PRINCE WILLIAM SOUND
SUBAREA CONTINGENCY PLAN

HAZARDOUS MATERIALS
SECTION

HAZMAT: PART ONE – HAZMAT RESPONSE

A. INITIAL NOTIFICATION OF RESPONSE AGENCIES

All hazardous material (hazmat) 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 Federal On-Scene Coordinator (FOSC). The FOSC shall contact the ADEC State On-Scene Coordinator (SOSC). If ADEC receives notification first, the SOSC 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 will relay the notification to local communities, resource agencies, medical facilities, and others as necessary and begin coordination with a Local On-Scene Coordinator (LOSC) if the incident poses an immediate threat to public health and safety.

As long as there is an immediate threat to public safety, LOSC serves as the ultimate command authority if the FOSC or SOSC does not assume the lead role for the response or the LOSC request a higher authority to assume that responsibility. 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. The local fire department and/or the Local Emergency Planning Committee should have the most current records on local storage of hazardous materials that are in quantities that meet federal reporting requirements.

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, 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 (PWS) subarea region can be found in the U.S. Coast Guard (USCG) CHRIS Manual, the Department of Transportation (DOT) Hazardous Materials 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, 1-800-424-9300, 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 publications/ programs listed here 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. www.alaskarrt.org/Documents.aspx?f=173
- Commandant Instruction #16465.30
- National Contingency Plan (40 CFR part 300)
- The Alaska Incident Management System (AIMS) Guide (November 2002 Revision 1) – www.dec.alaska.gov/spar/perp/docs/AIMS_Guide-Complete(Nov02).pdf
- Coastal Sensitivity Atlas
- USCG CHRIS Manual
- DOT Emergency Response Guidebook (current edition) – www.phmsa.dot.gov/hazmat/training/publications
- CHEMTREC, Chemical/Hazardous Substance information, 1-800-424-9300
- Sax's Dangerous Properties of Industrial Materials
- International Maritime Dangerous Goods Codes
- Safety Data Sheets - www.hazard.com/msds/index.php
- NFPA Fire Protection Guide On Hazardous Materials (current edition)
- NIOSH/OSHA/USCG/EPA Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities. Also, the NIOSH/OSHA Pocket Guide Book www.cdc.gov/niosh/npg/npg.html
- Hart Crowser, Inc., 1999. 1998 Statewide Hazardous Material Inventory. Prepared for ADEC, Division of Spill Prevention and Response.
- Hart Crowser, Inc., 1999. Alaska Level A and B Hazardous Material Response Resources. Prepared for ADEC, Division of Spill Prevention and Response.
- Hart Crowser, 2000. Evaluation of Chemical Threats to the Alaska Public. Prepared for ADEC, Division of Spill Prevention and Response.
- Statewide Hazardous Materials Commodity Flow Study, Nuka Research and Planning Group, 2010. Prepared for ADEC and the Alaska Department of Military and Veterans Affairs (DMVA). www.dec.alaska.gov/spar/perp/hazmat/study.html

- Oil and Chemical Response Reference Library at Sector Anchorage. 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.
- Spill Tactics for Alaska Responders Manual, April 2006. Describes the various levels of protection (Levels A, B, C, and D for hazardous materials response).
- www.dec.alaska.gov/spar/perp/star/index.htm.

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 USCG 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 Alaska 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 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

As long as there is an immediate threat to public safety, a LOSC serves as the ultimate command authority if the FOSC or SOSC does not assume the lead role for the response or the LOSC request a higher authority to assume that responsibility. 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, together with FOSC and SOSC, 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 AIMS Guide. The Unified Command brings together the FOSC, the SOSC, and the Responsible Party's Incident Commander (along with the LOSC if an immediate threat still exists to the health and safety of the local populace) into one governing unit. The **Unified Plan**, **Annex B**, and the **AIMS Guide** provide details on the ICS and the Unified Command formations. The organizational structure and Hazmat team member duties and responsibilities for Hazmat response are also further 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, and Appendix V** and in the Resources Section of this plan.

H. WARNING SYSTEMS & EMERGENCY PUBLIC NOTIFICATION

Three separate systems for broadcast of emergency messages are available to Alaska Regional Response Team, FOSC, and SOSC. These include the National Oceanic and Atmospheric Administration Weather Radio System, the State of Alaska Emergency Alert System, and the National Warning System. For details on how to access these systems are provided in the **Unified Plan, Annex E, Appendix III, Tab V**. LOSC or the local emergency services should activate any system they have available through their community (e.g. community alert system). To broadcast an emergency public notice to a specific PWS community, refer to the *Resources Section* of this plan for radio, newspaper, and television contacts.

