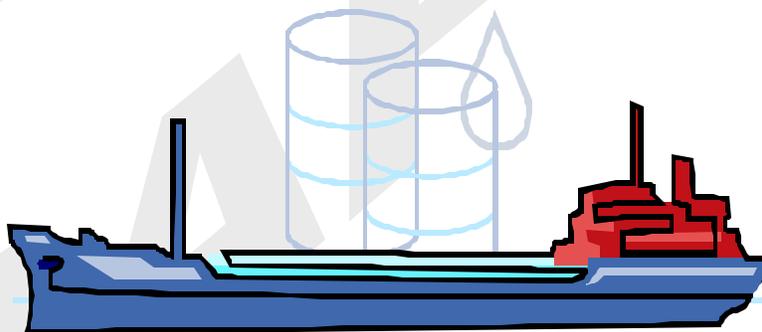


# Assessment Guidelines for Hazardous Substance Response Team Capabilities for the Marine Environment



Prepared by:

Chemical Transportation Advisory Committee (CTAC)  
Subcommittee for Response Practices in the Marine Environment

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## **Acknowledgement**

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## **General Reference Materials**

The information contained within this guidance document was obtained primarily from subcommittee experience, as well as the following sources:

International Maritime Organization (IMO). International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (IBC Code).

International Maritime Organization (IMO). International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 (MARPOL 73/78).

International Maritime Organization (IMO). International Convention for the Safety of Life at Sea (SOLAS), 1974.

International Maritime Organization (IMO). Sub-Committee on Standards of Training and Watchkeeping (STW). International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978, as amended in 1995 and 1997 (STCW Convention). London: IMO, 1996.

International Maritime Organization (IMO). Sub-Committee on Standards of Training and Watchkeeping (STW). Seafarer's Training, Certification and Watchkeeping Code (STCW Code). London: IMO, 1996.

National Fire Protection Association Inc (NFPA). Hazardous Material Response Handbook; 3<sup>rd</sup> ed. (Containing the complete text of NFPA 471 [Recommended Practices for Responding to Hazardous Material Incidents], NFPA 472 [Standard for Professional Competence of Responders to Hazardous Materials Incidents], and NFPA 473 [Standard for Competencies for EMS Personnel Responding to Hazardous Materials Incidents]) 1997 Edition. Quincy, MA: NFPA, 1997.

United States. U.S. Coast Guard (USCG). Chemical Hazards Response Information System (CHRIS), COMDTINST M16465.12C. Washington: GPO, 2000.

United States. U.S. Coast Guard (USCG). Incident Management Handbook, COMDTPUB P3120.17. Washington: USCG, 2001.

United States. U.S. Congress. Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA or Superfund) (Title 42, United States Code, Section 9601).

United States. U.S. Congress. Federal Water Pollution Control Act of 1948 (Clean Water Act), (Title 33, United States Code, Section 1251 – 1376).

United States. U.S. Congress. Oil Pollution Act of 1990 (OPA '90). (Title 33, United States Code, Section 2701-2761).

United States. U.S. Department of Labor, Occupational Safety and Health Administration (OSHA). Occupational Safety and Health Standards; Hazardous waste operations and emergency response (HAZWOPER), (Title 29, Code of Federal Regulations, Part 1910.120).

United States. U.S. Department of Transportation. Research and Special Programs Administration (RESPA). Hazardous Materials Regulations, (Title 49, Code of Federal Regulations, Part 171-176)

United States. U.S. Department of Transportation, U.S. Coast Guard, et al. National Preparedness For Response Exercise Program (PREP) Guidelines. Washington: GPO, 1994.

United States. U.S. Environmental Protection Agency (EPA). National Oil And Hazardous Substances Pollution Contingency Plan (NCP). (Title 40, Code of Federal Regulations, Part 300).

