



UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
Alaska Fisheries Science Center  
Resource Assessment and Conservation Engineering  
7600 Sand Point Way NE  
Seattle, WA 98115

Final  
**Project Instructions**

**Date Submitted:** September 18, 2013  
**Platform:** NOAA Ship *Oscar Dyson*  
**Project Number:** DY-13-09 leg1 (AFSC)  
**Project Title:** EMA-EcoFOCI GOA Project

**Project Dates:** September 23, 2013 to October 11, 2013

Prepared by: Wyatt Fournier Dated: 9/20/13  
Wyatt Fournier  
Research Fishery Biologist  
AFSC/ABL

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\_\_\_\_\_ Dated: \_\_\_\_\_  
Jamal Moss  
Research Fishery Biologist  
AFSC/ABL

Approved by: Dr. Phil Mundy Dated: 9/19/2013  
Dr. Phil Mundy  
Division Director  
AFSC/ABL

Approved by: Doug DeMaster Dated: 9/20/13  
Doug DeMaster  
Center Director  
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Division Director  
AFSC/ABL

Approved by:  Dated: 9/20/13

Doug DeMaster  
Center Director  
AFSC

Approved by:  CDR/NOAA Dated: 20 SEPT 2013  
for Captain Wade J. Blake, NOAA  
Commanding Officer  
Marine Operations Center – Pacific

## **I. Overview**

### **A. EMA-EcoFOCI GOA Project Survey**

September 23 – October 11, 2013

**B. Service Level Agreements:** Of the 19 DAS scheduled for this project, 11 DAS are funded by the program (FY14) and 8 days are funded by OMAO (FY13). This project is estimated to exhibit a High Operational Tempo.

**C. Operating Area:** Gulf of Alaska

### **D. Summary of Objectives**

Fisheries (surface and midwater trawl) and oceanographic survey to:

- 1) Measure physical and biological oceanographic properties (CTD deployment);
- 2) Collect zooplankton (Oblique Bongo net deployment) ;
- 3) Describe the community structure, biomass, energetic status of pelagic nekton (Pacific cod, walleye pollock, arrowtooth flounder, sablefish, rockfishes, herring, capelin, and eulachon) using a CanTrawl towed either at surface or midwater and acoustics;
- 4) Quantify marine mammals and seabirds (visual observation);
- 5) Recover (no deployments) 6 moorings located in the vicinity of Gore Point.

### **E. Participating Institutions**

NOAA – Alaska Fisheries Science Center (AFSC)  
7600 Sand Point Way N.E., Seattle, Washington 98115-0070

NOAA – Pacific Marine Environmental Laboratory (PMEL)  
7600 Sand Point Way N.E., Seattle, Washington 98115-0070

University of Washington – School of Aquatic and Fishery Science  
1122 N.E. Boat St., Seattle, Washington 98105

Western Washington University – Shannon Point Marine Center  
1900 Shannon Point Rd., Anacortes, Washington 98221

University of Alaska Fairbanks – School of Fisheries and Ocean Sciences  
905 N. Koyukuk Dr., Fairbanks, AK 99775-7220

F. Personnel/Science Party:

Name (Last, First)	Title	Date Aboard	Date Disembark	Gender	Affiliation	Nationality
Fournier, Wyatt	Chief Sci.	9/23/13	10/11/13	M	AFSC	USA
Metzger, Jacob	Fish Sci.	9/23/13	10/11/13	M	UAF	USA
Waite, Jason	Fish Sci.	9/23/13	10/11/13	M	UAF	USA
Andrews, Alex	Fish Sci.	9/23/13	10/11/13	M	AFSC	USA
McGowan, David	Acoustics	9/23/13	10/11/13	M	UW	USA
Floering, William	Oceanog.	9/23/13	10/11/13	M	PMEL	USA
Doyle, Terry	SB/MM Obs	9/23/13	10/11/13	M	USFWS	USA
Zaleski, Marilyn	Fish Sci.	9/23/13	10/11/13	F	AFSC	USA
Pirtle, Jodi	Acoustics	9/23/13	10/11/13	F	AFSC	USA
Morgan Ostendorf	Oceanog.	9/23/13	10/11/13	F	AFSC	USA
Fredrickson, Kerri	Oceanog.	9/23/13	10/11/13	F	WWU	USA
De Forest, Lisa	Oceanog	9/23/13	10/11/13	F	AFSC	USA

G. Administrative

1. Points of Contact:

Wyatt Fournier (Chief Scientist)  
 NOAA – Fisheries, Auke Bay Laboratories  
 17109 Point Lena Loop Rd.  
 Juneau, AK 99801  
 Ph: 907-789-6405  
 Email: Wyatt.Fournier@noaa.gov

Jamal Moss  
 NOAA – Fisheries, Auke Bay Laboratories  
 17109 Point Lena Loop Rd.  
 Juneau, AK 99801  
 Ph: 907-789-6609  
 Email: Jamal.Moss@noaa.gov

Ed Farley  
 NOAA – Fisheries, Auke Bay Laboratories  
 17109 Point Lena Loop Rd.  
 Juneau, AK 99801  
 Ph: (907) 789-6085  
 Email: Ed.Farley@noaa.gov

Jeff Napp, AFSC, 7600 Sand Point Way NE, Bldg 4, Seattle WA 98115,  
ph: 206-526-4148, Jeff.Napp@noaa.gov

Phyllis Stabeno, PMEL, 7600 Sand Point Way NE, Bldg 3, Seattle WA  
98115, ph: 206-526-6453, Phyllis.Stabeno@noaa.gov

### **Field Operations Officer**

Lt. Mark Frydrich

[ops.oscar.dyson@noaa.gov](mailto:ops.oscar.dyson@noaa.gov)

2. Diplomatic Clearances - N/A

3. Licenses and Permits

This project will be conducted under the Blanket Scientific Research Permit #2013-B issued by the U.S. on January 14, 2013 effective January 31 – October 14, 2013 to AFSC research personnel and the *Oscar Dyson*. In addition, the State of Alaska Fish Resource Permit CF-13-002 has been granted and is effective February 5, 2013 to December 31, 2015.

## **II. Operations**

### **A. Project Itinerary**

Departure: September 23, 2013 Kodiak, AK 0900 hours

Arrival: October 11, 2013 Kodiak, AK 1400 hours

### **B. Staging and Destaging**

The equipment necessary for the project will be shipped to Kodiak and loaded onto NOAA Ship *Oscar Dyson* prior to departure from Kodiak on 23 (Monday) September 2013. We request ship's assistance with loading on September 22, 2013. We will require dedicated use of the chemistry, hydrographic, wet, dry, and fish processing labs for sample and equipment preparation and request as much counter and cabinet space as possible. We will use the Dry lab for SEACAT operations. We request ship's assistance offloading CanTrawls, and doors, frozen fish and zooplankton samples in Kodiak on Oct 11<sup>th</sup>. We request that the CanTrawls and doors be stored at the NOAA warehouse in Kodiak. FOCI samples/equipment and PMEL moorings will remain on board until the NOAA Ship *Oscar Dyson* arrives in Seattle in October 2013.