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, Community Profiles* of this plan.

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 RQ as defined in Table 1 of 49 CFR 172.101 to the National Response Center (NRC) 24-hour telephone number, 1-800-424-8802, in accordance with NCP. Any release regardless of the amount is required to be reported to the State of Alaska. Notification to the state can be done by contacting ADEC either thru the Central Alaska Response Team at 269-3063 or through the 24-hour telephone number at 1-800-478-9300.

If direct reporting to the NRC is not immediately practicable, reports will be made to the Captain of the Port (COTP) PWS Marine Safety Unit Valdez at 835-7205, or duty officer cell phone at 831-0236. EPA's pre-designated FOSC may also be contacted through the regional 24-hour response telephone number at (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 Safety Data Sheet 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 pre-designated FOSC, SOSC and LOSC or local emergency services.

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.

HAZMAT: PART THREE – STATE HAZMAT ACTION

A. AUTHORITY

ADEC is mandated by statute to respond promptly to a discharge of oil or a hazardous substance (AS 46.80.130). Additionally, ADEC may contract with a professional emergency response contractor or municipality in order to meet response requirements, and/or establish and maintain a containment and cleanup capability (i.e., personnel, equipment and supplies) (AS 46.09.040).

B. RESPONSE POLICY

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. 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, the Municipality of Anchorage, the City of Kodiak, the City and Borough of Juneau, and the City of Ketchikan. These teams (along with the 103rd Civil Support Team [CST] and EPA Emergency Response Team) comprise the Statewide Hazmat Response Team. In the event of an hazmat release requiring immediate response, 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.

Another state asset is the 103rd CST, based at Kulis Alaska National Guard Base, Alaska. The 103rd CST can be requested through Alaska DMVA's Division of Homeland Security and Emergency Management, State Emergency Operation Center (SEOC: 428-7100 or 1-888-462-7100). The primary focus of the team is weapons of mass destruction, including chemical and biological warfare agents and toxic industrial chemicals. The 103rd CST maintains Level A entry capability and a wide variety of detection instruments and support equipment. The team can be used 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, SOSC'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 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 NCP (40 CFR 300). Under the NCP and the Unified Plan, each USCG COTP for coastal zones, or EPA representatives for inland zones, coordinates federal activities on-scene as either the pre-designated FOSC or as the first federal official in the absence of the pre-designated FOSC. The FOSC objective is to ensure rapid, efficient mitigation of actual or threatened pollution releases or discharges.

B. JURISDICTION

The NCP identifies USCG COTP for PWS (Commanding Officer, MSU Valdez) as the pre-designated FOSC for the coastal zone, and 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 U.S. Department of Defense vessels or 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 FOSC.

For all shore-side 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 USCG COTP to a designated EPA official.

LOSC would be the person in charge if 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. USCG Incident Management Handbook also provides guidelines for responding to hazardous substance 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 hazmat 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. Refer to the **Unified Plan** for a description of the National Strike Force and other special forces.
In situations requiring an entry into a hazardous environment, federal agencies will rely on the capabilities of USCG Pacific Strike Team, EPA Emergency Response Teams, state and local hazmat response teams, if available, and industry or commercial resources.

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 (e.g. Command Post, Cold Zone, etc.).

In implementing this conservative response posture, COTP for the PWS will carry out all the FOSC 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.

CAMEO computer programs will be an important part of any chemical release incident. CAMEO chemical database with Codebreaker and Response Information Data Sheets modules provide a rapid means of identifying chemicals and their associated hazards. ALOHA (Areal Locations of Hazardous Atmospheres) air modeling program, part of CAMEO, provides a rapid means of developing a downwind hazard evaluation. The National Oceanic and Atmospheric Administration Scientific Support Coordinator will be the primary individual responsible for operating the CAMEO programs during a hazardous chemical release for the FOSC. 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

This part provides general information on the location of extremely hazardous substances and other hazardous substances within the PWS subarea. PWS 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.

Under the requirements of Title III of the Superfund Reauthorization Act (SARA), the local fire department, as well as any Local Emergency Planning Committee, maintains records of reportable quantities of hazardous chemicals stored in the community, including their safety data sheets as reportable under the Tier II requirements of the SARA.

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 PWS subarea.

1. Chemical Inventory

In the compilation of 2011 Tier Two submissions, 42 facilities reported the storage/use of Extremely Hazardous Substances (EHS) above the established reportable quantity.

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

- anhydrous ammonia
- sulfuric acid

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 EHS 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. Ammonia poses the greatest threat out of all the EHS known to be present in the area.

