

US EPA ARCHIVE DOCUMENT

REGION V INLAND SHORELINE CLEANER TEST AND EVALUATION PROTOCOL

I. INTRODUCTION

Subpart J of the National Contingency Plan (NCP) provides that Regional Response Teams (RRTs) and Area Committees shall address, as part of their planning activities, (1) the desirability of using appropriate surface washing agents listed on the NCP Product Schedule; (2) the specific contexts in which such products should and should not be used; and, (3) planning for preauthorization of use.

This test protocol identifies specific practices to be followed for evaluating the effectiveness and biological impacts of test applications of selected chemical shoreline cleaning agents to recover oil discharged to shoreline environments in the Great Lakes and their interconnecting waters. The Federal On-Scene Coordinator (FOSC) is preauthorized to test specific shoreline cleaning agents subject to the constraints and practices identified in this document, including those identified through state permitting and Section 7 consultation under the Endangered Species Act. Test preauthorization is contingent on the notification process in Section IV and in accordance with Region V Area Contingency Plans and their associated Fish and Wildlife and Sensitive Environments Annex. Any post-test decision to operationally use the cleaning agents must receive RRT concurrence from the EPA, USCG, affected State(s), affected tribe(s), DOI, DOC/NOAA and any potentially affected state or foreign government.

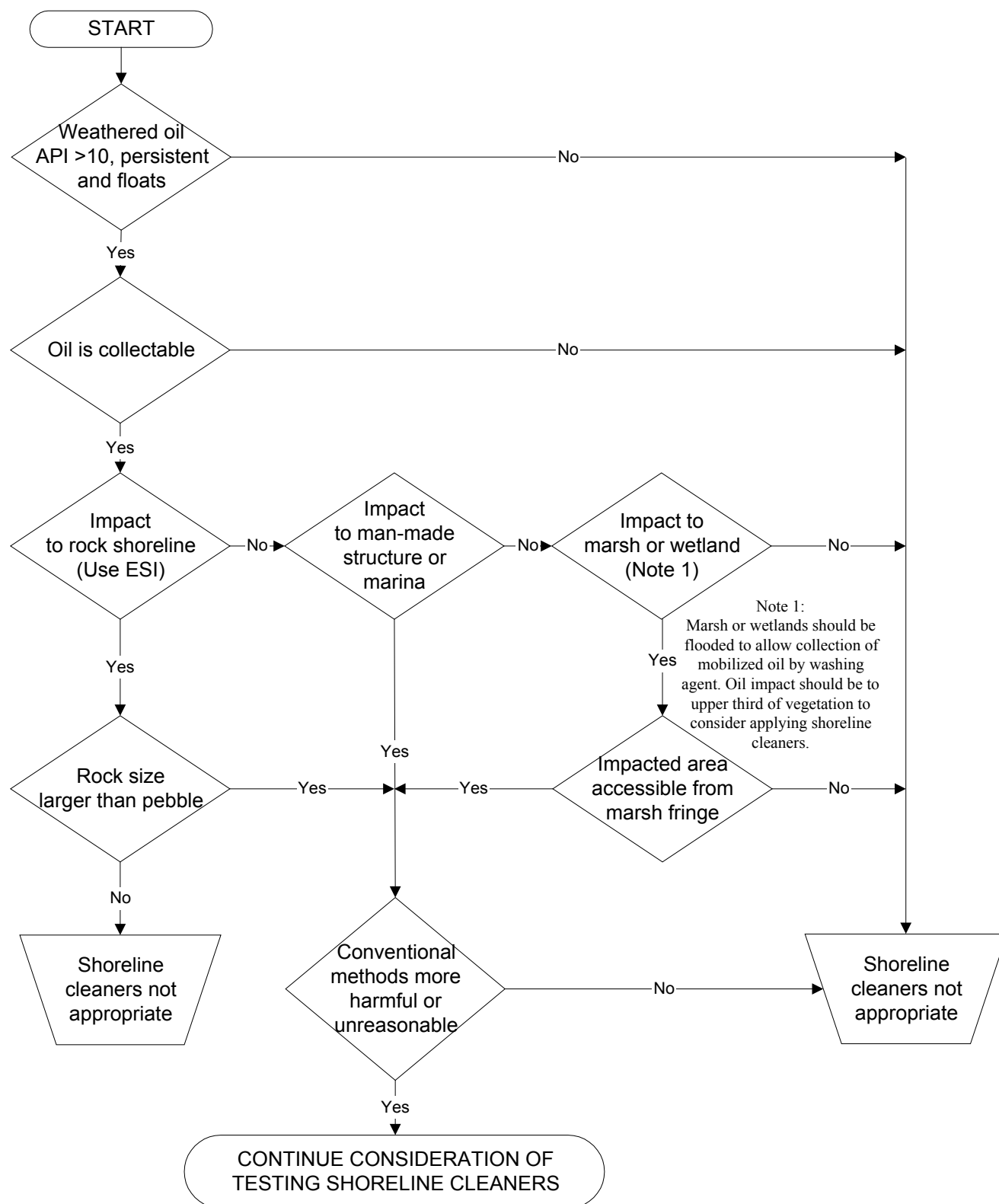
This protocol addresses the testing and evaluation of Corexit 9580 and Cytosol in participating States listed in Appendix 3. The RRT V shall periodically review the NCP Product Schedule for the purpose of removing or considering preauthorized testing protocols for these or other shoreline-cleaning agents. Any additions to the pre-authorized shoreline cleaner test list shall be subject to additional RRT V test protocol development, state permitting and ESA Section 7 consultation.

II. CRITERIA FOR CONSIDERING THE USE OF SHORELINE CLEANERS

The RRT V spill response policy is to contain and recover oil discharged to the aquatic environment without the use of chemical agents. However, RRT V recognizes that in certain circumstances timely containment and effective physical removal of the oil may not be possible, and the utilization of chemical agents, alone or in conjunction with mechanical removal methods, may be considered as a means to minimize a substantial threat to public health or welfare, or to minimize long term environmental damage.

Initial evaluation of the type of oil and impacted shoreline are required prior to testing chemical agents on a spill. Shoreline-cleaning agents work best with Type IV heavy crude oil (Appendix 1 describes oil types). However, light and medium crude oil can weather to heavier crude over time as constituents of the oil volatilize. A bucket test should be conducted to determine if the removed oil would likely float so it can be collected when remobilized (See Section IV: Test Preparation Procedures). If the removed oil sinks, it may be more difficult to collect and could adversely impact benthic communities. Shoreline types best suited for the use of shoreline-cleaning agents include man made structures, rip/rap, boulders, cobble, bedrock, etc., that can be cleaned without trapping removed oil in inaccessible spaces (Appendix 2: Shoreline Types).

Use this flow chart to identify and consider initial issues that guide the decision process of testing a shoreline-cleaner to determine if it merits further consideration as a viable response tool. If so, consider the physical conditions and special consideration constraints in Section III.



