recent Deepwater Horizon Spill looms large in the public's memory, and science is still trying to grasp the full impact of oil drilling, whether mishaps occur or not. Hopefully, OPERA can contribute to greater scientific understanding and cooperation between regulators and those they regulate.

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1. Introduction

In 1953, Congress passed the Outer Continental Shelf Lands Act (OCSLA). This act extended federal jurisdiction to include mineral resources in offshore regions including the Gulf of Mexico, the Atlantic, the Pacific, and off the coast of Alaska. The National Environmental Policy Act, or NEPA, became U.S. law in 1969. It marked a massive expansion in federal power, making the mediation among environmental, industrial, and technological interests a national rather than state issue. These two pieces of legislation laid the groundwork for the Oil Pollution Environmental Review Act (OPERA), which amends OCSLA so that offshore drilling now falls under greater scrutiny from the federal government. It eliminates the application of Categorical Exclusions for offshore drilling, which are procedures by which agencies seeking licenses or permits to drill in a federally mandated area can apply, only if minor revisions to administrative or environmental actions are proposed.

OPERA intends to make offshore drilling exploration, development, extraction, and production safer to offshore and coastal ecosystems. The short-term goal of OPERA, however, is not to end oil spills outright but to provide a comprehensive environmental review framework in order to reduce risk. The two steps that remain in the oversight process are Environmental Assessments (EAs) and Environmental Impact Statements (EISs). The long-term effects of OPERA would take decades to measure, as major spills do not happen often, and are affected by numerous factors, not just regulatory oversight.

2. Legislative Overview

2.1 Bill Summary

The Oil Pollution Environmental Review Act, or OPERA, amends the Offshore Continental Shelf Lands Act (OCSLA), which asserted that mineral resources off of the U.S. coast were under federal, rather than state, jurisdiction.[1] The amendment requires federal regulatory agencies to treat any plan for surveying or establishing offshore drilling sites or any lease sales by the government as a "major federal action" – affecting the quality of the environment. By categorizing offshore drilling activity as a major federal action, OCSLA requires companies to bid for licenses to drill and extract offshore resources, which is mandated by the provisions of the National Environmental Policy Act of 1969 (NEPA) decreeing that the federal government was the steward of the U.S.'s environment and natural resources.[2]

Under NEPA, all major federal actions are subject to detailed environmental analysis. - Environmental analysis refers to an Environmental Assessment (EA) and the more in-depth Environmental Impact Statement (EIS). OPERA removes Categorical Exclusions from environmental analysis for such activities. Categorical Exclusions are issued for agency-specific actions that are determined by the government to have no significant environmental impact. Examples of exclusion activities include minor facility renovations such as hiking trail restoration, rehabilitation of natural lands, or revision of administrative procedures.

[1] Outer Continental Lands Act 1952
[2] National Environmental Policy Act 1969

Finally, OPERA eliminates an existing thirty day timeframe in which the Secretary of the Interior must approve or reject offshore drilling actions as proposed in Environmental Assessments.[3]

2.2 Government Action

OPERA does not establish a new framework for regulation; it amends existing legislation—the OCSLA—to require more thorough analysis. The legislation does not eliminate all risk involved in drilling, but rather serves as an impetus to increase the data upon which federal decisions are made in order to minimize the risk and breadth of future disasters.[4]

3. The Science Behind Oil Spills

Oil spills have immediate impacts, such as the contamination of benthic and zooplankton communities[5], as well as longer-term impacts such as the poisoning of marshlands that can upset the balance of an ecosystem for decades to come.[6] Oil itself is very toxic[7], composed of hydrocarbons that can be harmful to organisms at all levels of the food chain. Additionally, the issue of oil drilling itself can lead to ocean contamination for the benthic community level even when no spill occurs.[8]

[3] HR 52 Oil Pollution Environmental Review Act
[4] HR 52 Oil Pollution Environmental Review Act
[5] Kinako, Pius D.S. "Short-term Effects of Oil Pollution on Species Numbers and Productivity of a Simple Terrestrial Ecosystem." *Environmental Pollution Series A, Ecological and Biological.* 26.2 (1981): 87-91.
[6] Bowman, Rosemary S. "Dounreay Oil Spill: Major Implications of a Minor Incident." *Marine Pollution Bulletin.* 9.10 (1978): 269-73.
[7] Toro, Dominic M. Di, Joy A McGrath, and William A. Stubblefield. "Predicting the toxicity of neat and weathered crude oil: Toxic potential and the toxicity of saturated mixtures. Environmental Chemistry. 26.1(2007): 24-36.
[8] Grant, Alastair. "Toxicity of Sediments from around a North Sea Oil Platform: Are Metals or Hydrocarbons Responsible for Ecological Impacts?"
Marine Environmental Research. 53.1 (2002): 95-116.

Oil spills are dangerous to human life as well, both directly and indirectly. Many of the components of oil are toxic to humans[9], and in the event of a major spill, fisheries are often shut down immediately due to potential contamination affecting the food chain. Tourism and recreation along coastal areas decrease as well, causing significant harm to the economy of the region through the cessation of commercial fishing[10] and tourism revenue.[11] Additionally, fatal accidents occur during oil spills. Among the ten greatest spills between 1962 and 2008, over 770 drilling platform workers died[12], making oil drilling itself a dangerous profession. Recovering from the spill also presents its own unique challenges, as the chemical dispersants used to break up the oil drifts into more manageable sizes have an effect on marine life that is still being debated, but could potentially be quite harmful.[13] Bioremediation, another remediation option, is a technique that uses microorganisms to break up the spill, although it presents promising results it is still being researched.[14]

4. Environmental Impacts

4.1 Oil Composition and Drilling Methods

Oil has a complex chemical composition, but its most concerning component is hydrocarbons—organic compounds that, depending on the complexity of their bonds, can be very difficult to break down (Figure 1[i]). Hydrocarbons are formed from organic compounds that have been converted by intense pressure and heat over the course of millions of years into

