

**PRINCE WILLIAM SOUND  
SUBAREA CONTINGENCY PLAN**

**HAZMAT  
SECTION**

<b>HAZMAT: PART ONE – HAZMAT RESPONSE .....</b>	<b>C-1</b>
A. Initial Notification of Response Agencies .....	C-1
B. Recognition.....	C-1
C. Evaluation .....	C-3
D. Evacuation .....	C-5
E. Direction and Site/Entry Control .....	C-5
F. Command and Control.....	C-6
G. Communications .....	C-6
H. Warning Systems & Emergency Public Notification .....	C-6
I. Health and Medical Services .....	C-7
<b>HAZMAT: PART TWO – RESPONSIBLE PARTY HAZMAT ACTION .....</b>	<b>C-9</b>
A. Discovery and Notification.....	C-9
B. Removal Action .....	C-9
<b>HAZMAT: PART THREE – STATE HAZMAT ACTION.....</b>	<b>C-11</b>
A. Authority .....	C-11
B. Response Policy.....	C-11
C. State Response Capabilities .....	C-11
D. Responsibilities.....	C-12
<b>HAZMAT: PART FOUR – FEDERAL HAZMAT ACTION .....</b>	<b>C-13</b>
A. Authority.....	C-13
B. Jurisdiction.....	C-13
C. Response Policy.....	C-13
<b>HAZMAT: PART FIVE – SUBAREA HAZMAT RISK ASSESSMENT .....</b>	<b>C-15</b>
A. General.....	C-15
B. Facilities.....	C-16
C. Transportation.....	C-21
D. Planning Priorities .....	C-21
E. References.....	C-22
Table C-1: PWS Locations with Extremely Hazardous Substances (EHS) .....	C-17
Table C-2: Other Chemicals – Prince William Sound Locations .....	C-18
Table C-3: Oil And Liquid Gases – PWS Locations .....	C-19
<b>HAZMAT: PART SIX – RADIOLOGICAL AND BIOLOGICAL ISSUES .....</b>	<b>C-23</b>

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## HAZMAT: PART ONE – HAZMAT RESPONSE

### A. INITIAL NOTIFICATION OF RESPONSE AGENCIES

All hazardous material releases in excess of the reportable quantity (RQ) must be reported by the responsible party to the National Response Center. Any release regardless of the amount is required to be reported to the State of Alaska, Department of Environmental Conservation (ADEC). Upon notification of a release, the NRC shall promptly notify the appropriate FOSC. The FOSC shall contact the ADEC. If the state receives notification first, the state shall notify the FOSC promptly. An emergency notification list is provided at the front of the Response Section to this plan. The FOSC and the SOSC (ADEC) will relay the notification to local communities, resource agencies, medical facilities, and others as necessary.

*The community's local on-scene coordinator (LOSC) is in command and control until he or she determines that there is no longer an imminent threat to public safety.* The LOSC can at any time request higher authority to assume command and control of an incident. Local emergency plans should be consulted for any specific directions or guidelines.

### B. RECOGNITION

The recognition of chemical or physical hazards is essential to dealing with a release safely. Chemical and physical hazards may be confronted by emergency response personnel when responding to a hazardous material incident. Chemical hazards include biological, radioactive, toxic, flammable, and reactive hazards. Physical hazards include slips, trips and falls, compressed gases, materials handling, thermal, electrical and noise hazards, and confined spaces.

Once a hazardous material has been identified it is important to determine the hazards and properties. Thousands of substances exhibit one or more characteristics of flammability, radioactivity, corrosiveness, toxicity, or other properties which classify them as hazardous. For any particular hazardous category, the degree of hazard varies depending on the substance.

The degree of hazard is a relative measure of how hazardous a substance is. For example, the Immediately Dangerous to Life and Health (IDLH) concentration of butyl acetate in air is 10,000 parts per million (ppm); the IDLH for tetrachloroethane is 150 ppm. Tetrachloroethane is therefore far more toxic (has a higher degree of hazard) when inhaled in low concentration than butyl acetate. Vapors from butyl acetate, however, have a higher degree of explosive hazard than tetrachloroethane vapors which are not explosive.

Once the substance(s) has been identified, the hazardous properties and degree of hazard can be determined using reference materials. Chemical properties and the health hazards associated with the various materials transported in the Prince William Sound Subarea can be found in the USCG CHRIS Manual, the DOT Emergency Response Guidebook (current edition), and CAMEO (Computer-Aided Management of Emergency Operations) computer programs. Industry experts can be consulted as well. An excellent resource is the CHEMTREC 24-hour information number, 800-424-9300, supported by the Chemical Manufacturers Association. Additional references are provided below.

Although appropriate references give information about a substance's environmental behavior, additional field data will likely be required. Most frequently, air monitoring and sampling are needed to verify and identify the presence of hazardous materials, to calculate concentrations, and to confirm dispersion patterns.

**Available references (with several websites) for HAZMAT and response organization information:**

Many of the following publications/programs can also be found at ADEC offices and with the local fire departments.

