BRISTOL BAY
SUBAREA CONTINGENCY PLAN

HAZARDOUS MATERIALS
SECTION

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HAZMAT: PART ONE – HAZMAT SPILL RESPONSE

A. INITIAL NOTIFICATION OF RESPONSE AGENCIES

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

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

B. RECOGNITION

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

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

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

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

Although appropriate references give information about a substance's environmental behavior, additional field data likely will be required. Most frequently, air monitoring and sampling are needed to verify and

identify the presence of hazardous materials, to calculate concentrations, and to confirm dispersion patterns.

Available references (with several websites) for HAZMAT and response organization information: Many of the following publications/programs can also be found at ADEC offices and with the local fire departments.

- The **Unified Plan**, which addresses the Unified Command Structure in Annex B, Appendix II, and also provides statewide Hazmat response guidance in Annex L. http://www.akrrt.org/plans.shtml
- Commandant Instruction #16465.30
- National Contingency Plan (40 CFR part 300)
- The Alaska Incident Management System (AIMS) Guide (November 2002 Revision 1) http://www.akrrt.org/aim/aim_toc.shtml
- Coastal Sensitivity Atlas
- USCG CHRIS Manual
- DOT Emergency Response Guidebook (current edition) - http://hazmat.dot.gov/gydebook.htm
- CHEMTREC, Chemical/Hazardous Substance information, 800-424-9300
- SAX - Dangerous Properties of Hazardous Materials
- IMDC Codes
- Material Safety Data Sheets (MSDS) - http://www.hazard.com/msds/index.php
- NFPA Fire Protection Guide On Hazardous Materials
- NIOSH/OSHA/USCG/EPA Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities. Also, the NIOSH/OSHA Pocket Guide Book http://www.cdc.gov/niosh/npg/npg.html
- HartCrowser, Inc., 1999. 1998 Statewide Hazardous Material Inventory. Prepared for Alaska Department of Environmental Conservation, Division of Spill Prevention and Response.
- HartCrowser, Inc., 1999. Alaska Level A and B Hazardous Material Response Resources. Prepared for Alaska Department of Environmental Conservation, Division of Spill Prevention and Response.
- HartCrowser, 2000. Evaluation of Chemical Threats to the Alaska Public. Prepared for Alaska Department of Environmental Conservation, Division of Spill Prevention and Response.
- State of Alaska Tier Two Summary Report (available through ADEC). The tier two data can be reviewed using the CAMEO program. The basic report is available at: www.ak-prepared.com/serc/
- Alaska Statewide Oil and Hazardous Substance Inventory for Reporting Year 2008, Ecology and Environment. Prepared for U.S. Environmental Protection Agency, Region 10.
- Statewide Hazardous Materials Commodity Flow Study, Nuka Research and Planning Group, 2010. Prepared for the Alaska Department of Environmental Conservation and the Alaska Department of Military and Veterans Affairs. The basic report is available at: http://dec.alaska.gov/spar/perp/hazmat/study.html
- Oil and Chemical Response Reference Library at the Marine Safety Office in Anchorage. This library consists of a Macintosh Computer System with CAMEO, plus all of the publications listed

above. A complete library listing is maintained and updated as new/revised publications/programs are received.

- Spill Tactics for Alaska Responders (STAR) Manual, April 2006. Describes the various levels of protection (Levels A, B, C, and D for hazardous materials response).
  http://www.dec.state.ak.us/spar/perp/star/index.htm

C. EVALUATION

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

1. Initial Characterization

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

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

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

- An attempt should be made to gather as much information as possible, such as:
  - Description and exact location of the incident.
  - Date and time of occurrence.
  - Hazmats involved and their physical/chemical properties.
  - Present status of incident.
  - Potential pathways of dispersion.
  - Habitation - population at risk.
  - Environmentally sensitive areas - endangered species, delicate ecosystems.
  - Economically sensitive areas - industrial, agricultural.
  - Accessibility by air, roads and waterways.
  - Current weather and forecast (next 24 to 48 hours).
  - Aerial photographs/video when possible.

- A general layout and mapping of the site.
- Available communications.

