COOK INLET 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 must be reported by the responsible party to the National Response Center (NRC). Any release, regardless of amount, is required to be reported to the 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 in this plan. The FOSC and 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 available, if the incident poses an immediate threat to public health and safety.

As long as there is an immediate threat to public safety, the LOSC serves as the ultimate command authority if the FOSC or SOSC does not assume the lead role for the response or the LOSC requests a higher authority to assume that responsibility.

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. The local fire department and/or Local Emergency Planning Committee (LEPC) should have the most current records on local storage of hazmat in quantities large enough to meet federal reporting requirements.

B. RECOGNITION

To deal with a hazmat release safely, it is essential to recognize the chemical or physical hazards that may affect response personnel. 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.

To help determine these hazards, it is important to identify the properties of the released material, including characteristics such as flammability, radioactivity, corrosiveness, toxicity, and/or other properties that classify them as hazardous. For any particular hazardous category, the degree of hazard varies depending on the substance.

The hazardous properties and degree of hazard for a substance can be determined using reference materials. Chemical properties and the health hazards associated with the various materials transported in the Cook Inlet Subarea can be found in the United States Coast Guard (USCG) Chemical Hazards Response Information System (CHRIS) Manual, the United States Department of Transportation (DOT) Emergency Response Guidebook (current edition), and Computer-Aided Management of Emergency Operations (CAMEO) 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.

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; the IDLH for tetrachloroethane is 150 parts per million. 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.

Although print and online sources can provide information about a substance's environmental behavior, additional field data will likely be required to fully characterize it. Most frequently, air monitoring and sampling are needed to verify and identify the presence of hazmat, calculate concentrations, and confirm dispersion patterns.

The following are some useful references for hazmat and response organization information:

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

State Plans and Guidance

- Alaska Federal/State Preparedness Plan for Response to Oil & Hazardous Substance Discharges/Releases http://dec.alaska.gov/spar/ppr/plans/uc.htm
- The Alaska Incident Management System (AIMS) Guide (November 2002 Revision 1) http://dec.alaska.gov/spar/ppr/docs/AIMS_Guide-Complete(Nov02).pdf
- Spill Tactics for Alaska Responders (STAR) Manual. http://dec.alaska.gov/spar/ppr/star/docs.htm

National Plans and Guidance

- National Contingency Plan (NCP) (40 Code of Federal Regulations [CFR] part 300)
- Commandant Instruction #16465.30, Policy Guidance for Response to Hazardous Chemical Releases

Chemical and Hazard Material Guides and Manuals

- CHEMTREC, Chemical/Hazardous Substance information, 1 800-424-9300
- DOT Emergency Response Guidebook (current edition) www.phmsa.dot.gov/hazmat/library/erg
- International Maritime Dangerous Goods Codes
- National Fire Protection Guide On Hazardous Materials
- National Institute for Occupational Safety and Health (NIOSH)/Occupational Safety and Health Administration (OSHA)/USCG/United States Environmental Protection Agency (EPA), NIOSH Pocket Guide to Chemical Hazards www.cdc.gov/niosh/npg/
- Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities. https://www.osha.gov/Publications/complinks/OSHG-HazWaste/all-in-one.pdf
- Safety Data Sheets (SDS) www.hazard.com/msds/index.php
- Sax's Dangerous Properties of Industrial Materials
- USCG CHRIS Manual

Reports

- Alaska Statewide Oil and Hazardous Substance Inventory for Tier Two, Reporting Year 2011. Prepared for U.S. Environmental Protection Agency, Region 10 by Ecology and Environment, Inc. 2012

- Statewide Hazardous Materials Commodity Flow Study, Nuka Research and Planning Group, 2010. The basic report is available at: http://dec.alaska.gov/spar/ppr/hazmat/study.html

C. EVALUATION

To properly evaluate a hazmat 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. This is generally a two-phase process, comprising 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, design plans for cleanup, and 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 these information gathering methods may be used. The following outline describes one approach to collecting the data needed to evaluate a hazmat incident's impact.