### **C. Underway Operations**

The ship's Scientific Computer System (SCS) shall operate throughout the project, acquiring and logging data from navigation, meteorological, and oceanographic sensors. See FOCI Standard Operating Instructions (**SOI 5.2** and **SOI 5.3**) for specific requirements. We request that the centerboard be DOWN for the duration of the project.

Daylight Acoustic Sampling:

Acoustic data will be collected during the entire survey to provide biomass estimates of age-0 and 1 marine fishes, other forage fish, and euphausiids. Acoustic data will be collected continuously with a Simrad ER60 echo integration system incorporating centerboard-mounted transducers at 18, 38, 70, 120, and 200 kHz. The vessel must not operate other echo sounders or acoustic equipment that interferes with collection of scientific acoustic data. The bow thrusters, Doppler speed log and bridge Furuno depth sounder should all be secured, as they degrade the quality of acoustic data.

Night Acoustic Sampling:

Bathymetry and backscatter data will be collected opportunistically throughout the survey with the Simrad ME70 multibeam echosounder. The ME70 will be slaved to the ER60 during the day and ping at a slight offset. If time allows, night operations will be conducted to collect multibeam data at fine-scale survey locations. Fine-scale survey locations for the evening will be selected based on the ship location at the end of daytime operations with consideration for transit time to the dawn station. Survey start and end points and line-spacing will be provided to the Navigation Officer. Ship speed should average 12 knots in favorable conditions.

A drop camera system will be deployed to groundtruth the bottom habitat at fine-scale survey locations. The drop camera used will be a stereo camera (SDC) system on an aluminum frame with a dedicated winch supplied by the scientific party. The SDC winch will be secured to the starboard hero deck. For deployment of the SDC with the dedicated winch we request permission to hang a 3rd block that will be provided by the scientists. A block of appropriate size to support camera operations will replace the smaller block currently in the aft position. Scientific party will operate the winch for the SDC. Survey and deck assistance are requested to deploy and retrieve the camera system.

One CTD cast may be requested during night operations depending on the location of the fine-scale survey relative to the location of the most recent CTD cast. We request survey and deck assistance for this operation

## 2. Station Operations –

### Surface trawling

The project will begin upon departure from Kodiak, Alaska at 09:00 ADT on 23 September, 2013. Prior to the time of departure the net reels will have been loaded with 1 CanTrawl and the 5m alloy doors will have been prepared for trawling activities. We will proceed to -152.8895W, 57.04769 N (station hl 181) and occupy the station the afternoon of Sept 23<sup>rd</sup>. We will proceed the morning of Sept 24<sup>th</sup> by sampling stations along the 181 transect from inshore to offshore. Once all four stations have been sampled, we will proceed to the 185 line and work from offshore to inshore and will continue sampling each transect on the survey grid from west to east. Acoustic transects are to be run between stations. If time allows, after operations are complete the ship will steam back to the station before proceeding to the next in order for acoustic data to be collected along the entire transect.

Two buttons are required:

- 1) Doors (in/out),
- 2) EQ

An average of 3 surface trawl hauls per 15 hrs is anticipated. Surface trawl duration will be 30 minutes, beginning when the doors are fully deployed to ensure an adequate sample. Due to ship location of the Simrad FS-20 3<sup>rd</sup> wire net sounder, and past complications in using this sounder to successful surface trawl operations, the net sounder will **not** be used to document net dimensions (width and depth) during the 30 minute surface trawl. In place of the Simrad FS-20, an ITI sensor will be placed on the headrope and footrope of the surface trawl to collect data on net spread (vertical) and location in the water column.

### Midwater trawling

Midwater trawling will occur between survey stations at the direction of the Chief Scientist or Watch Chief upon recommendation from the Acoustics technician if time allows. One midwater trawl deployment per day will be executed. Headrope floats will be removed and the acoustics scientist will advise the lead fisherman as to the duration and depth the net should be fished. Midwater trawl haul duration will vary depending on estimated abundance from acoustic echo signatures but will not exceed 30 minutes in duration. Net depth will be monitored using the ship's Simrad ITI (trawl eye) or FURUNO system. Standard trawl operations will be used for deployment, and once equilibrium is achieved, as determined by the fishing officer or scientist the net will be considered actively fishing.

Two buttons are required:

- 1) Doors (in/out),



2) EQ,

Marine fish collection:

Walleye pollock, Pacific cod, rockfishes, sablefish, arrowtooth flounder, and forage fishes will be sorted from the catch. All species will have lengths and weights recorded for the first 50 individuals. In the case that an individual fish is too small for an accurate weight, bulk weights will be recorded. Sub-samples of Walleye pollock(n=15), Pacific cod(n=15), rockfishes(n=50), sablefish(n=20), and Arrowtooth flounder (n=15) will be individually bagged and tagged and stored in the -80 freezer. A sub-sample (n=3) of each of the forage fish species will be collected and stored in the -20 freezer. These samples will be offloaded in Kodiak on Oct 11<sup>th</sup> and shipped to Juneau.

Zooplankton collection

A bongo tow will be conducted to collect zooplankton at each grid location. The standard gear for plankton sampling will be a 60-cm bongo (SOI 3.2.2) with 505 micron mesh net paired with a 20cm bongo with 0.153-mm mesh. A FastCat will be mounted above the bongo to provide depth, temperature, and salinity data. Tows will be to 200 meters or 10 meters off the bottom where water depth is shallower. EQ will be recorded when the sampler reaches

Two buttons are required:

- 1) Surface (in/out),
- 2) EQ

Marks to the MOA will be made in the Survey Office (Dry Lab) by a scientist on-watch who will be monitoring the FastCat operation throughout the station occupation. The initial processing of FastCat or SeaCat files and CTD files will be the responsibility of the scientific personnel on watch.

The samples collected from the 20-cm and 60-cm bongos will be processed in the following manner. All nets will be preserved in 1.8% formaldehyde, buffered with sodium borate, and boxed. These samples will be offloaded in Kodiak on Oct 11<sup>th</sup> and shipped to Fairbanks.

