

Chemical Countermeasure and In-Situ Burn Authorization Guide and Use Checklists

The purpose of this document is to outline the authorization process for the use of chemical countermeasures and/or in-situ burn within Region 8. Checklists specific to use for chemical countermeasures and in-situ burn are included in this guide. The checklists should not be considered all inclusive; nor should it be expected that every item will be available or applicable to each situation. Every evaluation for use should occur on a site-by-site, case-by-case basis. Evaluation of chemical agent and/or in-situ burn use, and the authorization process should be a collaborative effort within the Regional Response Team (RRT) (among the Federal On-Scene Coordinator [OSC], Environmental Protection Agency [EPA], the affected states, and the appropriate natural resource trustees), with each agency contributing its knowledge, priorities, and concerns.

Chemical Countermeasures

The terms chemical countermeasures and Subpart J agents are used interchangeably in this document. As defined by the National Contingency Plan (NCP), chemical agents are elements, compounds, or mixtures that coagulate, disperse, dissolve, emulsify, foam, neutralize, precipitate, reduce, solubilize, oxidize, concentrate, congeal, entrap, fix, make the pollutant mass more rigid or viscous, or otherwise facilitate mitigation of deleterious effects or removal of the pollutant from the water. Chemical agents include biological additives, dispersants, sinking agents, miscellaneous oil spill control agents, and burning agents, but do not include sorbents.

Burning agents/additives used during in-situ burn operations are considered chemical countermeasures. If no burning agent is needed to ignite an in-situ burn, Subpart J does not apply and Region 8 RRT authorization is not required; however, other requirements are detailed below in this document. This section applies only to oil spill responses under the Clean Water Act and Oil Pollution Act (CWA/OPA) in Region 8. Response actions to address hazardous substances (and use of chemical countermeasures during such actions) under Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) authorities are subject to Applicable or Relevant and Appropriate Requirements (ARAR), as specified by that statute and the NCP.

Use of chemical countermeasures is generally discouraged in Region 8. Many water bodies within the Region are small, shallow streams or rivers that could sustain greater damage if oil would be dispersed throughout the water column, as is often the result of chemical countermeasure use. However, in some

cases, chemical countermeasures may be appropriate. This may include, but is not limited to, bioremediation to avoid invasive and destructive mechanical response actions in wetland areas or other sensitive habitats. Sinking agents will not be used in Region 8.

There are *no preauthorizations* for chemical agent use; any entity interested in using these techniques must follow the provisions defined in the Region 8 Regional Contingency Plan (RCP) and Subpart J of the NCP. Only products listed on the NCP Product Schedule are allowed. However, products not included on the NCP Product Schedule, as well as those products included on the Schedule, may be authorized for use by the Federal OSC without first consulting with natural resource trustees and obtaining the concurrence of the EPA RRT representative or the state RRT representative, when, in the judgment of the Federal OSC, use of the product is necessary to prevent or substantially reduce a hazard to human life (per 40 CFR 300.910(d)). If a product is approved under these conditions, and once the threat to human life has subsided, the Federal OSC shall inform the following of use of such dispersant or other chemicals: EPA RRT representative and, as appropriate, the RRT representatives from the affected states, and when practicable, the natural resource trustees.

Bioremediation

Bioremediation is a treatment technology that enhances existing biological processes to accelerate the decomposition of petroleum hydrocarbons and some hazardous wastes. The benefits of bioremediation have not been adequately demonstrated through field applications. The promise of bioremediation providing increased rates of oil and other contaminant degradation with minimal input of human effort is attractive. However, the technology can be time consuming, unproven in open water environments, and likely best suited to the treatment of specific types of shorelines and marsh habitats. Biological additives are considered chemical countermeasures (as stated above) and the approval process for their use is the same as any other Subpart J agent.