[9] Cadahia, Beatriz Perez, Anunciacion Lafuente, Teresa Cabaleiro, Eduardo Pasaro, Josefina Mendez, and Bianca Laffon. "Initial study on the effects of Prestige oil on human health". Environment International. 33.2(2007):176-185.
[10] BP. "Supporting the seafood industry". Jun. 2012. Web.http://www.bp.com/sectiongenericarticle800.do?categoryId=9036594&contentId=7067596.
[11] Carson, Richard T., and W. Michael Hanemann. "A Preliminary Economic Analysis of Recreational Fishing Losses Related to the Exxon Valdez Oil Spill". Report to the Attorny General of the State of Alaska. 1992.
[12] Hopey, Don. "Choice is more oil or more risk to coast". Pittsburgh Post-Gazette. Jun. 2008.
[13] Lessard, R. R., and G. DeMarco. "The Significance of Oil Spill Dispersants". Spill Science and Technology Bulletin. 6.1(2000): 69-68.
[14] Delille, D. Delille, B., and E. Pelletier. "Effectiveness of Bioremediation of Crude Oil Contaminated Subantarctic Intertidal Sediment: The Microbial Response." SpringerLink. Springer Science Business Media. 44.2(2002): 118-126.

petroleum, which exists today either on the surface of the earth or in deposits just beneath the surface.[15]

There are two methods for offshore drilling: bottom-supported and floating. In recent years, the depletion of oil at shallower depths has forced the oil industry to upgrade its methods in order to drill at depths greater than years' passed, which previously did not surpass 6,000 feet[16]. Now that the methods of drilling – ranging from sturdier rigs to submersible drilling vessels – grow more complex to account for these changes, more advanced techniques are required to compensate for anticipated spills. Research has indicated that the deeper a spill, the more difficult it is to clean up after it.[17]

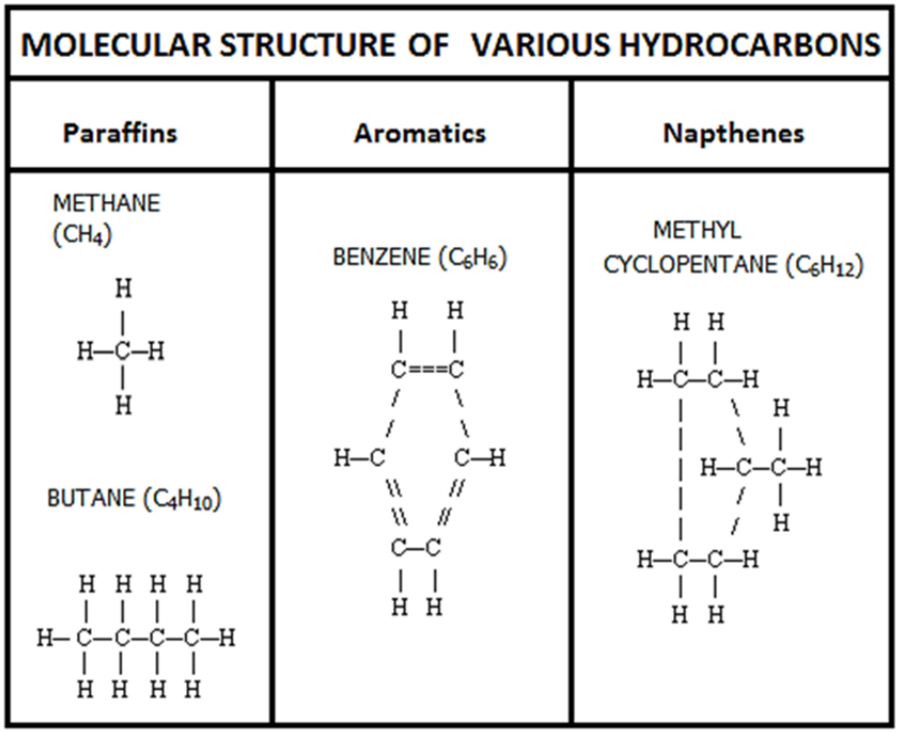

Fig. 1: The molecular chains formed by hydrocarbons range in simplicity (methane) to complexity (methyl cyclopentane).

Basic chemical and physical characteristics pertinent to this study are viscosity and volatility. High viscosity – similar to molasses and caused by heat – results in less horizontal

[15] Agency for Toxic Substances and Disease Registry
[16] Greenberg, Jerry. "Offshore Drilling Rig Types". Energy Offshore Center, 2010.
[17] Greenberg, Jerry. "Offshore Drilling Rig Types". Energy Offshore Center, 2010.

spreading as temperature increases, viscosity decreases resulting in wider spreading.[18] Lighter, refined oil evaporates more readily into the atmosphere leaving denser products to break up and either float into a "mousse" or sink down onto the ocean floor. Oil groups can be divided into four main groups of different compounds such as saturated, unsaturated, aromatic, and polar; of those four, aromatic hydrocarbons, are the most hazardous and toxic. On average crude oil will contain 30% alkanes, 50% cycloalkanes, 15% aromatics, and 5% nitrogen.[19] Understanding the composition of oil and its chemical breakdown is pertinent to comprehension of its adverse effects on surrounding ecosystems.[20]

4.2 Non Spill Oil Production Effects On Marine Wildlife

In the absence of spills, hydrocarbons travel far from drill sites and settle on the ocean floor. The longer a site is in operation, the farther away the hydrocarbon sediments are found. In one study, after nine years of drilling, sediments were found up to six kilometers from the drilling site.[21] These sediments have been observed to have a positive correlation with the loss of species in the benthic community, which hosts the highest level of marine biodiversity. Benthic algae serve as a food source for different species living in the water column, therefore loss of benthic algae impacts the systems of other marine zones as well. Additionally, studies on drilling mud (a fluid used to aid in the drilling of boreholes) suggest that the negative effects of drilling may be associated with the type of drilling mud used to maintain the borehole, rather than from the oil leaking out from the hole. Oil-based drilling muds are associated with reduced