- Off-site reconnaissance (that can be conducted in Level D) should be the primary inspection for initial site characterization when the hazards are largely unknown or there is no urgent need to go on-site. Off-site reconnaissance consists of visual observations and monitoring for atmospheric hazards near the site. Collecting of off-site samples may identify substance migration or indicate on-site conditions.

  Off-site reconnaissance would include:

  - Monitoring ambient air with direct-reading instruments for:
    organic and inorganic vapors, gases, and particulates;
    oxygen deficiency;
    specific materials, if known;
    combustible gases and radiation.
  - Identifying placards, labels, or markings on containers or vehicles.
  - Noting the configuration of containers and, tank trailers.
  - Noting the types and numbers of containers, tank trailers, buildings, and impoundments.
  - Identifying any leachate or runoff.
  - Looking for biological indicators - dead vegetation, animals, insects or fish.
  - Noting any unusual odors or conditions.
  - Observing any vapors, clouds, or suspicious substances.
  - Taking off-site samples of air, surface water, ground water (wells), drinking water, site runoff, and soil.
  - Reviewing the Dangerous Cargo Manifest.
  - Conducting interviews with workers, witnesses, observers, or inhabitants.

- An on-site survey (conducted in a minimum of Level B protection until hazards can be determined) may be necessary if a more thorough evaluation of hazards is required. On-site surveys require personnel to enter the restricted or "hot zone" of the site. Prior to any personnel conducting an on-site survey, an entry plan addressing what will be initially accomplished and prescribing the procedures to protect the health and safety of response personnel will be developed. On-site inspection and information gathering would include:

  - Monitoring ambient air with direct-reading instruments for:
    Organic and inorganic vapors, gases, and particulates;
    Oxygen deficiency;
    Specific materials, if known;
    Combustible gases and radiation.

  - Observing containers, impoundments, or other storage systems and noting:
    Numbers, types, and quantities of materials.
    Condition of storage systems (state of repair, deterioration, etc.)
    Container configuration or shape of tank trailers, etc.
    Labels, marking, identification tags, or other indicators of material

Leaks or discharges from containers, tanks, ponds, vehicles, etc.

- Noting physical condition of material:
  Solids, liquids, gases
  Color
  Behavior (foaming, vaporizing, corroding, etc.)

- Determining potential pathways of dispersion - air, surface water, ground water, land surface, biological routes.

- Taking on-site samples of storage containers, air, surface water, ground water (wells), drinking water, site runoff, and soil.

2. Comprehensive Characterization

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

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

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

D. EVACUATION

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

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

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

E. DIRECTION AND SITE/ENTRY CONTROL

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

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

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

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

F. COMMAND AND CONTROL

As long as there is an immediate threat to public safety, a LOSC serves as the ultimate command authority if the FOSC or SOSC does not assume the lead role for the response or the LOSC request a higher authority to assume that responsibility. The LOSC can at any time request higher authority to assume command and control of an incident. All applicable local emergency plans should be consulted. After the LOSC has determined that public safety is not at risk, then the Unified Command response organization will assume command and control of the incident.

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

G. COMMUNICATIONS

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

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

H. WARNING SYSTEMS & EMERGENCY PUBLIC NOTIFICATION

For FOSC/SOSC access to emergency broadcast systems refer to the **Unified Plan, Annex E, Appendix III.** For a listing of radio, newspaper, and television contacts refer to the Information Directory in the Resources Section of this Plan.

Public Information/Community Relations guidelines and information are provided in the **Unified Plan, Annex I.**

I. HEALTH AND MEDICAL SERVICES

For local hospital and clinic information refer to the *Resources Section, Community Profiles* of this plan.

HAZMAT: PART TWO – RESPONSIBLE PARTY HAZMAT ACTION

A. DISCOVERY AND NOTIFICATION

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

If direct reporting to the NRC is not immediately practicable, reports will be made to the Captain of the Port (COTP) Western Alaska (the USCG FOSC for the Bristol Bay Subarea, 907-271-6723 (24-hour contact number). The Environmental Protection Agency's pre-designated FOSC may also be contacted through the regional 24-hour response telephone number (206-553-1263). All such reports shall be promptly relayed to the NRC.