Any/all other suggested use of Subpart J agents, other than as described above, must have prior RRT authorization. As defined in 40 CFR 300.910(b), the EPA representative to the RRT and, as appropriate, the RRT representatives from the affected states with jurisdiction over the navigable waters threatened by the release or discharge, are the individuals authorized to grant the approval. When practicable, the Department of Interior (DOI) natural resource trustees will be consulted when considering use of chemical countermeasures. These key individuals will be contacted using email and/or phone to convene a meeting where notification and authorization of such use will be discussed and documented. All records generated from these meetings will be retained in the Region 8 RRT file.

Although the Federal OSC is expected to initiate and facilitate the evaluation of chemical countermeasures, it is anticipated/expected that the process outlined below will be a collaborative effort amongst all appropriate RRT member agencies as defined in 40 CFR Section 300.900 (Subpart J of the NCP). Further, it is understood/expected that every item described below may not be available or applicable to a given situation. Therefore, the Federal OSC and RRT member agencies will share with the Incident Specific RRT as much information as appropriate, and readily available given the site specific conditions, to ensure a proper evaluation of the proposed agent use. The Chemical Countermeasure Use Checklist created for Region 8 is included as Attachment A. This checklist can be used by a Federal OSC or other response personnel to organize the required information necessary to properly evaluate use of chemical countermeasures (which includes bioremediation additives). The evaluation/authorization process for use of chemical countermeasures is outlined below.

- 1) Prepare a site-specific evaluation of the oil discharge. The site-specific evaluation provides the RRT and other stakeholders an understanding of the conditions onsite and helps determine whether additional permitting is required. It is also important to include the Responsible Party (RP) in development of this evaluation, as they may be able to provide additional information about the source, cause and petroleum characteristics.

This evaluation does not need to be submitted as a formal, written report but the Federal OSC should be prepared, at minimum, to verbally relay information to the RRT when seeking authorization to use Subpart J agents. Some items to include are:

- General incident information – cause of the discharge, type and volume of petroleum product discharged, and the geographic area or environment affected.
- Special considerations - are there any special considerations to be taken to alleviate immediate danger to human population or wildlife and their habitat?
- Petroleum product specifics - has the source been eliminated, is the product rapidly spreading, slowly advancing, or stationary, and will it vaporize quickly, negating the need for remediation?
- Environmental items – what is the proximity to human population, what indigenous flora and fauna are on site and will a specific remediation agent have more of a harmful effect on any particular plant or animal, bird or insect?
- Agent specific considerations - availability of product as well as trained personnel and necessary equipment for application of the product.
- Other physical factors - soil characteristics, geology, hydrogeology, topography, and weather.

- Other considerations – what is the total cost estimate of the chosen treatment project, where will funding come from, will the cost of treatment be covered by the RP?
 - Impacts - what will be the ultimate impact on the water and natural resources?
- 2) Prepare proposal for Subpart J agent. In addition to providing general information about site conditions, the Incident Specific RRT should evaluate the desired application/use of the selected agent. Obviously, a lengthy evaluation or monitoring program is not reasonable in the event of imminent danger to humans. Furthermore, not all situations warrant long term testing. Items for the Federal OSC and RRT to consider include:
- a) Is a simulated field test demonstration or “bench scale” test warranted, or is full scale field application warranted/preferred or both? The objective is to predict the agent’s effectiveness at remediation, degrading or enhancing biodegradation (in the case of a bioremediation agent) of petroleum products in specific terrestrial settings or habitats.
 - b) Has the petroleum been treated before and, if so, with what? (i.e. Is this the first Subpart J request?)
 - To what degree was any previous treatment successful?
 - What were the physical site characteristics of use (topography, geology, flora and fauna, weather, etc.)?
 - Was a significant level of degradation measured that could be attributed to the treatment agent, based on chemical or biological tests?
 - c) Submit/share information collected from the selected agent vendor.
 - The agent must be listed on the NCP Product Schedule (except in aforementioned situations).
 - What is the agent composition?
 - Submit Material Safety Data Sheets (MSDS) and formulation characteristics.
 - What is the recommended application rate and schedule?
 - d) Determine for the specific agent:
 - The availability;
 - Chemical make-up;
 - Proposed method of use;
 - History of use at previous spills;
 - Application rates and methods;
 - Chemical properties, persistence, potential toxicity and ultimate long-term effects to the environment;
 - Laboratory or field studies available that demonstrate the agent’s toxicity;
 - A description of vender’s management structure and qualifications; and
 - Technical bulletins for each product on the NCP. (Schedules are available at: <http://www.epa.gov/emergencies/docs/oil/ncp/schedule.pdf> or by calling the NCP Information Line – number provided in Annex I of the RCP).