- The Unified Plan, which addresses the Unified Command Structure in Annex B, Appendix II, and also provides statewide Hazmat response guidance in Annex L. <http://www.akrrt.org/plans.shtml>
- Commandant Instruction #16465.30
- National Contingency Plan (40 CFR part 300)
- The Alaska Incident Management System (AIMS) Guide (November 2002 Revision 1) [http://www.akrrt.org/aim/aim\\_toc.shtml](http://www.akrrt.org/aim/aim_toc.shtml)
- Coastal Sensitivity Atlas
- USCG CHRIS Manual
- DOT Emergency Response Guidebook (current edition) - <http://hazmat.dot.gov/guidebook.htm>
- CHEMTREC, Chemical/Hazardous Substance information, 800-424-9300
- SAX - Dangerous Properties of Hazardous Materials
- IMDC Codes
- Material Safety Data Sheets (MSDS) - <http://www.hazard.com/msds/index.php>
- NFPA Fire Protection Guide On Hazardous Materials
- NIOSH/OSHA/USCG/EPA Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities. Also, the NIOSH/OSHA Pocket Guide Book <http://www.cdc.gov/niosh/npg/npg.html>
- HartCrowser, Inc., 1999. 1998 Statewide Hazardous Material Inventory. Prepared for Alaska Department of Environmental Conservation, Division of Spill Prevention and Response.
- HartCrowser, Inc., 1999. Alaska Level A and B Hazardous Material Response Resources. Prepared for Alaska Department of Environmental Conservation, Division of Spill Prevention and Response.
- HartCrowser, 2000. Evaluation of Chemical Threats to the Alaska Public. Prepared for Alaska Department of Environmental Conservation, Division of Spill Prevention and Response.
- State of Alaska Tier Two Summary Report (available through ADEC). The tier two data can be reviewed using the CAMEO program. The basic report is available at: [www.ak-prepared.com/serc/](http://www.ak-prepared.com/serc/)
- Statewide Hazardous Materials (Hazmat) Commodity Flow Study, June 2005. The basic report is available at: [www.ak-prepared.com/serc/](http://www.ak-prepared.com/serc/)
- Oil and Chemical Response Reference Library at the Marine Safety Office in Valdez. This library consists of a Macintosh Computer System with CAMEO, plus all of the publications listed above. A complete library listing is maintained and updated as new/revised publications/programs are received.

## C. EVALUATION

To properly evaluate a hazardous materials release, the incident must be characterized. Incident characterization is the process of positively identifying the substance(s) involved and evaluating the actual or potential public health and environmental impacts. Characterizing a hazardous substance incident is generally a two-phase process, an initial characterization followed by a more comprehensive characterization.

### 1. **Initial Characterization**

The initial characterization is based on information that is readily available or can be obtained fairly rapidly to determine what hazards exist and if immediate protective measures are necessary. During this initial phase, a number of key decisions must be made regarding:

- Imminent or potential threat to public health.
- Imminent or potential threat to the environment.
- Immediate need for protective actions to prevent or reduce the impact.
- Protection of the health and safety of response personnel.

If the incident is not immediately dangerous to human life or sensitive environments, more time is available to evaluate the hazards, to design plans for cleanup, and to establish safety requirements for response personnel. Information for characterizing the hazards can be obtained from on-scene intelligence (records, placards, eye witnesses, etc.), direct-reading of instruments, and sampling. Depending on the nature of the incident and the amount of time available, various combinations of this information gathering process are used. The following outline describes an approach to collecting data needed to evaluate the impact of a hazardous materials incident.

- An attempt should be made to gather as much information as possible, such as:
  - Description and exact location of the incident.
  - Date and time of occurrence.
  - Hazmats involved and their physical/chemical properties.
  - Present status of incident.
  - Potential pathways of dispersion.
  - Habitation - population at risk.
  - Environmentally sensitive areas - endangered species, delicate ecosystems.
  - Economically sensitive areas - industrial, agricultural.
  - Accessibility by air, roads and waterways.
  - Current weather and forecast (next 24 to 48 hours).
  - Aerial photographs/video when possible.
  - A general layout and mapping of the site.
  - Available communications.
- Off-site reconnaissance (that can be conducted in Level D) should be the primary inspection for initial site characterization when the hazards are largely unknown or there is no urgent need to go on-site. Off-site reconnaissance consists of visual observations and monitoring for atmospheric hazards near

the site. Collecting of off-site samples may identify substance migration or indicate on-site conditions.

Off-site reconnaissance would include:

- Monitoring ambient air with direct-reading instruments for:
    - Organic and inorganic vapors, gases, and particulates
    - Oxygen deficiency
    - Specific materials, if known
    - Combustible gases and radiation
  - Identifying placards, labels, or markings on containers or vehicles.
  - Noting the configuration of containers, tank cars, and trailers.
  - Noting the types and numbers of containers, tank cars, trailers, buildings, and impoundments.
  - Identifying any leachate or runoff.
  - Looking for biological indicators - dead vegetation, animals, insects or fish.
  - Noting any unusual odors or conditions.
  - Observing any vapors, clouds, or suspicious substances.
  - Taking off-site samples of air, surface water, ground water (wells), drinking water, site runoff, and soil.
  - Reviewing the Dangerous Cargo Manifest.
  - Conducting interviews with workers, witnesses, observers, or inhabitants.
- An on-site survey (conducted in a minimum of Level B protection until hazards can be determined) may be necessary if a more thorough evaluation of hazards is required. On-site surveys require personnel to enter the restricted or hot zone of the site. Prior to any personnel conducting an on-site survey, an entry plan addressing what will be initially accomplished and prescribing the procedures to protect the health and safety of response personnel will be developed. On-site inspection and information gathering would include:
- Monitoring ambient air with direct-reading instruments for:
    - Organic and inorganic vapors, gases, and particulates
    - Oxygen deficiency
    - Specific materials, if known
    - Combustible gases and radiation
  - Observing containers, impoundments, or other storage systems and noting:
    - Numbers, types, and quantities of materials.
    - Condition of storage systems (state of repair, deterioration, etc.)
    - Container configuration or shape of tank cars, trailers, etc.
    - Labels, marking, identification tags, or other indicators of material
    - Leaks or discharges from containers, tanks, ponds, vehicles, etc.
  - Noting physical condition of material:
    - Solids, liquids, gases
    - Color
    - Behavior (foaming, vaporizing, corroding, etc.)
  - Determining potential pathways of dispersion - air, surface water, ground water, land surface, biological routes
  - Taking on-site samples of storage containers, air, surface water, ground water (wells), drinking water, site runoff, and soil.