III. CONSTRAINTS GOVERNING TEST USE OF SHORELINE CLEANERS:

Physical Conditions play a vital role in the overall effectiveness of shoreline cleaners, as well as the success in recovering refloated oil. As such, the following constraints shall be observed:

1. **Water Velocity:** Current at the impacted area must be less than 1 knot. This will help ensure refloated oil does not escape containment and contaminate clean beaches down current.
2. **Wave Action:** The treated area cannot be exposed to breaking waves. The cleaning agents require a soaking time and continual bombardment will reduce effectiveness of the agent(s).
3. **Water Depth:** Approximately one foot of water should submerge the hose and strainer assembly of the pump configuration. Depth must be sufficient to facilitate the operation of portable pumps.
4. **Accessibility:** Area must be accessible to observers, monitors, sample collectors, and contract workers.
5. **Precipitation:** Application during heavy rain, sleet or snow should be avoided. Heavy precipitation will greatly reduce cleaner effectiveness by impacting the soaking time.
6. **Temperature:** If ambient air temperature is below 50 ° F, special consideration of the shoreline cleaner's viscosity should be reviewed when selecting it for use. Consult Manufacturer's recommended application criteria when practical (appended).
7. **Wind:** High wind will play a vital role in the effectiveness of certain cleaners. (See appended application procedures for Corexit 9580)

Special Consideration areas are notable for environmental sensitivity, treaty protection, government designation, important public value and private ownership. If testing is proposed in the following areas, additional consultation with the appropriate manager or owner shall be undertaken prior to test application:

1. **Vital Resources - i.e. water supplies:** Shoreline cleaner testing is not recommended near operating water intakes. Oil lifted from the substrate may disperse into the water column or escape floating containment, potentially fouling water supplies.
2. **Threatened & Endangered Species (Federal and State listed) and designated critical habitats:** OSCs shall review available information in the ACP on the presence of federally listed species and designated critical habitat. If the proposed test may affect federally listed species or critical habitat, the OSC shall initiate emergency consultation with the FWS or NMFS, as appropriate, to obtain timely recommendations to avoid or minimize impacts. See the Inter-Agency MOA Regarding Oil Spill Planning and Response Activities Under the FWPCAs NCP and ESA. OSCs shall consult with the governing state agency regarding any recommended measures to avoid or minimize impacts to state-listed species and their habitats.
3. **Federal, State or local parks, recreational areas, and refuges:** OSCs shall not undertake testing of shoreline cleaners within or adjacent to federal, state or local parks, recreational

areas, and refuges without the prior consent of the land managing agency. Test applications on such lands are subject to all conditions imposed by the managing authorities.

4. **Tribal Governments:** OSCs shall receive prior approval from the appropriate tribal authority before undertaking test applications on or adjacent to tribally administered lands and waters, including lands and waters protected by treaty. Test applications on such lands and waters are subject to all conditions imposed by these authorities.
5. **Historical/Archeological Resources:** OSCs shall consult with the State Historic Preservation Officer (SHPO) and other trustees to identify, avoid, and/or mitigate potential impacts.
6. **Private landowners:** OSCs shall notify landowners of their intent to conduct test applications of shoreline cleaning agents on privately-owned property and give special consideration to any concerns expressed by the landowners.
7. **Foreign Governments:** OSCs shall notify Canadian Authorities (Canadian Coast Guard and Environment Canada) of their intent to conduct test applications of shoreline cleaning agents in the Great Lakes and interconnecting waters and give special consideration to any concerns expressed by these agencies.

IV. TEST PREPARATION PROCESS

OSCs shall follow this protocol to ensure the physical conditions and special considerations are met and have been adequately addressed prior to continuing consideration of testing shoreline cleaners. The following processes and procedures shall be used to guide further action:

1. Identify, notify and coordinate with stakeholders to include incident specific RRT notification of your intent to initiate test preparation (Use the Contact Information list in Appendix 5)
2. Select one or both of the approved shoreline-cleaning agents based on environmental conditions (Corexit 9580 and/or Cytosol)
3. Conduct a bucket test to determine if removed oil will float or sink. If it floats, note the time it takes for the water column to clear (all particles float to the surface). If the oil sinks, then the use of shoreline-cleaners is not appropriate.
4. Contact shoreline-cleaning agent supplier
 - a) Identify cost
 - b) Determine availability
 - c) Consider transportation
 - d) Invite shoreline-cleaning agent representative to participate

V. TEST APPLICATION PROCEDURES

1. Identify test areas and control area boundaries (see Appendix 8: Test Layout Example)

- a) Select a minimum of two representative test areas that 5 gallons of product will adequately cover (approximately 300 to 500 square feet total) and clearly mark the areas.
- b) Set aside a representative control area similar to the test areas for comparison
- c) Obtain Global Positioning System (GPS) location points defining each area
- d) Include a map of the area identifying the test and control areas

2. Effectiveness criteria and monitoring procedures:

- a) Estimates of effectiveness of a Shoreline Cleaning Agent for removing oil are determined by comparing results from tests of oiled substrates with and without application of a candidate Shoreline Cleaning Agent. Therefore, washing the representative control set-aside with on-site water in a manner equivalent to the treated test area with the Shoreline Cleaning Agent should be compared for a measure of effectiveness.
- b) 8 oz. (125 ml) sample jars should be used to collect run-off wash water from both areas for quantifying estimated effectiveness. Note the relative difference of floating oil in the jars from the two areas. Photo-documentation of jars will be needed.

3. Water and sediment sampling in control and test areas for Total Petroleum Hydrocarbon (TPH) analysis

- a) Using 1-liter sample jars, collect a background water sample in an adjacent non-impacted area in addition to subsurface water samples from inside and outside of the boom in the test areas and downgradient of boomed areas immediately prior to cleaning agent application. During washing operations, collect 1-liter subsurface water samples from inside and outside of the boom in the test areas and downgradient of boomed areas at 10-minute increments until 30 minutes after final wash process.
- b) Label water sample jars with a unique identifier and include media type, date, time, location (GPS), depth, and shoreline cleaner used, and store in a cool to cold container for shipment to EPA-approved lab for quick turn around analysis in accordance with EPA-approved protocol.
- c) Using 8 oz. (250 ml) jars or sleeves, collect sediment samples in test areas immediately prior to cleaning agent application and following washing process.
- d) Label sediment sample jars with a unique identifier and include media, date, time, location (GPS), depth, and shoreline cleaner used, and store in a cool to cold container for shipment to EPA-approved lab for quick turn around analysis in accordance with EPA-approved protocol.

- e) Document the process and interpret analytical results.

4. Toxicity procedures to evaluate shoreline cleaning agent impacts to aquatic life

- a) Choose a laboratory to run the aquatic toxicity tests. See the attached list of laboratories that routinely run these tests in Appendix 5: Contact Information.
- b) Collect one-gallon (4-liter) subsurface water samples in brown glass containers at each sampling site.
- c) Collect a water sample from an unimpacted area (background/control), from an area near the shoreline inside the boom and from an area downstream outside the boom prior to the application of the shoreline cleaner.
- d) Collect a water sample inside and outside the boom and a sample downstream after the shoreline cleaner is washed from the rocks into the surface water.
- e) Label sample jars with a unique identifier and include date, time, location (GPS), depth, and shoreline cleaner used, and store in a cool to cold container for shipment to EPA-approved lab for quick turn around analysis in accordance with EPA-approved protocol.
- f) Ask the laboratory to conduct 48-hour EC_{50}/LC_{50} acute toxicity tests and 7-day chronic toxicity tests for *Ceriodaphnia dubia* using the American Society for Testing and Materials (ASTM) guidelines.
- g) Compare the results from the 48-hour EC_{50}/LC_{50} and the 7-day tests to assess whether application of the shoreline cleaner has the potential to adversely affect aquatic life.
- h) Document the process and interpret analytical results.