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

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

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

B. REMOVAL ACTION

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

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

HAZMAT: PART THREE – STATE HAZMAT ACTION

A. AUTHORITY

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

B. RESPONSE POLICY

The ADEC is currently operating in accordance with an August 1992 policy decision which precludes ADEC personnel from responding to situations which require Level A/B protection. ADEC personnel are prohibited from responding with or using personal protective equipment beyond the Level C protection category (as defined in EPA standards).

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

C. STATE RESPONSE CAPABILITIES

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

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

Another State asset is the 103rd Civil Support Team (CST), based with the Alaska National Guard at Fort Richardson, Alaska. The 103rd CST can be requested through ADEC or DMVA's Division of Homeland Security and Emergency Management, State Emergency Operations Center (SEOC – 428-7100 or 1-888-462-7100). The primary focus of the team is weapons of mass destruction (WMD), including chemical and biological warfare agents and toxic industrial chemicals. The 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 State On-Scene Coordinator's anticipated and prioritized response objectives are as indicated below:

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

HAZMAT: PART FOUR – FEDERAL HAZMAT ACTION

A. AUTHORITY

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

B. JURISDICTION

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

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

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

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

C. RESPONSE POLICY

The USCG will follow the policy guidance contained in COMDTINST M16465.30, "Policy Guidance for Response to Hazardous Chemical Releases", and the Marine Safety Manual, Volume VI, Chapter 7 when responding to a hazardous chemical release. The USCG 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 evacuating the affected area and maintaining a safe perimeter while attempting to positively identify the pollutant and outlining a clear course of action. Federal personnel, with the exception of specialized teams (e.g., the National Strike Force and the Pacific Strike Team, and the EPA START Team), will not enter a hazardous environment.

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

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

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

In implementing this conservative response posture, the COTP 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 (Computer-Aided Management of Emergency Operations) computer programs will be an important part of any chemical release incident. The CAMEO chemical database with Codebreaker and Response Information Data Sheets modules provide a rapid means of identifying chemicals and their associated hazards. The ALOHA air modeling program, part of CAMEO, provides a rapid means of developing a downwind hazard evaluation. The NOAA SSC likely 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.

HAZMAT: PART FIVE – SUBAREA HAZMAT RISK ASSESSMENT

A. GENERAL

This part provides general information on the location of extremely hazardous substances and other hazardous substances within the Bristol Bay Subarea which includes the Bristol Bay region and adjacent inland areas of western southcentral Alaska. Please note that 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 material safety data sheets, along with any reports of chemical releases to the environment, as reportable under the Tier II requirements of the SARA.

There have been relatively few major hazardous materials spills or releases in the Bristol Bay Subarea. The most significant release occurred on July 21, 2008, when a fire at a fish processing facility resulted in a release of 8,000 pounds of anhydrous ammonia. The DEC Spills Database also noted three other minor releases of anhydrous ammonia and a release of hydrochloric acid over the past 17 years of recorded data.

1. Chemical Inventory

Based on the 2011 Tier Two summary report, the most prevalent extremely hazardous substances stored in the region are listed below along with the federally mandated threshold reporting quantities:

- anhydrous ammonia – 100 pounds (12 facilities)
- sulfuric acid – 1000 pounds (2 facilities)
- chlorine – 10 pounds (1 facility)

The overwhelming concentration of hazardous chemicals in the Bristol Bay Subarea occurs in the City of Naknek, with smaller amounts in Dillingham, Chignik, King Salmon, and Big Creek. Anhydrous ammonia is present in the greatest quantities, followed by chlorine and sulfuric acid. Anhydrous ammonia has been reported on the Alaska Tier II form by five seafood processing facilities in Naknek, four facilities in Chignik, and two facilities in Dillingham. Chlorine gas is reported in use at seafood processing facility in Naknek. Sulfuric acid is located at communications facilities in King Salmon, and Dillingham.

In addition to these extremely hazardous substances, there is also an indeterminate amount of hazardous materials scattered throughout the Bristol Bay Subarea, mostly in formerly utilized defense sites (FUDS) located at Naknek, King Salmon, and Port Heiden. However, because the quantities and locations of these substances either are below reporting requirements or unknown, they have not been included in the hazardous materials inventory in this plan. Large quantities of flammable petroleum products, such as propane and gasoline, also are stored at several facilities within the subarea, and a few facilities store and utilize compressed gasses.