## **2. Comprehensive Characterization**

Comprehensive characterization is the second phase, a phase which may not be needed in all responses. It is a more methodical investigation to enhance, refine, and enlarge the information base obtained during the initial characterization. This phase provides more complete information for characterizing the hazards associated with an incident. As a continuously operating program, the second phase also reflects environmental changes resulting from any response activities.

Information obtained off-site and during the initial site entries can be sufficient to thoroughly identify and assess the human and environmental effects of an incident. But if it is not, an environmental surveillance program needs to be implemented. Most of the same type of information collected during the preliminary inspection is needed, but more detailed and extensive. Instead of one or two groundwater samples being collected, for instance, a broad and intensive groundwater survey may be needed over a long period of time.

Results from preliminary inspections provide a screening mechanism for a more complete environmental surveillance program to determine the full extent of contamination. Since mitigation and remedial measures may cause changes in the original conditions, a continual surveillance program can be used to identify and track fluctuations or ramifications.

### **D. EVACUATION**

Neither the Coast Guard nor the EPA has the authority to order an evacuation of facilities or communities in the event of a release; this authority lies with local or state entities. However, evacuation should be strongly recommended to local civil authorities (police, fire departments, etc.) whenever a hazardous release poses a threat to surrounding personnel. With a release of hazardous materials, the area should be isolated for at least 100 meters in all directions until the material is identified. Only trained and properly equipped personnel should be allowed access.

Quick evacuation tables are located in the back of the DOT Emergency Response Guidebook. Evacuation should always begin with people in downwind and in low-lying areas. Continual reassessment is necessary to account for changes in weather wind, rate of release, etc. CAMEO should be used to provide an air plume trajectory model for downwind toxic plume distances. Again, constant reassessment will be required.

Issues concerning disaster assistance should be referred to DMVA's Division of Homeland Security and Emergency Management.

### **E. DIRECTION AND SITE/ENTRY CONTROL**

The purpose of site control is to minimize potential contamination of emergency response personnel, protect the public from any hazards, and prevent unlawful entry onto the site which may result in an additional release of material, destruction of evidence, or prolong the cleanup effort. The degree of site control necessary depends on site characteristics, site size, and the surrounding community.

Several site control procedures should be implemented to reduce potential exposure and to ensure that an effective, rapid cleanup is conducted:

- Secure site, and establish entry control points.

- Compile a site map.
- Prepare the site for subsequent activities.
- Establish work zones.
- Use the buddy system when entering.
- Establish and strictly enforce decontamination procedures.
- Establish site security measures.
- Set up communications networks.
- Enforce safe work practices.

For complete guidance on Direction and Site Entry/Control, refer to the NIOSH/OSHA/USCG/EPA Occupational Safety & Health Guidance Manual for Hazardous Waste Site Activities (Publication No. 85-115).

#### **F. COMMAND AND CONTROL**

*The community's local on-scene coordinator (LOSC) is in command and control until he or she determines that there is no longer an imminent threat to public safety.* The LOSC can at any time request higher authority to assume command and control of an incident. All applicable local emergency plans should be consulted. After the LOSC has determined that public safety is not at risk, then the Unified Command response organization will assume command and control of the incident.

Government response organization in the State of Alaska is based on the Unified Command structure of the Incident Command System (ICS), which is outlined in the Alaska Incident Management System (AIMS) Guide. The Unified Command brings together the FOSC, the SOSC, and the Responsible Party's Incident Commander (along with the LOSC if participation is warranted and available) into one governing unit. The ICS and the Unified Command structure are discussed in further detail in the **Unified Plan, Annex B**, and in the **AIMS Guide**. The organizational structure and Hazmat team member duties and responsibilities for Hazmat response are also described in the AIMS Guide, Appendix B.

#### **G. COMMUNICATIONS**

A communications plan for all sections of the ICS will be established by the Incident Commander. At this time, a pre-established generic communications plan accounting for the various police, fire, federal, state, and local frequencies has not been established. State and federal communications resources are listed in **the Unified Plan, Annex E, Appendix V** and in the Resources Section of this plan.

#### **H. WARNING SYSTEMS & EMERGENCY PUBLIC NOTIFICATION**

For FOSC/SOSC access to emergency broadcast systems refer to the **Unified Plan, Annex E, Appendix III, Tab V**. For a listing of radio, newspaper, and television contacts refer to the Information Directory in the Resources Section of this Plan. Public Information/Community Relations guidelines and information are provided in the **Unified Plan, Annex I**.

**I. HEALTH AND MEDICAL SERVICES**

For hospital and clinic information refer to the Resources Section of this plan.

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## **HAZMAT: PART TWO – RESPONSIBLE PARTY HAZMAT ACTION**

### **A. DISCOVERY AND NOTIFICATION**

Any person in charge of a vessel or a facility shall report releases of hazardous materials in excess of the reportable quantity (RQ) as defined in Table 1 of 49 CFR 172.101 to the National Response Center (NRC) 24-hour telephone number, 800-424-8802, in accordance with the National Contingency Plan. Any release regardless of the amount is required to be reported to the State of Alaska. Notification of the State can be done by contacting the Department of Environmental Conservation, either thru the DEC Area Response Team or through the 24-hour telephone number, 800-478-9300.