5. Booming and recovery procedures:

- a) Identify current direction and velocity.
- b) Use a float to determine distance of boom from the shoreline based on the time it takes for the oil in the bucket test to float to the top and the water becomes clear.
- c) Install a double boom around the test and control areas at the appropriate distance.
- d) Use appropriate absorbent material inside the boom for oil recovery and if possible more aggressive removal equipment (i.e., vacuum pumps, portable skimmers, etc.) to remove the oil.

6. Site specific product application procedures to be in accordance with manufacturer's recommended application procedures (See Appendix 7).

VI. REPORTING

1. Recommended after-action report outline:

A. Cover

- title
- date
- agency
- preparer

B. Introduction

- spill summary
- test date
- test location
- landowner(s) notified
- physical conditions
- type of oil(s) treated
- cleaner(s) tested
- test participants

C. Test Procedures

- bucket test
- field test
- measuring effectiveness
- sampling for TPH
- toxicity testing
- booming and recovery

D. Results

- effectiveness of bucket test
- effectiveness of field test and recovery
- TPH
- toxicity

E. Test Conclusions

- oil recovered/not recovered
- oil dispersed/not dispersed
- oil-cleaner mix toxic/nontoxic

F. Recommendations

- proceed no further
- coordinate/consult for operational use
- conditions

2. Lessons learned:

Following each use of this protocol, the OSC will provide observations, lessons learned, and suggested changes to one the Region V Shoreline Cleaner Subcommittee members identified in Appendix 7 who will contact the other members and set up a conference call to discuss and incorporate the suggested changes as appropriate. The Shoreline Cleaner Subcommittee will identify the appropriate point of contact to maintain a file or database of all uses of this protocol on spills of opportunity and capture lessons learned from each application.

APPENDIX 1: OIL TYPES

Group #	Description	Characteristics
I	Light Distillates Sp. Gr. < 0.8 API > 45 Vise.: 0.5 - 2 cSt. @ 15 C.	*Very volatile and highly flammable *High evaporation rates *Rapid spreading rates *Highly toxic to biota * Little if any, emulsification *High penetration of substrate
II	Light Crudes Sp. Gr. 0.8 - 0.85 API 35 - 45 Vise.: 4 to solid (avg. 8 cSt) @ 15 C.	* Moderate volatility * Low to moderate viscosity * Below pour points, behave like group IV oils * Moderate to high toxicity * Can form stable emulsions * Moderate to high penetration of substrate
III	Medium Crudes Sp. Gr. 0.85 - 0.95 API 17.5 - 35 Vise.: 8 to solid (avg. 275 cSt.) @ 15 C	* Moderate volatility * Moderate viscosity * Below pour points, behave like group IV oils * Variable acute toxicity - depending on light fractions remaining. * Can form stable emulsions * Low to moderate penetration of substrate
IV	Heavy Crudes / Fuel Oils Sp. Gr. 0.95 - 1.00 API 10.0 - 17.5 Vise.: 1500 - solid @ 15 C	* Moderate volatility * Moderate to high viscosity * Below pour points, behave like group IV oils. * Variable acute toxicity - depending on light fractions remaining * Can form stable emulsions * Low to moderate penetration of substrate
V	Very Heavy Fuel / Bunker Oils Sp. Gr. > 1.00 API < 10.0 Vise.: solid (unless heated)	*Very low volatility * Little if any evaporation *Very high viscosity *Very low acute toxicity * Can form stable emulsions * Little if any penetration of substrate

Group # (Based in Part on I.T.O.P.F. Oil Groups, 1987 & U.S.C.G., 1990)

Group I oils (or non-persistent oils) tend to disappear rapidly from the sea surface
Group II - V (often referred to as persistent oils) dissipates more slowly depending upon their specific physical / chemical properties and the volume spilled.

APPENDIX 2: ESI SHORELINE TYPES

The use of Shoreline Cleaners should only be considered on the following shoreline types:

ESI = 5A MIXED SAND AND GRAVEL BEACHES

DISCRIPTION

These beaches are composed of variable mixture of shells, rubble, and rock fragments in a multitude of sizes. They occur in a wide variety of settings, but are most common on exposed shorelines in shallow indentations adjacent to eroding headlands and bluffs. Active beaches have low infaunal densities because of sediment mobility; more stable beaches have moderate densities.

PREDICTED OIL IMPACT

Oil penetration may be high (tens of cm), with greatest penetration in coarser, well sorted sediments. Under very heavy accumulations, oil may spread across the entire beach. During small spills, oil would be deposited along and above the high water swash line. Burial of oil by clean sediments may be very deep (more than one meter) at the high water berm. Asphalt pavements are likely to form in more sheltered beaches where heavy accumulations of oil fill the voids between the sediments; once formed, these pavements are very stable and can persist for years. Any oil stranded above the high water line would be highly persistent.

Biota present may be killed by oil, either by smothering or lethal concentrations of dissolved components in interstitial water.

ESI = 5B ARTIFICIAL FILL CONTAINING A RANGE OF GRAIN SIZE AND MATERIALS

DISCRIPTION

Most of the developed ports and harbors have areas that have been modified by creating beaches, assorted breakwaters, etc., by artificial placement of a variety of materials. Usually has the consistency of mixed sand and gravel beaches, being composed of sand mixed with rock debris. These beaches may be exposed only to very intermittent energy.

PREDICTED OIL IMPACT

Oil penetration may be high (tens of cm), with greatest penetration in coarser, well sorted sediments. Deeply penetrated oil may leach for a period of time, generating a source of chronic oiling to adjacent habitats. Under very heavy accumulations, oil may spread across the entire beach. During small spills, oil would be deposited along and above the high water swash line.

Natural removal rates may be very slow, depending on local wave or boat wake energy.

Asphalt pavements are likely to form in more sheltered beaches where heavy accumulations of oil fill the voids between the sediments; once formed, these pavements are very stable and can persist for years. Any oil stranded above the high water line would be highly persistent.

ESI = 6 GRAVEL BEACHES**DISCRIPTION**

Gravel beaches are composed purely of gravel-sized sediments, with little-to-no sand. The gravel-sized sediments include rubble and/or shell and rock fragments. Gravel beaches are present adjacent to eroding headlands. They can be steep, with multiple wave-built berms forming the upper beach.

PREDICTED OIL IMPACT

Oil on gravel beaches would coat individual pieces of gravel. Limestone rubble is very porous and most oils will soak into the limestone itself. High porosity and permeability would allow deep penetration to several tens of centimeters into substrate. In exposed areas, waves would remove surface contamination. In intermittent-energy areas, buried or penetrated oil would tend to seep out slowly, generating sheens that can recontaminate the shoreline.

There is a high potential for burial by accretional features.

If left to harden, heavy accumulations of oil would likely form an asphalt/gravel pavement in sheltered areas.

ESI = 7A RIPRAP**DISCRIPTION**

Riprap consists of large rocks as well as concrete armor units (tetrapods, dolos, etc.). Riprap is present in harbor entrances and along developed areas for shore protection. Biomass is generally low in high-energy area, but attached organisms density and species diversity are higher at more protected sites.