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, ammonia is neither explosive nor flammable, but will support combustion. Anhydrous ammonia 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.

3. Response Capability

There are no Level A Hazmat Response Teams in PWS subarea. In the event of a hazardous substance release, ADEC should be contacted and they can activate the Statewide Hazmat Response Team. This formally agreed arrangement allows ADEC to request a Level A Hazmat team to respond to an event anywhere in the state,

In addition, several of the larger industrial facilities within the subarea are required to have Risk Management Plans for chemicals exceeding threshold quantities under 40 CFR Part 68 regulations. The Risk Management Plans 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 the number of facilities that store and utilize hazardous substances. Local emergency responders receives copies of Tier Two inventory report from local facilities annually. If other emergency responders are deployed to the area, they should contact the local fire department to determine specific chemical hazards at a particular facility, based on Tier Two reports.

TABLE C-1
Number of Facilities with Hazardous Substances

SUBSTANCE	MAX AMOUNT (pounds)	NUMBER OF FACILITIES
EXTREMELY HAZARDOUS SUBSTANCES[1,2,3,4]		
Anhydrous Ammonia	68,730	5
Sulfuric Acid – Pure & Battery Electrolyte	90,602	18
HAZARDOUS SUBSTANCES[3,4]		
Acetylene, Compressed Gas	1,899	4
Aer-O-Lite 3% Green Foam	296,147	5
Air, Compressed Gas	13,353	1
Argon (75% Argon/25% CO_2), Compressed Gas	6,006	2
Bionutrient 2170	39,432	1
Brine	1,351,345	4
Calibration Gases, Compressed Gases	1,096	1
Cleartron ZB-258	13,344	1
Corexit 9500 – Dispersant	86,955	1
Corrosion Inhibitor WAW 5210 and CRW 9110	10,156	1
Ethylene Glycol	281,796	1
Ethylene Glycol Deice Fluid	15,810	1
Flouroprotein Foam – National Aer-O-Foam	576,505	1
Freon 22	900	1
Helium, Compressed Gas	44	1
Hydrogen Peroxide	77,802	1
Hydrogen, Compressed Gas	11	1
Hypochlorite Solution 12.5%	28	1
Lead	27,245	2
Lead Battery Plates	52,574	2
Nitrogen	76,502	4
Oxygen, Compressed Gas	2,989	4
Paint and Thinners	23,492	1
Phosphoric Acid, Solution 52%	9,000	1
Propane, Liquid	192,475	4
Sodium Hydroxide	400,445	1
Therminol 66 Heat Transfer Fluid	13,382	1
Transformer Oil	44,717	1
Tritium Gas, DOT Class 7	1	1
PETROLEUM PRODUCTS[3,4]		
Av Gas	26,000	1
Aviation Turbine Fuel JP-5	130,000	1
Crude Oil	2,311,000,000,000	1
Diesel Fuel (Diesel #1 and #2)	15,483,515	21
Fuel Oil, #1	29,040	1
Gasoline	85,311	3
Heating Oil, DOT Class 3	11,144	10
Hydraulic/Lube Oils	332,965	2
Jet A Fuel	37,400	1
Jet B/JP-4 Aviation Fuel	65,000	1

SUBSTANCE	MAX AMOUNT (pounds)	NUMBER OF FACILITIES
Kerosene	151,800	3

Note:

1. The Emergency Planning and Community Right-to-Know Act of 1986 categorizes certain dangerous chemicals as EHS.
2. The above table summarizes EHS present above the associated threshold quantities as reported by facilities in the Prince William Sound Subarea on 2011 Tier Two forms. Facilities in other communities within the subarea may have these and other extremely hazardous substances at quantities below the EHS threshold quantities.
3. The Emergency Planning and Community Right-to-Know Act of 1986 requires facilities to report the presence of any chemical that has a Safety Data Sheet as administered by the Occupational Safety and Health Administration and is stored in amounts above certain threshold levels. In certain cases involving mining operations, facilities may be exempt from reporting under Mining Safety and Health Administration provisions.

