INTERIOR ALASKA 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 (RP) to the National Response Center. [The Environmental Protection Agency (EPA) has established the RQs for all of the roughly 800 Superfund law (CERCLA) substances.] Any hazmat release, regardless of the 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 also contact the ADEC. If the State receives notification first, the State shall notify the FOSC promptly. An emergency notification list is provided at the front of the *Response Section* to this plan. The FOSC and the State On-Scene Coordinator (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, 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 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. 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 the chemical or physical hazards is essential to dealing with a release safely. Chemical and physical hazards may be encountered by emergency response personnel when responding to a hazardous material incident. Chemical hazards include biological, radioactive, toxic, flammable, and reactive hazards. Physical hazards include slips, trips and falls, compressed gases, materials handling, thermal, electrical and noise hazards, and confined spaces.

Once a hazardous material has been identified, it is important to determine the hazards and properties. Thousands of substances exhibit one or more characteristic 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 may be. 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. Therefore, tetrachloroethane is 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.

After 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 Interior Subarea can be found in the U.S. Coast Guard (USCG) CHRIS Manual, the DOT Emergency Response Guidebook (current edition), and CAMEO (Computer-Aided Management of Emergency Operations) computer programs. Industry experts can be consulted, as well. The Chemical Manufacturers Association supports an excellent resource, the CHEMTREC 24-hour information number, 1-800-424-9300. 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 (including 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 (UC) Structure in Annex B, Appendix II, and also provides statewide Hazmat response guidance in Annex L: www.dec.alaska.gov/spar/perp/plans/uc.htm
- 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
- USCG CHRIS Manual
- DOT Emergency Response Guidebook (current edition) www.phmsa.dot.gov/hazmat/library/erg
- CHEMTREC, Chemical/Hazardous Substance information, 1-800-424-9300
- Sax's Dangerous Properties of Hazardous Materials
- International Maritime Dangerous Goods Codes
- Safety Data Sheets (SDS) www.hazard.com/msds/index.php
- NFPA Fire Protection Guide On Hazardous Materials
- NIOSH/OSHA/USCG/EPA Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities. Also, the NIOSH/OSHA Pocket Guide Book: www.cdc.gov/niosh/npg/npg.html
- HartCrowser, Inc., 1999. 1998 Statewide Hazardous Material Inventory. Prepared for ADEC, Division of Spill Prevention and Response.
- HartCrowser, Inc., 1999. Alaska Level A and B Hazardous Material Response Resources. Prepared for ADEC, Division of Spill Prevention and Response.
- HartCrowser, 2000. Evaluation of Chemical Threats to the Alaska Public. Prepared for ADEC, Division of Spill Prevention and Response.
- State of Alaska Tier Two Summary Report (available through ADEC). The tier two data can be reviewed using the CAMEO program. The basic report is available at: www.ak-prepared.com/serc/
- Statewide Hazardous Materials Commodity Flow Study, Nuka Research and Planning Group, 2010. Prepared for ADEC and ADMVA. The basic report is available at: www.dec.alaska.gov/spar/perp/hazmat/study.html
- Spill Tactics for Alaska Responders (STAR) 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/docs.htm

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. 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.
  - Hazardous materials 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 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 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
        - 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

Federal agency personnel do not have 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 can provide an air plume trajectory model for downwind toxic plume distances, and should be used to provide regular situation reassessments.

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 that an effective, rapid cleanup is conducted:

- Secure site, and establish entry control points.
- Compile a site map.
- Prepare the site for subsequent activities.
- Establish work zones.
- Use the buddy system when entering.
- Establish and strictly enforce decontamination procedures.
- Establish site security measures.
- Set up communications networks.

- Enforce safe work practices.

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

F. COMMAND AND CONTROL

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 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 has determined that public safety is not at risk, then the UC response organization will assume command and control of the incident.

Government response organization in the State of Alaska is based on the UC structure of the Incident Command System (ICS), which is outlined in the Alaska Incident Management System (AIMS) Guide. The UC brings together the FOSC, the SOSC, and the RP's Incident Commander (IC) (along with the LOSC if participation is warranted and available) into one governing unit. The ICS and the UC 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. COMMUNITCATIONS

A communications plan for all sections of the ICS will be established by the IC.