PREDICTED OIL IMPACT

Heavy oil would coat the surface as well as penetrate and completely fill the cavities in riprap structures. In exposed areas, waves would remove surface contamination. In lower-energy areas, oil would tend to seep out of the oil-filled cavities slowly, generating sheens that can recontaminate adjacent shorelines.

If oil is left to harden, an asphalt pavement may result.

ESI = 7B COASTAL STRUCTURES**DISCRIPTION**

Seawalls, piers, bulkheads, and other structures can dominate developed shorelines along harbors and bays.

PREDICTED OIL IMPACT

Oil would coat the high water mark surfaces of rocky shores and seawalls. On vertical surfaces, the oil would form a distinct oil band along the high water mark.

Oil may persist for weeks to months; fresh oil and light refined products have high acute toxicities, which can affect attached organisms after even short exposures.

ESI = 10 NARROW AND BROAD WETLANDS

DESCRIPTION

Narrow or fringing wetlands are found throughout. Broad wetlands are most common in low-lying, sheltered areas. They are relatively sheltered from wave activity. Narrow areas less than 5 meters wide are found throughout the study area. Wetlands are most important wildlife habitat in the area, providing a nesting area for ducks, geese, herons, rails, kingfishers, some shorebirds, muskrats, and turtles; as well as a nursery and spawning ground for many species of sport and forage fish.

PREDICTED OIL IMPACT

Oil in heavy accumulations may persist for decades. Small quantities of oil will be deposited primarily along the outer wetland fringe or along the upper wrack (debris) swash line.

Resistant biota, including bird life, is likely to be oiled and possibly killed.

APPENDIX 3: STATE PROCEDURES

TBD: This appendix should contain contact information and include state specific requirements.

Michigan (participating state)

Great Lakes and Environmental Assessment Section Procedure #57

Rule 97 Certification of Approval Issuance/Denial Process

All projects involving the application of materials to waters of the state for water resource management purposes must obtain a Rule 97 Certification of Approval from the Michigan Department of Environmental Quality (MDEQ). The MDEQ Director has delegated the duties and powers necessary to issue and deny Rule 97 Certifications of Approval for projects with statewide implications, except for aquatic plant and swimmer itch control projects, to the Chief of the Great Lakes and Environmental Assessment Section (GLEAS). The MDEQ Director also delegated the duties and powers necessary to issue and deny Rule 97 Certifications of Approval for projects impacting specific sites, except for aquatic nuisance control projects, to the District Supervisors of the Surface Water Quality Division (SWQD). In practice, the SWQD District Supervisors handle projects involving tracer dye and reaeration gas applications; while all other projects, except aquatic plant and swimmer itch control projects, are handled by the Chief of GLEAS.

Rule 97 of the Michigan Water Quality Standards states:

The application of materials for water resources management projects pursuant to state statutory provisions is not subject to the standards as prescribed by these rules, but all projects shall be reviewed and approved by the commission before application.

Water resource management projects historically covered by Rule 97 include, but are not limited to: sea lamprey control treatments with TFM and Bayer 73; fish reclamation projects using piscicides (i.e., rotenone) by state agencies, local organizations, and private individuals; blackfly control treatments using BTi bacteria; mixing zone mapping and time of passage studies using tracer dyes and reaeration gases; discharge point location studies using tracer dyes, water intake treatment with biocides to control zebra mussels; and ice painting using colored dyes.

Requests for projects involving the application of tracer dyes or reaeration gases should be submitted directly to the appropriate SWQD District Supervisor; all other project requests should be submitted to the Chief of GLEAS. The SWQD district staff may need to request GLEAS to perform a chemical evaluation if a tracer dye or reaeration gas that has not been previously evaluated by GLEAS is proposed for use. Requests by private individuals for the use of fish toxicants should use the application in Appendix A. All other requests should provide the following information:

1. Description and purpose of the proposed water resource management project. A copy of any relevant Standard Operating Procedures should be provided, if available.
2. Name of the waterbody(ies) potentially affected by the proposed project.

3. Geographic location(s) of the specific stream segment(s) or lake/wetland area(s) potentially affected by the proposed project. Township/Range/Section data should be included to identify the affected site(s) location.
4. Name of the material(s) to be applied to the surface water. All chemical ingredients in any trade name formulations should be listed with respective chemical abstract service (CAS) numbers. A Material Safety Data Sheet for the product should also be included.
5. Specific time period when the project will occur. It is acceptable for a single request to cover multiple material applications scheduled over an extended time period (e.g. rotenone treatments of several waterbodies planned during 1994-1997).
6. Total load(s) and dosage concentration(s) of the material(s) to be applied to the surface water.
7. A description of any detoxification and fish collection/disposal procedures to be employed for fish reclamation projects.

Staff Review of Rule 97 Certification of Approval Requests

- Step 1. The Water Quality Appraisal Unit (North or South) Chief or the SWQD District Supervisor shall log and assign the request to appropriate staff.
- Step 2. Staff shall review the request and communicate with the applicant to request any additional information needed.
- Step 3. Staff shall investigate the toxicological and environmental fate characteristics of the material(s).
- Step 4. Staff shall take appropriate steps to encourage product or chemical substitution for any request that involves the discharge of a bioaccumulative, persistent chemical(s) to the waters of the state.
- Step 5. Staff shall determine whether the request also needs to be reviewed by the Michigan Department of Natural Resources (MDNR) or the MDEQ, Drinking Water and Radiological Protection Division (DWRPD). DWRPD review is required when the project has the reasonable potential to affect a public water supply intake. MDNR, Wildlife Division, review is needed when the project has the reasonable potential to adversely affect endangered or threatened species (not required for tracer dye or reaeration gas projects). MDNR, Fisheries Division, review is needed for all fish reclamation, sea lamprey control, and other project requests that have the reasonable potential to affect the fish community. Formal review by the Fisheries Division for requests by private individuals to use a fish toxicant may not be necessary if Fisheries Division was involved in the development of the application in Appendix A.
- Step 6. Staff shall review the project from a surface water protection perspective. Based upon this review and after considering comments received from the DWRPD and MDNR divisions, staff shall determine whether a recommendation to issue (or deny) a Certification of Approval for the project should be made to the Chief of GLEAS.

Issuance Process for Rule 97 Certifications of Approval

- Step 1. Staff shall prepare a draft Rule 97 Certification of Approval, a draft memo to the Chief of GLEAS or the SWQD District Supervisor, a draft cover letter to transmit the signed Certification to the applicant, and draft SWQD Bulletin "Notice of Action Taken" language. Recent examples of the above correspondence can be found in the GLEAS Rule 97 file. This entire package needs to be submitted to the Chief of GLEAS for review and approval. The example Rule 97 Certification of Approval in Appendix B may be used for the use of fish toxicant by a private individual if the following criteria are met:
- 1) The pond is less than 10 acres in size;
 - 2) The pond has no outlet, or the outlet can be effectively blocked to prevent the discharge of fish toxicant into the connecting waterbody (drain, river, stream, pond, lake, or wetland), and appropriate detoxification procedures will be employed; and
 - 3) The pond is owned by a single entity.
- Step 2. The Chief of GLEAS shall review the package for acceptability and transmit any recommended changes to staff.
- Step 3. Staff shall make any necessary changes required to finalize the Rule 97 Certification of Approval, memo, and cover letter.
- Step 4. The Unit Secretary shall submit the final Rule 97 Certification of Approval and cover letter for signature to the Chief of GLEAS and transmits the signed Certification and cover letter to the applicant
- Step 5. After obtaining a signed Rule 97 Certification of Approval and cover letter, the Section Secretary shall submit the SWQD Bulletin "Notice of Action Taken" language to the Division Chief Secretary.