- Attempt to gather as much information as possible, such as:
  - Nature and exact location of the incident
  - Date and time of occurrence
  - Hazardous substances involved and their physical/chemical properties
  - Present status of the 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 Personal Protective Equipment (PPE), per OSHA and EPA guidance) should be the primary inspection method for initial site

characterization when the hazards are largely unknown or there is no urgent need to enter the site. Off-site reconnaissance consists of visual observations and monitoring for atmospheric hazards near the site. Collecting of off-site samples may help 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 and trailers
- Noting the types and numbers of containers, 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 PPE, per OSHA and EPA guidance 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, and may not be needed in all responses. It is a more methodical investigation to enhance, refine, and enlarge the information base developed 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 any environmental changes resulting from 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. If not, an environmental surveillance program needs to be implemented. This program collects the same type of information gathered during the preliminary inspection, but more detailed and extensive. For example, if the first phase involved the collection of one or two groundwater samples, the second phase would conduct a broad and intensive groundwater survey 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 these fluctuations or ramifications.

D. EVACUATION

Neither the USCG nor the EPA has the authority to order an evacuation of facilities or communities in the event of a hazmat 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. In the event of such a release, 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.

To guide evacuations, the DOT Emergency Response Guidebook includes “Table 1: Initial Isolation and Protective Action Distances.”. Evacuation should always begin with people in downwind and in low-lying areas. Continual reassessment is necessary to account for changes in weather and wind, rate of release, etc. CAMEO should be used to provide an air plume trajectory model for downwind toxic plume distances. Again, constant reassessment is required.

Issues concerning disaster assistance for people and organizations in evacuated areas should be referred to the Alaska Department of Military and Veterans Affairs (DMVA) 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, contain and reduce the extent of contamination to the environment, and prevent unlawful entry onto the site that may result in an additional release of material, destruction of evidence, or prolonging of 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 ensure an effective, rapid cleanup, including:

- 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 and Health Guidance Manual for Hazardous Waste Site Activities (Publication No. 85-115).

F. COMMAND AND CONTROL

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 the 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 participation is warranted and available) into one governing unit. The ICS and 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 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 the Alaska Regional Response Team, FOSC, and SOSC: the National Oceanic and Atmospheric Administration (NOAA) Weather Radio System, the State of Alaska Emergency Alert System, and the National Warning Systems. Details on how to access these systems are provided in the Unified Plan, Annex E, Appendix III, Tab V**.** The LOSC or the local emergency services should activate any system available in their community (e.g., community alert system). To broadcast an emergency public notice to a specific Cook Inlet community, refer to the Resources section of this plan for radio, newspaper, and television contacts**.**

I. HEALTH AND MEDICAL SERVICES

For local hospital and clinic information, refer to the Resources, Community Profiles section 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 hazmat in excess of the reportable quantity as defined in Table 1 of 49 CFR 172.101 to the NRC's 24-hour telephone number, 1-800-424-8802, in accordance with the NCP. Any release, regardless of the amount, is required to be reported to the State of Alaska. This notification can be accomplished by contacting the ADEC either through the Central Area 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) Western Alaska (the USCG FOSC for the Cook Inlet Subarea at 24-hour telephone number 428-4200). The 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.

The person in charge of any 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, including, but not limited to, the following:

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

See Page C-3 for additional pertinent information to be gathered and reported, as available.

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

The ADEC is mandated by statute to respond promptly to a discharge of oil or a hazardous substance (Alaska Statute [AS] 46.80.130). Additionally, the ADEC may contract with a professional emergency contractor or municipality 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

The ADEC is currently operating in accordance with an August 1992 policy decision that precludes ADEC personnel from responding to situations that 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).

C. STATE RESPONSE CAPABILITIES

In the Cook Inlet Subarea, the ADEC has entered into community response agreements with the Municipality of Anchorage, Kenai Peninsula Borough, Matanuska-Susitna Borough, and the Cities of Homer, Kenai, and Seldovia.

The ADEC also coordinates with the Statewide Hazardous Materials Response Team, which consists of the local and regional Level A Entry capable hazmat response teams. These teams include the hazmat teams from the Municipality of Anchorage, Fairbanks North Star Borough, the City of Kodiak, the City and Borough of Juneau, and the City of Ketchikan, along with the Alaska National Guard 103rd Civil Support Team (CST) and the EPA response team (Superfund Technical Assessment and Response Team).

In the event of a hazmat release requiring immediate response, the ADEC's 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 stations. Post-response recovery operations will be handled by the responsible party (if known) or through ADEC response team contractors or federal contractors.