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

H. WARNING SYSTEMS & EMERGENCY PUBLIC NOTIFICATION

Three separate systems for broadcast of emergency messages are available to the Alaska Regional Response Team, FOSC, and SOSC. These include the National Oceanic and Atmospheric Administration (NOAA) Weather Radio System, the State of Alaska Emergency Alert System, and the National Warning Systems. For details on how to access these systems are provide in the *Unified Plan, Annex E, Appendix III, Tab V***.** The 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 Interior community refer to the *Resources Section* of this plan for radio, newspaper, and television contacts**.**

I. HEALTH AND MEDICAL SERVICES

In the *Resources Section, Part One-Community Profiles* identifies the local clinics available in a community and *Part Three, H. Hospitals* lists major hospitals in the subarea.

HAZMAT: PART TWO – RESPONSIBLE PARTY HAZMAT ACTION

A. DISCOVERY AND NOTIFICATION

Any person in charge of a vessel or a facility shall report releases of hazardous materials in excess of the reportable quantity 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 the National Contingency Plan. Any release regardless of the amount is required to be reported to the State of Alaska. Notification of the State can be done by contacting the ADEC either thru the Northern Alaska Response Team at 451-2121 or through the 24-hour telephone number, 1-800-478-9300.

If direct reporting to the NRC is not immediately practicable, reports will be made to the EPA's pre-designated FOSC who may be contacted through the regional 24-hour response telephone number (206-553-1263). All such reports shall be promptly relayed to the NRC.

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

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

- Location of the release
- Type(s) of material(s) released, including any pertinent SDS 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 RP 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 RP 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 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

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

Another asset in the State is the 103rd CST, based at Kulis Alaska National Guard Base, Alaska. The 103rd CST can be requested through ADEC or DMVA's Division of Homeland Security and Emergency Management (DHS&EM), State Emergency Operations Center (SEOC: 428-7100 or 1-800-478-2337). The primary focus of the team is weapons of mass destruction (WMD), 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 103rd CST can be utilized in an advisory role for hazard modeling or medical assessment and in an assist mode to perform entries alone or in conjunction with other first responders.

D. RESPONSIBILITIES

State agency roles and responsibilities are clearly defined in the *Unified Plan, Annex A*. During a hazmat incident, the 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 RP 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

The Comprehensive Environmental Response, Compensation and Liability Act of 1980 and Section 311 of the Federal Water Pollution Control Act 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*, the EPA representative for the inland zones coordinate 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 the EPA (Region 10 Alaska Operations Office) as the pre-designated FOSC for the inland zone. The FOSC will respond to hazardous substance releases, or threats of release, occurring in the inland zone and not involving DOD vessels or DOD facilities, which originate from:

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

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 request a higher authority to assume that responsibility.

C. RESPONSE POLICY

EPA, Region 10 maintains a Level A capability through their START Contractor and EPA response staff stationed in Alaska. USCG maintains the Pacific Strike Team located in Novato, California. A description of Strike Team capabilities is provided in the *Unified Plan, Annex E, Appendix IV*.

Additionally, EPA may call upon the Department of Defense's Alaskan Command (as a member of the Alaska Regional Response Team) to provide hazmat response resources (teams and equipment) from U.S. Army and U.S. Air Force facilities, if capabilities exist.

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

In situations requiring an entry into a hazardous environment, federal agencies will rely on the capabilities of the EPA Superfund Technical Assessment and Response Teams (START), USCG Pacific Strike Team, state and local hazmat response teams, if available, and industry or commercial resources. The EPA may call upon the Department of Defense's Alaskan Command (as a member of the Alaska Regional Response Team) to provide hazmat response resources (teams and equipment) from U.S. Army and U.S. Air Force facilities, if capabilities exist. Refer to the *Unified Plan* for a description of the National Strike Force and other special forces.