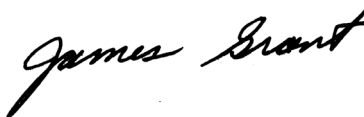
Denial Process for Rule 97 Certifications of Approval

- Step 1. Staff shall prepare and send a draft memo to the Chief of GLEAS that describes the basis for the recommendation to deny a Rule 97 Certification of Approval for the project.
- Step 2. The Chief of GLEAS will review the memo and determine whether a Rule 97 Certification of Approval should be denied for the project.
- Step 3. After a final denial decision has been made, staff shall prepare a letter (for the signature of the appropriate decision-maker) which transmits this decision to the applicant.

Correspondence Filing

All correspondence generated by the Certification development and issuance/denial process shall be filed in the GLEAS Rule 97 file. All GLEAS correspondence shall be copied to the appropriate SWQD District Office.

Approved:



Date: 4/25/01

Michigan State Permit Sample: C

Nov 7 '00 16:38 P.02

STATE OF MICHIGAN



JOHN ENGLER, Governor
DEPARTMENT OF ENVIRONMENTAL QUALITY

"Better Service for a Better Environment"
HOLLISTER BUILDING, PO BOX 30473, LANSING MI 48909-7973

INTERNET: www.deq.state.mi.us
RUSSELL J. HARDING, Director

REPLY TO:

SURFACE WATER QUALITY DIVISION
KNAPPS CENTRE
PO BOX 30273
LANSING MI 48909-7773

November 7, 2000

Captain Scott Gordon
United States Coast Guard
Group Sault Ste. Marie
337 Waters Street
Sault Ste. Marie, MI 49783

Dear Captain Gordon:

On November 7, 2000, the Michigan Department of Environmental Quality (MDEQ) approved your request of November 6-7, 2000, to apply COREXIT 9580 to an oil spill along a 100-foot shoreline segment of the St. Mary's River in Sault Township.

This Certification is issued pursuant to Rule 97 of the Michigan's Water Quality Standards. The enclosed Certification of Approval provides specific reporting and procedural requirements that must be complied with for the MDEQ authorization.

If you have any questions, please contact Mr. William Taft of our staff at 517-335-4205.

Sincerely,

James Grant, Chief
Great Lakes and Environmental Assessment Section
Surface Water Quality Division
517-335-4121

jjg:wtyg

Enclosure

cc/enc: Mr. Steve Casey, MDEQ
Mr. William Taft, MDEQ
Mr. Gerald Saalfeld/COREXIT Rule 97 File, MDEQ

WORKING DRAFT OF 1-15-02

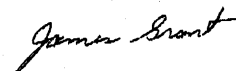
Nov 7 '00 16:38 P.03

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
CERTIFICATION OF APPROVAL

In compliance with the provisions of Part 31, Water Resources Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, Michigan Executive Order 1991-31, and Rule 97 of the Michigan Water Quality Standards, the United States Coast Guard is granted approval to apply COREXIT 9580 to 100 feet of Saint Mary's River shoreline in Sault Township, Michigan to remediate an oil spill. This approval is based on the request and information provided by Captain Scott Gordon, United States Coast Guard, on November 6-7, 2000, to the Surface Water Quality Division (SWQD), Michigan Department of Environmental Quality (MDEQ), and is contingent upon full compliance with the following requirements:

1. The waterbody covered by the Certification is limited to a 100 foot shoreline segment of the Saint Mary's River in Sault Township, Michigan (Chippewa County). The approximate latitude and longitude of the shoreline segment to be treated is North 46° 26.8' West 084° 16.4' to North 46° 26.1' West 084° 16.0'.
2. The application of COREXIT 9580 shall occur in November 2000.
3. The COREXIT 9580 shall be applied in accordance with the manufacturer's label rates and restrictions.
4. At least one day prior to the COREXIT 9580 application, the United States Coast Guard shall notify the Marquette District Supervisor, SWQD, MDEQ, at 906-226-1373.
5. By January 31, 2001, the United States Coast Guard shall submit a report to the Marquette District Supervisor summarizing the effectiveness of the oil spill remediation project. The report shall also identify any adverse water quality impacts that occurred as a result of the COREXIT 9580 application.
6. In the event that any of the above conditions of this Certification of Approval are or may not be met, the United States Coast Guard shall immediately notify the Marquette District Supervisor.

Issued this 7th day of November 2000, by the MDEQ and shall expire on February 1, 2001.



James Grant, Chief
Great Lakes and Environmental Assessment Section
Surface Water Quality Division

WORKING DRAFT OF 1-15-02

Ohio (not participating at this time but is expressing interest)

Wisconsin (not participating at this time but have expressed interest)

Indiana (not participating at this time)

Illinois (not participating at this time)

Minnesota (not participating at this time but in discussion)

WORKING DRAFT OF 1-15-02

APPENDIX 4: EQUIPMENT LIST

ITEM (QTY)

Digital camera
Plastic Buckets (2)
Thermometer
wooden stakes (30)
orange or red survey tape (2 rolls)
sledge hammer (2)
shovel (2)
hand shovel (2)
funnel (2)
Gasoline tank 20 gallon
p250 or equivalent water pump (2)
100 ft of intake hose (2)
intake strainer (2)
200 ft fire hose (2)
500 ft ball of string (6)
knife (2)
400 ft snares minimum must have enough for back up (12 boxes to start)
400 ft of sausage boom sorbant type (12 bails to start)
200 ft of harbor boom
boom anchor (4)
10 bails of sorbant pads
hand held sprayer garden type (4)
duct tape (5 rolls)
wide clear tape (1 roll)
empty plastic water jug for priming water pumps (2)
PPE - face shields, rubber gloves, steel toe boots, waders, tyvek suits (4 sets)

Sampling equipment

6 cases of 1 liter bottles (for H2O TPH test)
4 cases of brown 1-gallon or 4 liter jugs (for H2O toxicity analysis)
1 case of 8 oz (250 ml) jars or brass sleeves (for sediment testing)
protective gloves (2 boxes)
large coolers (10)
blue ice or cold ice gel refrigerant (sufficient to cool samples)
bubble wrap (sufficient to properly protect sample jars)
wooden sample tongue depressors (10)
labels (100)
chain-of-custody forms (50)
GPS receiver (2)
batteries (8 AA)
water resistant marking pen (2)
Note pads small pocket size (4)
Kemmer tube or equivalent (for water samples below the surface)

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APPENDIX 5: CONTACT INFORMATION

Region V Shoreline Cleaner Subcommittee:

Darrell Robertson	US Department of the Interior	617-223-8565
Michael Chezik	US Department of the Interior	215-597-5378
Jason Maddox	US Department of Commerce/NOAA	216-522-7760
Thor Strong	Michigan DEQ	517-241-1252
Dennis Bush	Michigan DEQ	517-373-9958
Samuel Borries	US Environmental Protection Agency	312-353-2886
Steve Clement	Environment Canada	416-739-5908
Dave Siebold	Marathon Ashland Petroleum	419-421-2629
David Fritz	BP	630-420-5880
Joe Czarnecki	Exxon/Mobile	703-846-3376

RRT V Representatives:

(Insert call down list from RRT V roster)

Analytical Labs:

TBD:

STL - North Canton
4101 Shuffell Drive NW
North Canton, Ohio 44720
330-497-9396
Becky Strait

STL - Valparaiso
2400 Cumberland Drive
Valparaiso, IN 46383
219-462-2953
Kathy Osborn

Equipment Providers:

TBD:

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APPENDIX 6: PRODUCT MATERIAL SAFETY DATA SHEETS (MSDS)

COREXIT:

CYTOSOL:



NALCO/EXXON
ENERGY CHEMICALS, L.P.