[18] Kingston, Paul F. "Long-Term Environmental Impact of Oil Spills." Centre for Marine Biodiversity and Biotechnology, Department of Biological Sciences, Heriot-Watt University, Riccarton, Edinburgh EH14 4AS, Scotland, UK. 9 May 2002. Web.
[19] Payne, J.R. and Phillips. C.R. "Photochemistry of Petroleum in Water." *Environmental Science and Technology* (1985): 19:7
[20] Payne, J.R. and Phillips. C.R. "Photochemistry of Petroleum in Water." *Environmental Science and Technology* (1985): 19:7
[21] Frode, Olsgard, and Gray S. John. "A Comprehensive Analysis of the Effects of Offshore Oil and Gas Exploration and Production on the Benthic Communities of the Norwegian Continental Shelf."*Marine Ecology Progress Series.* 122nd ser. (1995): 277-306. Web.

populations of certain sensitive species, with damage increasing with proximity to the drill site and larger organisms being affected near the drill site. It is important to note that, for the most part, water-based drilling muds are not associated with damage to the benthic community.[22]

4.3 Oil Spill Volume and Impact on Ecosystems

In the event of an oil spill, the oil spreads out over the water, forming a thin layer on the surface (Figure 2[ii]). A significant portion of the oil, depending on its density and on the weather conditions, evaporates. In the Exxon Valdez tanker spill of 1989, for example, 30% of the 38,000 tons spilled, evaporated into the atmosphere. In spills, much of the oil dissolves into moderately toxic, low-weight compounds in the water.[23] As much as 35 percent of it can end up

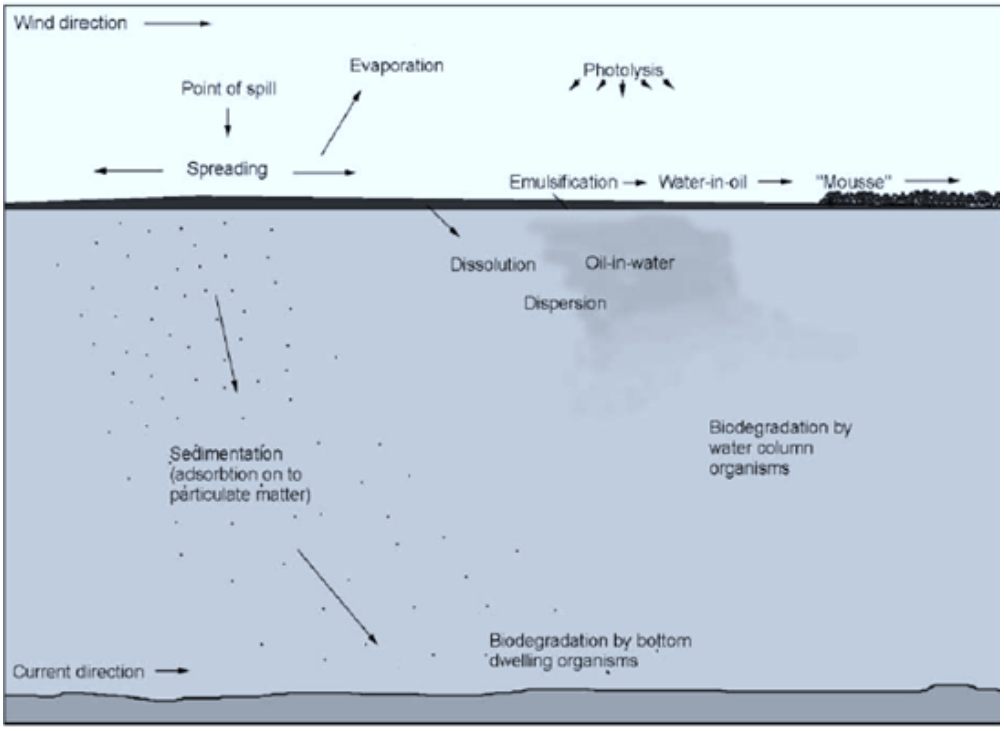

Fig 2: Pathways by which oil may enter the marine ecosystem

[22] Daan, Rogier and Mulder, Maarten. "On the short-term and long-term impact of drilling activities in the Dutch sector of the North Sea" *ICES J. Mar. Sci. (1996) 53 (6): 1036-1044.*

[23] Kingston, Paul F. "Long-Term Environmental Impact of Oil Spills." Centre for Marine Biodiversity and Biotechnology, Department of Biological Sciences, Heriot-Watt University, Riccarton, Edinburgh EH14 4AS, Scotland, UK. 9 May 2002. Web.

in the sediments on the ocean floor.[24] Upon reaching this point, the oil can sink to the seabed along with other substances in the water column such as clay and sand, where it then becomes sequestered into the sediment. Benthic organisms can break down that oil, but in the case of extreme spills, the oil remains in the sediment. This kind of event can have severe long-term consequences.[25]

The long-term effects of loss of habitat and benthic community organisms exhibit a positive correlation between spill volume and total mortality; however, it is not true that larger spills always indicate lethal ones, or conversely, that smaller spills are less lethal. The Tsesis Spill of 1977 off the coast Sweden resulted in 1,000 gallons spilled, 600-700 of which were recovered, yet its significant impact on the ecosystem was widely documented[22]. The pelagic system recovered fairly quickly, but the benthic community was still contaminated by oil up to a year later. By contrast, the Exxon-Valdez spill released 38,000 gallons in the environment and resulted in more wildlife damage, yet like the Tsesis spill, the oil from the Exxon-Valdez proved to be surprisingly persistent[26]. Studies conducted almost ten years later showed that bird and sea otter populations were still struggling to return to pre-spill levels. Oil that was found in the sediment in 1992 had become so deeply sequestered into sediment that both physical barriers and a lack of access to oxygen prevented it from being degraded or weathered[27]. This information is not to discount the initial damage resulting from oil spills. Around 50% of the sea otters at the