2. Chemical Risks

Identified below are the hazards associated with the extremely hazardous substances present within the subarea, and the properties of each substance and the effects on humans are outlined. Among these substances known to be present in the Bristol Bay Subarea, ammonia poses the greatest (most-likely) threat.

Anhydrous ammonia is a colorless gas with a characteristic odor. The term "anhydrous" is used to distinguish the pure form of the compound from solutions of ammonia in water. Like chlorine, anhydrous ammonia is neither explosive nor flammable, but will support combustion. It readily dissolves in water to form an aqua ammonia solution. Anhydrous ammonia is considerably lighter than air and will rise in

absolutely dry air. As a practical matter, though, anhydrous ammonia immediately reacts with any humidity in the air and will often behave as a heavier gas. The chemical reacts with and corrodes copper, zinc and many alloys.

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

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

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

3. Response Capability

There are no Level A Hazmat response teams in the Bristol Bay subarea. In the event of a hazardous substance release, the ADEC should be contacted and they can take action to activate the Statewide Hazmat Response Team. This formally agreed arrangement allows ADEC to request a Level A Hazmat team to respond to an event anywhere in the state, as long as the requested Hazmat Team can spare the services of the equipment and trained personnel.

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

Several communities in the Bristol Bay 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

Table C-1 below identifies the quantities of extremely hazardous substances in the subarea. Emergency responders should refer to the CAMEO database program to determine specific chemical hazards at a particular facility, based on Tier Two reporting requirements.

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

EHS	Max Amt (lbs)	No. of Facilities
Ammonia, Anhydrous	65,276	12
Chlorine	1,200	1
Sulfuric Acid	1,207	2
Total	**67,683**	**15**

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

C. TRANSPORTATION

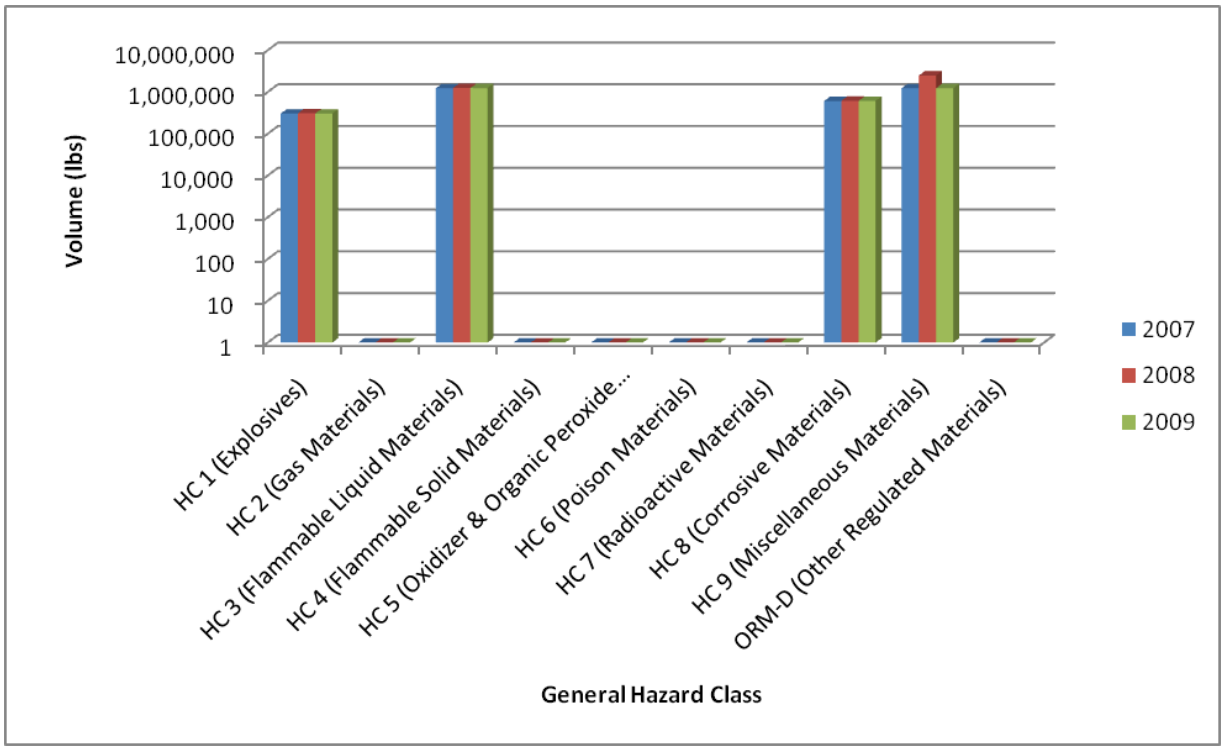
Hazardous substances are generally transported into the subarea via water and delivered either direct to facilities or transported to facilities by truck over local road systems. Some substances may be shipped by air or come into the area aboard fishing-industry vessels.