PRODUCT
MATERIAL SAFETY DATA SHEET
EC9580A COREXIT 9580

Emergency Telephone Number
 Medical (800) 462-5378 (24 hours) (800) I-M-ALERT

SECTION 01 CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

TRADE NAME: EC9580A COREXIT 9580

DESCRIPTION: A blend of oxyalkylate polymer, substituted fatty ester, and aliphatic hydrocarbon

NFPA 704M/HMIS RATING 1/1 HEALTH 2/2 FLAMMABILITY 0/0 REACTIVITY 0 OTHER
 0=Insignificant 1=Slight 2=Moderate 3=High 4=Extreme

SECTION 02 COMPOSITION AND INFORMATION ON INGREDIENTS

Our hazard evaluation has identified the following chemical ingredient(s) as hazardous under OSHA's Hazard Communication Rule, 29 CFR 1910.1200. Consult Section 15 for the nature of the hazard(s).

INGREDIENT(S)	CAS #	APPROX. %
Hydrotreated light distillate	64742-47-8	70-100

SECTION 03 HAZARD IDENTIFICATION

EMERGENCY OVERVIEW:

CAUTION! Combustible. May cause irritation to skin and eyes. Prolonged inhalation of vapor may be harmful. Avoid contact with skin, eyes and clothing. Avoid prolonged or repeated breathing of vapor. Use with adequate ventilation. Do not take internally. Keep away from heat and open flame. Keep container closed when not in use.

Empty containers may contain residual product. Do not reuse container unless properly reconditioned.

PRIMARY ROUTE(S) OF EXPOSURE: Eye, Skin, Inhalation

EYE CONTACT: Can cause mild, short-lasting irritation.

SKIN CONTACT: May cause irritation with prolonged contact.

SYMPTOMS OF EXPOSURE:

ACUTE: Inhalation of high concentrations of hydrotreated light distillate can cause nausea, dizziness, vomiting, stupor or unconsciousness.

CHRONIC: Prolonged skin contact with hydrotreated light distillate can cause dry skin and defatting resulting in irritation and dermatitis.

AGGRAVATION OF EXISTING CONDITIONS: A review of available data does not identify any worsening of existing conditions.

SECTION 04 FIRST AID INFORMATION

EYES: Flush with water for 15 minutes. Call a physician.

SKIN: Wash thoroughly with soap and rinse with water. Call a physician.

INGESTION: Do not induce vomiting. Give water. Call a physician.

INHALATION: Remove to fresh air. Treat symptoms. Call a physician.

NOTE TO PHYSICIAN: Based on the individual reactions of the patient, the physician's judgment should be used to control symptoms and clinical condition.

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CAUTION: If unconscious, having trouble breathing or in convulsions, do not induce vomiting or give water.

SECTION 05 FIRE FIGHTING MEASURES

FLASH POINT: 174 Degrees F (TCC) ASTM D-56

UEL 7.0% LEL 0.6%

EXTINGUISHING MEDIA: Based on the NFPA guide, use dry chemical, foam, carbon dioxide or other extinguishing agent suitable for Class B fires. Use water to cool containers exposed to fire. For large fires, use water spray or fog, thoroughly drenching the burning material.

SECTION 06 ACCIDENTAL RELEASE MEASURES

IN CASE OF TRANSPORTATION ACCIDENTS, CALL THE FOLLOWING 24-HOUR TELEPHONE NUMBER (800) I-M-ALERT or (800) 462-5378.

SPILL CONTROL AND RECOVERY:

Small liquid spills: Contain with absorbent material, such as clay, soil or any commercially available absorbent. Shovel reclaimed liquid and absorbent into recovery or salvage drums for disposal. Refer to CERCLA in Section 15.

Large liquid spills: Dike to prevent further movement and reclaim into recovery or salvage drums or tank truck for disposal. Refer to CERCLA in Section 15.

For large indoor spills, evacuate employees and ventilate area. Those responsible for control and recovery should wear the protective equipment specified in Section 8.

SECTION 07 HANDLING AND STORAGE

Storage : Keep container closed when not in use.

SECTION 08 EXPOSURE CONTROLS AND PERSONAL PROTECTION

RESPIRATORY PROTECTION: Respiratory protection is not normally needed since the volatility and toxicity are low. If significant mists are generated, use either a chemical cartridge respirator with a dust/mist prefilter or supplied air.

For large spills, entry into large tanks, vessels or enclosed small spaces with inadequate ventilation, a positive pressure, self-contained breathing apparatus is recommended.

VENTILATION: General ventilation is recommended.

PROTECTIVE EQUIPMENT: Use impermeable gloves and chemical splash goggles when attaching feeding equipment, doing maintenance or handling product. Examples of impermeable gloves available on the market are neoprene, nitrile, PVC, natural rubber, viton and butyl (compatibility studies have not been performed).

The availability of an eye wash fountain and safety shower is recommended.

If clothing is contaminated, remove clothing and thoroughly wash the affected area. Launder contaminated clothing before reuse.

HUMAN EXPOSURE CHARACTERIZATION: Based on Nalco's recommended product application and our recommended personal protective equipment, the potential human exposure is: LOW.

SECTION 09 PHYSICAL AND CHEMICAL PROPERTIES

COLOR: Light amber
FORM: Liquid
ODOR: Hydrocarbon
DENSITY: 6.8 lbs/gal.

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SOLUBILITY IN WATER: Slightly dispersible
 SPECIFIC GRAVITY: 0.82 @ 60 Degrees F
 VISCOSITY: 28 cst @ 32 Degrees F,
 16 cst @ 60 Degrees F,
 8 cst @ 100 Degrees F
 POUR POINT: -65 Degrees F
 BOILING POINT: 380 Degrees F @ 760 mm Hg (Calculated)
 FLASH POINT: 174 Degrees F (TCC)
 VAPOR PRESSURE: 14 mm Hg (0.27 psi) @ 100 Degrees F ASTM D-445

NOTE: These physical properties are typical values for this product.

SECTION 10 STABILITY AND REACTIVITY

INCOMPATIBILITY: Avoid contact with strong oxidizers (eg. chlorine, peroxides, chromates, nitric acid, perchlorates, concentrated oxygen, permanganates) which can generate heat, fires, explosions and the release of toxic fumes.

THERMAL DECOMPOSITION PRODUCTS: In the event of combustion CO, CO₂, SO_x, may be formed. Do not breathe smoke or fumes. Wear suitable protective equipment.

SECTION 11 TOXICOLOGICAL INFORMATION

TOXICITY STUDIES: No toxicity studies have been conducted on this product.