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

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

- Conducting preliminary assessment of the incident.
- Carrying out FOSC measures such as restricting access to affected areas, establishing 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. The CAMEO chemical database with Codebreaker and Response Information Data Sheets modules provide a rapid means of identifying chemicals and their associated hazards. The ALOHA air modeling program (part of CAMEO) provides a rapid means of developing a downwind hazard evaluation. The deployed Hazmat Teams and/or the NOAA SSC will be 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

The Interior Subarea encompasses the vast central area of Alaska. The region includes four Local Emergency Planning Districts (LEPD) with active Local Emergency Planning Committees (LEPC): Fairbanks Area LEPC, the Denali Borough LEPC, the Yukon-Koyukuk LEPC, and the Delta Greely LEPC. The remaining locations within the subarea are considered part of the unorganized LEPD for the State. These include Interior Alaska and the northern portion of Southeast Interior (See the *Background Section* of this plan for a complete description of the subarea).

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.

The City of Fairbanks is the largest community in the region and serves as a regional service and transportation hub, as well as a trans-shipment point for movement of materials into and out of the area, including the oil industry at Prudhoe Bay. Small communities are scattered along interior river systems and road corridors. Several major military facilities are located in the region. The Alaska Railroad and the George Parks Highway connect Fairbanks with Anchorage and together represent a major transportation corridor. Industrial activity is comprised largely of a refinery near Fairbanks and gold mining throughout the region.

This part of the *Hazmat Section* provides a brief overview of the risk assessment (hazardous materials used or transported in the Interior Subarea), the hazmat response capabilities, and a hazards analysis summary for the subarea. For a detailed discussion and description of the extremely hazardous substances and other hazardous substances used within the Interior Subarea, consult the references at the end of *Part Five*.

1. Chemical Inventory

Based on Tier Two reports, the most prevalent extremely hazardous substances in the region are:

- Sodium cyanide
- Sulfuric acid
- Ethylenediamine
- Chlorine
- Cyclohexanamine and Cyclohexalymine

Extremely hazardous substances are generally transported into the subarea from southern ports via rail or by truck over the road systems.

2. Chemical Risks

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

Sodium Cyanide is principally used by the mining industry to extract gold from gold bearing ore using the carbon-in-leach and carbon-in-pulp processes. These processes enable commercial recovery of gold at very low concentrations. It is normally shipped and stored as a white solid, and is readily soluble in water and other solvents including alcohol. The chemical is not combustible but forms flammable gas on contact with water or damp air, and emits irritating or toxic fumes (or gases) in a fire. The chemical can cause eye irritation, and can be absorbed through the skin. It also presents an inhalation and ingestion hazard.

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

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

Ethylenediamine is a colorless liquid with an ammonia-like odor. It is used as a solvent and in the production of dyes, waxes, pesticides, and antifreeze solutions. Ethylenediamine can present a hazard through inhalation or absorption through the skin. It is a corrosive chemical and can severely irritate and burn the skin and eyes with possible eye damage. Inhalation can irritate the nose and throat, and can irritate the lungs causing coughing and/or shortness of breath. Higher exposures can cause a build-up of fluid in the lungs (pulmonary edema), a medical emergency, with severe shortness of breath. Ethylene-diamine may cause a skin allergy, and also an asthma-like allergy. Exposure may result in damage the liver and kidneys.

Cyclohexanamine and *Cyclohexalymine* is a colorless to yellow liquid with a pungent odor. Its primary use is as an additive to treat boiler water and inhibit corrosion for oil production use as well. The substance decomposes on burning producing toxic and corrosive fumes including nitrogen oxides. The substance is a strong base, it reacts violently with acid and is corrosive. It also reacts violently with strong oxidants causing fire hazard. It attacks aluminum, copper, zinc. The substance can be absorbed into the body by inhalation, through the skin and by ingestion. Hazardous concentrations in the air can be reached rather quickly on evaporation of this substance at 20°C. The substance is corrosive to the eyes, the skin and the respiratory tract. It also corrosive on ingestion. The substance may cause negative effects on the central nervous system.