If direct reporting to the NRC is not immediately practicable, reports will be made to the Captain of the Port (COTP) Prince William Sound (the USCG FOSC for the PWS Subarea, 907-835-7205, or duty officer cell phone at 831-0192). The Environmental Protection Agency's pre-designated FOSC may also be contacted through the regional 24-hour response telephone number (206-553-1263). All such reports shall be promptly relayed to the NRC.

*In any event, the person in charge of the vessel, vehicle, or facility involved in a hazardous material release shall notify the NRC and the State of Alaska as soon as possible.*

As much information as possible shall be reported. This will include, but is not limited to, the following:

- Location of the release
- Type(s) of material(s) released, including any pertinent MSDS data
- An estimate of the quantity of material released
- Possible source of the release
- Date and time of the release
- Population and/or environment at risk.

### **B. REMOVAL ACTION**

The responsible party shall, to the fullest extent possible, perform promptly the necessary removal action to the satisfaction of the predesignated FOSC and SOSC.

Regardless of whether or not a cleanup will be conducted, the responsible party shall cooperate fully with all federal, state, and local agencies to ensure that the incident is handled in a safe, proper manner.

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## **HAZMAT: PART THREE – STATE HAZMAT ACTION**

### **A. AUTHORITY**

The Alaska Department of Environmental Conservation is mandated by statute to respond promptly to a discharge of oil or a hazardous substance (AS 46.80.130). Additionally, the ADEC may contract with a person or municipality in order to meet response requirements, or establish and maintain a containment and cleanup capability (i.e., personnel, equipment and supplies) (AS 46.09.040).

### **B. RESPONSE POLICY**

The ADEC is currently operating in accordance with an August 1992 policy decision which precludes ADEC personnel from responding to situations which require Level A/B protection. A reduction in FY 93 funding resulting in corresponding decreases in the level of equipment, training, and overall readiness. ADEC personnel are prohibited from responding with or using personal protective equipment beyond the Level C protection category (as defined in EPA standards).

For additional information regarding the State's general response policy, refer to the **Unified Plan, Annex A, Appendix VI, Tab C.**

### **C. STATE RESPONSE CAPABILITIES**

The ADEC has entered into local response agreements with the Fairbanks North Star Borough (FNSB), the Municipality of Anchorage (MOA), the City of Valdez, and the City of Kodiak. These teams (along with the 103<sup>rd</sup> Civil Support Team, the EPA team, and other teams in the State) comprise the Statewide Hazmat Response Team. In the event of a hazmat release requiring immediate response, the ADEC pre-designated SOSC may request support from any of the Hazmat Response Teams. These teams maintain a Level A entry capability and can respond beyond their jurisdictional boundaries at the request of the SOSC. The teams are to be used strictly for emergency response operations. Once the immediate hazard is dealt with, the teams will be released to return to their home station. Post-response recovery operations will be handled by the responsible party (if known) or through ADEC response term contractors or Federal contractors.

ADEC currently maintains several term contracts for hazmat assessment, contaminated sites and hazmat/unknowns response, and oil spill response. These term contractors are listed in the **Unified Plan (Annex E, Appendix III, Tab X)**. Several of these term contractors possess limited hazmat response capability.

Another state asset is the 103<sup>rd</sup> Civil Support Team (CST), based at Fort Richardson, Alaska. The 103<sup>rd</sup> CST can be requested through DMVA's Division of Homeland Security and Emergency Management, State Emergency Coordination Center (SECC – 428-7100 or 1-888-462-7100). The primary focus of the team is weapons of mass destruction (WMD), including chemical and biological warfare agents and toxic industrial chemicals. The 103<sup>rd</sup> CST maintains Level A entry capability and a wide variety of detection instruments and support equipment. The 103<sup>rd</sup> CST can be utilized in an advisory role for hazard modeling or medical assessment and in an assist mode to perform entries alone or in conjunction with other first responders.

#### **D. RESPONSIBILITIES**

State agency roles and responsibilities are clearly defined in the **Unified Plan, Annex A**. During a hazmat incident, the State On-Scene Coordinator's anticipated and prioritized response objectives are as indicated below:

- **Safety**: Ensure the safety of persons involved, responding or exposed from the immediate effects of the incident.
- **Public Health**: Ensure protection of public health and welfare from the direct or indirect effects of contamination on drinking water, air and food.
- **Source Mitigation**: Ensure actions are taken to stop or reduce the release at the source to reduce/eliminate further danger to public health and the environment.
- **Environment**: Ensure protection of the environment, natural and cultural resources, and biota from the direct or indirect effects of contamination.
- **Cleanup**: Ensure adequate containment, control, cleanup and disposal by the responsible party or take over when cleanup is inadequate.
- **Restoration**: Ensure assessment of contamination and damage and restoration of property, natural resources and the environment.
- **Cost Recovery**: Ensure recovery of costs and penalties to the Oil and Hazardous Substance Release Prevention and Response Fund for response containment, removal, remedial actions, or damage.