The following pages contain information from the Statewide Hazmat Commodity Flow Study conducted in 2010. The information provided is specific to the Bristol Bay subarea.

5.6 Bristol Bay

The transportation of hazardous materials through the Bristol Bay Subarea (BB) includes two modes of transportation: air and marine. The breakdown of hazardous materials volumes from year to year by Hazard Class is depicted in Figure 5-26 below.

Figure 5-26. Volumes of Hazardous Materials Shipped into Bristol Bay presented on a log scale



In general, HC 3 commodities (Flammable Liquid Materials), HC 9 (Miscellaneous Materials), and HC 8 commodities (Corrosive Materials) consistently dominated the volume of hazardous materials commodities shipped within the Bristol Bay Subarea. Figures 5-27, 5-28, and 5-29 below depict the volume of hazardous materials by hazard class as a percentage of the total volume shipped within the subarea for each calendar year.

Figure 5-27. BB Hazardous Materials Percentage of Total Volume by Hazard Class for 2007

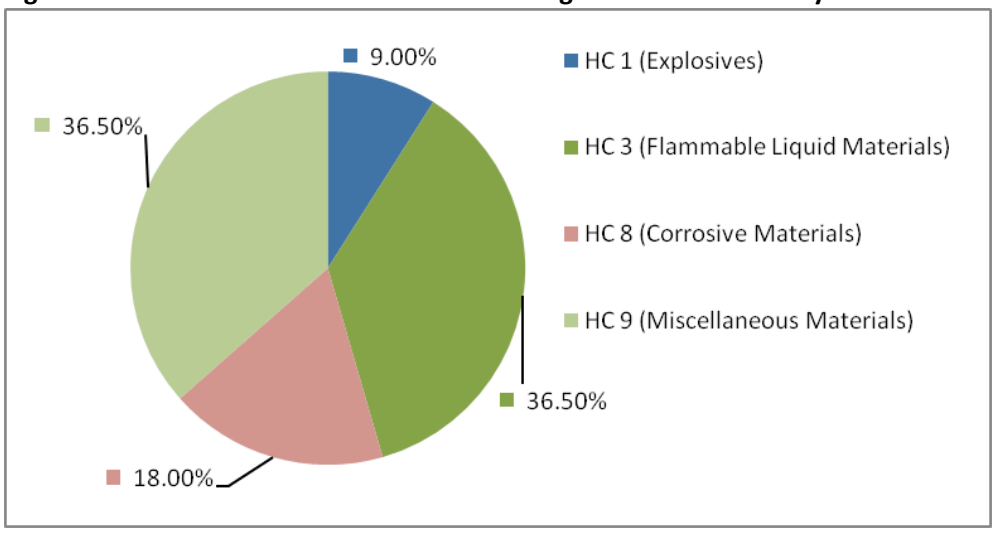


Figure 5-28. BB Hazardous Materials Percentage of Total Volume by Hazard Class for 2008