## **Acronyms**

CERCLA .....	The Comprehensive Environmental Response, Compensation, and Liability Act
CFR .....	Code of Federal Regulations
CHRIS .....	Chemical Hazards Response Information System
COMDTINST .....	Commandant Instruction
COMDTPUB .....	Commandant Publication
CTAC .....	The Chemical Transportation Advisory Committee
CWA .....	Clean Water Act
DECON .....	Decontamination
DOT .....	Department of Transportation
EPA .....	Environmental Protection Agency
FHWA .....	Federal Highway Administration
FOSC .....	Federal On-scene Coordinator
FRA .....	Federal Railroad Administration
FWPCA .....	Federal Water Pollution Control Act (Clean Water Act)
GC/FID .....	Gas Chromatography with Flame Ionization Detector
GC/MS .....	Gas Chromatography/Mass Spectrometry
HAZCAT .....	Hazard Categorization Kit
HAZMAT .....	Hazardous Material
HAZSUB .....	Hazardous Substance
HAZWOPER .....	Hazardous Waste Operations and Emergency Response
HSRT .....	Hazardous Substance Response Team
IBC .....	International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk
IC .....	Incident Commander
ICS .....	Incident Command System
IMO .....	International Maritime Organization
MARPOL 73/78 .....	International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978.
NCP .....	The National Oil and Hazardous Substances Pollution Contingency Plan
NFPA .....	National Fire Protection Association

NIIMS.....	National Interagency Incident Management System
NIOSH.....	National Institute for Occupational Safety and Health
OPA 90.....	Oil Pollution Act of 1990
OSHA.....	Occupational Safety & Health Administration
PPE.....	Personal Protective Equipment
PREP.....	National Preparedness For Response Exercise Program
QI.....	Qualified Individual
RSPA.....	Research and Special Programs Administration
SMT.....	Spill Management Team
SOLAS.....	International Convention for the Safety of Life at Sea
STCW.....	Standards of Training, Certification, and Watchkeeping for Seafarers
STW.....	Sub-Committee on Standards of Training and Watchkeeping
USC.....	United States Code
USCG.....	United States Coast Guard

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## **General Definitions**

*Availability* – Ability to be on-scene within a planned timeframe.

*Entry Team* – Those on-site individuals who enter the Exclusion Zone and those in immediate backup, support, and supervision of those entering the Exclusion Zone.

*Hazardous Response Guidelines* – A set of guidelines that define operational response capabilities for teams directly engaged in responding to maritime-related and other Hazardous Substance incidents. These capabilities are measured through different parameters involving human safety, equipment availability and expertise, and ability to arrive on-scene, as dictated by needs.

*Hazardous Substance* – As defined in the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), (40 CFR Part 300.5) .

*Hazardous Substance Response Team* – Individuals who assess and/or mitigate an emergency, including both on- and off-site personnel, whether in-house or contracted resources.

*Incident* – An occurrence that may poses a significant safety or health hazard to people in the immediate vicinity, to the environment, or has the potential to become an emergency within a short time frame. Operational releases, as defined below, are not below are not considered an “incident” for the purpose of this guidance document.

*In-house* – Assets or expertise directly owned or possessed by the plan holder.

*On-Scene* – The location where the incident occurs, requiring mitigation.

*Operational Releases* – Releases where the substance is absorbed, neutralized, or otherwise controlled at the time of release by employees in the immediate release area, or by maintenance personnel and are limited in quantity, exposure potential, or toxicity and presents minor safety or health hazards to employees and/or people in the immediate work area or those assigned to mitigate the release.

*Responsible Party* –the individual or organization which has primary responsibility for mitigation of a release.

*Sustainability* – Ability to continue response operations for the duration necessary to mitigate the incident.

# Hazardous Substance Emergency Response Guidelines for the Marine Environment

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**Purpose-** to provide guidance to the regulated community for evaluating HSRT capabilities.

## **Introduction**

The purpose of this document is to provide the regulated community with guidance to use when evaluating hazardous substance response team (HSRT) capabilities needed for planning a response to an incident involving worst-case scenario. These guidelines are based on the purposed requirements in 33 CFR Parts 154.2055 & 155.3080, and the requirements in 29 CFR Part 1910.120, NFPA Standard 472, recommendations of the International Maritime Organization (IMO), and industry best practices.