3. Response Capability

The Fairbanks North Star Borough has equipped and trained a Hazmat Response Team for response to chemical releases and spills. In the event of a hazardous substance release outside of the borough's jurisdiction, the ADEC can request support from the Fairbanks Hazmat Response Team through their

agreement with the Fairbanks North Star Borough. This valuable agreement allows ADEC to request the Level A Hazmat team to respond to an event anywhere in the state, as long as the Fairbanks North Star Borough can spare the services of the equipment and trained personnel. (Similar agreements are in place with other hazmat teams in the state.)

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

Local communities in the subarea 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

The table below identifies the number of facilities that store and utilize hazardous substances. Local emergency responders receive copies of Tier Two inventory reports for local facilities annually. If other emergency responders are deployed to the area, they should contact the local fire department ti determine specific chemical hazards at a facility.

Number of Facilities with Hazardous Substances

Substance	Max Amount (lb)	Number of Facilities
Ammonia	2,883	2
Arsine	30	1
Cyclohexylamine	1,967	2
Ethylenediamine	88,966	1
Hydrazine	5,044	1
Nitric Acid	2,803	1
Sodium Cyanide	804,000	2
Sulfuric Acid	339,724	85

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 Interior 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 required 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 report under Mining Safety and Health Administration provisions.

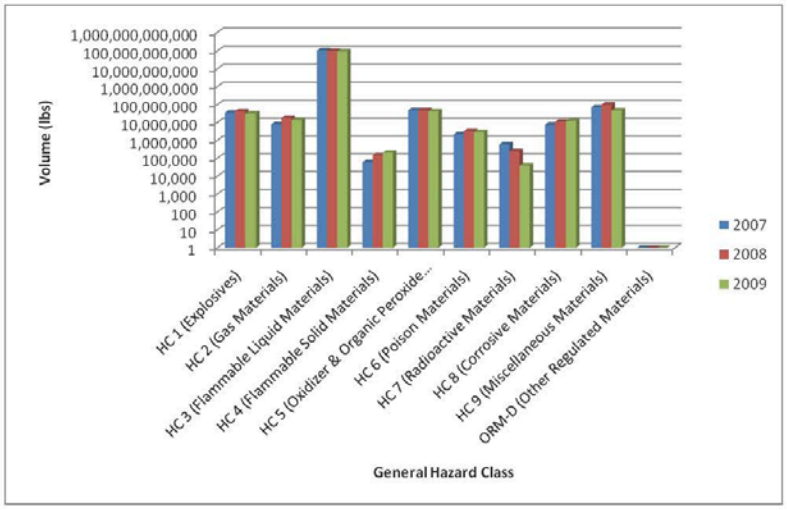
C. TRANSPORTATION

The following pages contain information from the Statewide Hazmat Commodity Flow Study conducted in 2010. The information provided is specific to the Interior Subarea. The complete report is available on the ADEC website at: www.dec.alaska.gov/spar/perp/hazmat/study.html

5.10 Interior Alaska

The transportation of hazardous materials through the Interior Alaska Subarea (INT) includes all modes of transportation: air, highway, marine, pipeline and rail. The pipeline and rail modes dominate the volumes shipped as noted previously for the Prince William Sound and Cook Inlet Subareas. Similar to the Cook Inlet Subarea, the transportation infrastructure and central location as a receiver or transshipment point results in large volumes reported across the spectrum of hazard class commodities. The breakdown of hazardous materials volumes from year to year by Hazard Class is depicted in Figure 5-46 below.

Figure 5-46. Volumes of Hazardous Materials Shipped into INT presented on a log scale



In general, HC 3 commodities (Flammable Liquid Materials), specifically Crude Oil dominates the volume of hazardous materials shipped within the INT Subarea by nearly three (3) orders of magnitude. This observation is aligned with the fact that the Trans-Alaska Pipeline passes through this Subarea on its way from the North Slope to Valdez. As this hazard class makes up 99.8% of the total volume shipped, the breakdown of volumes of hazard class shipments within this subarea (inclusive of all hazard classes) in a percentage of subarea-wide volume does not provide any meaningful insight. However, excluding this hazard class provides a general breakdown of the other hazard classes by percentage of the total remaining volume. Figures 5-47, 5-48 and 5-49 depict the breakdown of hazardous material shipments within the INT Subarea by a percentage of total remaining volume shipped. HC 9 (Miscellaneous Materials), HC 5 (Oxidizer & Organic Peroxide Materials) and HC 1 (Explosives) consistently dominate the volume of hazardous materials shipped from year to year.