[24] Kingston, Paul F. "Long-Term Environmental Impact of Oil Spills." Centre for Marine Biodiversity and Biotechnology, Department of Biological Sciences, Heriot-Watt University, Riccarton, Edinburgh EH14 4AS, Scotland, UK. 9 May 2002. Web.
[25] Kingston, Paul F. "Long-Term Environmental Impact of Oil Spills." Centre for Marine Biodiversity and Biotechnology, Department of Biological Sciences, Heriot-Watt University, Riccarton, Edinburgh EH14 4AS, Scotland, UK. 9 May 2002. Web.
[22] Elmegren, R., S. Hansson, U. Larsson, B. Sundelin, and P. D. Boehm. "The "Tsesis" oil spill: Acute and long-term impact on the benthos". *Marine Biology*. 73.1 (1983): 51-65.
[26] Elmegren, R., S. Hansson, U. Larsson, B. Sundelin, and P. D. Boehm. "The "Tsesis" oil spill: Acute and long-term impact on the benthos". *Marine Biology*. 73.1 (1983): 51-65.
[27] Elmegren, R., S. Hansson, U. Larsson, B. Sundelin, and P. D. Boehm. "The "Tsesis" oil spill: Acute and long-term impact on the benthos". *Marine Biology*. 73.1 (1983): 51-65.

Northern Knight Island were lost shortly after the Exxon-Valdez spill, and estimates of bird deaths were conservatively held at 250,000.[28] The BP Deepwater Horizon spill was the largest accidental oil spill in recorded history, resulting in the loss of 210 million gallons of oil throughout the region that killed birds, sea turtles, fish, and contaminated thousands of miles of coastline.[29] Long-term recovery after a spill is often very slow. Some regions, like marshes, can take decades to recover.[30] In the short term, there is a very strong correlation between spill volume and wildlife fatalities (Figure 3[iii]).

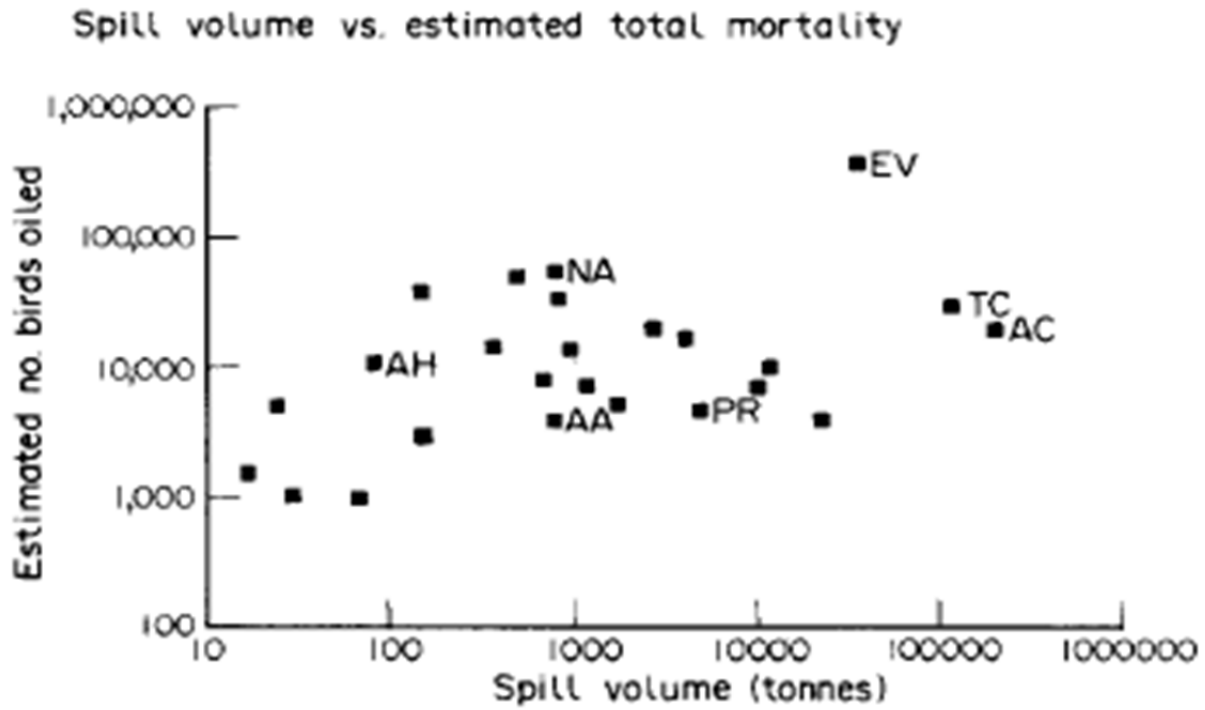

Fig 3: The correlation between the size of the spill and the number of bird fatalities.

[28] Peterson, Charles H., Rice, Stanley D., Short, Jeffrey W., Esler, Daniel, Bodkin, James L., Ballachey, Brenda E., Irons, David B. "Long-Term Ecosystem Response to the Exxon-Valdez Oil Spill" *Science 19 December 2003:* Vol. 302 *no. 5653 pp. 2082-2086.* Web.
[29] "Southern Environmental Law Center Â» Newsroom Â» Government Approval Of New Deepwater Oil Drilling Ignores Gulf Disaster." *Southern Environmental Law Center Â» Newsroom Â» Government Approval Of New Deepwater Oil Drilling Ignores Gulf Disaster*. N.p., n.d. Web. 12 June 2012.
[30] Kingston, Paul F. "Long-Term Environmental Impact of Oil Spills." Centre for Marine Biodiversity and Biotechnology, Department of Biological Sciences, Heriot-Watt University, Riccarton, Edinburgh EH14 4AS, Scotland, UK. 9 May 2002. Web.