SECTION 12 ECOLOGICAL INFORMATION

If released into the environment, see CERCLA in Section 15.

SECTION 13 DISPOSAL CONSIDERATIONS

DISPOSAL: If this product becomes a waste, it does not meet the criteria of a hazardous waste as defined under the Resource Conservation and Recovery Act (RCRA) 40 CFR 261, since it does not have the characteristics of Subpart C, nor is it listed under Subpart D.

As a non-hazardous liquid waste, it should be solidified with stabilizing agents (such as sand, fly ash, or cement) so that no free liquid remains before disposal to an industrial waste landfill. A non-hazardous liquid waste can also be incinerated in accordance with local, state and federal regulations.

SECTION 14 TRANSPORTATION INFORMATION

PROPER SHIPPING NAME/HAZARD CLASS MAY VARY BY PACKAGING, PROPERTIES, AND MODE OF TRANSPORTATION. THIS PRODUCT IS REGULATED IN THE U.S. ONLY WHEN SHIPPED IN CONTAINERS EXCEEDING 119 GALLONS OR 882 POUNDS CAPACITY OR WHEN THE PACKAGE EXCEEDS THE REPORTABLE QUANTITY. TYPICAL PROPER SHIPPING NAMES FOR THIS PRODUCT ARE:

ALL TRANSPORTATION MODES : COMBUSTIBLE LIQUID, N.O.S.
 (UNLESS SPECIFIED BELOW)

AIR TRANSPORTATION : PRODUCT IS NOT REGULATED
 (IATA/ICAO) DURING TRANSPORTATION

MARINE TRANSPORTATION : PRODUCT IS NOT REGULATED
 (IMDG/IMO) DURING TRANSPORTATION

UN/ID NO : NA 1993
 HAZARD CLASS - PRIMARY : 3 - COMBUSTIBLE LIQUID
 PACKING GROUP : III
 IMDG PAGE NO : N/A
 IATA PACKING INSTRUCTION : CARGO: N/A
 IATA CARGO AIRCRAFT LIMIT : NO LIMIT (MAX NET QUANTITY PER PACKAGE)
 FLASH POINT : 174 F 78.8 C
 TECHNICAL NAME(S) : HYDROCARBON SOLVENT
 RQ LBS (PER PACKAGE) : NONE
 RQ COMPONENT(S) : NONE

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SECTION 15 REGULATORY INFORMATION

The following regulations apply to this product.

FEDERAL REGULATIONS:

OSHA HAZARD COMMUNICATION RULE, 29 CFR 1910.1200:

Based on our hazard evaluation, the following ingredient in this product is hazardous and the reason is shown below.

Hydrotreated light distillate - skin irritant

Hydrotreated light distillate = TWA 5 mg/m3 ACGIH/TLV

Hydrotreated light distillate = TWA 5 mg/m3,
STEL 10 mg/m3, OSHA/PEL

CERCLA/SUPERFUND, 40 CFR 117, 302:

Notification of spills of this product is not required.

SARA/SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986

(TITLE III) - SECTIONS 302, 311, 312 AND 313:

SECTION 302 - EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355):

This product does not contain ingredients listed in Appendix A and B as an Extremely Hazardous Substance.

SECTIONS 311 and 312 - MATERIAL SAFETY DATA SHEET REQUIREMENTS (40 CFR 370):

Our hazard evaluation has found this product to be hazardous. The product should be reported under the following EPA hazard categories:

XX Immediate (acute) health hazard
-- Delayed (chronic) health hazard
XX Fire hazard
-- Sudden release of pressure hazard
-- Reactive hazard

Under SARA 311 and 312, the EPA has established threshold quantities for the reporting of hazardous chemicals. The current thresholds are: 500 pounds or the threshold planning quantity (TPQ), whichever is lower, for extremely hazardous substances and 10,000 pounds for all other hazardous chemicals.

SECTION 313 - LIST OF TOXIC CHEMICALS (40 CFR 372):

This product does not contain ingredients on the List of Toxic Chemicals.

TOXIC SUBSTANCES CONTROL ACT (TSCA):

The chemical ingredients in this product are on the 8(b) Inventory List (40 CFR 710).

RESOURCE CONSERVATION AND RECOVERY ACT (RCRA), 40 CFR 261 SUBPART C & D:

Consult Section 13 for RCRA classification.

FEDERAL WATER POLLUTION CONTROL ACT, CLEAN WATER ACT, 40 CFR 401.15/ formerly Sec. 307, 40 CFR 116/formerly Sec. 311:

None of the ingredients are specifically listed.

CLEAN AIR ACT, Sec. 111 (40 CFR 60), Sec. 112 (40 CFR 61, 1990 Amendments),

Sec. 611 (40 CFR 82, CLASS I and II Ozone depleting substances):

This product does not contain ingredients covered by the Clean Air Act.

STATE REGULATIONS:

CALIFORNIA PROPOSITION 65:

This product does not contain any chemicals which require warning under California Proposition 65.

MICHIGAN CRITICAL MATERIALS:

This product does not contain ingredients listed on the Michigan Critical Materials Register.

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STATE RIGHT TO KNOW LAWS:

This product does not contain ingredients listed by State Right To Know Laws.

INTERNATIONAL REGULATIONS:

This is a WHMIS controlled product under The House of Commons of Canada Bill C-70 (Class B3 and Class D2B). The product contains the following substance(s),

from the Ingredient Disclosure List or has been evaluated based on its toxicological properties, to contain the following hazardous ingredient(s):

Chemical Name	CAS #	% Concentration Range
Hydrotreated light distillate	64742-47-8	70-100

SECTION 16 OTHER INFORMATION

Internal number F103086

SECTION 17 RISK CHARACTERIZATION

Due to our commitment to Product Stewardship, we have evaluated the human and environmental hazards and exposures of this product. Based on our recommended use of this product, we have characterized the product's general risk. This information should provide assistance for your own risk management practices. We have evaluated our product's risk as follows:

- * The human risk is: LOW.
- * The environmental risk is: LOW.

Any use inconsistent with Nalco's recommendations may affect our risk characterization. Our sales representative will assist you to determine if your product application is consistent with our recommendations. Together we can implement an appropriate risk management process.

This product material safety data sheet provides health and safety information. The product is to be used in applications consistent with our product literature. Individuals handling this product should be informed of the recommended safety precautions and should have access to this information. For any other uses, exposures should be evaluated so that appropriate handling practices and training programs can be established to insure safe workplace operations. Please consult your local sales representative for any further information.

SECTION 18 REFERENCES

Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices, American Conference of Governmental Industrial Hygienists, OH.

Hazardous Substances Data Bank, National Library of Medicine, Bethesda, Maryland (CD-ROM version), Micromedex, Inc., Englewood, CO.

IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man, Geneva: World Health Organization, International Agency for Research on Cancer.

Integrated Risk Information System, U.S. Environmental Protection Agency, Washington, D.C. (CD-ROM version), Micromedex, Inc., Englewood, CO.

Annual Report on Carcinogens, National Toxicology Program, U.S. Department of Health and Human Services, Public Health Service.

Title 29 Code of Federal Regulations, Part 1910, Subpart Z, Toxic and Hazardous Substances, Occupational Safety and Health Administration (OSHA).