Figure 5-47. INT Hazardous Materials Percentage of Total Volume by Hazard Class for 2007

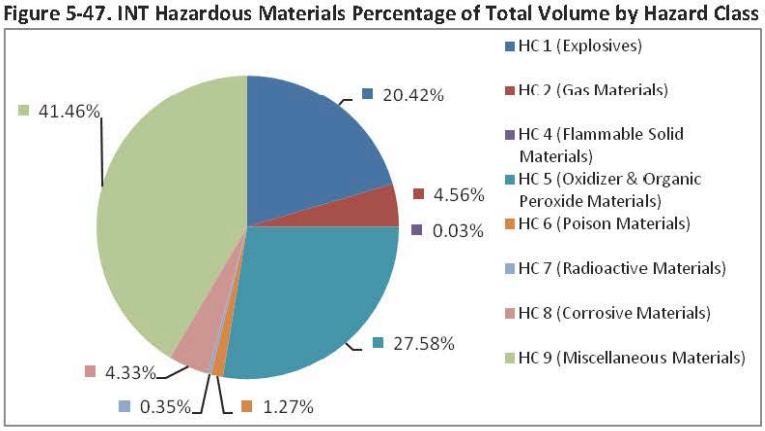


Figure 5-48. INT Hazardous Materials Percentage of Total Volume by Hazard Class for 2008

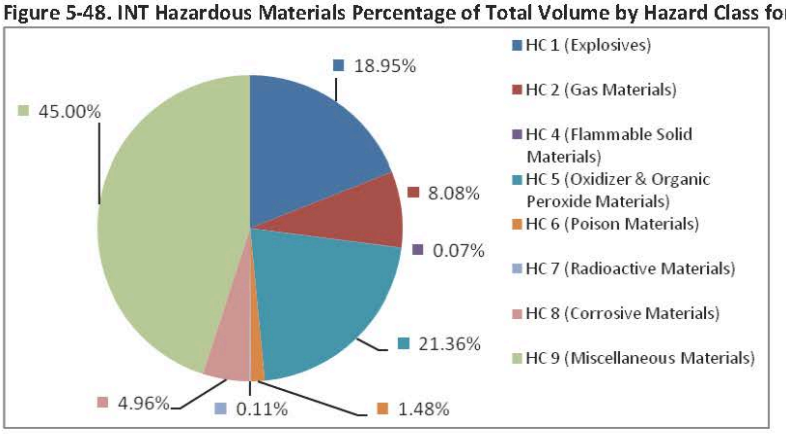


Figure 5-49. INT Hazardous Materials Percentage of Total Volume by Hazard Class for 2009

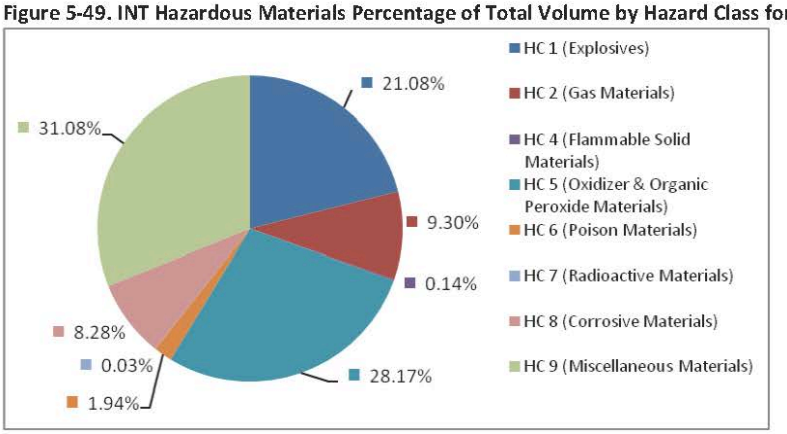


Table 5-73 lists the volume of hazardous materials shipped within the Interior Alaska Subarea by hazard class for each calendar year evaluated for this study.