- e) Evaluate the relative ability of the agent to degrade target contaminant under controlled or defined laboratory conditions.
 - f) Perform tests with standard oil, using analytical methods developed or approved by the EPA or ASTM International (ASTM).
 - g) Is there a sufficient amount of the agent, and are the trained personnel and equipment needed for application and monitoring available?
- 3) The Federal OSC and Incident Specific RRT will evaluate items 1) and 2) above to determine if Subpart J agent use is appropriate for the given site conditions. If authorization is granted, the Federal OSC and RRT will determine whether additional monitoring is necessary. If additional monitoring is appropriate, the following items should be addressed:
- h) A site-specific monitoring plan should be developed. The monitoring plan is intended to determine the effectiveness and impacts of the project. The primary use of monitoring data is to support response and management decisions by the Federal OSC. Specific uses of monitoring are to:
 - Identify and correct problems in the treatment process.
 - Determine whether target end points have been reached.
 - Ensure that treatment is less environmentally harmful than the “no action” alternative.
 - b) Monitoring also includes general record keeping documenting Subpart J agent implementation. This includes - chemical brands, equipment and methods used in application, dilution of chemicals/agents used prior to application, rate of application, times and areas of application, wind, weather conditions, wave and tide information (if any), cost and time of sampling for lab evaluation, visual and photographic documentation.
 - c) The Federal OSC and RRT should evaluate whether additional sampling is needed to document and monitor Subpart J agent use. This may include collecting representative samples from a pre-determined location or plan. Distribution should include all environmental, habitat sites. Professional judgment and visual inspection should assist in assessing variability and quantity – do not underestimate the number of samples. The contractor can provide valuable information to develop a sampling plan based on past performance. The sampling plan should include:
 - Enumeration of the type and number of samples
 - Analytical parameters
 - Sampling objectives
 - Data quality objectives
 - Specific sample collection techniques
- 4) The RRT may require additional updates regarding the successes, failures or other observations related to Subpart J agent use. Otherwise, it is customary for the Federal OSC to detail outcomes in a Pollution Report (POLREP). This includes final information on the amount of agent used and any observed or monitored impacts.

In-Situ Burns

The in-situ burning described below assumes burning agents are not used, and that such agents would be considered chemical countermeasures and subject to authorization as described above.

Under certain specific conditions, in-situ burning may offer a logistically simple, rapid, inexpensive, and relatively safe means for reducing impacts of an oil spill. Burning can substantially reduce need for collection, storage, transport, and disposal of recovered material. Under certain circumstances, such as oil spilled under ice conditions, burning may be the only viable response technique. In-situ burning may have significant short-term impacts (e.g., airborne release of particulate matter and hazardous substances, etc.), but may actually produce the lowest long-term impact because it removes the oil quickly. In-situ burning should augment, not replace, other oil spill response techniques such as mechanical removal.

Use of in-situ burning as a response technique does not require RRT approval, again provided an agent is not required to sustain the burn. However, the Federal OSC and/or any other party wanting to conduct in situ burning must consult with affected natural resource trustees, land management agencies, and state representatives to the RRT prior to in-situ burning activities because other authorizations and/or permits (e.g., air quality) may be required. All records associated with authorizing in-situ burns will be retained by involved parties/agencies.

The In-Situ Burn Checklist created for Region 8 is included as Attachment B. This checklist can be used to organize the required information necessary to properly evaluate use of in-situ burning. It should be noted that the In-Situ Burn Checklist is applicable for burns using a burn agent (considered a chemical countermeasure) and those not utilizing burn agents.