## HAZMAT: PART FOUR – FEDERAL HAZMAT ACTION

### A. AUTHORITY

Section 311 of the Federal Water Pollution Control Act (FWPCA) and the Comprehensive Environmental Response, Compensation and Liability Act of 1980 are the principal authorities for federal response to discharges of oil and releases of hazardous substances. The procedures and standards for conducting responses are contained in the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (40 CFR 300). Under the NCP and the Unified Plan, each Coast Guard COTP for coastal zones, or EPA representatives for inland zones, coordinates federal activities on-scene as either the predesignated FOSC or as the first federal official in the absence of the predesignated FOSC. The FOSC objective is to ensure rapid, efficient mitigation of actual or threatened pollution releases or discharges.

### B. JURISDICTION

The NCP identifies the Coast Guard COTP for Prince William Sound (Commanding Officer, MSO Valdez) as the predesignated Federal On-Scene Coordinator (FOSC) for the coastal zone, and the EPA (Region 10 Alaska Operations Office) as the pre-designated FOSC for the inland zone. The FOSC will respond to hazardous substance releases, or threats of release, occurring in the coastal or inland zones and not involving DOD vessels or DOD facilities, which originate from:

- Vessels and vehicles (as well as other modes of transportation, e.g., railroad)
- Facilities, other than hazardous waste management facilities, when the release requires immediate action to prevent risk of harm to human life, health, or the environment.
- Hazardous waste management facilities, or illegal disposal areas, when the FOSC determines emergency containment or other immediate removal actions are necessary prior to the arrival of the EPA OSC.

For all shoreside incidents in the coastal zone, once the immediate threat to human life, health, or the environment has been abated and the character of the response changes to a long-term cleanup or site remediation, the FOSC responsibilities will be transferred from the USCG COTP to a designated EPA official.

**Note: The Local On-Scene Coordinator (LOSC) would be the person in charge as long as there is an immediate threat to public health or safety. The LOSC may defer to the FOSC or SOSC (per the Unified Plan, Annex B).**

### C. RESPONSE POLICY

The USCG will follow the policy guidance contained in COMDTINST M16465.30, "Policy Guidance for Response to Hazardous Chemical Releases", and the Marine Safety Manual, Volume VI, Chapter 7 when responding to a hazardous chemical release.

The USCG and other federal agencies in Alaska will maintain a "conservative" Level D response capability level. "Conservative" response consists of recommending evacuating the affected area and maintaining a safe perimeter while attempting to positively identify the pollutant and outlining a clear course of action. Federal personnel, with the exception of specialized teams (e.g., the National Strike Force and the Pacific Strike Team, and the EPA START Team), will not enter a hazardous environment.

This response posture is appropriate due to insufficient numbers of trained or equipped personnel to allow a safe and proper entry into a hazardous environment and the low risk of a chemical release in the area. Refer to the **Unified Plan** for a description of the National Strike Force and other special forces.

Level D protection is primarily work uniform/coveralls, safety boots, safety goggles and a hard hat. This provides minimal protection. Level D must not be worn for "entry" into any hazardous materials situation. It does NOT provide protection from chemicals. Level D protection strictly applies to non-hazardous environments (i.e., Command Post, Cold Zone, etc.).

In situations requiring an entry into a hazardous environment, federal agencies will rely on the capabilities of the USCG Pacific Strike Team, EPA Emergency Response Teams (ERTs), state and local hazmat response teams, if available, and industry or commercial resources.

In implementing this conservative response posture, the COTP PWS will carry out all the FOOSC functions not requiring entry of unit personnel into a hazardous environment. These functions include:

- Conducting preliminary assessment of the incident.
- Carrying out COTP measures such as restricting access to affected areas, controlling marine traffic (safety zones), notifying affected agencies, coordinating with state and local agencies, and assisting as resources permit.
- Conducting local contingency planning.
- Identifying responsible parties, and informing them of their liability for removal costs.
- Carrying out "first aid" mitigation if the situation warrants and capability exists.
- Monitoring cleanup activities.

The CAMEO (Computer-Aided Management of Emergency Operations) computer programs will be an important part of any chemical release incident. The CAMEO chemical database with Codebreaker and Response Information Data Sheets modules provide a rapid means of identifying chemicals and their associated hazards. The ALOHA air modeling program, part of CAMEO, provides a rapid means of developing a downwind hazard evaluation. MSO Valdez Port Operations Department personnel and/or the NOAA SSC will be responsible for operating the CAMEO programs during a hazardous chemical release for the FOOSC. Local fire departments and EPA also maintain CAMEO to assist in their response efforts. Programs for the ALOHA model need to be frequently updated to account for changing wind and weather conditions, source strength, and other variable conditions.

# HAZMAT: PART FIVE – SUBAREA HAZMAT RISK ASSESSMENT

## A. GENERAL

The Prince William Sound Subarea includes the major communities of Valdez, Whittier and Cordova, and several other smaller communities. The Glenn, Richardson, and Edgerton Highways transect the region. Several inland communities plus Valdez are connected to this interior highway network which provides transportation routes to the larger communities of Fairbanks and Anchorage.

Several facilities within the subarea store and utilize chemicals categorized as extremely hazardous substances. Large quantities of flammable petroleum products, such as propane and gasoline, also are stored at several facilities within the subarea. Some facilities store and utilize compressed gasses. This section provides general information on the location of extremely hazardous substances within the PWS Subarea.

### 1. Chemical Inventory

Based on tier two reports contained in the CAMEO database, the most prevalent extremely hazardous substances in the region are:

- anhydrous ammonia
- sulfuric acid
- chlorine

Extremely hazardous substances are generally transported into the subarea from southern ports via water and delivered either direct to facilities or transported to facilities by truck over local road systems. Some substances may be shipped by air or come into the area aboard fishing-industry vessels.

