

APPLICATION FOR EPA PERMITS TO DISCHARGE OIL FOR RESEARCH PURPOSES: REVISED INTERIM GUIDELINES¹

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ABSTRACT

The U.S. Environmental Protection Agency (EPA or the Agency) has prepared revised guidelines on discharging oil into U.S. waters to assist research efforts on the prevention, preparedness and response to oil pollution that cannot be conducted in a laboratory, test tank, or other facility. The revised guidelines update the 1971 guidelines developed for the same purpose. Under these guidelines, the applicant for an oil discharge permit should: 1) provide data on the methods used to assess the environmental effects of the proposed test; 2) provide information and demonstrate (if possible) that the proposed test site has been selected to minimize adverse environmental impacts; 3) assess the potential impacts of the proposed test on the aesthetic, recreational, and economic uses of the proposed test site; 4) address potential impacts to public health; 5) describe how expected environmental effects will be controlled; 6) provide an opportunity for public participation in the permitting process; 7) provide a detailed description of the proposed test site; and 8) include a description of the geology, hydrology, water quality, ecology, climatic and any other environmental factors that could effect the petroleum discharge and the site.

EPA recognizes that bench- and meso-scale testing has prompted interest in field testing (using intentional discharges of oil) on a larger scale than was contemplated when the original guidelines were issued in 1971. The Agency has, therefore, removed the 1,000-gallon upper limit on the size of the permitted oil discharge in the original guidelines. The Agency is aware, however, that the discharge of greater volumes of oil will require correspondingly greater efforts to protect the public health and environment. EPA will therefore closely examine the justifications for large-volume discharge applications (greater than 1,000 gallons) to determine whether the proposed discharge size is justified.

DISCUSSION

Alternatives to Field Testing

Intentional spills present an additional risk of environmental harm that should be avoided whenever possible. The Agency; therefore, encourages the use of alternatives to intentional-discharge testing methods. In addition to computer modeling of spills the following could be used:

Test Tanks

Researchers may gain valuable data by using tanks built for the purpose of larger-scale oil spill response testing. Existing test tanks includes the U.S. Minerals Management Service's Oil and Hazardous Materials Simulated Environmental Test Tank, in Leonardo, New Jersey, and the Texas General Land Office's Coastal Oil Spill Simulation System in Corpus Christi, Texas, and the Coast Guard facility in Mobile, Alabama.

Spills of Opportunity

EPA also encourages the use of accidental spills (also known as "spills of opportunity") for field testing. An average of more than 65 accidental oil spills greater than 40,000 gallons occur each year², some of which may be suitable for use in field tests of new spill response technologies. The Agency suggests that potential applicants for 40 CFR 110.5 permits work with the appropriate Regional Response Team (RRT) to explore the possibility of conducting research on accidental spills instead of intentional spills. Planning for research on accidental spills will involve coordination with RRT spill response procedures and spill research policies. Federal lands may also present opportunities for oil spill research. Researchers may be able to work with state and local governments to identify areas known as "Set Asides" as discussed in the Oil Pollution Act. Any addition of oil, of any kind and or mixed with chemical or biological countermeasures, would have to be permitted by the EPA Administrator.

Natural Oil Seeps

For example, Coal Oil Point in Santa Barbara, California would be considered a natural oil seep. The Agency encourages researchers who believe that neither of the options listed above can be used for their projects to propose the smallest size discharge feasible in their applications. All applications will be carefully reviewed to determine whether the choice of an intentional discharge over alternative testing methods is justified.

BACKGROUND

Statutory Authority

Section 311 of the Federal Water Pollution Control Act, also known as the Clean Water Act (CWA), 33 U.S.C. 1251 *et seq.*, establishes a regulatory strategy for preventing and responding to oil spills,

including a general prohibition of the discharge of oil to navigable waters and in other cases. CWA section 311(b)(3)(B), however, provides an exception to the prohibition of spills by permitting the discharge of oil "...in quantities and at times and locations or under such circumstances and conditions as the President may, by regulation, determine not to be harmful."

Development of Guidelines

The CWA section 311(b)(3)(B) provision permitting the discharge of oil in certain cases was enacted pursuant to amendments to the CWA on April 3, 1970. This statutory authority is now delegated to EPA by the President in Executive Order 12777 (56 FR 54757 section 8(a) October 22, 1991). Using this statutory authority, EPA issued an oil discharge permit regulation on September 11, 1970 (35 FR 14306).³ As currently codified (40 CFR 110.5), the regulation provides that, "the Administrator may permit the discharge of oil...in connection with research, demonstration projects, or studies relating to the prevention, control, or abatement of oil pollution."

On April 17, 1971, EPA published guidelines entitled, "Discharges of Oil for Research, Development, and Demonstration Purposes" (36 FR 7736) to implement the 40 CFR 110.5 and to assist applicants for oil discharge permits.