Oceanography

At each survey station a CTD cast with niskin bottle water collection will be conducted. All hydrographic casts include high-resolution vertical profiling of water properties (including temperature, salinity, chlorophyll fluorescence, PAR, dissolved O<sub>2</sub>) to within 10 m of the bottom

using a Seabird 911Plus CTD. Oxygen samples will be titrated on board to ensure quality of data from the CTD oxygen sensors. Nutrient samples will be collected from 8 depths and frozen for analysis at a later date at the NOAA laboratories in Seattle.

Size-fractionated chlorophyll will be filtered from water collected at 6 depths by the CTD, extracted, and analyzed on board. A fluorometer will be setup on the bench on the inboard side of the chem lab and a filtration rack on the island bench in chem lab. We will need access to a freezer for the extractions (not the -80, the walk-in freezer).

Samples will be preserved for phytoplankton and microzooplankton from 6 water depths sampled by the CTD. A small filtration rack will be set up in the chem. lab fume hood. Small volumes of chemicals will need to be stored in a refrigerator for this process. Plankton samples will be collected and preserved with 5% acid Lugol's (microzooplankton) or 2% formaldehyde (phytoplankton) and boxed;

Stable isotope-based primary productivity samples will be collected from 4 additional depths at the morning station only, using a total of 12 niskin bottles on the CTD. Depths will be dictated by the screen sets based on PAR reading during the CTD downcast and will not always coincide with the specified depths for nutrients and chlorophylls. The CTD cast at the morning station will occur after the zooplankton collection and trawling to insure it occurs during the daylight hours.

Incubation experiments (24 hr) are scheduled to occur daily in an incubated on deck in a flowing seawater-cooled incubator. The incubator is small (~ 2.5 x 2.5 feet) and needs to be in a location where it is not shaded by anything on the ship. 6 depths will be sampled for productivity at the morning station only.

Two buttons are required:

- 1) Surface (in/out),
- 2) EQ

#### Moorings:

Six sub-surface moorings in the Central Gulf of Alaska will be recovered between Sept 23<sup>rd</sup> and Oct 11th. If possible, the moorings will be collected en route while transiting between stations (see Appendix for map with station and mooring locations). If moorings are not collected en route, the last two days of the survey will be dedicated to their retrieval. A CTD cast .25 to .33 miles from each mooring would be conducted prior to recovery, if time allows. Recoveries would be during daylight hours or when after sunset when deemed safe by the commanding officer.

Assuming all goes according to plan, each station should take no more than 1.5 hours including the CTD cast. All moorings are less than 6 meters in length and weigh approximately 900 lbs ~~and can easily be recovered over the side using the deck crane~~. These moorings were deployed off the Oscar Dyson during spring 2013. The positions for these moorings are listed below

13-GPP-32A 59 deg. 06.133 min. N 151 deg. 00.195 min. W, 160 meters depth  
13-GPP-34A 58 deg. 58.128 min. N 150 deg. 56.870 min. W, 147 meters depth  
13-GPP-36A 58 deg. 44.731 min. N 150 deg. 51.877 min. W, 182 meters depth  
13-SVP-39A 58 deg. 46.173 min. N 152 deg. 15.684 min. W, 122 meters depth  
13-KEP-41A 59 deg. 01.284 min. N 151 deg. 54.036 min. W, 194 meters depth  
13-PCP-1A 58 deg. 20.545 min. N 151 deg. 08.547 min. W, 123 meters depth

### Daily Operations

We plan to begin primary operations at 0630hours each day unless otherwise agreed upon by the CO and Chief Scientist. Standard station activities in order of operation include:

#### 1<sup>st</sup> Station

- 0630hours - Oblique bongo net tow
- 0730hours - Breakfast
- 0800hours - Surface Trawl
- 0930hours - CTD cast with water collection
- 1130hours - Lunch

#### 2<sup>nd</sup> Station

- 1300hours - Oblique bongo net tow
- 1400hours - CTD cast with water collection
- 1500hours - Surface Trawl
- ????hours - Dinner

#### 3<sup>rd</sup> Station

- 1900hours - Surface Trawl
- 2000hours - Oblique Bongo Tow
- 2100hours - CTD cast with water collection

Mid-water trawl would occur in transit between stations (1 tow per day; time permitting).

This schedule may be adjusted depending on time of sunrise and sunset:

D. Dive Plan N/A

## E. Applicable Restrictions

Conditions that could preclude normal operations would be poor weather and equipment failure. Poor weather would be waited out in a sheltered area until operations could be resumed and modifications would be made to the sampling grid. Equipment failure would have to be addressed immediately for the project to continue.

## III. Equipment

### A. Equipment and capabilities provided by the ship (itemized)

#### 1. Acoustic Equipment

- GPS with NEMA 183 to ER60 (2)
- 50/200 kHz ES60 Bridge sounder
- Furuno FE-700 fathometer
- Acoustic echosounders (5)

#### 2. Trawling Equipment

- 3rd wire FS-70 net sonar with winch and accessories (2)
- Simrad ITI net mensuration system (2)
- Furuno CN24-40 headrope transducer
- Stern trawl capabilities for trawling

#### 3. Oceanographic Equipment

- Both starboard oceanographic winches with conducting cable, slip rings and blocks. Forward winch terminated for CTD/rosette; aft winch terminated for FastCat/SeaCat and Bongo.
- Seabird SBE 911+CTD System
- Seabird SBE19+CTD and PDIM for real time data on zooplankton tows
- SBE45 Thermosalinograph with fluorometer
- Power source for ISUS
- Wire speed indicators and readout for both hydrographic winches visible in Dry Lab or where SEACAT operations occur
- Weather instr. for above surface PAR, wind speed/direction
- Ship's crane and A-frame for recovering moorings

#### 4. Biological Sampling Equipment

- Fish lab conveyor system
- Catch sorting and weighing table
- Calibrated Marel M60 60kg scale (2)

- Calibrated Marel M60 6kg scale (2)
- Elect. Fish meas. Board (2)
- Large gray tubs for dumping catch into (2)

5. Computing equipment

- Scientific Computing System
- Fisheries Scientific Computer System

6. Sample storage equipment

- Supercold freezer (-80C)
- Walk in freezer (-10C)
- Stand up freezer (-20C)
- Hazmat storage cabinets

7. Laboratory and exterior working space

- Use of Pentium PC in Dry and/or Computer Lab for data analysis,
- Scientific Computer System (SCS)
- Video monitors in Dry, Chemistry, and Wet labs for viewing SCS and Electronic MOA output
- Laboratory space with exhaust hood, sink, lab tables, and storage space
- Sea-water hoses and spray nozzles to wash nets (quarterdeck and aft deck),
- Adequate deck lighting for night-time operations,
- Navigational equipment including GPS and radar,
- Safety harnesses for working on starboard sampling station/hero platform and fantail
- Ship's crane(s) used for loading and/or deploying gear and supplies