Preparing for an emergency response to a hazardous substance release may require the use of specialized chemical emergency response expertise and equipment due to the unique characteristics of hazardous substances. The challenges and complications of an expedient, efficient response effort are often magnified by the nature of the chemical and the location or logistical issues responders must address on or near the water, the vessel, or a marine transportation-related facility. Chemical-specific gear and the appropriate responders may also be localized and not uniformly available nationwide. Therefore, plan-holders face the challenge of developing a Hazardous Substance Response Team that may include the services of numerous entities.

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The regulated community asked for guidance on how to evaluate and compare the preparedness capabilities of contracted responders.

With the recent emphasis on vessel and facility response plans for hazardous releases, the regulated community has asked for guidance on how to evaluate and compare the preparedness capabilities of hazardous substance responders. In response to this request, and to document the best practices currently employed by industry to mitigate hazardous incidents, the United States Coast Guard (USCG) asked the Chemical Transportation Advisory Committee (CTAC) to review this issue. CTAC formed a subcommittee that brought together representatives from a broad spectrum of industry: contractors, shippers, manufacturers, and emergency responders. These dedicated individuals gave their time and energy to tackle the difficult question of what comprises sound response practices in a marine environment. The results of this two-year effort are contained in these guidelines.

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Hazardous Substance Response Team should be incorporated in the Operations Section of an ICS response organization.

However, **it is not a stand-alone document.** It is intended to complement, and be used in conjunction with international and domestic shipboard training, safety equipment, and emergency response procedures, regulations, treaties, and other guidelines. Where international chemical tanker regulations specify requirements by the International Maritime Organization (IMO) or by other internationally-recognized guideline-setting organizations, the equipment and procedures meeting those international requirements are considered reasonably equivalent to the recommended resources discussed in this document. In referencing this guide, you should use it in conjunction with your risk assessment and your specific chemical inventory.

The Incident Command System (ICS) is the nationally recognized emergency response system recognized under the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). As such, it is envisioned that the hazardous substance response team referred to in these guidelines would be incorporated into the appropriate section of the ICS response organization.

These guidelines are designed to address hazardous substance incidents on marine tank vessels and at marine-transportation related facilities. Although, in many cases, these guidelines do not address specific issues dealing with gas carriers, it offers guidance to any person or operator who becomes involved in these marine hazardous substance incidents involving gas cargos by establishing guidelines for response teams and for plan-holders who must evaluate response contractors under 33 CFR Part 154.2055 & 155.3080. Federal On-scene Coordinators (FOSCs) and Incident Commanders (ICs) may also find this information useful when assessing capabilities for response teams, and the availability of responders to adequately respond in their areas of responsibility.

## **Background**

The USCG, through its authority as promulgated under the Federal Water Pollution Control Act (FWPCA), as amended by the Clean Water Act (CWA); the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA); and the NCP, is the pre-designated FOSC for response to oil and hazardous substance releases occurring in the coastal zone, Great Lakes waters, and specified inland ports and harbors (except as described 40 CFR Part 300). This responsibility includes overseeing the proper containment, removal, cleanup, and disposal of a large variety of hazardous substances that have greatly varying chemical, physical, physiological, and toxicological properties.

This guideline does not, in any manner, affect or provide guidance for responses to operational releases of hazardous substances where the substance is absorbed, neutralized, or otherwise controlled at the time of

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These guidelines are applicable to accidental releases that are not immediately controlled/remediated at the source.

release by employees in the immediate release area, or by maintenance personnel. Operational releases are not considered “incidents” within the scope of this guideline.

## **Response Elements**

The final authority for response operations remains with the FOSC. Hazardous Substance Response Teams (HSRTs) assess and/or mitigate emergencies involving releases or a threat of a release of hazardous substance. There are many aspects of a response that adversely affect the safety of personnel involved either directly or indirectly. It is essential that a response be handled appropriately to minimize any negative impacts on human health for both those conducting the response and those in the surrounding community. Therefore, it is critical that HSRT personnel be prepared to effectively and efficiently respond, regardless of the complexity and duration of the incident. Parameters that measure the adequacy of a response organization are outlined below.