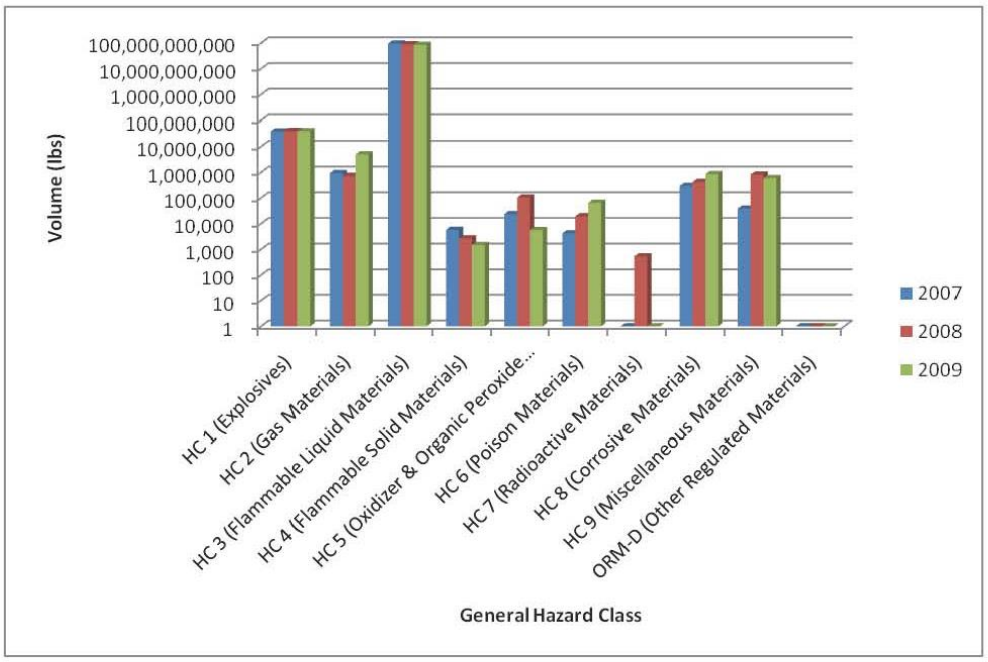
C. TRANSPORTATION

EHS are normally delivered via air, water, and road to various facilities within the subarea. The following pages contain information from the Statewide Hazmat Commodity Flow Study conducted in 2010. The information provided is specific to the Prince William Sound subarea.

5.2 Prince William Sound

Transportation of hazardous materials through the Prince William Sound Subarea (PWS) included three modes: highway, marine, and pipeline. The largest volume commodity was crude oil that is piped from the North Slope to Valdez and then loaded onto tankers and shipped to the lower 48 and other locations within Alaska. There were no shipments via air or rail reported in the data evaluated for this study. The lack of air shipments is suspect, and likely reflective of the limited air transport data captured for this study. The breakdown of hazardous materials volumes from year to year by Hazard Class is depicted in Figure 5-6 below.

Figure 5-6. Volumes of Hazardous Materials Shipped into PWS presented on a log scale



Because HC 3 (Flammable Liquid Materials), specifically petroleum products, makes up 99.9% of the total volume shipped, the breakdown of volumes of hazard class shipments as a percentage of subarea-wide volume does not provide any meaningful insight. If HC 3 (Flammable Liquid Materials) commodities are excluded, HC 1 (Explosives) dominates the remaining hazard classes. If HC 1 (Explosives) is also excluded as these are primarily military shipments of ammunition, the breakdown of hazardous material shipments does provide some meaningful insight. Figures 5-7, 5-8 and 5-9 depict the breakdown of hazardous material shipments within the Prince William Sound Subarea by a percentage of total remaining volume shipped. Of the remaining hazard classes, HC 2 (Gas Materials), HC 8 (Corrosive Materials), and HC 9 (Miscellaneous Materials) dominate the volumes of hazardous materials shipped from year to year.

Figure 5-7. PWS Hazardous Materials Percentage of Total Volume by Hazard Class for 2007

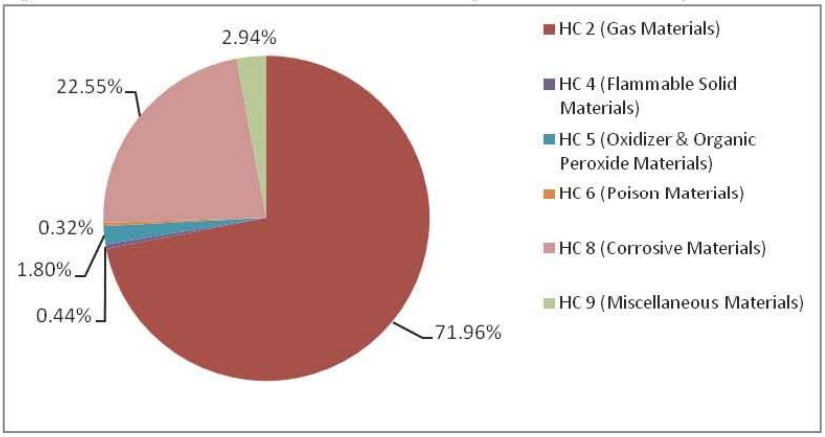


Figure 5-8. PWS Hazardous Materials Percentage of Total Volume by Hazard Class for 2008