4.4 Remediation Efforts – Dependent on Environmental Impact

There are three different categories of remediation methods on oil spills: physical, chemical, and thermal. Oil spill remediation employs combinations of techniques from the different categories, and the chosen combination varies, depending on the nature and scope of the spill. Physical methods do not alter the chemical properties of oil, and therefore have a low impact on marine life. These methods include booms, which serve as barriers to contain oil, and skimmers, which collect oil from the surface. Chemical methods, which include the use of dispersants and solidifiers, alter the composition of oil. Dispersants do not remove oil, but break it down into smaller pieces that are dispersed into the water column to be degraded by the existing microorganisms.[31] Sometimes additional microorganisms are introduced to the site to accelerate the degradation process, which is known as bioremediation.[32] There is controversy about the impact of dispersants on marine life, with some results suggesting that they lead to higher rates of bioaccumulation of oil components in fish.[33] Solidifiers change the physical state of oil from liquid to solid to make recovery easier. This method is used less frequently than dispersants, due to the economic costs of recovering solidified oil, which is removed manually, using shovels and pool nets, causing cleanup and disposal costs to skyrocket in addition to the negative environmental impacts of sunken solidified oil on benthic communities.[34] Thermal remediation is the use of burning to remove oil, and is effective when employed immediately

[31] Dave, D., and A. E. Ghaly. "Remediation Technologies for Marine Oil Spills: A Critical Review and Comparative Analysis." *American Jounral of Environmental Science* 7.5 (2001): 423-440.
[32] Bassères, D. Delille, A., and A. Dessommes. "Effectiveness of Bioremediation for Oil-polluted Antarctic Seawater." *SpringerLink*. Springer Science Business Media, n.d. Web. 12 June 2012.
[33] Kingston, Paul F. "Long-Term Environmental Impact of Oil Spills." Centre for Marine Biodiversity and Biotechnology, Department of Biological Sciences, Heriot-Watt University, Riccarton, Edinburgh EH14 4AS, Scotland, UK. 9 May 2002.
19 Bassères, D. Delille, A., and A. Dessommes. "Effectiveness of Bioremediation for Oil-polluted Antarctic Seawater." *SpringerLink*. Springer Science Business Media, n.d. Web. 12 June 2012.
[34] Dave, D., and A. E. Ghaly. "Remediation Technologies for Marine Oil Spills: A Critical Review and Comparative Analysis." *American Jounral of Environmental Science* 7.5 (2001): 423-440.

after a spill occurs. Burning, however, produces significant air pollution that can impact both human and marine life.[35]

5. The Proposed Solution

5.1 Overview

The major proposed solutions in OPERA consist of three specific components for addressing environmental consequences of offshore drilling within the United States. First, OPERA reemphasizes that oil drilling proposals must be defined as a major federal action affecting the quality of the environment. By characterizing offshore drilling as a major federal action, OPERA requires a detailed environmental analysis of the proposed oil drilling and development by drilling companies, also known as lessees. These environmental analyses also require predictions for foreseeable subsequent actions, which was initially required as analysis criteria in the National Environmental Policy Act (NEPA) of 1969. The third provision in OPERA repeals a requirement that the Secretary of Interior approve proposed geological exploration plans within thirty days.[36]

5.2 Major Federal Action

According to the definition in the Code of Federal Regulation, Section 1508.18, a "Major Federal Action" is "an action with effects that may be major and which is potentially subject to Federal control and responsibility. These actions include new and continuing projects and programs that are entirely or partly financed, assisted, conducted, regulated, or approved by

[36] H.R.52, Oil Pollution Environmental Review Act

federal agencies."[37] This definition asserts that any proposed environmental development or production plans requiring federal oversight should be assessed by the federal government before action is authorized.

5.3 Environmental Analysis Under NEPA

While OPERA does request detailed environmental analysis before the related federal agency approves proposed offshore drilling actions, NEPA also requires leasing companies to craft a detailed statement on how the proposed activities affect the quality of the human environment, which includes:

"(i) the environmental impact of the proposed action,(ii) any adverse environmental effects which cannot be avoided should the proposal be implemented, (iii) alternatives to the proposed action, (iv) the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and (v) any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented."

----Section 102, The National Environmental Policy Act of 1969

The language in the OPERA legislation implies that offshore drilling actions significantly affect the quality of human environments – drilling mud and produced water are two crucial detailed items for human environmental analysis. Drilling muds are used for the lubrication and

[37] The Code of Federal Regulation, Section 1508.18

cooling of the drill bit and pipe, and produced water is fluid trapped underground and brought up with oil and gas.[38]

The term "Categorical Exclusion" under NEPA means that when a review of the extraordinary circumstances discloses no potential environmental impacts, "the Department of the Interior may apply the Categorical Exclusion and allow a drilling company to proceed with development actions."[39] Categorical Exclusions set aside, OPERA requires leasing companies to prepare an Environmental Assessment (EA) and an Environmental Impact Statement (EIS) when seeking approval for offshore activities.

5.4 Environmental Assessment (EA)

An Environmental Assessment (EA) is the first environmental analysis for offshore drilling activities conducted by the lessee, or drilling company. It is typically a short document including initial proposals for activity on federal land and it costs very little to lessees to produce.[40] Additionally, the EA also includes suggestions and identified ways to modify the proposed actions so as to minimize their environmental effects.[41] Previously, under OCSLA, an EA provided evidence and analysis in determining whether to prepare an EIS for the reviewed action or not. Under the revisions of OPERA, an Environmental Impact Statement (EIS) will follow an EA regardless of the evidence within it.