Table 5-73. Volumes of Hazard Class Transported within INT Subarea by Calendar Year

Hazard Class	2007 (Total Volume in lbs)	2008 (Total Volume in lbs)	2009 (Total Volume in lbs)
HC 1 (Explosives)	35,250,447	42,337,916	31,490,549
HC 2 (Gas Materials)	7,871,310	18,040,563	13,888,474
HC 3 (Flammable Liquid Materials)	104,499,279,833	98,453,107,755	93,374,633,231
HC 4 (Flammable Solid Materials)	59,869	147,672	207,369
HC 5 (Oxidizer & Organic Peroxide Materials)	47,626,734	47,718,173	42,083,109
HC 6 (Poison Materials)	2,193,319	3,300,200	2,895,225
HC 7 (Radioactive Materials)	598,743	247,119	39,171
HC 8 (Corrosive Materials)	7,479,104	11,079,032	12,365,945
HC 9 (Miscellaneous Materials)	71,588,225	100,514,011	46,438,170
ORM-D (Other Regulated Materials)	-	-	-

A more detailed evaluation for each hazard class is provided below. The commodity shipment threshold was established at 500,000 lbs due to the variety and high volumes/shipment of hazmat commodities shipped in this region.

HC 1 Explosives: The explosives transported in the Interior Alaska Subarea covered HCs 1.0, 1.1, 1.2, 1.3, 1.4 and 1.5. Volumes of each HC remained relatively consistent from year to year with the biggest change seen for HC 1.5 where it nearly doubled in volume between 2007 and 2008, and then decreased by half between 2008 and 2009. Table 5-74 lists the primary HC 1 commodities shipped within the Interior Alaska Subarea.

Table 5-74. Primary Hazard Class 1 Commodities Shipped within the INT Subarea

Hazard Class	Hazardous Material Description (Greater than 500,000 lbs Shipped)	UN ID Number
1.1	Explosive Materials (Military Shipments)	Unspecified
	Explosive, Blasting, Type E	0241
	Explosive, Blasting, Type A	0081
	Boosters	0042
	Cord Detonating	0065
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
	Detonators, Non-Electric	0267
1.5	Explosive, Blasting, Type E or Agent Blasting, Type E	0332
	Explosive, Blasting, Type B or Agent Blasting, Type B	0331
	Ammonium Nitrate-Fuel Oil Mixture	0331

HC 2 Gas Materials: HCs 2.0, 2.1, 2.2 and 2.3 were transported in the Interior Alaska Subarea. The HC 2.0 commodities represent materials that were transported via Alaska Railroad on the Anchorage-Fairbanks rail segment. HC 2.1 saw an approximate 80% increase in volume shipped between 2007 and 2008, and then an approximate 67% decrease between 2008 and 2009. HC 2.2 increased consistently from year to year. HC 2.3 increased approximately 75% in 2008 and then decreased approximately 80% in 2009. Table 5-75 lists the primary HC 2 commodities shipped within the Interior Alaska Subarea.

Table 5-75. Primary Hazard Class 2 Commodities Shipped within the INT Subarea

Hazard Class	Hazardous Material Description (Greater than 500,000 lbs Shipped)	UN ID Number
2.0	Gases	Unspecified
2.1	Methane, Refrigerated Liquid or Natural Gas, Refrigerated Liquid	1972
	Propane Cylinders	1978
	Acetylene, Dissolved	1001
2.2	Nitrogen, Compressed	1066
	Oxygen, Compressed	1072

HC 3 Flammable Liquid Materials: The Interior Alaska Subarea displays the greatest volume of HC 3.0 transported within the State. The primary source of this commodity is crude oil that is transported via the Trans-Alaska Pipeline from the North Slope to Valdez. Table 5-76 lists the primary HC 3 commodities shipped within the Interior Alaska Subarea.