### 2. Chemical Risks

This subsection identifies the hazards associated with the most common extremely hazardous substances present within the subarea in amounts greater than the federally-mandated threshold planning quantities. The properties of each substance and how they affect humans are discussed below. Of the extremely hazardous substances known to be present, ammonia poses the greatest threat.

*Anhydrous ammonia* is a colorless gas with a characteristic odor. The term "anhydrous" is used to distinguish the pure form of the compound from solutions of ammonia in water. Like chlorine, anhydrous ammonia is neither explosive nor flammable, but will support combustion. It readily dissolves in water to form an aqua ammonia solution. Anhydrous ammonia is considerably lighter than air and will rise in absolutely dry air. As a practical matter, however, anhydrous ammonia immediately reacts with any humidity in the air and will often behave as a heavier gas. The chemical reacts with and corrodes copper, zinc and many alloys.

Anhydrous ammonia affects the body in much the same way as chlorine gas. Like chlorine, anhydrous ammonia gas is primarily a respiratory toxicant. In sufficient concentrations, the gas affects the mucous membranes, the respiratory system and the skin. In high concentrations it can cause convulsive coughing, difficult and painful breathing, and death. Anhydrous ammonia will cause burns if it comes in contact with skin or eyes.

*Sulfuric acid* is a dense, colorless, oily liquid. It is highly reactive with a large number of other substances and is readily soluble in water with release of heat. Fumes are released from the liquid through evaporation, and heat as a result of fire or other chemical reaction can significantly increase emissions. Both the liquid and its solutions will cause burns if allowed to come in contact with skin or eyes. Fumes are highly toxic, and reaction of the acid with a variety of substances can produce other toxic gases.

*Chlorine* is a greenish-yellow gas with a characteristic odor. It is neither explosive nor flammable, but is a strong oxidizing agent and will support combustion. It is only slightly soluble in water. At about two and one-half times the density of air, it will spread as a dense gas flowing downhill under the influence of gravity. The chemical has a strong affinity for many substances and will usually produce heat on reacting. While dry chlorine is non-corrosive at ordinary temperatures, it becomes extremely corrosive in the presence of moisture. Chlorine gas is primarily a respiratory toxicant. In sufficient concentrations, the gas affects the mucous membranes, the respiratory system and the skin. In high concentrations it can permanently damage the lungs and can cause death by suffocation. Liquid chlorine will cause burns if it comes in contact with skin or eyes.

### **3. Response Capability**

The Valdez Fire Department has equipped and trained a Hazardous Materials (Hazmat) Response Team for response to chemical releases and spills. In the event of a hazardous substance release outside of the City of Valdez, the ADEC can request support from the Valdez Hazmat Response Team through their agreement with the City of Valdez. This valuable agreement allows ADEC to request a Level A Hazmat team to respond to an event anywhere in the state, as long as the Valdez Fire Department can spare the services of the equipment and trained personnel.

In addition, several of the larger industrial facilities within the subarea are required to have Risk Management Plans (RMPs) for chemicals exceeding threshold quantities under 40 CFR Part 68 regulations. The RMPs contain emergency response plans for mitigating facility releases. Large bulk fuel production and storage facilities within the subarea also are required to maintain Facility Response Plans and specific levels of response equipment to mitigate oil releases in accordance 40 CFR Part 112.20 regulations.

The communities of Valdez, Cordova, and Whittier have developed and maintain local emergency management plans, or all-hazard plans, to respond to a variety of emergencies including hazardous substance releases.

### **B. FACILITIES**

Table C-1 identifies communities with industrial facilities that store and utilize extremely hazardous substances in significant quantities. Table C-2 identifies facilities that store and utilize other chemicals in Valdez. Table C-3 identifies communities with industrial facilities that store, utilize, or produce significant quantities of petroleum products. Emergency responders should refer to the CAMEO database program to determine specific chemical hazards at a particular facility, based on Tier Two reporting requirements.

**TABLE C-1: PWS LOCATIONS WITH EXTREMELY HAZARDOUS SUBSTANCES (EHS)**

<b>EHS</b>	<b>Max Amt (lbs)</b>	<b>Location</b>
Ammonia, Anhydrous	7732	Cordova
Ammonia, Anhydrous	2900	Valdez
Sulfuric Acid	99	Gakona
Sulfuric Acid	999	Glennallen
Sulfuric Acid	9999	Glennallen
Sulfuric Acid	9999	Glennallen
Sulfuric Acid	999	Glennallen
Sulfuric Acid	99	Glennallen
Sulfuric Acid	99	Glennallen
Sulfuric Acid	99	Northway
Sulfuric Acid	999	Paxson
Sulfuric Acid	999	Paxson
Sulfuric Acid	99	Tanacross
Sulfuric Acid	9999	Tok
Sulfuric Acid	9999	Valdez
Sulfuric Acid	9999	Valdez
Sulfuric Acid	999	Valdez
Sulfuric Acid	9999	Yost
Sulfuric Acid - Battery Electrolyte	500	TAPS
Sulfuric Acid – Pure And Battery Electrolyte	60000	Valdez

Note:

1. The above table summarizes the most common extremely hazardous substances (EHS) present above the associated threshold quantities (TQ) as reported by facilities in the PWS Subarea on Tier Two forms. Facilities in other communities within the subarea may have these and other extremely hazardous substances at quantities below the EHS TQ.
2. Consult the CAMEO database for information on all chemicals reported by facilities within the PWS Subarea.