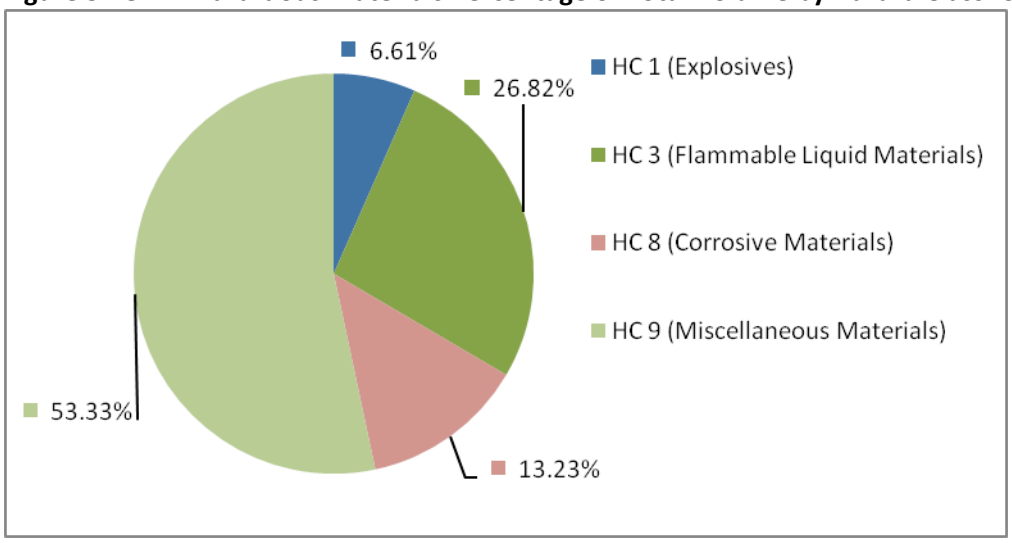


Figure 5-29. BB Hazardous Materials Percentage of Total Volume by Hazard Class for 2009

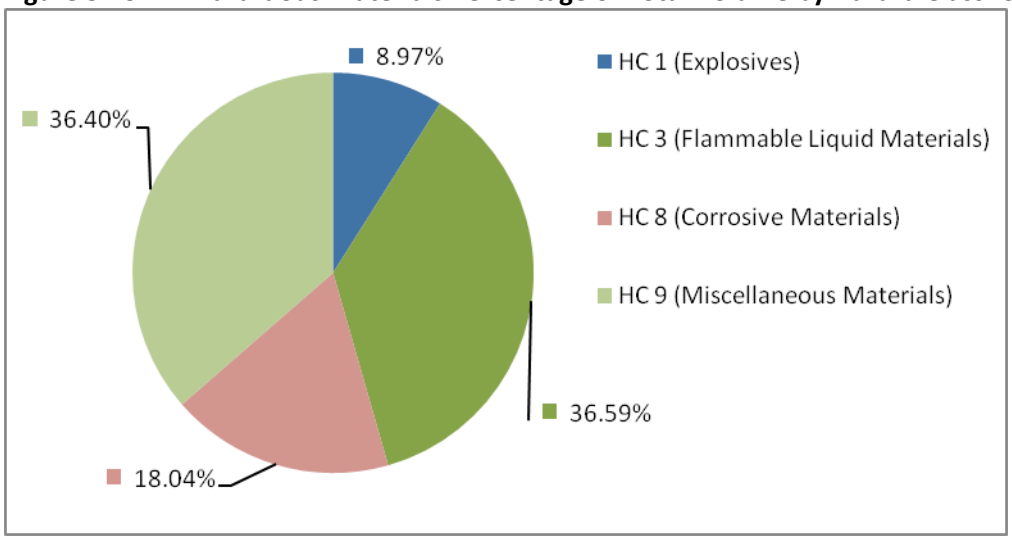


Table 5-42 lists the volumes of hazardous materials shipped within the Bristol Bay subarea by hazard class for each calendar year evaluated for this study.

Table 5-42. Volumes of Hazard Class Transported within BB Subarea by Calendar Year

Hazard Class	2007 (Total Volume in lbs)	2008 (Total Volume in lbs)	2009 (Total Volume in lbs)
HC 1 (Explosives)	303,750	308,925	305,325
HC 2 (Gas Materials)	-	-	-
HC 3 (Flammable Liquid Materials)	1,231,875	1,252,864	1,244,663
HC 4 (Flammable Solid Materials)	-	-	-
HC 5 (Oxidizer & Organic Peroxide Materials)	-	-	-
HC 6 (Poison Materials)	-	-	-
HC 7 (Radioactive Materials)	-	-	-
HC 8 (Corrosive Materials)	607,500	617,850	613,850
HC 9 (Miscellaneous Materials)	1,231,875	2,491,127	1,238,263
ORM-D (Other Regulated Materials)	-	-	-

A more detailed evaluation of each hazard class is provided below. A shipment volume threshold was not established for the Bristol Bay subarea due to the limited number and volumes of shipments reported.

