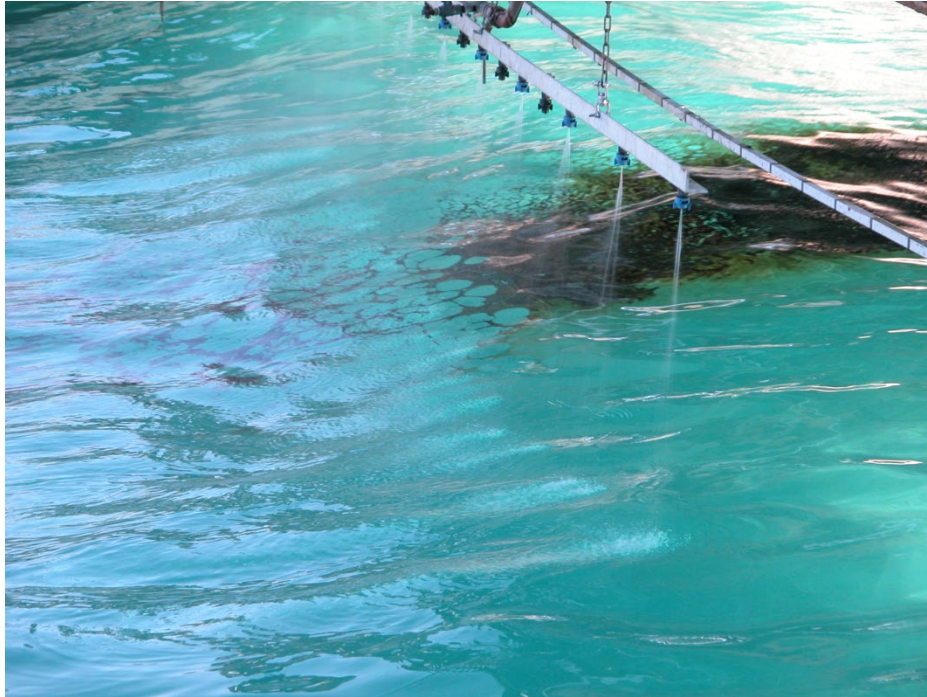


PRINCE WILLIAM SOUND REGIONAL CITIZENS' ADVISORY COUNCIL DISPERSANT USE POSITION UPDATE

Summary of Board of Directors Workshops and Draft Evidence-Based, Updated Position



Cold-water dispersant trials at Ohmsett test tank (Nuka Research, 2006)

Report to
Prince William Sound Regional Citizens' Advisory Council
July 26, 2022
Revised September 26, 2022



The opinions expressed in this PWSRCAC-commissioned report are not necessarily those of PWSRCAC.

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1. Introduction

This report is an interim deliverable to the Prince William Sound Regional Citizens' Advisory Council (PWSRCAC) under contract 9550.22.01 to support the Council's intention to update their position on the use of dispersants in Prince William Sound and the Gulf of Alaska.

This report updates information included in the April 2022 Background Report (which was distributed in draft form to the PWSRCAC Board of Directors as a discussion document preceding a March 10, 2022 workshop) and summarizes the proceedings of the March workshop and three subsequent workshops that were conducted to inform and refine PWSRCAC's dispersant use position.

This report also includes a draft position statement for review and consideration by PWSRCAC staff, Scientific Advisory Committee (SAC) members, and Board.

2. Board of Director Workshop Series

2.1. MARCH 2022 BOARD OF DIRECTORS WORKSHOP

The Dispersant Use Position update options listed in the Background Report were the focus of a March 10, 2022 workshop with the PWSRCAC Board of Directors. The purpose of the workshop was not to make any decisions, but to initiate a conversation among Board members and provide them with the opportunity for a structured discussion with technical experts Merv Fingas and Gary Shigenaka. The workshop summary report is available in the PWSRCAC document management system.