Several factors will influence the level of a hazardous substance response: the amount of equipment and numbers of qualified personnel that will be required on-scene, and when these resources need to arrive. In order to better judge and manage expectations, a **Response Capability**, for purposes of these guidelines, means the ability to:

- Arrive on-scene rapidly with the necessary expertise and resources within the planning timeframe.
- Assess the incident and/or undertake and accomplish/conduct a safe “scope of work” requiring technical expertise, personnel, support, instrumentation and equipment (specialized if necessary) to stabilize and mitigate a specific incident involving a Hazardous Substance(s).
- Access additional resources, as indicated by the scope or escalation of the incident.
- Integrate into the appropriate section of the ICS organization.

## **I. Types of Response Team Capabilities**

The ICS categorizes response team components by type and delineating the ability to undertake and perform certain tasks. These Guidelines use this nomenclature to define, qualify, and delineate measures of response capabilities of different teams.

Response Elements consist of HSRTs, entry team activities, response team components, training, and response times.

### **I. TYPES OF RESPONSE TEAM CAPABILITIES**

**1. Type 1: Highly Capable Team**

- A response team able to assess and undertake a response to a large-scale, complex, and sustained duration incident unilaterally, or with limited initial support from external resources.
- Extensive in-house (or available under contract) technical expertise and capabilities with regard to mitigation equipment and pertinent monitoring and modeling capabilities for supporting entry and response operations.
- Extensive in-house (or available under contract) large-scale logistics capabilities for engaging additional resources to fully support sustained/long-term operations.
- Must be able to sustain a minimum 7 entries per day for 7 days of operation (7/7).

**2. Type 2: Capable Team**

- A response team able to assess and undertake a response to a significant, moderately-complex, and sustained duration incident with support from readily available contracted resources (cooperatives or mutual aid associations).
- Some in-house technical expertise and capabilities with mitigation equipment. Basic monitoring instrumentation available in-house to support entry operations.
- Limited in-house logistical support, able to obtain logistical support from other contracted sources for sustained operations.
- Must be able to sustain a minimum 3 entries per day for 3 days of operation (3/3).

**3. Type 3: Limited Capability Team**

- A response team able to conduct assessments and responding to a simple incident of very limited duration.
- Has access to limited technical expertise, unable to handle all situational responses. Limited basic mitigation equipment availability, very limited air-monitoring instrumentation for entry support.

**II. ENTRY TEAM  
ACTIVITIES**

**Assessment Entry  
Team:**

- 4 to 5 person team, minimum
- Makes initial entry to evaluate, validate, and define situation
- May perform simple response actions

**Mitigation Entry  
Team:**

- 7 person team, minimum
- Makes entry to mitigate and remediate the situation

- No logistics or support capability other than what is readily available within company inventory.
- Must be able to sustain a minimum 2 entries for 1 day of operation (2/1).

**II. Assessment and Mitigation Entry Team  
Activities**

When an incident occurs, an on-scene observer will report the circumstances to the Qualified Individual (QI) who will activate an initial response that includes the dispatch of assessment and mitigation teams. The on-scene observer may not be trained in hazardous substance emergency response and may be instructed to remain outside the incident exclusion zone. However, a vessel's crew trained for hazardous substance emergencies, may act as assessment and mitigation teams onboard the vessel, using the vessel's onboard resources, when responding in compliance with applicable U.S. or International standards.

Figure 1, Recommended Personnel Planning Guidelines for Hazardous Substance Response Entry Teams, describes assessment and mitigation entry teams. The description indicates the recommended minimum number of team members under the planning guidelines for a worst case incident. After the preliminary assessment, the number of team members can change. These guidelines do not prohibit the IC from adjusting the number of responders needed to adequately handle the situation based on the findings of the preliminary assessment. In the event that fewer personnel are utilized in an actual incident than what are indicated in these guidelines, these personnel should fulfill multiple roles to insure all aspects described in Figure 1, are covered.

- 1. Assessment Entry Team** – A team comprised of an appropriate number of responders, able to make an initial entry, to safely evaluate/validate/define the situation. While the team is not expected to actually mitigate the emergency without further support and reinforcement, it may perform additional response actions, depending on the situation encountered, its hazards, and complexity.
- 2. Mitigation Entry Team** – Teams able to make entries to re-assess, mitigate, and remediate the emergency. Mitigation Entry Teams can be adjusted as needed to adequately handle the situation based on the findings of the preliminary assessment, and to carry out the objectives of the entry and response.