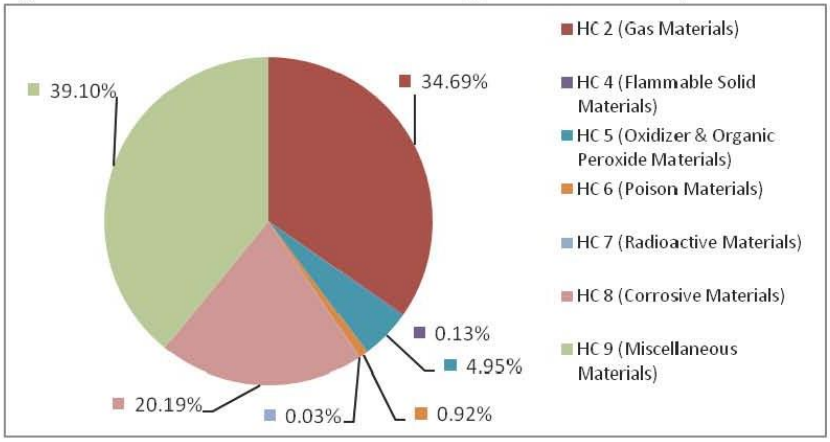
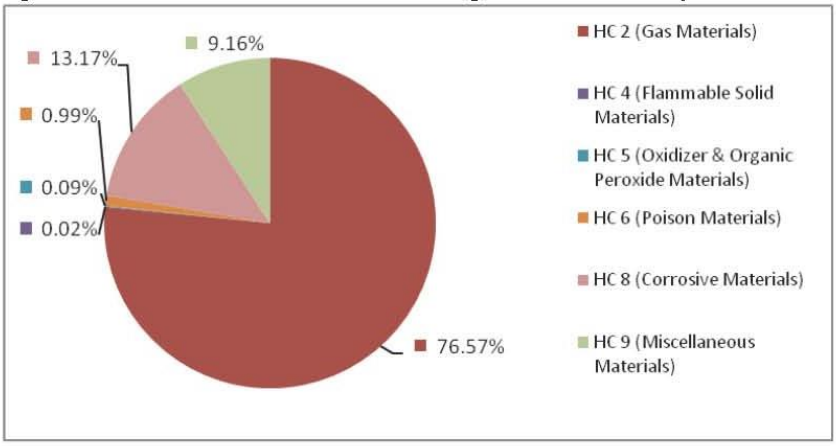


Figure 5-9. PWS Hazardous Materials Percentage of Total Volume by Hazard Class for 2009



In general, HC 3 commodities (Flammable Liquid Materials) dominated the volume of hazardous materials transported within the PWS Subarea by nearly three (3) orders of magnitude. This observation is logical and is aligned with the fact that the Trans-Alaska Pipeline passes through and terminates in this Subarea at the Port of Valdez. Table 5-9 below lists the total volumes (lbs) of hazardous materials by hazard class for each calendar year evaluated in this study.

Table 5-9. Volumes of Hazard Class Transported within PWS Subarea by Calendar Year

Hazard Class	2007 (Total Volume in lbs)	2008 (Total Volume in lbs)	2009 (Total Volume in lbs)
HC 1 (Explosives)	38,804,513	39,785,078	39,158,003
HC 2 (Gas Materials)	938,075	724,767	5,002,646
HC 3 (Flammable Liquid Materials)	94,748,096,616	90,058,924,538	86,025,436,418
HC 4 (Flammable Solid Materials)	5,699	2,634	1,462
HC 5 (Oxidizer & Organic Peroxide Materials)	23,416	103,389	5,602
HC 6 (Poison Materials)	4,176	19,249	64,416
HC 7 (Radioactive Materials)	-	528	-
HC 8 (Corrosive Materials)	294,046	421,712	860,719
HC 9 (Miscellaneous Materials)	38,275	816,786	598,725
ORM-D (Other Regulated Materials)	-	-	-

A more detailed evaluation of each hazard class is provided below. For the Prince William Sound Subarea, the volume threshold for more detailed analysis was set at 50,000 lbs due to the higher numbers of hazmat commodities shipped in this region.