2.1.1. Preferred Options

Five position options were discussed:

1. Retain Existing Position with Expanded Documentation on Scientific Rationale for Opposing Dispersant Use
2. Retain Existing Position with Expanded Rationale on Why Mechanical Recovery is Preferred Response Method
3. Retain Existing Position with Focus on Dispersant Effectiveness in the Exxon Valdez Oil Spill (EVOS) Region
4. Expand on the Existing Position to Establish Effectiveness Thresholds for Dispersant Use in EVOS Region
5. No Longer Advocate for or Against Dispersant Use

The Board expressed mixed preferences across the first four position update options. There was no support for the fifth option to no longer hold a position. There was general consensus that effectiveness remains central to the issue of dispersant use in the PWSRCAC region. Board members expressed particular interest in understanding the trade-offs between mechanical recovery and dispersants, and on evaluating the trade-offs between dispersant application or no response at all. There was also Board interest in understanding the interplay between dispersants and mechanical recovery, and specifically

the potential for dispersant application to reduce the effectiveness of mechanical response.

Dispersant toxicity to biota and human health impacts were a consideration for some but not all Board members. Some Board members described toxicity concerns as secondary to effectiveness. If dispersants are ruled out due to lack of effectiveness, then the potential toxicity is not an issue. Dispersant toxicity may be more relevant to the trade-off discussion in evaluating scenarios where the only two options are dispersants or nothing.

2.1.2. Refining Board Position

A series of three virtual follow-up workshops was conducted during May and June of 2022 to target the issues that emerged from the March 10 Board workshop as most critical to updating the Council's position.

2.2. FOLLOW-UP WORKSHOP SERIES

2.2.1. Workshop #1: The Room Where it Happens

The first workshop was held on May 25, focusing on the Unified Command and Alaska Regional Response Team (ARRT) decision-making processes when dispersants are being considered as a spill response option. The workshop purpose was to orient PWSRCAC Board members to the decision-making context that state and federal spill response agencies bring to the issue of dispersant use. A background document was created to provide additional context for workshop participants.

This workshop was facilitated panel discussion with invited participants from state and federal agencies with a role in dispersant use decisions specifically: the Alaska Department of Environmental Conservation (ADEC), the United States Coast Guard (USCG), the U.S. Environmental Protection Agency (EPA), the U.S. Department of Commerce (DOC), the U.S. Department of the Interior (DOI), and the National Oceanic and Atmospheric Administration (NOAA). Invited panelists¹ from state and federal agencies participated in pre-workshop preparatory sessions to keep the conversation focused. Agency participants provided informal overviews of their organizational role within the ARRT and during spill response, and identified the tools, guidelines, and procedures that they follow when considering dispersant use.

Agency Roundtable and Moderated Discussion

The agency participants reinforced information about the state and federal context for dispersant use, which is also summarized in Section 3 of the Background Report (Appendix A). They pointed to several key documents and checklists, including Subpart J of the National Contingency Plan (the NCP Product Schedule), which identifies all dispersants that may be used in U.S. waters. EPA representatives explained that the NCP Product Schedule

¹ Agency participants in the workshop were Allison Natcher (ADEC), Mark Everett (USCG), Doug Helton (DOC/NOAA), Catherine Berg (NOAA), Mary Goolie (EPA), Beth Sheldrake (EPA), Tiffany Larsen (ADEC), and Anna Carey (ADEC).

is currently being updated, based on a recent court case. These changes may include the testing requirements for dispersant toxicity and effectiveness and could lead to changes in the types of dispersants that may be used in U.S. waters. The revised Product Schedule should be released sometime in 2023.

The USCG explained the procedures outlined in the Alaska Dispersant Use Guidelines as they relate to dispersant decisions. He emphasized the importance of the checklists, and also explained how USCG as the lead federal agency for marine oil spills seeks concurrence from other agency partners. The USCG participant also provided a handout that further explains the pre-authorization process from the USCG and ARRT perspective emphasizing that the procedures underwent major changes in 2016 (Figure 2-1).