**Figure 1:** Recommended Personnel Planning Guidelines for Hazardous Substance Response Entry Teams.

<b>Response Position</b>	<b>Assessment Entry Team Personnel (Type 3)</b>	<b>Mitigation Entry Team Personnel (Type 2)</b>	<b>Mitigation Entry Team Personnel (Type 1)</b>
Assessment and Mitigation:	2	2	2
Back Up/Decon:	2	2	2
Decon:	-	1	1
Equipment Support	-	1	1
Supervisor/Site Safety Officer:	1	1	1
<b>TOTALS</b>	<b>5</b>	<b>7</b>	<b>7</b>
<b>Sustainability</b>	Minimum 2 entries in one day	Minimum 3 entries per day for 3 days of operations without major re-supply	Minimum 7 entries per day for 7 days of operations without major re-supply

### III. Components of a Hazardous Substance Response Team

The responsible party's Hazardous Substance Response Team organization manages the response resources necessary to perform activities identified in the response plan. The personnel, equipment, supplies, and capabilities to perform these activities may be resources from within the responsible party's organization, contracted from a resource provider, or a mix of both. Where appropriate, resources may be provided through contracts or other approved means for other than in-house assets. However, the company must be able to access the resource on a 24-hour basis, and ensure that those resources are not double-counted through sub-contracting arrangements. Figure 2, Components of a Hazardous Substance Response Team Matrix, shown at the end of this section, is summarized here based on recommended availability of resources:

#### 1. General Components

- a **Potential Personal Protective Equipment (PPE) Levels:** HSRTs should be appropriately trained to conduct an effective

#### III. COMPONENTS OF A RESPONSE TEAM

#### Personal Protective Equipment

response at different levels of protection (Level A, Level B, and Level C) (as defined in 29 CFR Part 1210.120(g)).

**i) PPE; Quantifiers:** PPE will be selected to best protect responders from chemical and physical hazards posed by emergency response operations. This equipment should be selected, maintained, used, decontaminated, and inspected using appropriate guidelines, such as those required by OSHA in 29 CFR Part 1910, the manufacturer, and industry guidelines. Personal protective equipment should be of sufficient quantity to support operations in accordance with the sustainability criteria outlined in this document.

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**Sustainability**

**b. Sustainability:** Response organizations should supply an adequate number of response personnel and equipment to meet the expected daily number of entries. These criteria were defined earlier in Figure 1, Recommended Personnel Planning Guidelines for Hazardous Substance Response Entry Teams.

**c. Minimum Staffing:** See discussion above in section II, Assessment and Mitigation Entry Team Activities.

**2. Specialty Components**

**a. Entry Team Type:** See section II, Assessment and Mitigation Entry Team Activities.

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**Technical Specialists**

**b. Technical Specialists:** HSRTs should have, as part of their response organizations, technical specialists who can perform the functions listed below. These technical specialists may be either on staff, under contract, or available from other identified sources. A QI may also provide aspects of necessary expertise, as may the Master or Chief Mate on a chemical tanker. If a Spill Management Team (SMT) is activated, these competencies may reside or be available from within that organization. An individual may hold one or more competencies and fill multiple roles. As the situation warrants, and an SMT (multi-branch) system grows, this expertise may be transferred to another part of the organization. Technical Specialists, (except the Personnel Safety Specialists), may be on-site or readily available by other means depending on the situation. The Personnel Safety Specialist should be on-site and available when any entry team is ready to enter and/or is inside the "exclusion zone". Other technical specialists, such as air/water modeling or firefighting, should be available if the situation warrants.

**i) Personnel Safety:** Industrial Hygienist, Certified Marine Chemist, or Site Safety Officer.

**ii) Product Knowledge:** Product Specialist (as defined in 29 CFR Part 1910.120(q)(6)(iv)), a Chemist or Chemical Engineer, or other individual having an intimate and practical working knowledge of the product, its toxicities, physical and chemical characteristics, and processes for mitigation of its hazards.