Another state asset is the 103rd CST, based at Joint Base Elmendorf Richardson, Alaska. The 103rd CST can be requested through the ADEC or DMVA's Division of Homeland Security and Emergency Management, State Emergency Operations Center (428-7100 or 1-888-462-7100). This team's primary focus 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 a primary or 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 SOSC's anticipated and prioritized response objectives are as follows:

- Safety: Ensure the safety of persons involved, both those responding and those 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 that 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 that the responsible party accomplishes adequate containment, control, cleanup, and disposal, or take over if cleanup is inadequate.
- Restoration: Ensure assessment of contamination and damage, as well as 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 the NCP (40 CFR 300). Under the NCP and the Unified Plan, each USCG COTP for coastal zones, or EPA representative 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

In accordance with the NCP and Alaska Unified Plan, the USCG COTP for Western Alaska (Commanding Officer, Sector Anchorage) is identified as the pre-designated FOSC for the Cook Inlet coastal zone, and the EPA (Region 10 Alaska Operations Office) is 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 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's responsibilities will be transferred from the USCG COTP to a designated EPA official.

As long as there is an immediate threat to public safety, the LOSC serves as the ultimate command authority if the FOSC or SOSC does not assume the lead role for the response, or the LOSC requests a higher authority to assume that responsibility.

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 Incident Management Handbook also provides guidelines for responding to a 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 evacuation of 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, the Pacific Strike Team, and the EPA Environmental Response Team and Superfund Technical Assessment and Response 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 hazmat 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 situations requiring an entry into a hazardous environment, federal agencies will rely on the capabilities of the USCG Pacific Strike Team, EPA response teams, state and local hazmat response teams, if available, and industry or commercial resources.

In implementing this conservative response posture, the COTP for Western Alaska 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.

The CAMEO software suite will be an important part of any chemical release incident. This set of software includes CAMEOfm, CAMEO Chemicals, Areal Locations of Hazardous Atmospheres (ALOHA), and Mapping Application for Response, Planning, and Local Operational Tactics (MARPLOT). Together, the CAMEOfm chemical database and CAMEO Chemicals chemical response information datasheets and reactivity prediction tool provide a rapid means of identifying chemicals and their associated hazards. ALOHA air modeling program, part of CAMEO, provides a rapid means of developing a downwind hazard evaluation. MARPLOT is an easy-to-use geographic information system (GIS) interface. The NOAA 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 the 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. These software applications are available for free download at https://www.epa.gov/cameo.

HAZMAT: PART FIVE – SUBAREA HAZMAT RISK ASSESSMENT

A. GENERAL

This section provides general information on the location of extremely hazardous substances and other hazardous substances within the Cook Inlet Subarea. The Cook Inlet Subarea includes the Municipality of Anchorage, Matanuska Susitna Borough, and Kenai Peninsula Borough. The region is characterized by several medium and large municipalities, and numerous smaller communities, including isolated coastal communities on the Kenai Peninsula, the western side of Cook Inlet, and along interior rivers of the Matanuska Susitna Borough.

This subarea has the highest concentration of industrial activity in the state. Numerous facilities within the subarea store and utilize chemicals categorized as extremely hazardous. Large quantities of flammable petroleum products, such as propane and gasoline, also are stored at many facilities within the subarea. Some facilities store and utilize compressed gasses.

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 SARA.

Several hazmat spills or releases have occurred in the Cook Inlet Subarea. As of March 2016, the most significant release in this subarea was the Alaska Railroad Corporation train derailment release of 120,516 gallons of diesel fuel at Gold Creek on December 22, 1999. The ADEC Spills Database lists 888 hazmat releases of 100-plus gallons/pounds since 1980. Of these, 14 were releases of chemicals classified as extremely hazardous substances (EHS) (anhydrous ammonia, sulfuric acid or hydrochloric acid), and only six exceeded the reporting threshold specified in the Emergency Planning and Community Right-to-Know Act Section 302.