B. Equipment and capabilities provided by the scientists (itemized)

1. Acoustic Equipment (500lbs)

- Simrad ER60 system
- Simrad ME70 multibeam system
- Stereo Drop Camera
- Stereo Drop Camera Winch
- Stereo Drop Camera Block

2. Trawling Equipment

- Cantrawl mid water trawl w/accessories (e.g., 2.0cm mesh liners,) (2); 7,000lbs
- Spectra bridles for CanTrawl (60 m); 800lbs
- NETS 5.0m doors with accessories (1 set); 3,000lbs
- Spare webbing & twine
- Spare hardware
- All accessories to make trawls fishable and spare web if available

### 3. Oceanographic Equipment (1,500lbs)

- Biospherical QSP2300 PAR sensor
- Wet labs ECO Fluorometer and turbidity sensor (FL-NTU)
- Wet labs C-start Transmissometer
- SBE 43 dissolved oxygen sensor (2)
- pH sensor
- Secondary TC sensors for SBE 911+
- SBE 49 FastCat
- Niskin Bottles 10 L (need 10 total+ spares)
- Filter racks and pumps (3)
- Turner 10-AU fluorometer, sonicator, centrifuge (for on-board chla analysis)
- 20 & 60 cm Bongo frames, 505, 153 mesh nets, cod ends, weights, and flowmeters
- Two wire-angle indicators
- Biological supplies (misc.) \*

### 4. Biological Sampling Equipment (500lbs)

- Dynamometer
- Mechanical platform scale (2)
- Fish baskets (30)

### 5. Miscellaneous scientific sampling and processing equipment

- Fish baskets (12, EMA),
- Dishpans (12, EMA),
- 5-gal buckets (5),
- Wading pools (small and large),
- Two length boards for adult fish,
- Three length boards for small fish,
- 2000 Zip-loc bags (12"),
- Sieves, jar holder, funnels, squirt bottles,

- 4 cases of 1-L bottles, lids, and labels,
  - 8 flowmeters, calibration data, hardware for attaching and maintaining them
  - Phytoplankton incubator (2.5 x 4.0 ft.)
  - Preservative-dispenser equipment,
  - Hazardous materials spill kit, and
6. Computing equipment (50lbs)
- IBM compatibles w/XP Op. System\*
  - Printers\*
  - Laptops
  - Electronic (MS Excel) and paper forms: Haul, Catch, and Length

#### **IV. Hazardous Materials**

##### **A. Policy and Compliance**

The Chief Scientist is responsible for complying with FEC 07 Hazardous Materials and Hazardous Waste Management Requirements for Visiting Scientific Parties (or the OMAO procedure that supersedes it). By Federal regulations and NOAA Marine and Aviation Operations policy, the ship may not sail without a complete inventory of all hazardous materials by name and the anticipated quantity brought aboard, MSDS and appropriate neutralizing agents, buffers, or absorbents in amounts adequate to address spills of a size equal to the amount of chemical brought aboard, and a chemical hygiene plan (see Appendix 2 for Chemical Hygiene Plan and SOPs. All AFSC personnel on this survey are trained to manage and respond to spills for the chemicals listed below in the Inventory). Documentation regarding those requirements will be provided by the Chief of Operations, Marine Operations Center, upon request.

Upon departure from the ship, scientific parties will provide the CO or their designee an inventory of hazardous material indicating all materials have been used or removed from the vessel. The CO's designee will maintain a log to track scientific party hazardous materials. MSDS will be made available to the ship's complement, in compliance with Hazard Communication Laws.

Overboard discharge of scientific chemicals is not permitted during projects aboard NOAA ships.

- B. Radioactive Isotopes N/A**
- C. Inventory (itemized)**

<b>Common Name</b>	<b>Concentration</b>	<b>Amount</b>	<b>Spill Response (all FOCI personnel)</b>	<b>Notes</b>
Formaldehyde	37%	1 – 5 gal.	Gloves Eye Protection Fan-Pads Formalex Plastic bag	Dyson loaded 1/23/2013, working volume for all Spring FOCI projects. MSDS, hygiene plan, and SOPs provided at time of loading.
Ethanol	100%	1 – 1 gal.	Gloves 3M Sorbent Pads Plastic bag	Loaded 1/23/2013, working volume for all Spring and Fall FOCI projects.
Sodium Borate Solution	5-6%	1 – 5 gal.	Gloves Paper towels Plastic bag	Loaded 1/23/2013, not a regulated chemical.
Sodium Borate Powder	100%	1 – 500 g	Gloves Wet paper towels Plastic bag	Loaded 1/23/2013, not a regulated chemical.
Ethylene Glycol	100%	1 – 500 ml	Gloves Paper towels Plastic bag	Loaded 1/23/2013, not a regulated chemical.
Formalex	100%	1.5 gal.	Gloves Paper towels	Loaded 1/23/2013, not a regulated solution. Used for spill cleanup.
Acetone	100%	8 liters	Gloves 3M Sorbent Pads Plastic bag	
Glutaraldehyde	25%	500 ml	Gloves 3M Sorbent Pads Plastic bag	
Hydrochloric Acid	3.6%	1 liter	Gloves 3M Sorbent Pads Plastic bag	



<b>Spill Kit Contents</b>	<b>Amount</b>	<b>Use</b>	<b>Total Spill Volume Controllable</b>	<b>Notes</b>
Formalex	1.5 gallons	Formaldehyde cleanup (all concentrations)	1.5 gallons 1:1 control	Formalex will be used in conjunction with Fan-Pads to reduce total spill volume.
Fan-Pads	1 roll (50 sheets)	Formaldehyde cleanup (all concentrations)	50 sheets=50-150 ml spills	Formalex will be used in conjunction with Fan-Pads to reduce total spill volume.
3 M Pads	10 pads	Ethanol cleanup	10 pads=10-250ml spills	Pads may be reused if dried out.
Nitrile Gloves	4 pairs each S,M,L,XL	For all cleanup procedures	N/A	Gloves will be restocked by each survey group.
Eye Protection	4 pairs	Formaldehyde cleanup	N/A	Eye protection will be cleaned before re-use.
Tyvex Lab Coats	2 coats	Formaldehyde cleanup	N/A	Coats will be cleaned with Fan-Pads and Formalex before reuse.
Plastic Bags	2	Formaldehyde cleanup/Fan Pads	N/A	Bags may be packed full and sealed.