Basis for Revised Guidelines

EPA has issued the revised version of the 1971 guidelines to help ensure that the environment is protected from threats posed by field research involving intentional oil discharges. Although the Agency recognized these threats when the original guidelines were issued in 1971, scientific advances since that time have led to a better understanding of environmental problems. At the same time, regulations based on these advances—and on the Agency's experience in regulation generally—have evolved to better protect human health and the environment. The 1971 guidelines needed to be updated to reflect these scientific and regulatory advances.

Scientific Advances

Developments in environmental science have increased our knowledge of the human health and ecological threats posed by the hazardous constituents of oil and the products of physical, chemical, and biological action on oil.

Similarly, significant improvements have been made to the technologies used to clean up oil spills and to protect spill response workers. Research has also led to a better understanding of the environmental conditions and oil spill characteristics that determine the effectiveness of field tests of oil spill response methods. Computer models have been developed to help predict the behavior of dispersion plumes that result from such testing. In addition, bench- and meso-scale research on oil spill response technologies has led to a greater interest in full-scale, open-water discharges of oil to determine whether conclusions drawn from smaller-scale research will hold true for full-size, accidental spills.

Regulatory Advances

Gains in science and technology have been reflected in the establishment or amendment of several Federal environmental statutes since the guidelines were first issued. Statutes that affect discharges of oil include, for example, the Clean Water Act (as amended by the Oil Pollution Act-OPA), the Clean Air Act, the Endangered Species Act, the Marine Protection, Research, and Sanctuaries Act, and the National Environmental Policy Act. To be consistent with these more recent statutes and regulations, elements of the revised guidelines include, for example, provisions for public participation in the permitting process and provisions

for the assessment of the potential impacts of an intentional spill on aesthetic, recreational, and economic resources.

General Conditions

The discharge of oil for research and development purposes must be approved by the Administrator of the Environmental Protection Agency or the Administrator's designee. Approvals shall be granted in the form of an oil discharge permit. An applicant for an oil discharge permit should provide EPA with information that the proposed discharge and testing will: (1) be in the public interest (2) result in the acquisition of new scientific information unobtainable by alternate methods and (3) result in improved state of preparedness for responding to oil discharges. The applicant must assume all liability for any personal injury, property losses, or environmental damages resulting directly or indirectly from any testing, and for all costs, including costs or damages resulting from cancellation by the Administrator or failure by the Administrator to cancel such tests. All applicants except Federal and State government entities should submit proof of financial responsibility for the testing.

The applicant also must comply fully with all applicable Federal environmental statutes and regulations. For Federal agency applicants, such requirements include, but are not limited to, the interagency cooperation provisions of the Endangered Species Act and the environmental impact assessment requirements of the National Environmental Policy Act. Lastly, the applicant must agree to provide the complete results of any testing to the Administrator of the EPA and all interested stakeholders. Permits issued in accordance with 40 CFR section 110.5 shall allow testing on the testing date(s) stated in the application. Permits also may be used to conduct future testing date(s) provided that: (1) permission to conduct testing after the date stated in the application is requested in writing and (2) the environmental conditions of the test site on the actual testing date are not appreciably different from the site conditions on the testing date stated in the application.

Application Conditions

At least six months prior to the proposed discharge of oil for research purposes (the test), the applicant must submit ten copies of the application to the Regional Administrator of the EPA Region in which the test is proposed and ten copies of the application to the Director, Oil Program Center (5203 G), U.S. EPA, 1200 Pennsylvania Ave. N.W., Washington, DC, 20460. The six month time period is designed to ensure that any revisions and subsequent resubmissions of the application deemed necessary by EPA may be made without delaying the start of the test. The application should contain an adequate level of detail to facilitate review and action on the permit application. It is expected that some details such as specific personnel assignments may not be known at the time of the application.

To assist EPA with its review of the application, the written application should include the following information elements:

Identification

The name, address, and telephone number of the applicant and any co-applicants and individuals to contact for further information.

Test Program

1. A description of the material or technique to be tested and the quantity and a detailed description of the type of oil to be discharged. (ie. volatile aromatics Polynuclear Aromatic Hydrocarbons, viscosity, etc.)
2. A description and detailed location of the proposed test site including latitude and longitude readings for the corners (or

- limits) of the proposed test site. For a test at sea, the applicant should also include Loran readings for the corners (or limits) of the proposed test site.
3. The time, dates, and duration of the overall test, experiment, or demonstration and any component stages of the test.
 4. The procedure(s) to be followed in conducting the test.
 - A. Criteria for determining that the test has been completed.
 - B. Identification of the test director and chain of command.
 - C. Organizations/agencies participating in the test and their role.
 - D. Measurements to be made and how the test results will be analyzed/evaluated.
 - E. A Quality Assurance Plan documenting the planned statistical validity of the measurements.
 5. A description of how the environmental effects will be controlled during the test, including contingency plans for containing and recovering oil that might escape from the system being tested.
 6. A description of how the economic and other non-environmental effects will be controlled during the test. Provisions for independent observers, government, corporate, community, and organizational observers.