Table 5-76. Primary Hazard Class 3 Commodities Shipped within the INT Subarea

Hazard Class	Hazardous Material Description (Greater than 500,000 lbs Shipped)	UN ID Number
3.0	Petroleum Crude Oil	1267
	Flammable Liquids, N.O.S.	1993
	Paint	1263
	Gasoline	1203
	Adhesives	1133
	Combustible Liquid, N.O.S.	1993
	Petroleum Distillates, N.O.S. or Petroleum Products, N.O.S.	1268
	Flammable Liquids	Unspecified

HC 4 Flammable Solid Materials: HC varied between 4.1, 4.2 and 4.3 from year to year for this grouping of commodities. Volumes also varied and displayed no visible trend

other than potentially industrial demands. There were no HC 4.0 commodities shipped in a volume that exceeded 500,000 lbs.

HC 5 Oxidizer and Organic Peroxide Materials: HC 5.1 and 5.2 were transported within the Interior Alaska Subarea each year. The volume of HC 5.1 shipped within the Interior Alaska represented the second highest volume of HC 5.1 transported statewide. HC 5.1 decreased and increased slightly from year to year. Similar to Cook Inlet, HC 5.2 increased by approximately 35% between 2007 and 2008 and then by another 90% between 2008 and 2009. Table 5-77 lists the primary HC 5 commodities shipped within the Interior Alaska Subarea.

Table 5-77. Primary Hazard Class 5 Commodities Shipped within the INT Subarea

Hazard Class	Hazardous Material Description (Greater than 500,000 lbs Shipped)	UN ID Number
5.1	Ammonium Nitrate	3375
	Ammonium Nitrate	1942
	Sodium Nitrate	1498

Within HC 5.2, there were no commodities shipped in a volume that exceeded 500,000 lbs.

HC 6 Poisons: HC 6.1 and 6.2 were transported in the Interior Alaska Subarea. Sodium Cyanide, HC 6.1, was the largest volume commodity transported via the Alaska Railroad each year and any changes in volume follow the increases or decreases noted in the Alaska Railroad data. HC 6.2 commodities were primarily regulated medical waste products. Table 5-78 lists the primary HC 6 commodities shipped within the Interior Alaska Subarea.

Table 5-78. Primary Hazard Class 6 Commodities Shipped within the INT Subarea

Hazard Class	Hazardous Material Description (Greater than 500,000 lbs Shipped)	UN ID Number
6.1	Sodium Cyanide	1689

HC 7 Radioactive Materials: HC 7.0 shipped within the Interior Alaska Subarea decreased significantly from year to year dropping by half in 2008 and then by another 85% in 2009. There were no HC 7.0 commodities shipped in volumes that exceeded 500,000 lbs.

HC 8 Corrosive Materials: The volume of HC 8.0 shipped within the Interior Alaska Subarea consistently increased from year to year. Between 2007 and 2008 the volume increased by approximately 35%, and between 2008 and 2009 the volume increased by approximately 10%. Table 5-79 lists the primary HC 8 commodities shipped within the Interior Alaska Subarea.

Table 5-79. Primary Hazard Class 8 Commodities Shipped within the INT Subarea

Hazard Class	Hazardous Material Description (Greater than 500,000 lbs Shipped)	UN ID Number
8.0	Corrosives	Unspecified
	Batteries, Wet, Filled with Acid	2794
	Bisulfites, Aqueous Solutions, N.O.S.	2693
	Amines, Liquid, Corrosive, N.O.S. or Polyamines, Liquid, Corrosive, N.O.S.	2735
	Corrosive Cleaning Supplies	1760