## V. Additional Projects

- A. Supplementary (“Piggyback”) Projects N/A
- B. NOAA Fleet Ancillary Projects

## VI. Disposition of Data and Reports

- A. Data Responsibilities
- B. Pre and Post Project Meeting

Prior to departure, the Chief Scientist will conduct a meeting of the scientific party to train them in sample collection and inform them of project objectives. Some vessel protocols, e.g., meals, watches, etiquette, etc. will be presented by the ship’s Operations Officer.

Post-Project Meeting: Upon completion of the project, a meeting will normally be held at 0830 (unless prior alternate arrangements are made) and attended by the ship’s officers, the Chief Scientist and members of the scientific party to review the project. Concerns

regarding safety, efficiency, and suggestions for improvements for future projects should be discussed.

C. Ship Operation Evaluation Report

Within seven days of the completion of the project, a Ship Operation Evaluation form is to be completed by the Chief Scientist. The preferred method of transmittal of this form is via email to [omao.customer.satisfaction@noaa.gov](mailto:omao.customer.satisfaction@noaa.gov). If email is not an option, a hard copy may be forwarded to:

Director, NOAA Marine and Aviation Operations  
NOAA Office of Marine and Aviation Operations  
8403 Colesville Road, Suite 500  
Silver Spring, MD 20910

**VII. Miscellaneous**

A. Meals and Berthing

Meals and berthing are required for up to 12 scientists. Meals will be served 3 times daily beginning one hour before scheduled departure, extending throughout the project, and ending two hours after the termination of the project. Since the watch schedule is split between day and night, the night watch may often miss daytime meals and will require adequate food and beverages (for example a variety of sandwich items, cheeses, fruit, milk, juices) during what are not typically meal hours. Special dietary requirements for scientific participants will be made available to the ship's command at least seven days prior to the survey. One scientist is allergic to dairy, eggs, soy, and gluten. We request that at least one food option per meal be free of these ingredients; and that coconut and almond milk be provided with gluten free breakfast cereal.

Berthing requirements, including number and gender of the scientific party, will be provided to the ship by the Chief Scientist. The Chief Scientist and Commanding Officer will work together on a detailed berthing plan to accommodate the gender mix of the scientific party taking into consideration the current make-up of the ship's complement. The Chief Scientist is responsible for ensuring the scientific berthing spaces are left in the condition in which they were received; for stripping bedding and linen return; and for the return of any room keys which were issued. The Chief Scientist is also responsible for the cleanliness of the laboratory spaces and the storage areas utilized by the scientific party, both during the project and at its conclusion prior to departing the ship.

All NOAA scientists will have proper travel orders when assigned to any NOAA ship. The Chief Scientist will ensure that all non NOAA or non Federal scientists aboard also have proper orders. It is the responsibility of the Chief Scientist to ensure that the entire scientific party has a mechanism

in place to provide lodging and food and to be reimbursed for these costs in the event that the ship becomes uninhabitable and/or the galley is closed during any part of the scheduled project.

All persons boarding NOAA vessels give implied consent to comply with all safety and security policies and regulations which are administered by the Commanding Officer. All spaces and equipment on the vessel are subject to inspection or search at any time. All personnel must comply with OMAO's Drug and Alcohol Policy dated May 7, 2000 which forbids the possession and/or use of illegal drugs and alcohol aboard NOAA Vessels.

**B. Medical Forms and Emergency Contacts**

The NOAA Health Services Questionnaire (NHSQ, Revised: 02 JAN 2012) must be completed in advance by each participating scientist. The NHSQ can be obtained from the Chief Scientist or the NOAA website <http://www.corporateservices.noaa.gov/~noaaforms/eforms/nf57-10-01.pdf>. The completed form should be sent to the Regional Director of Health Services at Marine Operations Center. The participant can mail, fax, or scan the form into an email using the contact information below. The NHSQ should reach the Health Services Office no later than 4 weeks prior to the project to allow time for the participant to obtain and submit additional information that health services might require before clearance to sail can be granted. Please contact MOC Health Services with any questions regarding eligibility or completion of the NHSQ. Be sure to include proof of tuberculosis (TB) testing, sign and date the form, and indicate the ship or ships the participant will be sailing on. The participant will receive an email notice when medically cleared to sail if a legible email address is provided on the NHSQ

Contact information:

Regional Director of Health Services  
Marine Operations Center - Pacific  
2002 SE Marine Science Dr.  
Newport, OR 97365  
Telephone 541-867-8822  
Fax 541-867-8856  
Email [MOP.Health-Services@noaa.gov](mailto:MOP.Health-Services@noaa.gov)

Prior to departure, the Chief Scientist must provide an electronic listing of emergency contacts to the Executive Officer for all members of the scientific party, with the following information: contact name, address, relationship to member, and telephone number.

**C. Shipboard Safety**

Wearing open-toed footwear or shoes that do not completely enclose the foot (such as sandals or clogs) outside of private berthing areas is not permitted. Steel-toed shoes are required to participate

in any work dealing with suspended loads, including CTD deployments and recovery. The ship does not provide steel-toed boots. Hard hats are also required when working with suspended loads. Work vests are required when working near open railings and during small boat launch and recovery operations. Hard hats and work vests will be provided by the ship when required.

#### D. Communications

A progress report on operations prepared by the Chief Scientist may be relayed to the Program Office. Sometimes it is necessary for the Chief Scientist to communicate with another vessel, aircraft, or shore facility. Through various means of communications, the ship can usually accommodate the Chief Scientist. Special radio voice communications requirements should be listed in the project instructions. The ship's primary means of communication with the Marine Operations Center is via e-mail and the Very Small Aperture Terminal (VSAT) link. Standard VSAT bandwidth at 128kbs is shared by all vessels staff and the science team at no charge. Increased bandwidth in 30 day increments is available on the VSAT systems at increased cost to the scientific party. If increased bandwidth is being considered, program accounting is required it must be arranged at least 30 days in advance.

#### E. IT Security

Any computer that will be hooked into the ship's network must comply with the *NMAO Fleet IT Security Policy* 1.1 (November 4, 2005) prior to establishing a direct connection to the NOAA WAN. Requirements include, but are not limited to:

- (1) Installation of the latest virus definition (.DAT) file on all systems and performance of a virus scan on each system.
- (2) Installation of the latest critical operating system security patches.
- (3) No external public Internet Service Provider (ISP) connections.

