Environmental Studies Program: Ongoing Study

Study Area(s): GOM OCS

Administered By: GOM OCS Region, Physical/Chemical Sciences Section (PCSS)

Title: Chemical Products Used in Gulf of Mexico Oil & Gas Operations: Inventory, Disposal, and Risks (NSL #GM-15-03)

BOEM Information Need(s) to be Addressed: BOEM needs an up-to-date, descriptive inventory of all chemicals used in the offshore oil and gas industry in the GOM, including hydraulic fracturing chemicals, that includes volumes used and disposed of. Furthermore, BOEM needs this study to include assessing the risks of a spill of such chemicals and a comparison of the inputs of such chemicals from the offshore oil and gas industry to the inputs from other practices that use these chemicals in and around the GOM. BOEM needs this information to prepare NEPA documents that evaluate the waters and sediments of the GOM as well as the biota that live within the waters and the sediments of the GOM. A centralized, vetted, and citable study such as this will also aid greatly in responding to questions that have arisen during the biological consultation process and the renewal of the United States Environmental Protection Agency (USEPA) National Pollutant Discharge Elimination System (NPDES) permits (these are the required permits that regulate discharges from the oil and gas industry). BSEE's Environmental Enforcement Branch have expressed that this study will be helpful for regulatory purposes as well.

Total BOEM Cost: $772,000 **Period of Performance:** FY 2016–2019

Conducting Organization(s): Booz Allen Hamilton

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Description:

Background: This project is an update of the dated, but highly valuable MMS study by Boehm et al. (2001) with several significant additions. The additions include considering both shallow and deepwater chemicals for all portions of the study, being sure to include up to date information on hydraulic fracturing practices in the GOM, considering disposal volumes and methods (whether discharged to the GOM or returned to shore) for the described chemicals, and comparing inputs of these chemicals to the GOM from Federal OCS oil and gas sources to that of other sources that may impact the GOM such as the activities of other Federal agencies (including the military), natural events or processes, State oil and gas activity, and activities related to the direct or indirect use of land and waterways by the human population. Though the original study was labelled as a literature review, it had in practice, a broader scope as it involved important input from oil and gas operators, chemical suppliers, and a scientific review

board which included a representative from the United States Coast Guard/National Oceanic and Atmospheric Administration in addition to industry representatives. The study also developed models for offshore exploration and production operations to estimate the volume of chemical transported, stored, and expected to be used at any one time in the GOM and to assess the ecological risks of chemical spills.

Objectives:

(1) Establish an updated baseline inventory of the chemical products, compounds, and mixtures in current use by operators in the GOM (including fracturing chemicals);
(2) estimate the amount of such chemicals expected to be used in the future in the GOM (values should be broken out for shallow and deepwater);
(3) locate and collect technical information on chemical volumes in typical GOM operations (values should be broken out for shallow and deepwater);
(4) estimate the volume of each chemical disposed of and describe the common disposal method;
(5) develop conceptual models using a range of chemical spill scenarios and predicted impacts as a result of these spills;
(6) develop an inventory of types and amounts of hazardous substances stored, handled, transferred to and from, disposed of, and used on offshore oil and gas facilities in all water depths; and
(7) compare volumes of chemicals released to the GOM by OCS oil and gas activities to other activities that input the same chemicals, or categories of chemicals, into the GOM directly or indirectly (e.g., runoff or river drainage).

Methods: The study methods are similar to those used by Boehm et al. (2001) including input from experts, a thorough search the literature, and the use models or calculations as appropriate. For example, in the Boehm et al., (2001) study, models were used to estimate future use of chemicals, transport of chemicals as well as the ecological risks of chemical spills (i.e., CHEMAP). The voluntary team of experts includes oil and gas operators in the GOM as well as chemical suppliers that can provide input into these issues as well as representatives from BOEM, BSEE, and the USEPA.

Current Status: The study was awarded on September 20, 2016. The contractors have rebuilt the old database to the extent possible from the published report and identified shortcomings of that data. The contactor and BOEM are soliciting operator participation and developing methodology for efficiently collecting the needed data.

Final Report Due: September 20, 2019

Publications Completed:

None to date.

Affiliated WWW Sites: https://marinecadastre.gov/espis/#/search/study/100152

Revised Date: June 14, 2017