Registry of Toxic Effects of Chemical Substances, National Institute for

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Occupational Safety and Health, Cincinnati, Ohio (CD-ROM version),
Micromedex, Inc., Englewood, CO.

Shepard's Catalog of Teratogenic Agents (CD-ROM version),
Micromedex, Inc., Englewood, CO.

Suspect Chemicals Sourcebook (a guide to industrial chemicals covered
under major regulatory and advisory programs), Roytech Publications
(a Division of Ariel Corporation), Bethesda, MD.

The Teratogen Information System, University of Washington, Seattle,
Washington (CD-ROM version), Micromedex, Inc., Englewood, CO.

PREPARED BY: William S. Utley, PhD., DABT, Manager, Product Safety
DATE CHANGED: 11/06/1997 DATE PRINTED: 03/28/1999

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APPENDIX 7: MAUFACTURERS' APPLICATION PROCEDURES

CYTOSOL

Type of Product: Surface Washing Agent

CytoCulture International, Inc.
249 Tewksbury Avenue
Point Richmond, CA 94801-3829
Phone: (510) 233_0102
Fax: (510) 233-3777
(Dr. Randall von Wedel)

PRIMARY DISTRIBUTORS

CytoCulture International, Inc.
249 Tewksbury Avenue
Point Richmond, CA 94801-3829
Phone: (206) 768-1450
Fax: (510) 233-3777
(Mr. Larry Pintler)

Foss Environmental, Inc.
7440 West Marginal
Seattle, WA 98108-4141
Phone: (510) 233-0102
Fax: (206) 767-3460
(Mr. Greg McGowan)

Advanced Cleanup Tech. Inc
20928 Lamberton Ave.
Carson, CA 90810
Phone: (800) 334-2284
Fax: (310) 763-9076
(Mr. Walt Dorn)

Avoid freezing. At temperatures below the cloud point (43 F), the product may become cloudy, but will return to normal upon warming, with no effect on performance. Store product in airtight containers, if possible, without excessive exposure to moisture.

SHELF LIFE: Closed container: 10 years in a dry environment. Open container: 1 year in a warm, humid environment. The product does not deteriorate appreciably over time, but will grow bacteria if water condensation accumulates in the container.

RECOMMENDED APPLICATION PROCEDURE

1. Application Method:

The CytoSol is applied to oiled shorelines to extract and recover weathered petroleum by flotation with passive water deluges from header pipes or manual spraying. Remaining residual hydrocarbons are biodegraded, either passively by intrinsic bioremediation, or aggressively by enhancing the process with controlled amounts of nutrients and/or acclimated cultures of bacteria cultured from the site, when approved by local, state and federal agencies. The CytoSol Process is most suitable for the treatment of heavily oiled shorelines that do not respond well to conventional treatments, or that are considered too sensitive for mechanical/pressure wash strategies. Prior to the application of CytoSol, collection booms, oil skimmers, sorbent pads, or other appropriate containment and collection mechanisms must be deployed and operational.

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2. Concentration/Application Rate:

CytoSol may be applied with a variety of spraying or washing equipment, depending upon the scale and type of shoreline to be cleaned. The product is to be used only neat and undiluted, for direct application to spilled oil. For large beach areas, CytoSol can be sprayed from water trucks or work boats equipped with pumps, hoses, and nozzles to deliver the product as an aerial spray. In smaller applications, CytoSol may be applied with hand sprayers or portable pumps to spray the product directly onto oiled surfaces. Dose rates will vary with the type and amount of petroleum spilled, the extent of weathering, and other site specific conditions, including temperature, porosity of shoreline, and residence time available to let the product contact the oil. In general, the ratio of applied CytoSol to crude oil is between 0.5:1 and 1:1. The quantity of CytoSol applied should be approximately equivalent to the quantity of petroleum accumulated on the shoreline, or as required to dissolve and remove weathered oil. After application, the product should be allowed to penetrate and dissolve the weathered petroleum for at least one hour, preferably longer. Cold weather applications will require more contact time before initiating recovery. In tidal areas, it is advisable to apply the CytoSol as the tide is ebbing (receding) to maximize contact time. Trapped oil may continue to be released for several days, requiring that containment devices be left in place.

3. Conditions for Use:

The following shoreline types are appropriate for the use of CytoSol: Coarse sand beaches where petroleum has penetrated into sand; marsh areas and vegetated wetlands where oil has coated plants and become trapped; concrete bulkheads, rip rap and piers that may have trapped oil; oiled pilings; gravel or cobble shorelines and rocky shores, where oil has become trapped in pockets; and, public beaches, fisheries, hatcheries, river banks, and other sensitive or high impact sites. The CytoSol has been fielded tested successfully for removing oil from mussel beds and intertidal zones, pilings and concrete rip rap. The CytoSol also proved effective in facilitating the removal of oil from the banks and vegetation along an oiled creek.

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COREXIT 9580 Shoreline Cleaner (EC9580A)

Type of Product: Surface Washing Agent (hydrocarbon based)

Nalco/Exxon Energy Chemicals, LP

P.O. Box 87

Sugar Land, TX 77487-0087

Customer Services:

Phone: (281) 263-7205

(800) 333-3714

Fax: (281) 263-7149

24-hour Emergency Number:

(281) 263-7200

Product Management:

Phone: (281) 263-7736

(281) 263-7955

Mobile: (713) 854-1658

(Mr. Paul Hey)

PRIMARY DISTRIBUTORS

ABASCO

363 W. Canino Rd.

Houston, TX 77238-8573

Phone: (281) 931-4400

Nalco/Exxon Energy

Chemicals, L.P.

P.O. Box 87

Sugar Land, TX 77487-0087

Phone: (800) 333-3714

Nalco/Exxon Energy

Chemicals L.P.

P.O. Box 220

Long Beach, CA 90801

Phone: (310) 639-1553

Nalco/Exxon Energy

Chemical, L.P.

701 E. Tudor St, # 290

Anchorage, AK 99503

Phone: (907) 563-9866

SHELF LIFE

COREXIT 9580 is unlimited.

RECOMMENDED APPLICATION PROCEDURE

1. Application Method:

COREXIT 9580 contains a balanced formula of specifically selected biodegradable surfactants in a de-aromatized hydrocarbon solvent system. COREXIT 9580 has a very low degree of toxicity to marine and shoreline organisms.

Shorelines, Mangroves, and Seagrasses-COREXIT 9580 is sprayed directly on the oiled rocky shorelines, mangroves or seagrasses full strength as supplied. After a soak time of zero to thirty minutes, rinse the cleaner and the oil released from the shoreline surface into the water where it can be readily recovered by conventional means such as skimmers or absorbents. The soak time may vary with temperature, oil density and degree of weathering.

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2. Concentration/Application Rate:

The recommended dosage is approximately 1 gallon per 100 sq. ft. but this can vary depending on the amount of weathering and oiling. The product should be applied full strength as supplied. Since it is hydrocarbon-based, the product should not be diluted with water during application, as this will greatly reduce effectiveness.

3. Conditions for Use:

COREXIT 9580 SHORELINE CLEANER is useful on shorelines in fresh or salt water. It is effective on all types of oil including heavily weathered and emulsified oil ("chocolate mousse") containing up to 50% water.

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APPENDIX 8: TEST CONFIGURATION EXAMPLE