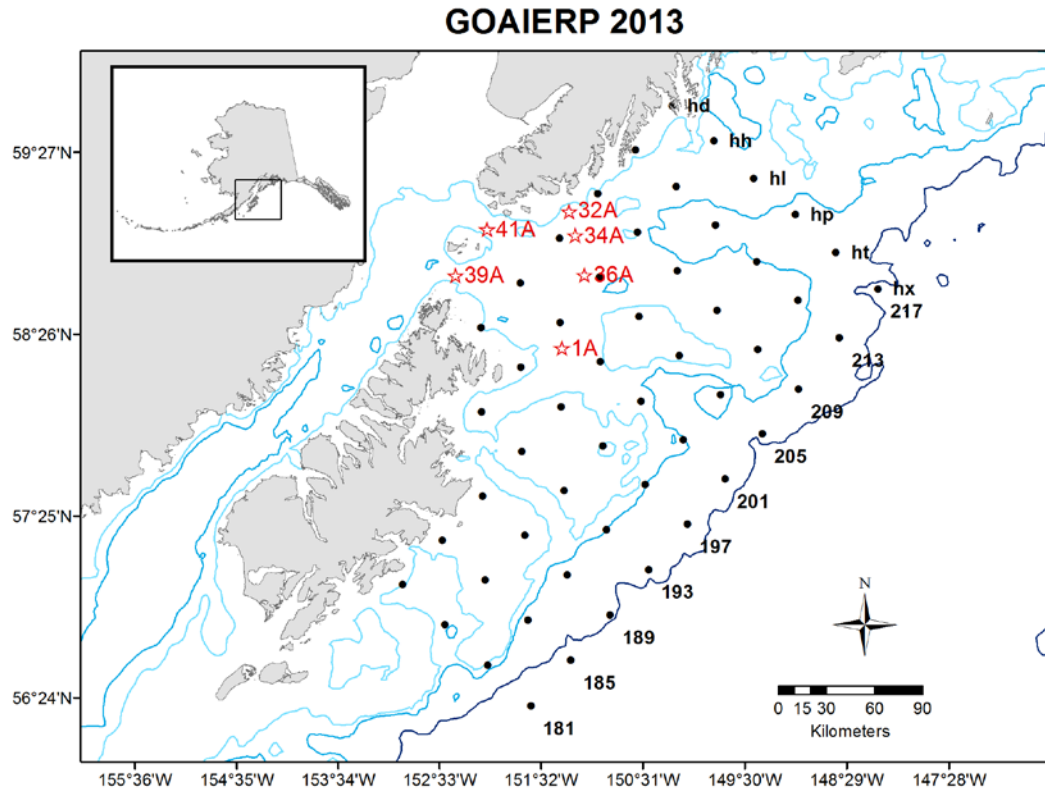
Completion of these requirements prior to boarding the ship is required.

Non-NOAA personnel using the ship's computers or connecting their own computers to the ship's network must complete NOAA's IT Security Awareness Course within 3 days of embarking.

#### F. Foreign National Guests Access to OMAO Facilities and Platforms. N/A

## Appendices

1. Grid station map with moorings displayed in red and coordinates list, (station order and number of stations occupied will vary).



Station	Region	Zone	Long	Lat
hl181	CGOA	shelf	-152.890	57.048
hp181	CGOA	shelf	-152.463	56.816
ht181	CGOA	shelf	-152.040	56.582
hx181	CGOA	slope	-151.614	56.348
hl185	CGOA	shelf	-152.466	57.290
hp185	CGOA	shelf	-152.037	57.061
ht185	CGOA	slope	-151.615	56.828
hx185	CGOA	slope	-151.192	56.594
hl189	CGOA	shelf	-152.040	57.532
hp189	CGOA	shelf	-151.611	57.304
ht189	CGOA	slope	-151.189	57.073
hx189	CGOA	slope	-150.770	56.838
hh193	CGOA	shelf	-152.025	58.003
hl193	CGOA	shelf	-151.611	57.773
hp193	CGOA	shelf	-151.186	57.545
ht193	CGOA	shelf	-150.764	57.315
hx193	CGOA	slope	-150.348	57.081
hd197	CGOA	shelf	-152.003	58.474
hh197	CGOA	shelf	-151.590	58.245
hl197	CGOA	shelf	-151.179	58.015
hp197	CGOA	shelf	-150.760	57.785
ht197	CGOA	shelf	-150.339	57.557
hx197	CGOA	slope	-149.926	57.322
hd201	CGOA	shelf	-151.563	58.716
hh201	CGOA	shelf	-151.152	58.487
hl201	CGOA	shelf	-150.744	58.257
hp201	CGOA	shelf	-150.331	58.026
ht201	CGOA	slope	-149.913	57.796
hx201	CGOA	slope	-149.504	57.561
hd205	CGOA	shelf	-151.119	58.958
hh205	CGOA	shelf	-150.712	58.729
hl205	CGOA	shelf	-150.306	58.499
hp205	CGOA	shelf	-149.897	58.267
ht205	CGOA	slope	-149.488	58.034
hx205	CGOA	slope	-149.081	57.799
hd209	CGOA	shelf	-150.678	59.197
hh209	CGOA	shelf	-150.268	58.971
hl209	CGOA	shelf	-149.865	58.741
hp209	CGOA	shelf	-149.465	58.505
ht209	CGOA	shelf	-149.061	58.272
hx209	CGOA	slope	-148.661	58.034
hd213	CGOA	shelf	-150.242	59.431
hh213	CGOA	shelf	-149.819	59.214
hl213	CGOA	shelf	-149.421	58.983
hp213	CGOA	shelf	-148.999	58.761
ht213	CGOA	shelf	-148.593	58.530
hx213	CGOA	slope	-148.185	58.299
hd217	CGOA	shelf	-149.806	59.664

<b>hh217</b>	<b>CGOA</b>	<b>shelf</b>	<b>-149.371</b>	<b>59.454</b>
<b>hl217</b>	<b>CGOA</b>	<b>shelf</b>	<b>-148.967</b>	<b>59.228</b>
<b>hp217</b>	<b>CGOA</b>	<b>shelf</b>	<b>-148.544</b>	<b>59.008</b>
<b>ht217</b>	<b>CGOA</b>	<b>shelf</b>	<b>-148.143</b>	<b>58.777</b>
<b>hx217</b>	<b>CGOA</b>	<b>slope</b>	<b>-147.723</b>	<b>58.554</b>

## 2. Chemical Hygiene Plan and Standard Operating Procedures (SOPs)

### **Appendix 2 – Chemical Hygiene Plan**

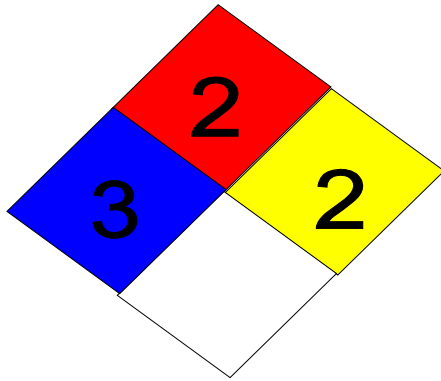
Previous sections of the Project Instructions include a list of hazardous materials by name and anticipated quantity. Chemicals will be transported, stored and used in a manner that will avoid any spills and adequate containment, absorbents and cleanup materials will be available in the event of a chemical spill.