1. **Chemical Inventory:** The most prevalent extremely hazardous substances in the region are

- Anhydrous ammonia
- Chlorine
- Hydrochloric acid (muriatic acid)
- Sulfuric acid

EHSs are generally transported into the Cook Inlet Subarea from southern ports via water and either delivered directly to facilities or transported to facilities by rail or by truck over local road systems within the subarea. They may also be transported by vessel, truck, or railcar from Cook Inlet ports and facilities to other Alaska destinations outside of the subarea.

2. Chemical Risks: This subsection identifies the hazards associated with the most common EHSs present within the Cook Inlet 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 EHSs 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. In normal conditions, 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 causes burns if it comes in contact with skin or eyes.

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 causes burns if it comes in contact with skin or eyes.

Hydrochloric Acid (Muriatic Acid) occurs as a colorless, nonflammable aqueous solution or gas. It has a highly pungent, irritating odor, and it sinks and mixes with water. It is a highly corrosive, strong mineral acid with many industrial uses. Hydrochloric acid is found naturally in gastric acid. When it reacts with an organic base, it forms a hydrochloride salt. Hydrochloric acid is corrosive to the eyes, skin, and mucous membranes. Acute (short-term) inhalation exposure may cause eye, nose, and respiratory tract irritation and inflammation and pulmonary edema in humans. Acute oral exposure may cause corrosion of the mucous membranes, esophagus, and stomach, and dermal contact may produce severe burns, ulceration, and scarring in humans.

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

In addition, several of the larger industrial facilities within the Municipality of Anchorage and Kenai Peninsula Borough 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 Municipality of Anchorage and Kenai Peninsula Borough have developed and maintain local emergency management plans, or all-hazard plans, to respond to a variety of emergencies including hazardous substance releases.

B. TRANSPORTATION

Hazardous substances are transported into the subarea via air, road, rail, and water and either delivered directly to facilities or transported to facilities by truck over local road systems.

Four extremely hazardous substances (ammonia, chlorine, hydrochloric acid, and sulfuric acid) are commonly 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 are summarized above.

Extremely hazardous substances are normally delivered via water, road, and rail to various facilities within the Cook Inlet Subarea, though no specific data are available. Hazard analyses have been performed by the LEPCs of Anchorage, Kenai Peninsula Borough, and Matanuska-Susitna Borough.

The Municipality of Anchorage's Comprehensive Emergency Operations Plan (2015) and Anchorage All-Hazard Mitigation Plan (2016) identify that small hazmat releases occur multiple times annually. The Ship Creek industrial area has the highest occurrence of hazmat storage. Major transportation corridors at are the Glenn and Seward Highways, Alaska Railroad and the pipeline delivering fuel to the Ted Stevens Anchorage International Airport. Common hazmat in the Municipality includes chlorine, sulfuric acid, gasoline, and medical/biological waste.

The Kenai Peninsula Borough LEPC hazard analysis identifies the high risk areas for hazmat releases:

> *"Offshore platforms, shoreline refineries, and oil and hazardous substance transportation routes (by water, rail, highway and pipeline) to threaten the generally high environmental quality of the area….Cook Inlet is dotted by offshore oil/gas drilling platforms. In addition there is an oil refinery, and the only LNG producing plant in the North American continent. Also present are fish processing plants that can have present large quantities of ammonia, gasoline, diesel, and propane. The Nikiski area receives and ships the largest quantities of petroleum products, and in fact the greatest tonnage of waterborne trade, in Southcentral Alaska.* (Source: http://www.kpb.us/emergency-mgmt/lepc)

The Matanuska-Susitna Borough LEPC hazard analysis identifies the following hazmat release risks:

> *"The Alaska Railroad connects the district to Anchorage, Seward or Whittier for ocean freight delivery. Ammonia and chlorine are routinely transported to and through the borough by truck, and formaldehyde is shipped through by rail to Fairbanks. Also, given the mining industry's need for certain "extremely hazardous substances", other chemicals may occasionally transit the district by rail or truck bound for interior Alaska and Canada."* (Source: http://www.matsugov.us/outreach/lepcinfo)

The Statewide Hazmat Commodity Flow Study conducted in 2010 is available on the ADEC website at: http://dec.alaska.gov/spar/ppr/hazmat/study.html . This report summarizes the transportation of hazmat through Alaska communities, including the types and quantities of hazmat commodities and the transportation routes used. Chapter 5.3 is specific to the transportation of hazmat in the Cook Inlet Subarea.

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.