Figure 2-1. Summary of Key Elements of Dispersant Use Plan for Alaska



Dispersant Use Plan for Alaska

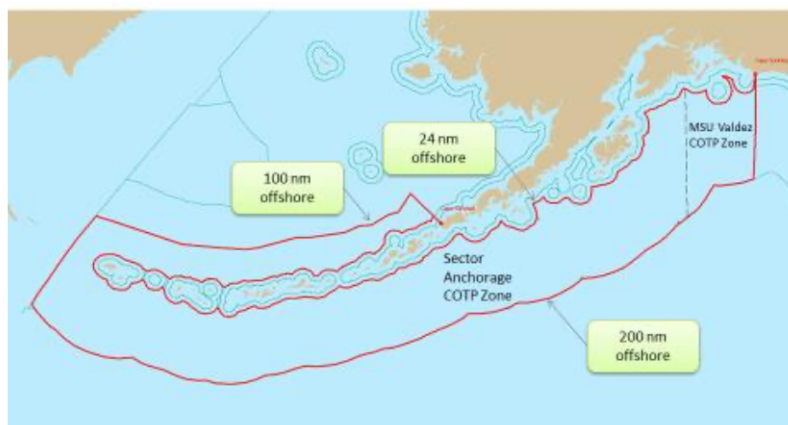
Shipment of persistent oils through Alaska waters poses a risk of spills and special response challenges, especially when involving crude-laden oil tankers transiting near shore.

33 CFR 155.1050(k) requires vessels carrying heavy fuel/persistent oils as primary cargo to have dispersant capability available *but only in areas where there is a dispersant use pre-authorization in place* (key to USCG enforceability). See graphic. Number of such transits through the Pre-Auth Area varies year to year. (e.g., Port Valdez avg. 239/yr.)

After four years of policy development, outreach, & consultation the *Dispersant Use Plan for Alaska* was signed into partial effect in 2016 by the five National Contingency Plan (NCP)-mandated agencies: USCG, EPA, State of Alaska, DOI, DOC/NOAA. After a required two-year implementation period, it went into full effect January 2018.

Alaska Dispersant Preauthorization Area

(Applies only to tankers carrying crude oil bound to/from a US port through this area)



Among numerous other mandates, CFR requires dispersant application on the slick to begin within 7 hours of FOSC decision. Specific application quantity/time/mode mandates drive the need for *aerial* dispersant capability (vice vessel).

Because the Plan requires having dispersant capability on hand for tankers – ensuring availability in the AOR – it also has a protocol for dispersant use *outside* the Pre-Auth Area (Undesignated Areas). This protocol for UA is more stringent. There are also temporal & spatial carve-outs *inside* the Pre-Auth Area that revert to the UA protocol. These carve-outs are described in the Area Contingency Plans.

The Plan has many other widely-accepted, highly-protective features & provisions that promote comprehensive analysis, methodical decision-making, and conservative use of this controversial response tactic.

Representatives from DOC and DOI explained the consultation process through which they may provide input into a dispersant use position. ADEC participants described their role within Unified Command when dispersant use decisions are presented.

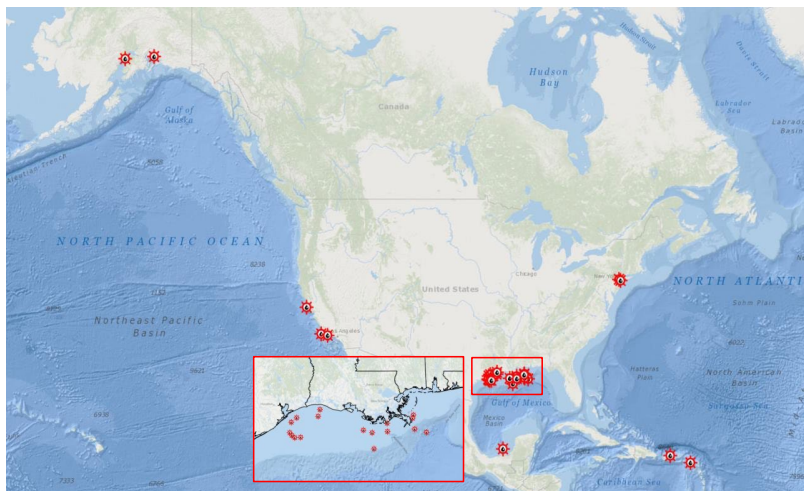
NOAA provided context for dispersant use in the U.S. generally, and Alaska specifically, emphasizing that dispersant application is rare across the country, with only 27 applications in the last 40 years. Dispersant use has been approved only twice in the State of Alaska, once during the Exxon Valdez oil spill and once during a Cook Inlet oil platform spill. In the Cook Inlet case, dispersants were not applied because field testing showed that they were not effective. Figure 2-2 shows a summary of historical dispersant application.