HC 1 Explosives: The primary explosives that were transported through the Prince William Sound Subarea were HC, 1.1, 1.2, 1.3, 1.4 and 1.5. These shipments are primarily made up of the twice-a-year ammunition shipments that arrive in Valdez from Indian Island, WA and are shipped north to Anchorage and/or Fairbanks, AK. The hazard classes for these military ammunition shipments include 1.1, 1.2, 1.3 and 1.4 commodities. However, the specific hazardous materials descriptions, Hazard Class Divisions and/or UN ID Numbers were not available for these shipments. For the most part, the commodity volumes remained fairly consistent from year to year[32]. HC 1.5 commodity shipments increased by approximately 60% between 2007 and 2008, and then decreased by approximately 60% between 2008 and 2009. Table 5-10 lists the primary HC 1 commodities shipped within the PWS Subarea.

[32] Largely based on the detail of the data made available from the military ammunition shipment manager.

Table 5-10. Primary Hazard Class 1 Commodities Shipped within the PWS Subarea

Hazard Class	Hazardous Material Description (Greater than 50,000 lbs Shipped)	UN ID Number
1.1	Explosive Materials (Military Shipments)	Unspecified
	Boosters	0042
1.2	Explosive Materials (Military Shipments)	Unspecified
1.3	Explosive Materials (Military Shipments)	Unspecified
1.4	Explosive Materials (Military Shipments)	Unspecified
	Detonator Assemblies, Non-Electric	0361
	Articles, Explosive, N.O.S.	0349
	Cartridges for Weapons, Blank	0014
	Signal Devices, Hand	0373
1.5	Explosive, Blasting, Type B	0331
	Explosive, Blasting, Type E or Agent Blasting, Type E	0332
	Ammonium Nitrate-Fuel Oil Mixture	0331

HC 2 Gas Materials: HCs 2.0, 2.1 and 2.2 were transported in the Prince William Sound Subarea in 2007 and 2009. In 2008, HC 2.3 was also shipped. The volumes between 2007 and 2008 rose slightly for HC 2.1 and decreased by approximately 30% for HC 2.2. Between 2008 and 2009, both HCs 2.1 and 2.2 increased by an order of magnitude. Table 5-11 lists the primary HC 2 commodities shipped within the PWS Subarea.

No HC 2.3 commodities were shipped in a volume that exceeded 50,000 lbs.

Table 5-11. Primary Hazard Class 2 Commodities Shipped within the PWS Subarea

Hazard Class	Hazardous Material Description (Greater than 50,000 lbs Shipped)	UN ID Number
2.0	Gas Materials	Unspecified
2.1	Petroleum Gases, Liquefied or Liquefied Petroleum Gas	1075
	Residue: Hydrogen, Compressed	1049
	Methane Compressed or Natural Gas Compressed	1971
	Compressed Gas, Flammable, N.O.S.	1954
	Acetylene, Dissolved	1001
2.2	Oxygen Compressed	1072
	Compressed Gas, N.O.S.	1956
	Air, Compressed	1002
	Argon, Compressed	1006
	Helium, Compressed	1046
	Fire Extinguishers	1044
	Articles, Pressurized, Pneumatic	3164
	Nitrogen, Compressed	1066
	Carbon Dioxide	1013

HC 3 Flammable Liquid Materials: HC 3.0 transported through the Prince William Sound Subarea represents the third highest volume in the State. The primary commodity is crude oil that is transported via the Trans-Alaska Pipeline from the North Slope to Valdez. As crude oil is the dominant commodity, it makes sense that the changes in volume from year to year follow the changes in crude oil production. Table 5-12 lists the primary HC 3 commodities shipped within the PWS Subarea.

Table 5-12. Primary Hazard Class 3 Commodities Shipped within the PWS Subarea

Hazard Class	Hazardous Material Description (Greater than 50,000 lbs Shipped)	UN ID Number
3.0	Petroleum Crude Oil	1267
	Paint	1263
	Methanol	1230
	Flammable Liquids, N.O.S.	1993
	Flammable Liquids	Unspecified
	Resin Solution	1866

HC 4 Flammable Solid Materials: Small volumes of HC 4.1 and 4.3 were transported in the Prince William Sound Subarea. No discernible trends were noted. With HCs 4.1 and 4.3, no shipments in excess of 50,000 lbs were noted.

HC 5 Oxidizer and Organic Peroxide Materials: HC 5.1 and 5.2 were shipped in this Subarea each year. According to the data received and reviewed, HC 5.1 was shipped in 2008 in volumes that exceeded the threshold volume of 50,000 lbs. Table 5-13 lists the primary HC 5 commodities shipped within the PWS Subarea.