<b>TABLE C-2: OTHER CHEMICALS – PRINCE WILLIAM SOUND LOCATIONS</b>			
<b>Hazardous Substance (HS)</b>	<b>Max Amt (lb)</b>	<b>Avg Amt (lb)</b>	<b>Location</b>
Acetylene	322	322	Valdez
Aero-o-lite 3%, Green Foam	366000	366000	Valdez
Argon	679	679	Valdez
Asphalt Bitumen (Petroleum Asphalt)	123088	2076	Valdez
Bionutrient 2170	220000	160000	Valdez
Bromotrifluoromethane (Halon 1301 Cylinders)	99999	99999	TAPS
Carbon Dioxide	632	632	Valdez
Carbon Dioxide	5280	5280	Valdez
CLEARTRON ZB-258	108000	108000	Valdez
COREXIT 9527 - Dispersant	100800	100800	Valdez
Corrosion Inhibitor	9800	9800	Valdez
Corrosion Inhibitor	99999	9999	TAPS
Ethylene Glycol	280000	280000	Valdez
Ethylene Glycol & Diethylene Glycol Monobutyl Ether Mixture (Ansulite 3% AFFF)	99999	99999	TAPS
Fluoroprotein Foam - National	510000	510000	Valdez
Helium	15.5	15.5	Valdez
Nitrogen	280	280	Valdez
Oxygen	891	891	Valdez
Sodium Hydroxide	159000	159000	Valdez
<p>* The Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA) categorizes certain dangerous chemicals as Extremely Hazardous Chemicals (EHS).</p> <p>** The EPCRA requires facilities to report the presence of any chemical that has a Material Safety Data Sheet (MSDS) as administered by the Occupational Safety and Health Administration (OSHA) and is stored in amounts above certain threshold levels.</p>			

**TABLE C-3: OIL AND LIQUID GASES – PRINCE WILLIAM SOUND LOCATIONS**

Substance	Max Amt (lbs)	Avg Amt (lbs)	Location
Asphalt Bitumen (Petroleum Asphalt)	123,088	2,076	Valdez
Aviation Gasoline	26,000	16,250	Valdez
Petroleum Lubricating Oil	3,527	2,200	Copper Center
Aviation Gasoline – 100LL	7,823	5,867	Copper Center
Aviation Gasoline – 100LL	7,870	5,830	Copper Center
Aviation Gasoline – 100LL	15,760	11,700	Copper Center
Crude Oil	180,027,750	180,027,750	Valdez
Diesel Fuel	9,999,999	9,999,999	TAPS
Diesel Fuel	8,507	8,507	Valdez
Diesel Fuel	55,000	30,000	Valdez
Diesel Fuel	24,000,000	24,000,000	Valdez
Diesel Fuel #1	999,999	999	Tok
Diesel Fuel #2	99,999	99,999	Gakona
Diesel Fuel #2	9,999	9,999	Glennallen
Diesel Fuel #2	99,999	99,999	Glennallen
Diesel Fuel #2	99,999	99,999	Glennallen
Diesel Fuel #2	99,999	99,999	Glennallen
Diesel Fuel #2	99,999	99,999	Glennallen
Diesel Fuel #2	99,999	99,999	Glennallen
Diesel Fuel #2	99,999	99,999	Paxson
Diesel Fuel #2	99,999	99,999	Paxson
Diesel Fuel #2	7,700	7,700	Cordova
Diesel Fuel #2	14,000	14,000	Cordova
Diesel Fuel #2	99,999	99,999	Northway
Diesel Fuel #2	99,999	99,999	Tanacross
Diesel Fuel #2	99,999	99,999	Tok
Diesel Fuel #2	99,999	99,999	Yost
Diesel Fuel #2	9,999	9,999	Valdez
Diesel Fuel #2	99,999	99,999	Valdez
Diesel Fuel #2	99,999	99,999	Valdez
Diesel Fuel #2	99,999	99,999	Valdez
Diesel Fuel #2	99,999	99,999	Valdez
Diesel Fuel #2	126,000	17,500	Valdez
Diesel Fuel #2	70,000	66,500	Valdez
Diesel Fuel #2	99,999	99,999	Valdez
Diesel Fuel #2, Marine	999,999	999,999	Valdez
Fuel Oil, (Diesel)	306,180	306,180	Valdez
Fuel Oil, (No. 1)	574,200	402,600	Gakona
Fuel , Turbine Engine Fuel Jet B (Kerosene)	4,083	3,000	Copper Center
Fuel , Turbine Engine Fuel Jet B (Kerosene)	13,766	10,000	Copper Center
Fuel , Turbine Engine Fuel Jet B (Kerosene)	15,187	11,390	Copper Center
Fuel , Turbine Engine Fuel Jet B (Kerosene)	18,225	12,000	Copper Center
Gasoline	1,469	1,000	Copper Center
Gasoline	4,013	2,500	Copper Center
Gasoline	5,247	3,900	Copper Center
Gasoline	99,999	99,999	TAPS