[38] OCEANA- Impacts of Offshore Drilling OCEANA.ORG
[39] BOEMRE.GOV, Categorical Exclusion Reviews
[40] BOEM.GOV, Contents of an Environmental Assessment
[41] U.S. Bureau of Land Management, National Environmental Policy Act Handbook

5.5 Environmental Impact Statement (EIS)

The Environmental Impact Statement (EIS) is the document required by NEPA for development and production proposals that might affect the environment, after an EA has been reviewed. Within OPERA, EIS documents specifically refer to offshore drilling actions that may have "significant effects on the quality of the human environment".[42] As a tool for decision-making, EIS describes the rationale – positive and negative environmental effects – of the proposed action and proposes one or more alternatives for proper development. There is also an option for No Action Alternatives, which demonstrates what would happen if the agency chooses not to pursue the action. Normally, a full EIS process contains Scoping, Analytical Scenarios, Impact Analysis, Draft EIS and Public Review and Final EIS:

"(i)Scoping is the process of determining the contents of an effective EIS; (ii) Analytical Scenarios are developed for the proposal and alternative options; (iii) Impact Analysis is the particular analysis to the environmental concern through scoping; (iv) The impact analysis is first documented in a draft EIS, which is made of available to the public for 60-90 days; (v) The final EIS is to address public comments on the draft EIS."[43]

----- "The EIS Process", Bureau of Ocean Energy Management, Regulation, and Enforcement

The Draft EIS is published for public review and comment for a minimum of 45 days. The Final EIS is then reviewed by the leading federal agency(s) in charge of the study before a final decision on the impact of the proposed project is made.

[42] H.R. 52, Oil Pollution Environmental Review Act
[43] BOEMRE.GOV, The EIS process

5.6 The Science of an EIS

The eight criteria that comprise a detailed EIS under NEPA include specific and extensive reports that, while costly, produce assessments to environmental quality after major federal actions.

1. Geological Studies

The petitioner (also known as lessee or permittee) must first describe the geological objectives of drilling with the inclusion of maps detailing the prospective hydrocarbon sand for Exploration Plans (EP), which includes the entire lease block and the locations of the proposed wells. This study will also provide interpretations of the geological structure cross-sections indicating the location and depth of a proposed well. In addition, copies of a shallow hazard report from a high-resolution geophysical survey must be provided, followed by an assessment of the shallow hazards[44].

2. Biological Studies

If the Exploration Plans proposes sea-floor disturbing activities such as rig placement and construction barge use of anchors, chains, cables or wires, the petitioner will have to provide site specific information about the presence of federally listed threatened or endangered species and critical habitat. The study requires research on: (i) the benthic communities and the presence of Impact Producing Factors (IPF), (ii) water quality, (iii) fisheries and how they are affected by drilling fluids and cutting discharges, (iv) marine animals especially with regards to the effects of noise, effluents or ingestion of debris, (v) sea turtles (IPFs, noises, fluids, effluents, debris), (vi) the vicinity of offshore location, (vii) essential fish habitats (drilling muds, water discharges,

[44] Cobalt International Energy, 2012 and BOEMRE, 2010.

water quality), (viii) marine and pelagic birds (air emissions, accidental oil spills, debris from vessels and facilities), (ix) shore birds and coastal nesting birds, (x) and about coastal wildlife refuges and wilderness areas[45].

3. Archaeological Studies

An archaeological report must be provided to the Regional Supervisor for all projects where the sea floor could contain historic or prehistoric archaeological resources[46].

4. Social-Economic Studies

Necessary information: (i) the estimated number of persons expected to be employed for the project, (ii) the transportation activities, (iii) the number of new employees and families likely to move in the affected area, (iv) an estimate of the major supplies, services, energy, water or other resources expected to be purchased in the area, that are necessary for the project, (v) and finally the types or contractors or vendors needed to carry the exploration plan[47].

5. Waste and Discharge Information

The lessees and operators must provide assessment of the projected generated wastes, both solids and liquids, as well as operational wastes allowed by the appropriate National Pollutant Discharge Elimination System (NPDES) permit and any other identified wastes[48]. They must also describe the plans for treating, storing, or disposal of these wastes at their facility locations.

[45] Cobalt International Energy, 2012 and BOEMRE, 2010.
[46] Cobalt International Energy, 2012 and BOEMRE, 2010.
[47] Cobalt International Energy, 2012 and BOEMRE, 2010.
[48] Cobalt International Energy, 2012 and BOEMRE, 2010.

6. Air Emission Information

If the Exploration Plans (EP) or Development Operations Coordination Document take place at the site of an existing facility or well, it is necessary to estimate two different emissions. The first one is the amount of emissions associated with the activities proposed in the current EP or DOCD, which are referred as Plan Emissions[49].

The second calculation, are the Complex Total Emissions. These are the Plan Emissions plus projected emissions from all existing co-located facilities and activities.

7. Oil Spill Information

The first required document for this section of the environmental analysis is the Oil Spill Response Plan (OSRP), which must incorporate a detailed description of the equipment that will be procured to satisfy the requirements of the stipulation and a timetable for its onsite deployment or availability. If the proposed activities are located in the Central or Western Planning Areas of the Gulf of Mexico, then the lessees should provide information regarding the (i) regional or sub-regional OSRP; (ii) spill response site; (iii) oil spill response organization; and (iv) the worst-case scenario determination[50].

The second required document corresponds to the oil spill response discussion. In it, companies must prepare the response they will provide in case of an oil spill resulting from the activities proposed in the EP or Development Operations Coordination Document. In order to best assess an appropriate response plan, companies must generate the response from data obtained from the location in which the potential spill dispenses the greatest volume of oil. Other

[49] Cobalt International Energy, 2012 and BOEMRE, 2010.
[50] Cobalt International Energy, 2012 and BOEMRE, 2010.

response plans reflect on ecologically sensitive areas or how development might be affected by extreme weather incidents.