Figure 2-2. Historical Dispersant Use in US Waters 1968-2020 (NOAA)

Historical Dispersant Use in U.S. Waters 1968-2020

Doug Helton NOAA OR&R 7600 Sand Point Way NE, Seattle, WA, 98115

- Large volumes of dispersants were used during the Deepwater Horizon (DWH) spill in 2010.
- There hasn't been a use of dispersants in U.S. waters since 2010.
- The controversy over their use at DWH may lead the public and policymakers to conclude that they are commonly used.
- But over the past 40 years and approximately 400,000-reported spill incidents in the United States where dispersants have been utilized.
- Most were in the Gulf of Mexico. Many were small scale or tests and not operationally significant.
- Dispersants are rarely used but can be an important tool in certain situations.



The Environmental Response Management Application (ERMA®) is NOAA's online mapping tool that integrates both static and real-time data, enabling users to quickly and securely analyze and display spatial data. <https://erma.noaa.gov/gulfofmexico/erma.htm>



The workshop discussion highlighted several key opportunities for PWSRCAC to provide input into dispersant use decision-making. The dispersant use checklist in the Alaska Guidelines includes local and stakeholder consultation. The DOI and DOC consultations may also provide an opportunity for PWSRCAC to raise local concerns to these two Trustee agencies.

2.3. WORKSHOP #2: TRADE-OFFS

The second workshop explored the topic of trade-offs by considering various decision-making factors through a series of hypothetical scenarios and “what if” questions. Workshop participation was limited to PWSRCAC Board, staff members, and contractors. The group reviewed components of the dispersant use checklists to understand the parameters that regulators consider in making dispersant use decisions.

Dispersant Use Checklists

For dispersant use in pre-authorization areas (24-200 nautical miles offshore), Unified Command (USCG and ADEC) must seek input from the two key Trustee agencies – Department of Commerce and Department of Interior. Eleven additional stipulations apply:

- Field tests must be conducted on a representative portion of slick.
- Dispersant application must follow an approved application plan.
- Water depth must be greater than 60 feet.
- Application area must be at least 1,640 feet distance from fish, birds, and mammals.

- Aerial application must follow Federal Aviation Administration (FAA) flight restrictions.
- Dispersant application may be conducted during daylight only.
- An observer from a Trustee agency (DOC or DOI) must be on board.
- Dispersant application monitoring protocols must be in place.
- The Unified Command must provide information to public within 48 hours of dispersant application.

For dispersant use outside of pre-authorization areas, the case-by-case checklist applies, which includes the criteria above and also includes notification of “appropriate stakeholders” (e.g., local governments, Native corporations, RCACs), and consultations with the National Marine Fisheries Service under the Endangered Species Act and for Essential Fish Habitat. The checklist requires a consideration of whether mechanical response or in situ burning are effective. The checklist also specifies wind and sea state parameters related to both dispersant application operations and dispersant effectiveness, including:

- Winds less than 25 knots
- Ceiling greater than 1,000 feet for aerial application
- Boat operations safe for vessel application
- Water salinity greater than 15 parts per thousand (PPT)
- “Sufficient” mixing energy

Case-by-case decisions require broader Natural Resource Trustee agency input from EPA, ADEC, DOC, and DOI. They also require input from Tribes and local stakeholders.

The decision-making criteria for both pre-authorization and case-by-case areas are a mix of objective, measurable standards and subjective criteria that are based in the judgment of the individual filling out the form.

Dispersant Use Scenarios

Materials that were distributed during a 2015 Prince William Sound tanker exercise were distributed to illustrate a scenario where the Responsible Party advocated for dispersant use. The Northern Dancer exercise included a Dispersant Ecological Tradeoff Analysis that was prepared by BP ahead of the exercise and injected, leading the Unified Command to consider dispersant use during the hypothetical response. The Tradeoff Assessment included BP’s rationale for supporting dispersant application, providing insight into the types of arguments that might be offered if dispersants were being considered during a response. Their key points included:

- Volume of oil treated by dispersants
- Reduction of oil volume washing ashore
- Short-term toxicity would dissipate quickly
- “Lower number” of sensitive species during September-October

- Increased biodegradation
- Benefit to species that live, feed, or breathe at the water surface