**iii) Situational Specialists:** Facility/Ship/Barge Cargo Systems/ Stability Experts and/or others with expertise appropriate for the situation encountered. Expertise includes practical on-the-job training and experience with handling the operational and/or technical issues presented by the risk assessment for the response. Some examples might include: air and/or water modeling specialists, firefighting specialists, certified marine chemists, toxicologists, and divers.

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**Entry Equipment**

**c. Entry Equipment:** A HSRT should have in its inventory, or available under contract or through identified external sources, appropriate equipment to support entry operations, ensure the safety of the responders, and mitigate the incident to which they are responding, including:

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**Air Monitoring Equipment**

**i) Air Monitoring Equipment:** HSRTs should have sufficient instrumentation to detect, identify, categorize, and monitor conditions of airborne contamination for hazardous substances as listed under the CWA that may affect human safety. This equipment should be maintained and calibrated in accordance with manufacturer, regulatory, and/or industry best practices, and available for use when necessary by Assessment and Mitigation Team entry personnel. Personnel using these instruments should be properly trained and familiar with correctly interpreting the results and with the limitations of the instrumentation employed. A minimum basic and standard suite of air monitoring equipment for entry teams is defined below. Specialized, and more complex air monitoring equipment should be made available, if the situation warrants.

**A) Air monitoring resources** must have the capability, including instrumentation, to adequately respond to the hazardous substances involved in the incident. The suite of air monitoring equipment may include:

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**Sampling  
Equipment**

- ❖ Combustible Gas Indicator
- ❖ Oxygen Meter
- ❖ Specialty Gas Meter (as appropriate)
- ❖ Direct Reading Colorimetric Indicator Tubes
- ❖ Flame Ionization Detectors
- ❖ Photo Ionization Detectors

B) **Other instrumentation** that could be part of the air-monitoring suite may include:

- ❖ Flame Ionization Detector with Gas Chromatography Option
- ❖ Gas Chromatograph with Mass Spectrometer
- ❖ Portable Infrared Spectrophotometer

ii) **Sampling:** HSRT should have a minimum amount of equipment for sampling and categorizing unknown hazardous substances and obtaining samples for shipment to an approved laboratory for analysis. Personnel using this equipment should be trained and familiar with sampling techniques, preservation of sample integrity, sampling equipment limitations, and chain-of-custody procedures.

A) Equipment includes but is not limited to the following:

- ❖ Liquid Sampling Kits
- ❖ Solid Sampling Kits
- ❖ Gas Sampling Kits

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**Mitigation  
Equipment**

iii) **Mitigation Equipment:** HSRT may have varying degrees of mitigation-type equipment as part of their inventories or otherwise available. Some of this equipment may be specifically designed for handling a specific type or class of hazardous substance. Other equipment may be general in nature, with wide application to respond to a variety of hazardous substances and multiple situations. Listed below are an assortment of varying types of mitigation equipment that may be found with various response companies/contractors, etc.

A) Lightering/Pumping/Skimmming Equipment: This equipment consists of portable, high capacity equipment capable of pumping a large variety of chemicals under less-than-optimum conditions in potentially hazardous environments. This equipment and its fittings, hoses, and other associated gear, should be constructed of materials

compatible with the conditions in which they are used. This equipment may also consist of a wide variety of smaller, more specialized pumping systems for emptying smaller tanks or allowing for a more controlled lightering situation. Examples include air-diaphragm pumps, peristaltic, or small hydraulically-driven submersible centrifugal-type pumps.