8. Environmental Monitoring Information

The lessees must provide a description of the monitoring systems they are using or plan to use throughout development and production. If the companies have reason to believe that protected species may be incidentally killed by their activities, they must also explain how they will monitor such incidents[51].

5.7 Thirty Day Repeal Provision

The third component of the OPERA legislation repeals the thirty day review timeframe by which the Secretary of the Interior must approve or deny oil or gas drilling proposals within the Outer Continental Shelf by production companies. This specific provision that OPERA would repeal was first introduced and passed in the 2005 Republican led Congress.[52] The amendments that this Congress added to the existing Outer Continental Shelf Lands Act (OCSLA) were meant to streamline the offshore drilling process domestically, since existing review processes could last indefinitely if the approving authority wanted it to.[53] Some Democratic critics of these amendments claimed that Republicans simply wanted to facilitate drilling in the United States so that oil barrel prices would decrease in sale; however, as Professor of Environmental Chemistry at Columbia University Juerg Matter observed, "Oil prices depend on the international market. Being produced here [in the U.S.] doesn't make it cheaper".

[51] Cobalt International Energy, 2012 and BOEMRE, 2010.
[52] United States Cong. Connolly, Gerry. “Connolly Bill Requires Full Environmental Study for Offshore Drilling Plans”.
[53] United States Cong. Connolly, Gerry. “Connolly Bill Requires Full Environmental Study for Offshore Drilling Plans”.

6. Measuring the Success of the Legislation

6.1 Indicators of Success

OPERA was created as an effort to decrease the incidence and severity of oil spills. In doing so, its indirect goal is to improve the quality of coastal waters. In order to evaluate the success of these goals, it is necessary to develop a set of questions that a government agency such as the Bureau of Ocean Energy Management, Regulation, and Enforcement (now BOEM and BSEE) could use to evaluate its success. The following questions are a suggested list, or guideline, created by this study, for appropriate measure of this policy's success.

1. **Are spills decreasing in frequency?**

A decrease in spill frequency might indicate that fewer risky drilling projects are taking place as a result of OPERA's requirement of all offshore drilling activity providing EISs. This effect could be measured over time by comparing annual tallies of spill reports before and after OPERA.

2. **Are spills decreasing in severity?**

To measure this element of success would require an analysis of reported spills before and after OPERA by categorizing spills in terms of severity. The government agency(s) assigned this task would need to develop a uniform way to measure spill severity, such as a rubric, incorporating factors like chemical composition of oil, quantity of oil, period of time that oil persisted, and damage to marine biota.

3. **Are cleanup efforts for spills more effective?**

Quicker and more effective cleanup efforts would indicate that the spill preparation aspect of the EIS is functioning well. This measure would require a comparison of data on clean-

up efforts before and after OPERA. As with severity, effectiveness is subjective and the agency conducting the study would need to determine a scoring system to compare spill effectiveness.

4. **Are government agencies making more informed decisions?**

With more time to review initial assessments and development proposals, government agencies should be able to make more informed decisions regarding approval for high-risk drilling projects. To assess this measure of success, the abundance and frequency of drilling accidents post-OPERA should again be compared to the number of accidents that occurred prior to its thirty day repeal provision. To assess this measure more closely, the number of days attributed to the review of each Environmental Analysis that accompanied a drilling accident should be calculated and compared pre- and post-OPERA.

5. **Is the oil content in coastal waters decreasing?**

A decrease in oil content in coastal waters would indicate the overall success of OPERA in making drilling safer. This measure could be assessed by repeatedly collecting water samples at various offshore locations and comparing this data over time.

6.2 Obstacles in Measuring the Success

A. The primary difficulty in measuring the success of this bill is the length of time that that will require.

    1. Minor spills happen often, but major spills happen only once every few years, if that.

The only way to truly assess the impact of HR 52 would be to wait for a period of at least a decade after its passage to see if the magnitude and frequency of spills had decreased.

2. There is also the difficulty in compiling spill data, as oil companies do not always report the less-damaging spills.[54] Even with data on spills, there is no guarantee that any drop in the frequency and severity of spills is tied to the measures imposed by the bill.
3. The increase in public scrutiny of the oil industry following the Deepwater Horizon disaster could lead to increased caution on the part of the oil companies. In the case of the Deepwater Horizon accident, the leasing company BP was later found responsible for paying retribution fees to individuals and businesses that suffered from its operating practices. If drilling companies are held responsible, they may be inclined to ensure all operations function efficiently.
4. It is also possible that technological advances in the ensuing years could make drilling safer without being a direct result of increased oversight by regulatory agencies.

B. General trends in the data should reveal a positive change if this bill is successful.

1. It removes the previously-held 30-day evaluation requirement for drilling, although a decision that is carefully considered is not always the most beneficial to the environment.

[54] Reporting Exemptions for Oil Spills | Emergency Management | US EPA." EPA. Environmental Protection Agency

2. Between the major accidental spills that have occurred over the past forty years, almost all of them occurred in instances marked by a lack of serious oversight.[55]
3. If Categorical Exclusions are reduced and oil companies are subject to more rigorous evaluation, then oil spills should not only start to happen less often, but be minor in scale. Some catastrophes (such as the spill in the 1st Gulf War, the largest spill in history) are outside the purview of NEPA, but a stronger regulatory hand can prevent accidental spills, if not intentional ones.

7. Controversies

7.1 Deep Water Drilling

Deep water drilling is defined as drilling that occurs below 500 feet of water on the Outer Continental Shelf, and because of the depth at which the drilling needs to be done, it requires more sophisticated technologies. These technologies can be riskier than other forms of drilling and can limit the effectiveness of spill cleanup efforts if something goes wrong. As of 2012, there were over 600 deep water drilling wells in the Gulf of Mexico for a total infrastructural investment of over $145 billion.[56] With the very public 2010 BP oil spill, deep water drilling generated many controversies.