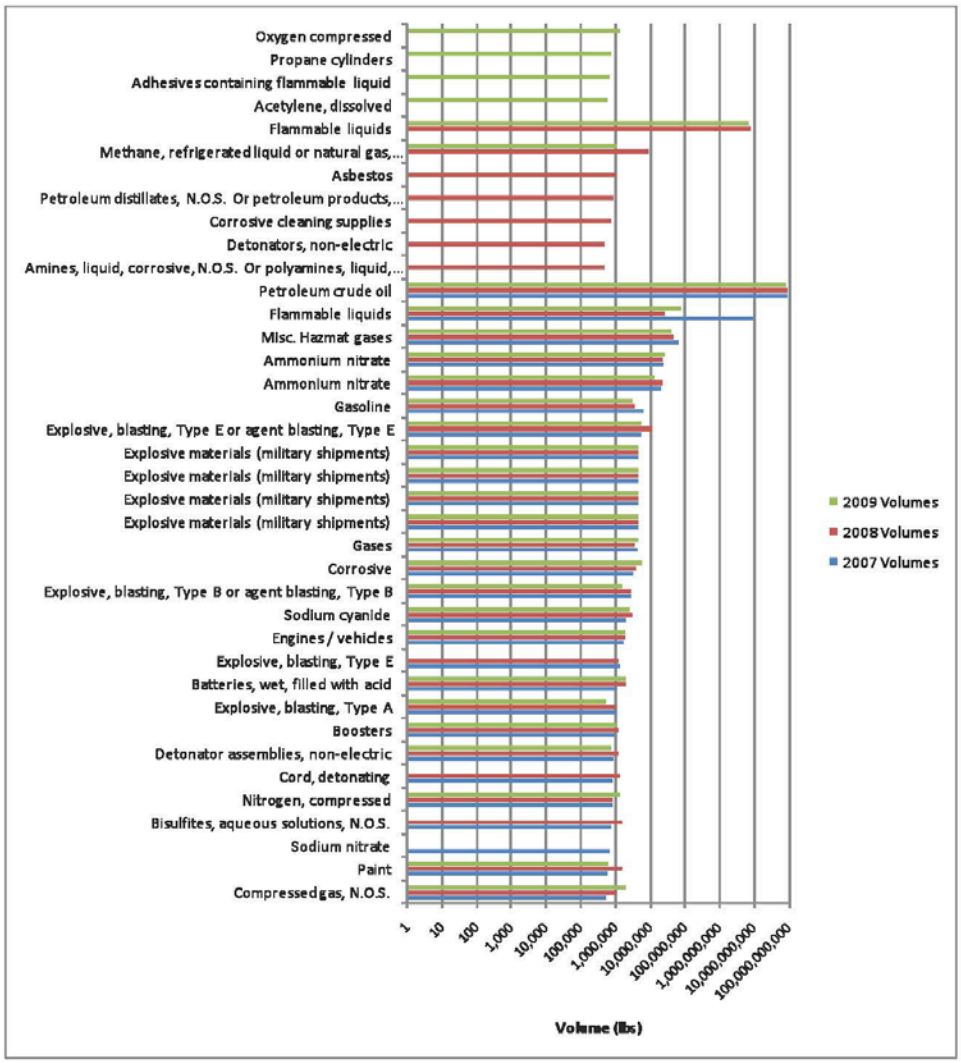
HC 9 Miscellaneous Materials: The volume of HC 9.0 commodities shipped within the Interior Alaska Subarea saw a dramatic increase between 2007 and 2008 and then dropped below 2007 levels in 2009. The sharp increase in 2008 could be attributable to the increase in the Alaska Permanent Fund Dividend checks during this timeframe. Table 5-80 lists the primary HC 9commodities shipped within the Interior Alaska Subarea.

Table 5-80. Primary Hazard Class 9 Commodities Shipped within the INT Subarea

Hazard Class	Hazardous Material Description (Greater than 500,000 lbs Shipped)	UN ID Number
9.0	Miscellaneous Hazardous Material Gases	Unspecified
	Engines / Vehicles	3166
	Asbestos	2212

Figure 5-50 depicts the volume of hazardous materials shipped each year within the Interior Alaska Subarea by Hazardous Material Name for volumes exceeding 500,000 pounds.

Figure 5-50. Hazardous Material Commodities by Hazardous Material Name (Greater than 500,000 lbs) for the Interior Alaska Subarea, for 2007 through 2009, presented on a log scale.



D. REFERENCES

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

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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.

Radiological risks in the Interior 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 Interior 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.

Terrorism threats in the Interior 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.