Table 5-13. Primary Hazard Class 5 Commodities Shipped within the PWS Subarea

Hazard Class	Hazardous Material Description (Greater than 50,000 lbs Shipped)	UN ID Number
5.1	Ammonium Nitrate	1942

Volumes of HC 5.2 showed no dramatic increases or decreases over this time period and did not exceed the volume threshold of 50,000 lbs.

HC 6 Poisons: HC 6.1 and 6.2 were shipped within the Prince William Sound Subarea. Varying volumes were reported. Only calendar year 2009 noted shipments of HC 6.1 in excess of the volume threshold of 50,000 lbs. Table 5-14 lists the primary HC 6 commodities shipped within the PWS Subarea.

Table 5-14. Primary Hazard Class 6 Commodities Shipped within the PWS Subarea

Hazard Class	Hazardous Material Description (Greater than 50,000 lbs Shipped)	UN ID Number
6.1	Trichloroethylene	1710

Conversely, volumes of HC 6.2 shipments consistently decreased from year to year. HC 6.2 commodities were primarily regulated medical waste products and did not exceed a shipping volume of 50,000 lbs.

HC 7 Radioactive Materials: According to the data received and reviewed, there were no HC 7.0 commodities shipped within the Prince William Sound Subarea that exceeded the shipping volume threshold of 50,000 lbs.

HC 8 Corrosive Materials: HC 8.0 shipments within the Prince William Sound Subarea increased steadily from year to year. An approximate 70% increase was noted between 2007 and 2008 with the total volume shipped more than doubling between 2008 and 2009. Table 5-15 lists the primary HC 8 commodities shipped within the PWS Subarea.

Table 5-15. Primary Hazard Class 8 Commodities Shipped within the PWS Subarea

Hazard Class	Hazardous Material Description (Greater than 50,000 lbs Shipped)	UN ID Number
8.0	Batteries, Wet, Filled with Acid	2794
	Amines, Liquid, Corrosive, N.O.S. or Polyamines, Liquid, Corrosive, N.O.S.	2735
	Sulfuric Acid	2796
	Chemical Kit	1760
	Paint	3066
	Batteries, Wet, Filled with Alkali	2795

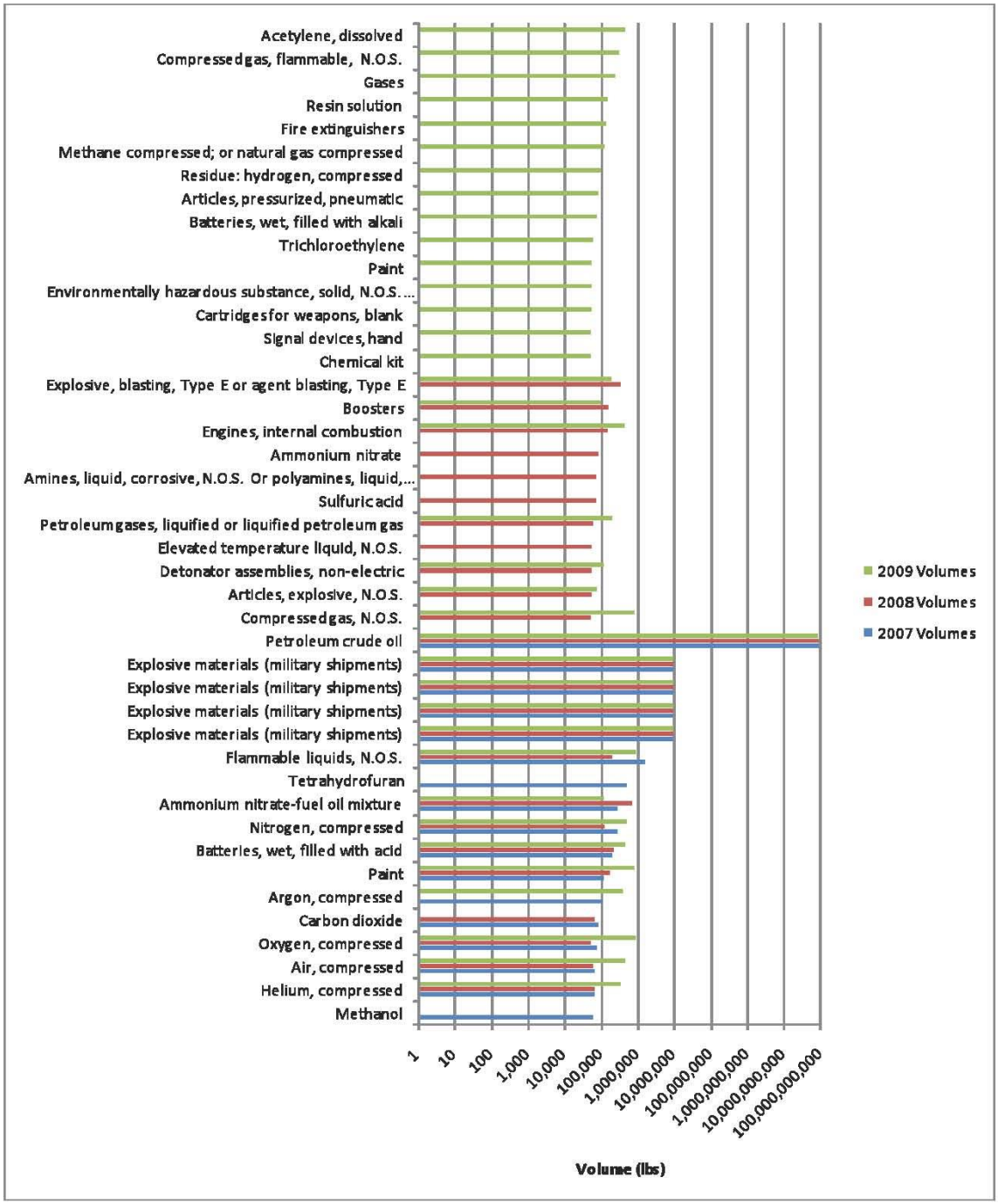
HC 9 Miscellaneous Materials: The volume of HC 9.0 commodities shipped within the Prince William Sound Subarea saw a dramatic increase between 2007 and 2008, an order of magnitude increase, and then dropped but remained much higher than 2007 levels in 2009. The sharp increase in 2008 could be attributable to the increase in the Alaska Permanent Fund Dividend checks during this timeframe. Table 5-16 lists the primary HC 9 commodities shipped within the PWS Subarea.