[55] Flournoy, Alyson, Sidney Shapiro, William Andreen, Thomas McGarity, and James Goodwin. "The BP Catastrophe: When Hobbled Law and Hollow Regulation Leave Americans Unprotected."
[56] Aarkstore Enterprise. “The Deepwater and Ultra Deepwater Market Report 2011-2021.”

7.2 Controversies of the Environmental Problem

The Deepwater Horizon explosion brought many of the shortcomings of oil drilling on the Outer Continental Shelf to light. Immediately following the 2010 spill, there were controversies on the methods used to evaluate the extent of the spill. The U.S. government, BP, and independent scientists announced different values of spillage ranging between 1,000 barrels/day to 60,000 barrels/day, the latter figure being the closest to the actual numbers. The industry, which announced the most conservative estimates, claimed at the time that it was impossible to accurately measure the leak, while independent scientists asserted that the technique to do so had been around for a while, just not applied.

Conflicting views on the severity of the 2010 oil spill still persist to this day. First described as the "greatest environmental disaster in American history" by President Barack Obama, scientists have since provided studies that indicated that the environmental impact may not have been as harmful as once thought, rating the overall health of the Gulf at almost the same level as it was before the spill only a year after the incident.[57]

According to the Deepwater Horizon Final Report, there are many complexities regarding scientific measurement, recording, reporting, and assessing. One example regards the cement composition ratio to prevent gas bubbling in oil wells that can cause explosions. These scientific and engineering exercises can be done correctly but pose risk for error and even more for nonconformity.

[57] Texas A&M University. "Tunnel GCCF Report."

7.3 Controversies on the Detailed Analysis Under NEPA

A) Another controversy is the fact that to conduct Environmental Assessments, the Minerals and Management Services would recycle old data from previous EIS's in order to avoid new findings of significant adverse impacts and avoid costs associated with conducting new research of similar environments. Such a finding would, by law, require a full EIS for that sale, adding months or years to the schedule. An investigation of the MMS by the Council on Environmental Quality, right after the 2010 spill, found that the regulatory agency would also frequently suppress the opinions of concerned scientists or even manipulate the scientific data in order to speed up the approval process for oil projects.[58] The investigation eventually led to the abolition of the agency and a restructuring into three separate divisions, the Bureau of Ocean Energy Management (BOEM), the Bureau of Safety and Environmental Enforcement (BSEE), and the Office of Natural Resources Revenue.

B) NEPA also alludes to "Significant Environmental Impact" but there is no specific definition, threshold, or specific operational procedures to define it. It is an ambiguous statement that leaves room for interpretations. For example, in March 2010, the Governmental Accountability Office (GAO) found that scientists, responsible for creating environmental reports in the Alaska Outer Continental Shelf region of the MMS, had no written rules on how to apply NEPA because there was no clear definition of what constitutes a "Significant Environmental Impact" and without that standard researcher do not know the extent to which they need to report on.[59] The issues within this discrepancy may include varying opinions, rather than definitive requirements, for an impact within native environments. Some scientists might

[58] Union of Concerned Scientist. "The Minerals Management Service: Bad Science in the Name of Private Interests."
[59] Union of Concerned Scientist. "The Minerals Management Service: Bad Science in the Name of Private Interests."

consider a change in native species populations to be significant impact, while some officials may assume that if native species still exist in a given environment, regardless of health or abundance of that species, an environment has not been impacted. Without set guidelines, NEPA is open to interpretation.

C) Unlike the auto industry there are no government testing standards on new drilling technologies or techniques apart from the International Organization for Standardization (ISO). The industry borrows certification guidelines from the American Petroleum Institute, a company that acts as a technology consultant for companies that want to streamline their lease approvals and certifications.[60] The level of complexity of the subject and the expertise required to understand it may explain why the government doesn't have standards and lets each company have a varying degree of autonomy and self-regulation and reporting as well as trade secrets on how they want to conduct those testing operations and what technology will be used.

7.4 Assessment of Controversies

There are great challenges facing the offshore drilling industry and therefore challenges for the government agencies tasked with regulating and monitoring their practices. Without the agencies to inspect and regulate it is very likely that attempts by companies to cut costs can result in exposing the environment to unnecessary risks. The science behind offshore oil drilling encompasses all fields of science and is very dynamic, having vast technological complexities. It is, therefore, important to note that OPERA does not address any of these technical issues but is rather a vehicle for more research to be conducted objectively.

[60] BOEMRE Final Report on DWH Page 139

8. Conclusions

OPERA is an effort to codify the offshore drilling review process so that drilling may be conducted both more carefully and thoroughly. The bill targets on encompassing all offshore drilling activity as a federal action specifically because accidents resulting from inadequately monitored operational activity can significantly effect the entire country, if not just a designated region. The components of this legislation revise existing protocol in order to maintain safe and healthy marine and coastal environments for both wildlife and humans. OPERA also aims to ensure economic security as well – albeit indirectly – as a responsible use of outer continental shelf lands that will result in fewer accidents, which could have otherwise posed losses in economic activity in coastal regions. In allowing for drilling lease application to be examined more thoroughly and with federal uniform standards, the scientific factors, some of which have been examined here, will become more transparent and less uncertain. Whether or not the legislation can be successful in these goals will be seen going forward, but by observing the changes in drilling technology and drilling practices, the bill postulates that the number and magnitude of spills that occur in the ensuing years and decades will decrease. The science of environmental and ecological impacts and the technology of drilling and safety approaches are refined constantly; H.R. 52 is one step to keep up with the changes in the industry, making the need for energy to be more balanced with the right to safety.

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