HC 1 Explosives: The primary explosives that were transported through the Bristol Bay Subarea were HC 1.0 (unspecified hazard class) and the volumes of the shipments were very consistent from year to year. The primary mode of transportation for these commodities was via air – therefore the volumes shipped, as noted in the previous section, are artificial and based on an algorithm generated from some discussions with the air carrier. However, it is apparent that based on the consistency of the volumes transported, the number of hazardous materials shipments in the Bristol Bay Subarea via aircraft remained fairly consistent. Table 5-43 lists the primary HC 1 commodities shipped within the Bristol Bay Subarea.

Table 5-43. Primary Hazard Class 1 Commodities Shipped within the BB Subarea

Hazard Class	Hazardous Material Description	UN ID Number
1.0	Ammunition	0006

HC 2 Gas Materials: There were no gas materials shipped within the Bristol Bay Subarea according to the data evaluated for this study.

HC 3 Flammable Liquid Materials: The shipments of HC 3.0 within the Bristol Bay Subarea were primarily shipped via aircraft. Fuel barges also make deliveries to the Bristol Bay subarea, but this information was not captured in this dataset. The volumes shipped via aircraft, as noted in the previous section, are somewhat artificial and based on an algorithm generated from discussions with the air carrier. However, the volume

changes reflect the changes in the number of hazardous materials shipments into the Bristol Bay Subarea. Table 5-44 lists the primary HC 3 commodities shipped within the Bristol Bay Subarea.

Table 5-44. Primary Hazard Class 3 Commodities Shipped within the BB Subarea

Hazard Class	Hazardous Material Description	UN ID Number
3.0	Gasoline	1203
	Flammable Liquid, Toxic, N.O.S.	1992
	Flammable Liquid, N.O.S.	1993

HC 4 Flammable Solid Materials: There were no Flammable Solid Materials transported within this Subarea during this time period according to the data evaluated.

HC 5 Oxidizer and Organic Peroxide Materials: No Oxidizer or Organic Peroxide Materials were shipped in this Subarea according to the data evaluated for this study.

HC 6 Poisons: No Poisons were reported for this Subarea.

HC 7 Radioactive Materials: No Radioactive Materials were reported for this Subarea.

HC 8 Corrosive Materials: The volumes of HC 8.0 shipments within the Bristol Bay Subarea remained nearly equivalent from year to year. No discernible trend noted. Table 5-45 lists the primary HC 8 commodities shipped within the Bristol Bay Subarea.

Table 5-45. Primary Hazard Class 8 Commodities Shipped within the BB Subarea

Hazard Class	Hazardous Material Description	UN ID Number
8.0	Amines, Liquid, Corrosive, N.O.S. or Polyamines, Liquid, Corrosive, N.O.S.	2735
	Corrosive Cleaning Supplies	1760
	Batteries, Wet, Filled with Acid	2794