Test Justification

1. Technical documentation and data concerning the effectiveness and efficiency of the material or technique being tested, including a description of previously conducted research (such as any bench-scale or meso-scale tests), a detailed discussion of the results of the previous research, and a discussion of how these results determined the need for and nature and size of the proposed test.
2. A discussion of the usefulness of the information to be obtained from the proposed test. Will it help to increase preparedness?
3. A description and evaluation of alternatives to the proposed discharge, such as the use of large-scale test tanks or accidental spills. The relative advantages and disadvantages, environmental impacts, and risks to human health of alternatives should be discussed to show whether and how well the data sought by the applicant can be obtained through other means.

Site Justification

An accurate characterization of the proposed test site ecosystem and a description of how the test site was selected to minimize impacts on resources such as: fisheries, parks, native flora and fauna, protected habitats, shorelines, beaches, populated areas, cultural or historic sites and commercial and recreational navigation. Considerations in making this determination should include, but are not limited to:

1. Geographic position, depth of water, bottom topography, and distance from coast; Shoreline or terrestrial environments should be defined as appropriate.
2. Proximity of the test site to breeding, spawning, nursery, feeding, or passage areas of living resources in adult or juvenile phases;
3. Logistical issues such as the feasibility of surveillance and monitoring of the test site;
4. Dispersal, horizontal transport, and vertical mixing characteristics of the area, including prevailing current direction and velocity;
5. Interference with shipping, fishing, recreational activities, fish and shellfish habitats, areas of special scientific importance, and other legitimate uses of the water body;

6. Existing water quality and ecology of the test site as determined by available data or by trend assessment or baseline surveys; and
7. Proximity of the test site to any significant natural, man-made, or cultural features of local and/or national importance. Include transportation of personnel and equipments to and from the site. Proximity to population areas including residential, commercial, and industrial. Impact of test personnel and equipment on the test site, housing, transportation of personnel and equipment to the site, and noise.

Assessment of Environmental Effects

An assessment of the environmental effects that may result from the test, including a description of the methods and approaches used to determine the potential environmental and public health impact or damage caused by the test. As part of the assessment the applicant may utilize methods and models available for assessing environmental effects available from the National Oceanic and Atmospheric Administration, should modeling be done.

1. All available data concerning the spill response method, products of reaction between the oil and any spill mitigation product, meteorological conditions at the test site, and the composition and toxicity of resulting products should be collected. These data should be modeled to predict the environmental impacts of the test and identify potential health effects and significant public health exposure.
2. Bioassays of indigenous organisms should be conducted to determine the toxicity of the dispersion plume (aquatic or aerial) and resulting reaction products if the existing data are not sufficient to model the potential impacts.⁴ If modeling or a bioassay test is not conducted, then a detailed justification for exemption should be provided.

Assessment of Non-Environmental Effects

An assessment of the potential impact on aesthetic, recreational, economic, and other uses of area around the test site based on the appropriate characteristics of the oil or its reaction products. Conservative rates of dilution, dispersion, and biochemical degradation of the oil or its reaction products should be used in the assessment. The following factors should be examined when conducting this assessment:

1. Nature and extent of present and potential recreational and commercial use of areas that may effect, or be affected by, the proposed discharge;
2. Presence in the oil or its reaction products of toxic chemical constituents released in volumes that may affect humans directly;
3. Presence in the oil or its products of chemical constituents that may be bioaccumulated or persistent and that may have an adverse effect on humans directly or through food chain interactions; and
4. Presence in the oil or its products of any constituents that might significantly affect living marine resources of recreational or commercial value.

Regulatory Compliance

1. Signed letters of approval from the EPA Regional Administrator and Regional Response Team for the Region(s) affected by the test.

Documentation attesting to the concurrence on the test program of all relevant State and local agencies and to the possession of any permits required by these agencies. Tests involving oil discharges more than three miles from the coastline may be subject to Ocean Dumping Act permit

requirements (40 CFR part 220); discharges less than three miles from the coast may be subject to National Pollutant Discharge Elimination System (NPDES) permit requirements (40 CFR part 122) under the CWA. Many States have been delegated NPDES authority by EPA; even in such cases, however, EPA Headquarters may need to concur in a NPDES program decision.