- ❖ **High Volume Pumping Units** - portable and self-contained prime mover; operable in adverse conditions, including in flammable atmospheres; able to power a variety of pumps and move products at significant head pressure.
  - ❖ **Skimmers** - portable and self-contained units operable in adverse conditions to skim floating hazardous substances from the water in a variety of environmental conditions and sea states.
  - ❖ **Submersible Pumps** – portable, with a high pumping efficiency, minimal weight, and easy servicing, able to pump viscous, flammable, corrosive, and abrasive fluids or slurries over long distances. Able to access cargoes through existing engineered tank accesses or openings or existing piping.
  - ❖ **Non-submersible Pumps** – portable, and designed to move lighter products at lower throughput capacities.
- B) **Portable Temporary Storage Devices** – portable devices (i.e. rail cars, tank trucks, barges, dracons or other vessels) selected to be compatible with temporarily storing various types of hazardous substances without being adversely affected. These devices may be free floating or may require a floating support platform during the transfer operation, as conditions and the situation warrant.
- C) **Specialized Reactors:** Transportable devices that can be brought on-scene to aid in mitigating the emergency. This equipment may be for general application or, it may be specialized equipment for the products being transported. Examples include: stirred tank reactors, plug flow reactors, heaters, coolers, exchangers, absorbers, distillers, scrubbers, ion exchangers, etc.
- D) **Capping, Plugging and Patching Kit:** Commercially-available or industry kits used for capping, plugging, and

patching small leaks in a variety of containers, e.g., Chlorine Emergency Kits, etc.

- E) **Fog/Fire Monitor: Foam, Neutralizers, Sorbent Systems:** High capacity, high pressure pumping systems and applications used for vapor suppression.

**iv) Support Equipment:**

- A) **Weather Station:** A remote weather station for measuring on-scene weather conditions through a number of sensors and supplying real-time data to the response team.
- B) **Cranes:** Lifting equipment that can be brought on-scene to support response operations.
- C) **Boats:** Floating platforms of various types to support on-water response operations (open ocean, protected waters, rivers, and estuarine or pier side environments).
- D) **Lightering/Transfer Equipment:** Rail cars, tank trucks, barges, or other vessels, suitable to transfer hazardous substances.
- E) **Decontamination Equipment:** Equipment for decontaminating personnel and equipment involved in hazardous substance response operations.
- F) **Laboratory:** An appropriately certified laboratory capable of receiving field samples, conducting the required analyses and expeditiously communicating results back to the field.

**d. Logistics:**

- i) **Logistician:** A person who is part of the HSRT, either on-site or otherwise immediately available, able to meet immediate entry team support requirements and operations in the field. As the situation warrants, and an ICS is established, this person may reside in, or be transferred to, that organization.
- ii) **Personnel Resources:** Additional qualified personnel resources to sustain response operations expected under adverse conditions while meeting OSHA safety guidelines in 29 CFR Part 1910.

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**Support  
equipment**

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**Other resources**

**iii) Air/Ground Transportation:** Equipment that provides responders the ability to rapidly arrive on-scene with necessary equipment and personnel.

**iv) Disposal:** Equipment necessary to temporarily store, transport, and properly dispose of any type of hazardous material or hazardous waste generated or recovered as part of the response.

The following matrix categorizes response team components based on capabilities and availabilities of assets. PPE should be commensurate with the chemical hazards.

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**Figure 2.** Components of a Hazardous Substance Response Team Matrix

<b>Response Capabilities</b>	<b>Type 1</b>	<b>Type 2</b>	<b>Type 3</b>
<b>General Components</b>			
	<b>Quantifiers</b>		
Potential PPE Levels Sustainability (entries per day/ # days) Min. Staffing (# of people)	<b>A, B, C</b> 7/7 7	<b>A, B, C</b> 3/3 7	<b>A, B, C</b> 2/1 5
<b>Specialty Components</b>			
	<b>Availability of Resources</b>		
<b>Entry Team Type</b>			
Assessment Mitigation	<b>I</b> <b>I</b>	<b>I</b> <b>UC</b>	<b>I</b> <b>UC</b>
<b>Technical Specialists</b>			
Personnel Safety Product Knowledge Situational Specialists	<b>I</b> <b>UC</b> <b>UC</b>	<b>I</b> <b>OS</b> <b>OS</b>	<b>I</b> <b>NA</b> <b>NA</b>
<b>Entry Equipment</b>			
Air Monitoring Sampling Mitigation Equipment Support Equipment	<b>I</b> <b>I</b> <b>UC</b> <b>OS</b>	<b>I</b> <b>I</b> <b>OS</b> <b>OS</b>	<b>I</b> <b>I</b> <b>NA</b> <b>NA</b>
<b>Logistics</b>			
Logistician Personnel Resources Air/Ground Transportation Disposal	<b>UC</b> <b>UC</b> <b>UC</b> <b>UC</b>	<b>OS</b> <b>UC</b> <b>UC</b> <b>OS</b>	<b>NA</b> <b>NA</b> <b>NA</b> <b>NA</b>