The scientific chemicals to be used for this project are: (1) ethyl alcohol (100%), (2) formaldehyde (37%), (3) Acetone (100%), glutaraldehyde (25%) and hydrochloric acid (3.6%). Other chemicals brought aboard are consumer products in consumer quantities. Dilutions of the scientific chemicals will be used to preserve in faunal organisms collected with benthic grab samplers, as described in the Operations section of these Project Instructions. Use of these chemicals and the specified dilutions will only occur in exterior locations on the ship away from air intakes. Scientific chemicals shall not be disposed over the side.

Standard Operating Procedures and Information Sheets are provided here for the scientific chemicals. Included are details concerning personal protective equipment, work area precautions, special handling and storage requirements, spill and accident procedures/first aid, waste disposal and other pertinent information. Both small and large spills are of particular concern. In both cases, the spill response is intended to first contain the spill and then neutralize it. This may be easily accomplished for small spills depending on the degree of vessel motion and the prevailing environmental conditions. In all cases, the first responder should quickly evaluate the risks of personal exposure versus the potential impacts of a delayed response to the spill and act accordingly. For example, if the spill is small and it is safe to do so, a neutralizing agent should be rapidly applied to encircle/contain the spill and then cover it. However, a large formaldehyde spill (> 1 L) is extremely hazardous and individuals at risk of exposure should immediately leave the area. The CO or OOD should be notified immediately so that a response team with self-contained breathing apparatus (SCBA) can be deployed to complete the cleanup operation or dispense the

hazard with a fire hose directed overboard. The vessel's course should be adjusted to minimize exposure of personnel to wind-driven vapors and to limit spread of the spill due to vessel motion. The reportable quantity (RQ) of formaldehyde is 1,000 pounds and the RQ for ethyl alcohol is 5,000 pounds which greatly exceed the quantities brought aboard for this project.





### Standard Operating Procedures – Formaldehyde At-Sea

Chemical Name: 37% Formaldehyde

UN Number: 1198

Hazard Ratings: (on a scale of 0 to 4)

Health (blue): 3          Flammability (red): 2

Reactivity (yellow): 2      Special (white):

Personal Protection Gear Needed

\*gloves

\*goggles or face shield

Special Handling Instructions

\* If a ventilation hood is not available, then pouring of chemical must be done outside. At least two people should be involved with large chemical transfers in case of an emergency.

\* Chemical must be stored at temperatures above 15° c to prevent polymerization of paraformaldehyde.

First Aid

\* If swallowed, give large amounts of drinking water and induce vomiting.

\*If vapors inhaled, get out into fresh air immediately. Give oxygen if breathing is difficult.

\* If spilled on skin or splashed in eyes, flush with water for at least 15 minutes.

Spill Cleanup Procedures

**For small spills** (500-1000 mls):

Cover spill quickly with a Fan Pad and spray on Formalex to deactivate and absorb chemical. Let material sit for 10 - 15 minutes. Dispose of materials in plastic bag.

**For large spills** (>1000 mls):

Use a combination of Fan Pads and Formalex as quickly as possible to contain spill and deactivate it. Vacate area and try to ventilate room, if possible. Call Bridge immediately.

Deactivation/Disposal Procedures At Sea

\*Formalex is a greenish liquid that is to be used to insure proper chemical deactivation. Formalex should also be used in conjunction with Fan Pads. Place used Fan Pad in plastic bag, seal, and put in bottom of Spill Kit.

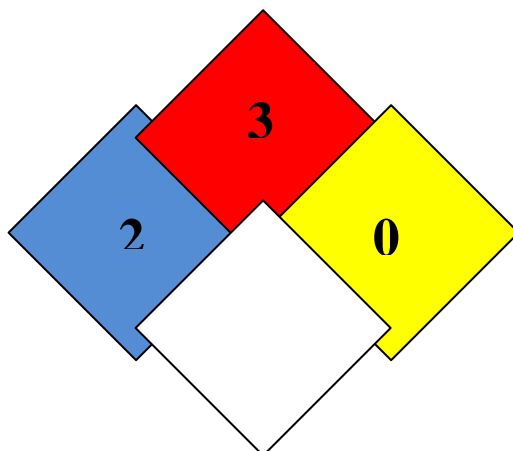
\*Fan Pads may be used to absorb small spills alone but these pads work best when used with Formalex to immediately control the vapor layer.

#### Shipping Procedures and Restrictions

37% formaldehyde cannot be ship by air due to its flammability rating.

All quantities should be over-packed with absorbency material in case the original container is damaged. When shipping by barge or land, labels are not required for quantities under 110 gallons by D.O.T. but the container should have MSDSs and the UN number readily available.

#### Standard Operating Procedures – Ethanol At-Sea



Chemical Name: 100% Alcohol

UN Number: 1170

Hazard Ratings: (on a scale of 0 to 4)

Health (blue): 2          Flammability (red): 3

Reactivity (yellow): 1      Special (white):

Personal Protection Gear Needed

\*gloves

\*goggles or face shield when pouring

Special Handling Instructions

\* Keep away from heat, flame, and other potential ignition sources.

\* Store in a well ventilated area or in a flammable cabinet.

First Aid

\* If swallowed, give large amounts of drinking water and induce vomiting.

- \* If vapors inhaled, get out into fresh air immediately. Give oxygen if breathing is difficult.
- \* If spilled on skin or splashed in eyes, flush with water for at least 15 minutes.

#### Spill Cleanup Procedures

Absorb ethanol with 3M Sorbent Pads and allow to dry in a well ventilated area away from ignition source.

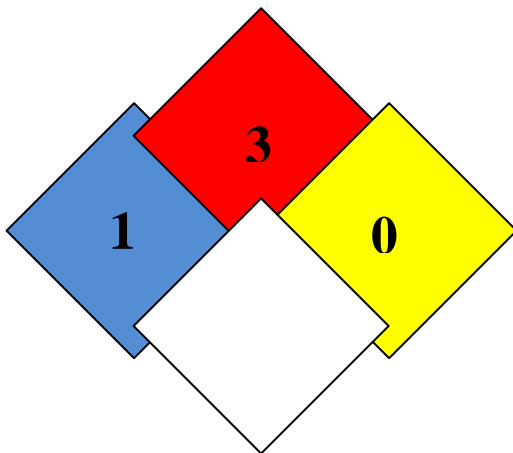
#### Deactivation/Disposal Procedures At Sea

Use 3M Sorbent Pads to absorb the ethanol. Put used pads outside to dry (secure from blowing overboard and exposure to flame). Once dry, the pads may be reused or burned.