**TABLE C-3: OIL AND LIQUID GASES – PRINCE WILLIAM SOUND LOCATIONS**

Substance	Max Amt (lbs)	Avg Amt (lbs)	Location
Gasoline	7,000	7,000	Valdez
Heating Oil #1/ Diesel Fuel	3,080	3,080	Copper Center
Heating Oil #1/ Diesel Fuel	3,150	1,750	Copper Center
Heating Oil #1/ Diesel Fuel	6,300	4,725	Copper Center
Heating Oil #1/ Diesel Fuel	9,450	7,000	Copper Center
Heating Oil #1/ Diesel Fuel	10,451	8,000	Copper Center
Heating Oil #1/ Diesel Fuel	18,900	14,000	Copper Center
Heating Oil #1/ Diesel Fuel	28,350	21,000	Copper Center
Heating Oil, DOT Class 3	10,000	10,000	Valdez
Hydraulic / Lube Oils	85,000	60,000	Valdez
Jet Fuel A-50	130,000	140,003	Cordova
Jet Fuel B / JP-4 Aviation Fuel	65,000	42,250	Valdez
Lube Oil	99,999	99,999	TAPS
Oil, Transformer	217,600	217,600	Gakona

Note:

1. The above table identifies communities where large quantities of petroleum products are present as reported by facilities in the PWS Subarea on Tier Two forms.
2. Consult the CAMEO database for additional information on the quantities and specific locations of petroleum products at facilities within the PWS Subarea.
3. Where quantities are depicted as “999,” “9,999,” “99,999,” or “999,999,” these are not actual volumes. The reporting facility provided range values for volumes and not actual volumes, and these figures represent the maximum volume in the range value provided.

## C. TRANSPORTATION

Three extremely hazardous substances (chlorine, ammonia, and sulfuric acid) are known to be transported to communities within the planning district, occasionally in amounts exceeding threshold planning quantities. The properties and health effects of these four extremely hazardous substances were discussed previously.

Extremely hazardous substances are normally delivered via air, water, and road to various facilities within the subarea. The following information specific to the PWS subarea) was extracted from the Statewide Hazmat Commodity Flow Study conducted in 2005.

**Air Transportation Mode:** The hazardous materials shipped via air transportation to the Prince William Sound Subarea were identified as Class 3 flammable liquid, paint, and Class 9 miscellaneous, ORM-D life saving appliance, self-inflating. One other item entered as a consumer commodity was reported, with no UN identification number; therefore, the hazard class is not identified.

**Highway Transportation Mode:** Hazardous materials reported by companies that shipped via highway route between Alaska and Washington are included in this subarea. E & E assumed that these materials moved via the Alaska Highway and through Tok in this subarea. The majority of the hazardous materials grouped in the Prince William Sound Subarea were en route to Southcentral Alaska (Anchorage, Seward and the Kenai Peninsula) or to Fairbanks and Prudhoe Bay. Although companies did not report the quantities of the materials shipped, the materials shipped most frequently throughout the year were Class 3 flammable liquids (adhesives, flammable liquids, N.O.S., paint), Class 2 flammable and non-flammable gases (lighters or lighter refills, liquefied petroleum gas, methyl acetylene and propadiene mixtures), and Class 8 corrosives (batteries, wet, filled with acid, corrosive liquids, sulfuric acid).

### **Marine Transportation Mode:**

None of the transportation companies that responded to the survey reported any deliveries of oil and hazardous substances to communities in this subarea. However, bulk fuel facilities exist in this subarea at the following communities: Chenega Bay, Cordova, Tatitlek, Whittier, and Valdez. Fuel deliveries to several of these communities are made periodically by tank barges.

The 2003 APDT report notes that the Prince William Sound subarea typically has 50-200 fuel transfers annually, with a fuel volume of 100 million to 200 million gallons. Tank barges operate in the subarea throughout the year, and there are approximately 30 vessel transits annually.

**Pipeline Transportation Mode:** With its terminus in Valdez, the Trans Alaska Pipeline System, operated by Alyeska Pipeline Service Company is the major hazardous material transported by pipeline for this subarea. Crude oil is a Class 3 flammable liquid. The average volume of crude oil transported daily for 2003 was ~~is~~ 993,000 barrels (1 bbl = 42 gallons). One other pipeline was reported for this subarea for the transportation of diesel fuel, marine diesel heating oil #1, and low sulfur insulating oil.

## D. PLANNING PRIORITIES

The relative risks associated with extremely hazardous substances are moderate to high in the PWS Subarea. Consequently, priorities for emergency planning in the subarea might include the following:

- a release of ammonia, chlorine, or other extremely hazardous substance from a facility;

- a release of extremely hazardous substances resulting from a transportation-related accident.

**E. REFERENCES**

Alaska Federal/State Preparedness Plan for Response to Oil & Hazardous Substance Discharges/Releases (Unified Plan) May 1994, Alaska Regional Response Team, 1994. (as amended).

1998 Statewide Hazardous Material Inventory, HartCrowser, 1999. Prepared for Alaska Department of Environmental Conservation, Division of Spill Prevention and Response.

Alaska Level A and B Hazardous Material Response Resources, HartCrowser, 1999. Prepared for Alaska Department of Environmental Conservation, Division of Spill Prevention and Response.

Evaluation of Chemical Threats to the Alaska Public, HartCrowser, 2000. Prepared for Alaska Department of Environmental Conservation, Division of Spill Prevention and Response.

State of Alaska Tier Two Summary Report (available through ADEC). The tier two data can be reviewed using the CAMEO program. The basic report is available at: [www.ak-prepared.com/serc/](http://www.ak-prepared.com/serc/)

Statewide Hazardous Materials (Hazmat) Commodity Flow Study, June 2005. The basic report is available at: [www.ak-prepared.com/serc/](http://www.ak-prepared.com/serc/)

## **HAZMAT: PART SIX – RADIOLOGICAL AND BIOLOGICAL ISSUES**

Procedures for radiological response are included in the **Unified Plan, Annex J**.

Presently, a biological response is not addressed, and procedures are not under development for biological issues.

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