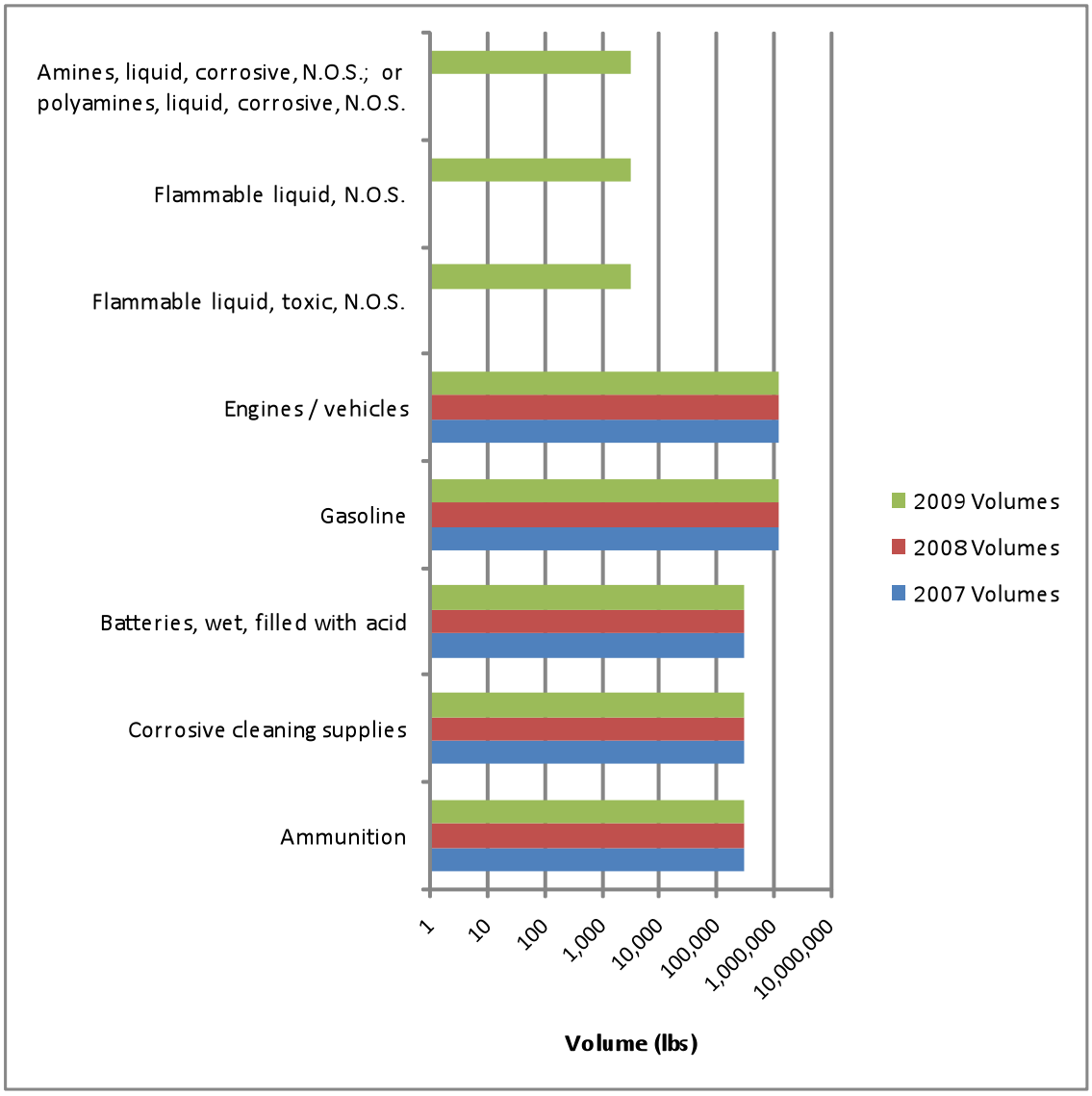
HC 9 Miscellaneous Materials: The volume of HC 9.0 commodities shipped within the Bristol Bay Subarea saw an increase between 2007 and 2008 and then dropped but remained higher than 2007 levels in 2009. The increase in 2008 could be attributable to the increase in the Alaska Permanent Fund Dividend checks during this timeframe. Table 5-46 lists the primary HC 9 commodities shipped within the Bristol Bay Subarea.

Table 5-46. Primary Hazard Class 9 Commodities Shipped within the BB Subarea

Hazard Class	Hazardous Material Description	UN ID Number
9.0	Engines / Vehicles	3166

Figure 5-30 depicts the volume of hazardous materials shipped each year within the Bristol Bay Subarea by Hazardous Material Name for volumes exceeding 10,000 pounds.

Figure 5-30. Hazardous Material Commodities by Hazardous Material Name (Greater than 10,000 lbs) for the Bristol Bay Subarea, for 2007 through 2009, presented on a log scale.



D. REFERENCES

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

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

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Alaska Statewide Oil and Hazardous Substance Inventory for Reporting Year 2008, Ecology and Environment. Prepared for U.S. Environmental Protection Agency, Region 10.

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

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HAZMAT: PART SIX – RADIOLOGICAL & BIOLOGICAL ISSUES

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

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

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