Workshop participants then considered how the spill scenario presented in the 2015 exercise would fare if the dispersant use checklists from 2016 were applied. The spill location, just off Montague Island, would require the case-by-case consideration. Based on what PWSRCAC Board members heard from the agency representatives at the previous workshop, there was speculation that dispersant use would be unlikely to attain Unified Command approval based on the spill location. Several participants observed that they would like to learn more about how the agencies would look at information and which factors might weigh more heavily into their decisions. This discussion also led several participants to observe that it is challenging to foresee the range of possible circumstances against which a dispersant use decision might be made. It is challenging to try to create a position with so many variables in play.

Workshop participants agreed that in the Northern Dancer scenario, they would strongly oppose a dispersant application because the spill was so close to shore. They also agreed that many of the points in the Tradeoff Analysis were inaccurate.

Participants were then faced with a few different “what if” scenarios to consider whether they might think differently about dispersant use. Participants were asked to consider whether PWSRCAC’s stance might change if weather was too rough for mechanical response and dispersants were the only operationally feasible response option and trajectory maps show untreated slicks moving towards Prince William Sound.

Participants were asked several follow-up questions to explore whether there might be circumstances where the Council would favor dispersant use. These included:

- How would seasonality influence your position?
- Would the size of the oil slick change your position?
- What other information would help you to make an informed decision?
- If the choice is between “do nothing” and “apply dispersants,” do you have any regrets if oil washes ashore?

None of the participants could pinpoint a specific set of conditions where they would favor dispersant use. There was a strong sentiment that the potential for dispersants to be ineffective in Prince William Sound conditions would make it difficult to support dispersants under any conditions. Key take-aways from the trade-off discussion included:

- Trade-offs involve many variables and it is hard to anticipate all of the factors.
- PWSRCAC should proactively communicate with decision-makers to make sure that they are aware of the Council’s position and the evidence that underlies it.
- The current checklist in the Dispersant Use Plan may preclude dispersants more often than in past drills.
- There are many unknowns and uncertainties that make it challenging to have a definitive, one-size-fits-all position.

- Potential effectiveness is critical to the discussion of trade-offs, because if dispersants are misapplied or not effective, then the arguments in favor of dispersant use are irrelevant.

2.4. WORKSHOP #3: DEMYSTIFYING DISPERSANT SCIENCE

The final Board of Directors workshop was also limited to PWSRCAC staff, Board members, and contractors. The purpose of this discussion was to focus PWSRCAC's position on areas where they can make the strongest evidence-based arguments.

The workshop began with a brief presentation about the basics of how dispersants work. Gary Shigenaka² gave a presentation that focused on the variables and uncertainties that impact dispersant effectiveness. He presented a series of hand drawings that characterized the level of uncertainty associated with various aspects of dispersant application (Figure 2-3). He then overlaid the uncertainty range with the key aspects of PWSRCAC's 2013 position statement (Figure 2-4).

Shigenaka emphasized that even with all of the research during and after the BP Deepwater Horizon oil spill dispersant application, there are many unknown or unsettled areas in the scientific literature. He highlighted two quotes from a 2021 synthesis of dispersant science by the Gulf of Mexico Research Institute.³

It will...take time and research to determine whether the dispersants themselves, used in such high volumes...are in fact effective at what they are intended to do and whether they have any longer-term detrimental effects on marine life and/or public health.

There remains a paucity of information on the long-term consequences of dispersants in the marine environment, as little is known about the fate of household cleaners and products such as shampoos and dishwashing liquids. Thus, the use of these dispersants enters the realm of the interfaces of science-economics-policy management.

² Dr. Merv Fingas was unable to attend due to illness.