**Legend:**

**A, B, or C** – Level of protection as defined in Appendix B of 29 CFR Part 1926.65.

**I (In-House)** – Resource available in-house.

**UC (Under Contract)** – Resource may be available either under contract, or in-house.

**OS (Other Source)** – Resource may be available through other identified sources (not under contract, but available through networking/letter of intent/coop or mutual aid and/or provided by QI or through an SMT), under contract or in-house.

**N/A** – Resource not required.

To respond effectively, HSRTs should possess a variety of skilled personnel and equipment. This section provides a framework for defining these essential components of an HSRT.

**IV. TRAINING**

Other Training that may be useful includes:

- Research and Special Programs Administrations, USDOT
- 49 CFR 171 – General Information, Regulations, and Definitions
- 49 CFR 176— Carriage by Vessel

**IV. Training**

All HSRT personnel, other than foreign shipboard personnel, must meet the OSHA training requirements of 29 CFR Part 1910.120. Foreign shipboard personnel should maintain current training in accordance with applicable flag state requirements and under international treaty and accepted industry practices, such as the International Convention on Standards, Training, Certification, and Watchkeeping for Seafarers (STCW), Chapter 5 or the IBC Code. Another resource that may be consulted is NFPA 472 – Standard for Professional Competence of Responders to Hazardous Materials Incidents.

Some response organizations may not be familiar with the challenges associated with hazardous substance response in the marine environment. Organizations should ensure that their entry team personnel are familiar with and trained on vessel response issues. Appropriate areas of training may include, but are not limited to:

- maritime nomenclature, vessel stability and safety issues,
- vessel configuration,
- sources of information about the on-board hazardous substances,
- the safety plan,
- the ship’s response team specified on the station bill,
- transfer procedures,
- cargo stowage plan, and
- cargo tank and piping diagrams.

**V. TIME FACTORS**

**V. Response Times**

*Time is critical in successfully and safely responding to a hazardous substance incident.* In planning for such contingencies, the responsible party is required to conduct a risk assessment to assess the environment(s) in which the chemical(s) is transported. Data considered when conducting this analysis should include the specific properties and quantities of the hazardous substance(s) and if released, the potential impact on the surrounding community and its supporting infrastructures. This information will drive, among other issues, the extent of resources necessary to abate the incident, the level of technical support needed, and the size and composition of the response teams. It will also determine the expediency with which these resources need to be activated in order to rapidly arrive on-scene to mitigate the emergency.

For planning purposes, it is important to establish a standard response initiation so that teams can be activated rapidly. The availability of teams to report on-scene with necessary equipment and resources will be

determined by applicable regulations. Figure 3, Response Time Matrix, categorizes response times. This is another tool to facilitate comparison of the availability of contracted response resources. This is planning guidance and does not imply a performance guideline.

**FIGURE 3. Response Time Matrix**

Availability (Response Times)						
	Team Type	Entry Teams		Technical Specialists	Mitigation Equipment	Logistics & Support
		Assessment	Mitigation			
<b>C A P A B I L I T Y</b>	Type 1	A I R	A I R	A I R	A+6 I+6 R+6	A I R
	Type 2	A I R	I R R+6	A I R	A+12 I+12 R+12	I R R+6
	Type 3	A I R	NA NA NA	A I R		
	<b>LEGEND</b>					
	<b>Assessment Team Qualifiers</b>			<b>Mitigation Team Qualifiers</b>		
<b>A</b>	Assessment Response (2 hrs or less on-scene)			+ 6 =	+ 6 hrs for Mitigation Team to arrive on-scene after Assessment Team's arrival on-scene	
<b>I</b>	Initial Response (6 hrs or less on-scene)			+ 12 =	+ 12 hrs for Mitigation Team to arrive on-scene after Assessment Team's arrival on-scene	
<b>R</b>	Reinforced Response (12 hrs or less on-scene)					
<b>NA</b>	= Not Available					