Table 5-16. Primary Hazard Class 9 Commodities Shipped within the PWS Subarea

Hazard Class	Hazardous Material Description (Greater than 50,000 lbs Shipped)	UN ID Number
9.0	Engines, Internal Combustion (Flammable Gas Powered)	3166
	Environmentally Hazardous Substance, Solid, N.O.S. (Lead)	3077
	Elevated Temperature Liquid N.O.S.	3257

Figure 5-10 depicts the volume of hazardous materials shipped each year within Prince William Sound by Hazardous Material Name for volumes exceeding 50,000 pounds.

Figure 5-10. Hazardous Material Commodities by Hazardous Material Name (Greater than 50,000 lbs) for PWS, for 2007 through 2009, presented on a log scale.



D. REFERENCES

Alaska Federal/State Preparedness Plan for Response to Oil & Hazardous Substance Discharges/Releases (Unified Plan) Change 3 January 2010, Alaska Regional Response Team, 2010 (as amended).

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

Alaska Level A and B Hazardous Material Response Resources, Hart Crowser, 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.

Alaska Statewide Oil and Hazardous Substance Inventory for Reporting Year 2011, Ecology and Environment. Prepared for U.S. Environmental Protection Agency, Region 10.

Statewide Hazardous Materials Commodity Flow Study, Nuka Research and Planning Group, 2010. Prepared for the Alaska Department of Environmental Conservation and the Alaska Department of Military and Veterans Affairs. http://dec.alaska.gov/spar/perp/hazmat/study.html

HAZMAT: PART SIX – RADIOLOGICAL AND BIOLOGICAL ISSUES

Radiological risks in the PWS region are limited and in most cases would be localized to a very isolated area.

The most predominate source of radiological substances in the region are very small amount (grams in weight or less) used in industrial materials testing and the medical services.

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

Biological risks in the PWS region are also limited and in most cases would be localized to a very isolated area. The most likely source is public or municipal waste water treatment facilities located throughout the region and incidents involving a threat to public health and safety would be limited. Environmental impact would be localized and response would be initiated following standard level C or lower response methods.

Medical wastes are generated in the region and medical providers and transporters have rigorous procedures and policies regarding their storage and transport.

Paralytic Shellfish Poisoning is a common coastal threat. Additional information can be found at: http://www.epi.alaska.gov/id/dod/psp/ParalyticShellfishPoisoningFactSheet.pdf

Terrorism threat in the PWS region are rare; however, domestic terrorist have transported real or suspected biological threats through the postal packaging services in Alaska. Response to these incidents are predominantly led by the Federal Bureau of Investigation with support from the Alaska National Guard 103red Civil Support Team.