³ Quigg, A., J.W. Farrington, S. Gilbert, S.A. Murawski, and V.T. John. (2021). *A Decade of GOMRI Dispersant Science: Lessons Learned and Recommendations for the Future*. *Oceanography*. 24:1. Pgs. 98-111. <https://tos.org/oceanography/article/a-decade-of-gomri-dispersant-science-lessons-learned-and-recommendations-for-the-future>

Figure 2-3. Elements of Uncertainty in Dispersant Application

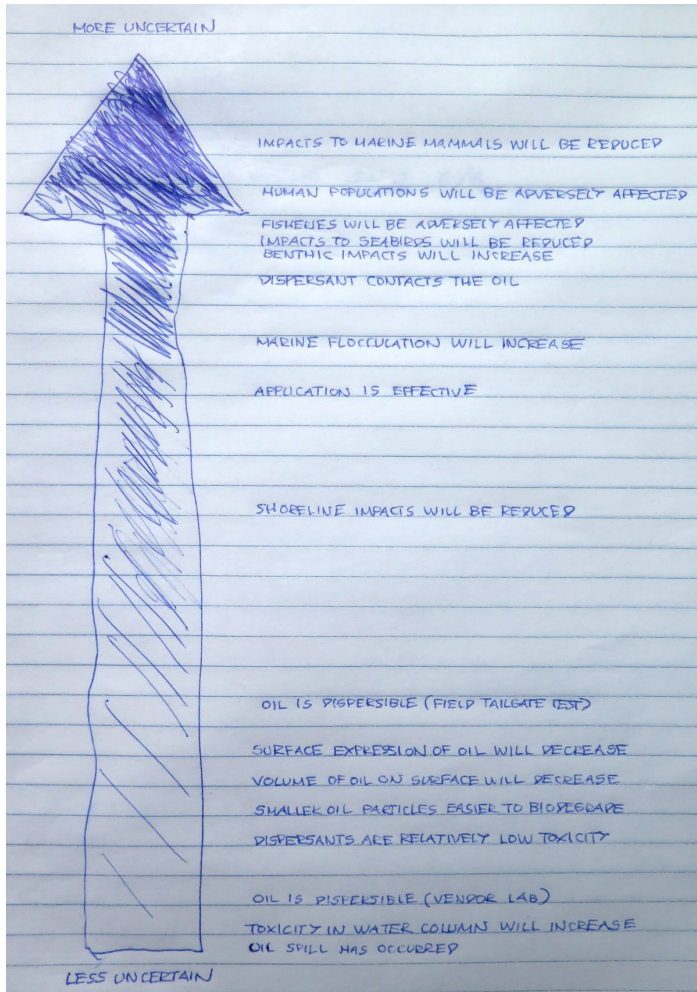
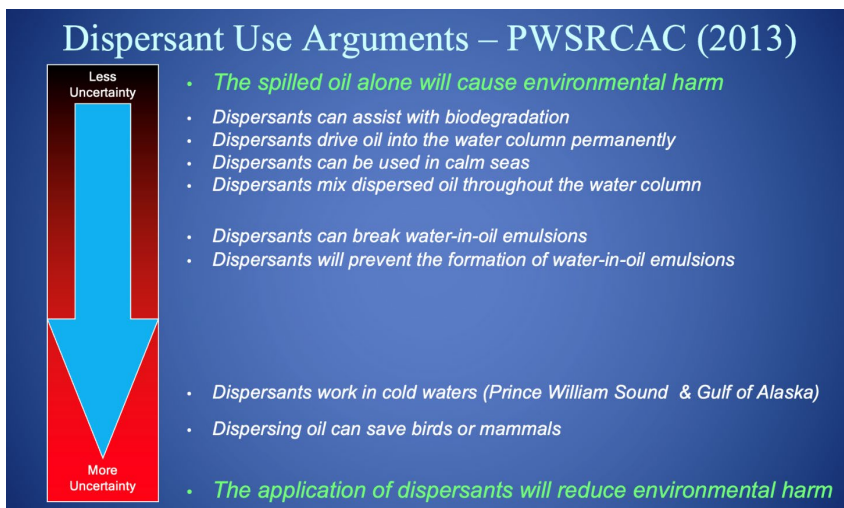


Figure 2-4. Uncertainty Comparison for Aspects of PWSRCAC's Current Dispersant Position



3. Draft Position Statement

The discussion during the three workshops in May-June 2022 helped to clarify the shared understanding among Board members of how dispersant use decisions are made. These discussions informed the following draft, updated position statement for consideration by PWSRCAC staff and committee members, and ultimately the Board of Directors. Once the wording of the position is finalized, a companion report will be developed to link each point in the position to evidence in the scientific and technical literature.