2. A description of the applicant's efforts to inform the U.S. Coast Guard, National Marine Fisheries Service, Forest Service, and other federal agencies including state and local natural resource and environmental protection agencies, of the proposed test to enable the interagency coordination required by section 7 of the Endangered Species Act (see 50 CFR part 402).
3. A statement of the information about the discharge to be reported to the National Response Center (as required by 40 CFR 110.6) when the discharge of oil occurs.

Air permits may also be required. Notification of public health officials should be documented and provided as part of the application.

Public Participation

Documented evidence of public participation in the permitting process also should be attached to the application. To facilitate public participation in the permit approval process, a notice describing the proposal, the time and place of any public hearings on the proposal, and any other procedures to enable public participation in the permit decision should be published in a local newspaper near the site of the proposed test. Any public hearing will be conducted at a location agreed upon by the applicant and EPA, and may be attended by EPA for oversight purposes. Public participation should include efforts to seek the opinions of local environmental and other organizations that may have an interest in the test.

Documented evidence of these efforts (such as letters of approval or disapproval from local environmental groups) should be attached to the application. The establishment of these public participation procedures is consistent with other Agency permit programs, such as those developed for the Ocean Dumping and NPDES programs.

Safety Plan

EPA recommends that the applicant design a safety/emergency response plan, especially when the test plan involves In Situ Burning of oil. The Safety Plan should include the following: identification of safety officer; worker health and safety measures; public safety measures; site security measures; predictions / monitoring plan and equipment; notifications to stakeholders and public; list of the means to deal with unexpected events such as weather changes, fire, explosion, container failure, equipment failure, etc.; incident command structure; emergency resources; Material Safety Data Sheets for all test oils and any chemical countermeasures.

Test Administration Procedures and Requirements

The amount of oil discharged should be no greater than the minimum quantity necessary for test purposes. Although EPA encourages applicants to propose discharge quantities of 1,000 gallons or less for one test or series of tests at the same site in one 24-hour period, the Agency is aware that the research needs of applicants may require larger volumes. Because of the potential harm to the environment that is posed by large-volume spills (those greater than 1,000 gallons), EPA will carefully scrutinize the discharge size justifications for large-volume spills.

The applicant should furnish and pay for all materials, equipment, and transportation necessary for execution of the

test program and for restoration or mitigation of any continuing environmental damage. The Administrator may at any time order cancellation or postponement of a test because of adverse weather or other conditions that would pose safety or pollution problems. Results of any test program should be provided to EPA by the applicant within a reasonable period following completion of the test and data analyses.

EPA representative(s) may accompany the test personnel on any vessels or in any aircraft or vehicle used by the applicant in connection with the test program. The need for attendance by a representative from EPA at the test shall be determined by the Administrator.

Press releases made by the party conducting the test program shall omit names and photographs of any EPA or other Federal government representatives present. Review by EPA of technical background data and test results will be for purposes of determining the need for such tests and in no way implies Federal government approval or endorsement of test procedures, test equipment, or materials used, or test results.

Penalties

Failure to comply with a EPA issued permit to discharge oil for research purposes may subject the party responsible to the penalties and liabilities provided for in the CWA as amended by OPA.

Peer Review

The research proposal described in the permit application shall be subjected to rigorous, substantial peer review by relevant technical authorities from academia, business, and other institutions to be determined by EPA with consultation from other government agencies. (EPA may conduct additional scientific evaluation of the proposal by having it reviewed by the Agency's Science Advisory Board.)

BIOGRAPHY

William Nichols has been an Environmental Protection Specialist with the EPA Oil Program for seven years. "Nick" manages the NCP Product Schedule. He is a member of the National Response Team Science and Technology Committee. Before EPA, Nick worked in the emergency response field, lead poisoning research, and aquatic toxicology labs. He has a Masters in Environmental Sciences from Johns Hopkins University and teaches at the JHU Free University.

ENDNOTES

- 1 The policies set out in this guidance are not final Agency action, but are intended solely as guidance. The guidance provided in this document is not to be construed as a rule under Clean Water Act section 311. Nor can the guidance set forth in this document be relied upon to create any rights enforceable by any party in litigation with the United States. EPA retains the right to amend this guidance or take actions not in accordance with this guidance at any time, however persons submitting applications for discharging oil for research permits should follow the approach suggested in this guidance. Applicants are subject to this guidance for the date stated on each page. In the event that EPA makes substantial changes to this guidance, we will work closely with the applicant to ensure that the approval process is not delayed past the six month lead time.
- 2 This information was obtained from the Emergency Response Notification System for the years 1989-1991.
- 3 Minor changes were made to the regulation on November 25, 1971 (36 FR 22369), November 11, 1976 (41 FR 49810), April 2, 1987 (52 FR 10712), and February 28, 1996 (61 FR 7419).
- 4 EPA's Office of Wetlands, Oceans and Watersheds has developed a predictive model and can aid in the development of test methodology.