#### Shipping Procedures and Restrictions

Due to the flammability rating of 95% ethanol, this chemical cannot be shipped by air. Transportation by barge or land vehicle will require the ethanol container to be over-packed with absorbent materials such as clumping kitty litter or shredded paper. Include MSDSs and the UN number with the shipment for reference in the event of a spill.

#### Standard Operating Procedures – Acetone At-Sea



Chemical Name: 100% Acetone

UN Number: 1090

Hazard Ratings: (on a scale of 0 to 4)

Health (blue): 1          Flammability (red): 3

Reactivity (yellow): 0      Special (white):

#### Personal Protection Gear Needed

\*gloves

\*goggles or face shield

#### Special Handling Instructions

- \* Keep away from heat, flame, and other potential ignition sources.

\* Store in a well-ventilated area or in a flammable cabinet.

#### First Aid

Inhalation: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion: Aspiration hazard. If swallowed, vomiting may occur spontaneously, but DO NOT INDUCE. If vomiting occurs, keep head below hips to prevent aspiration into lungs. Never give anything by mouth to an unconscious person. Call a physician immediately.

Skin Contact: Immediately flush skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.

Eye Contact: Immediately flush eyes with plenty of water for at least 15 minutes, lifting upper and lower eyelids occasionally. Get medical attention.

#### Spill Cleanup Procedures

Ventilate area of leak or spill. Remove all sources of ignition. Contain and recover liquid when possible. Use non-sparking tools and equipment. Absorb spills with absorbent pads and place in heavy-duty plastic bags.

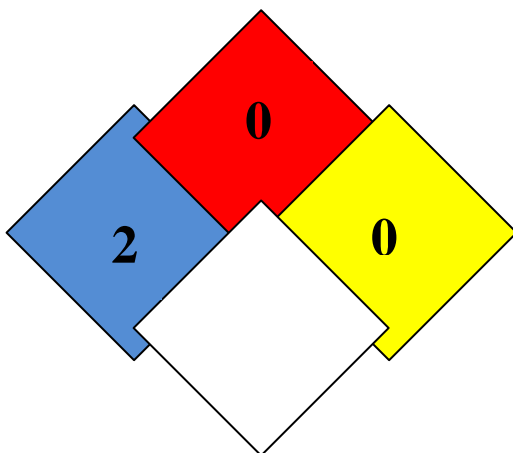
#### Deactivation/Disposal Procedures At Sea

Use 3M Sorbent Pads to absorb the acetone. Absorb spills with absorbent pads and place in heavy-duty plastic bags.

#### Shipping Procedures and Restrictions

Due to the flammability rating of acetone, this chemical cannot be shipped by air. Transportation by barge or land vehicle will require the ethanol container to be over-packed with absorbent materials such as clumping kitty litter or shredded paper. Include MSDSs and the UN number with the shipment for reference in the event of a spill.

Standard Operating Procedures – Glutaraldehyde At-Sea



Chemical Name: 25% Glutaraldehyde

UN Number: 3265

Hazard Ratings: (on a scale of 0 to 4)

Health (blue): 2          Flammability (red): 0

Reactivity (yellow): 0      Special (white):

Personal Protection Gear Needed

\*gloves

\*goggles or face shield

First Aid

Inhalation: Causes irritation to the respiratory tract. Symptoms may include coughing, shortness of breath. Heating the solution may result in more severe irritant effects.

Ingestion: Causes irritation to the gastrointestinal tract. Symptoms may include nausea, vomiting and diarrhea. May cause chemical burns of the mouth, throat, esophagus and stomach with discomfort or pain in the chest and abdomen. Aspiration into the lungs may occur during swallowing or vomiting, resulting in lung damage.

Skin Contact: Causes irritation to skin. Symptoms include redness, itching, and pain. Prolonged contact may cause skin burns. May be absorbed through the skin with possible systemic effects.

Eye Contact: Corrosive! Vapors are irritating and may cause damage to the eyes. Contact may cause severe burns and permanent eye damage.

Spill Cleanup Procedures

Ventilate area of leak or spill. Contain and recover liquid when possible. Absorb spills with absorbent pads and place in heavy-duty plastic bags.

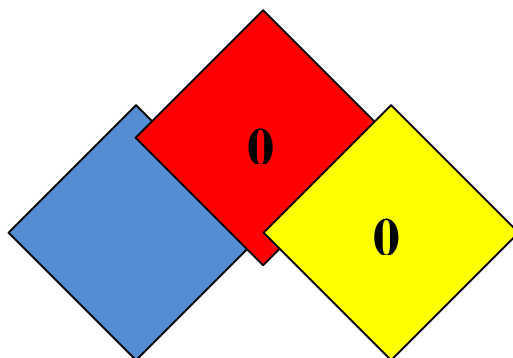
Deactivation/Disposal Procedures At Sea

Use 3M Sorbent Pads to absorb glutaraldehyde. Absorb spills with absorbent pads and place in heavy-duty plastic bags.

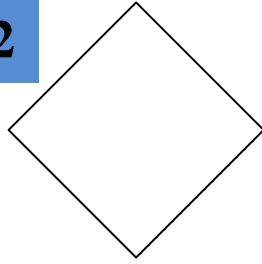
Shipping Procedures and Restrictions

None

Standard Operating Procedures – 3.6% Hydrochloric Acid At-Sea



2



Chemical Name: 3.6% (1N) Hydrochloric Acid

UN Number: 1789

Hazard Ratings: (on a scale of 0 to 4)

Health (blue): 2          Flammability (red): 0

Reactivity (yellow): 0      Special (white):

Personal Protection Gear Needed

\*gloves

\*goggles or face shield

First Aid

Eye Contact: Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention immediately.

Skin Contact: In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cover the irritated skin with an emollient. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

Ingestion: If swallowed, do not induce vomiting unless directed to do so by medical personnel.

Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention.

Spill Cleanup Procedures

Dilute with water and mop up, or absorb with absorbent pads and place in an appropriate waste disposal container.

Deactivation/Disposal Procedures At Sea

Dilute with water and mop up, or absorb with absorbent pads and place in an appropriate waste disposal container.

Shipping Procedures and Restrictions

None