DRAFT UPDATED POSITION STATEMENT

It is the position of the Prince William Sound Regional Citizens' Advisory Council (PWSRCAC) that chemical dispersants should not be used on Alaska North Slope crude oil spills in the waters of the Exxon Valdez oil spill (EVOS) region for the following reasons:

- 1) *Mechanical recovery is the preferred response method in Alaska and PWSRCAC supports mechanical recovery in PWS and the EVOS affected region for several reasons:*
 - a. *Mechanical recovery is the only response option that removes oil from the marine environment. Chemical dispersants alter the fate and transport of spilled oil, but the oil remains in the environment.*
 - b. *A Response Gap Analysis for Prince William Sound found that operating conditions would limit the feasibility of dispersant application much more frequently than mechanical response, meaning that there is a higher probability of mounting a response using mechanical systems than dispersants.*
 - c. *Chemical dispersants reduce the opportunity for mechanical recovery to remove oil from the environment.*
 - i. *Slicks that are treated with dispersants may still impact shoreline areas.*
 - ii. *Physical and chemical changes to chemically dispersed oil may reduce the effectiveness of skimmers.*
 - d. *Mechanical recovery capabilities in PWS and the EVOS affected region are significantly advanced compared to other areas in the U.S.*
- 2) *Dispersants have not been demonstrated, in field or laboratory conditions, to be effective in treating oil slicks in marine environments with similar temperature and salinity profiles found in PWS and the EVOS affected region.*
 - a. *There has never been a successful application of chemical dispersants to an ANS crude oil spill in cold water regions.*
 - b. *Dispersant application was unsuccessful during the Exxon Valdez oil spill.*
 - c. *Tank trials to evaluate chemical dispersants on ANS crude oil have not demonstrated effectiveness in conditions found in PWS and the EVOS affected region.*

- d. *There is an unproven assumption that oil on the surface is worse than oil in the water column.*
- 3) *The potential benefits of chemically dispersing spilled oil do not outweigh the known harms and potential risks. In the absence of definitive proof of safety and holistic benefits to the environment and people, dispersants should not be applied in PWS and the EVOS affected region.*
 - a. *Dispersant application introduces additional chemicals into the environment and may increase exposure of marine organisms to toxic components of oil.*
 - b. *Dispersant application may cause adverse human health impacts.*
 - c. *Dispersant application does not necessarily increase biodegradation of oil.*
 - d. *Dispersant application increases the amount of oil that settles on the seafloor through sedimentation and marine snow formation.*
 - e. *Long-term effects of dispersant application on ecosystems and organisms are not well understood, making it difficult to accurately weigh potential adverse impacts.*
- 4) *The dispersant use approval process outlined in the Federal On-scene Coordinator (FOSC) Dispersant Authorization Checklist (Alaska Dispersant Use Plan) will preclude dispersant application in PWS and the EVOS affected region.⁴*
 - a. *Water salinity is below 15 ppt in areas of PWS and the EVOS affected region during certain seasons.*
 - b. *Mixing energy is not sufficient for dispersant application in areas of PWS and the EVOS affected region during certain seasons and times.*
 - c. *There is no marine area in PWS that is 1,640 feet or more away from swimming fish, rafting seabirds, swimming marine mammals, or marine mammal haul outs (#19d).*
 - d. *There may not be adequate time or access to key stakeholders to incorporate their informed consent into dispersant use decision-making (#20 & #21).*
 - i. *Alaska Native Tribes and rural community members in PWS and the EVOS affected region rely on a healthy marine ecosystem for subsistence foods and bear disproportionate risk of toxic exposure if dispersants are applied in the vicinity of harvest areas.*
 - ii. *Fish and wildlife in the water and on the seafloor are an important food source. Dispersant application can injure those resources and impact food safety and security.*
 - iii. *“Appropriate” stakeholders incorporate broader interests than identified in the checklist.*

⁴ Parenthetical cross-references to specific checklist items.

Oil spill prevention remains PWSRCAC's top priority because once oil is spilled there will be adverse impacts to people and the environment. In the event of an oil spill in our region, mechanical recovery and containment of crude oil spilled at sea should remain the primary response method. PWSRCAC recommends that oil spill response research and development should focus on enhancing and improving mechanical recovery technologies and methods.