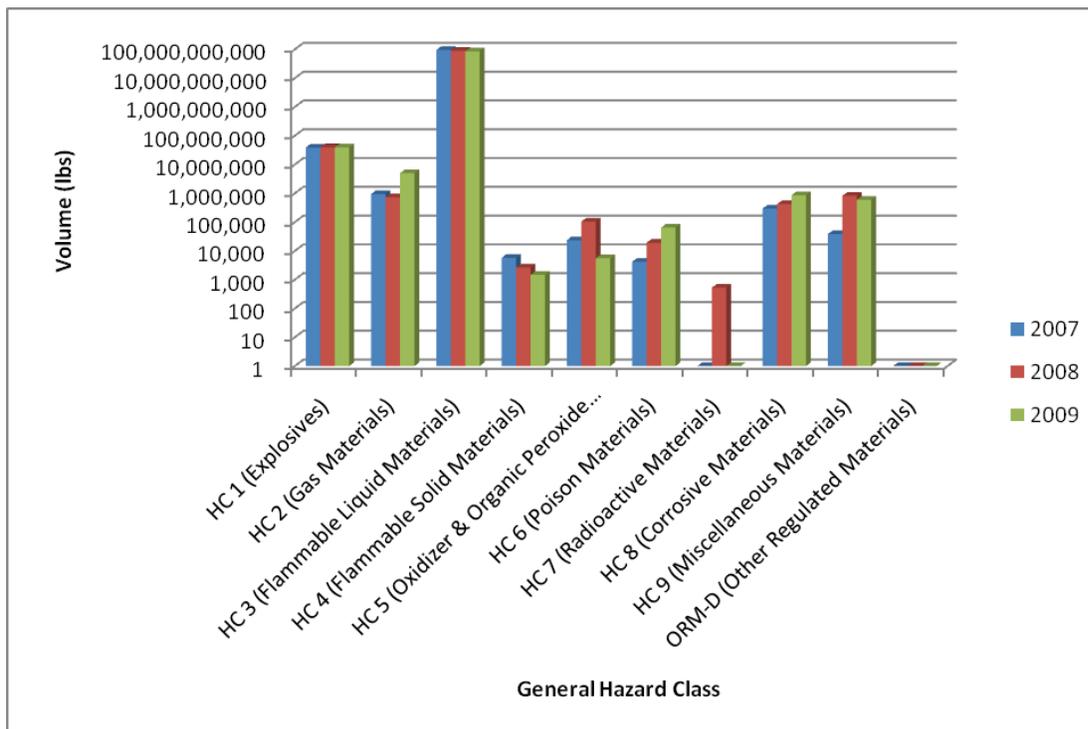


## 5.2 Prince William Sound

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

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



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

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

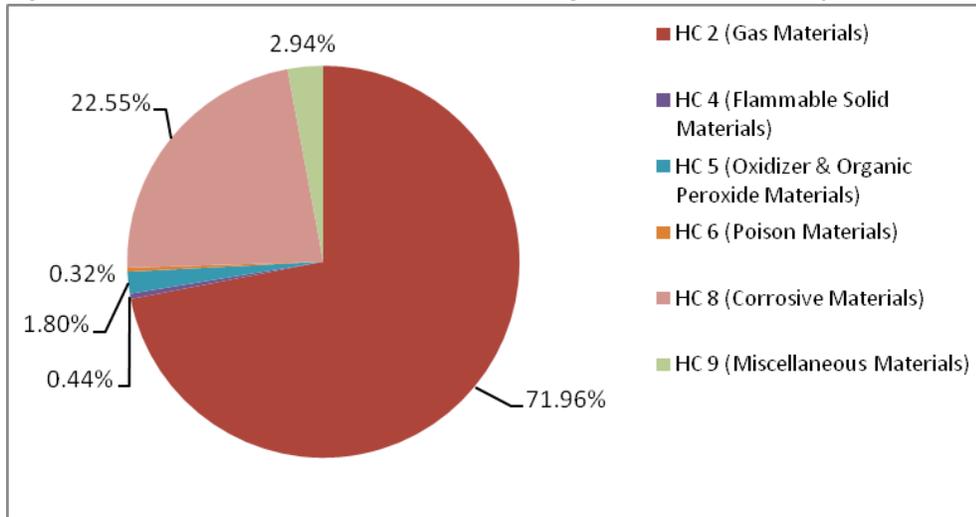


Figure 5-8. PWS Hazardous Materials Percentage of Total Volume by Hazard Class for 2008

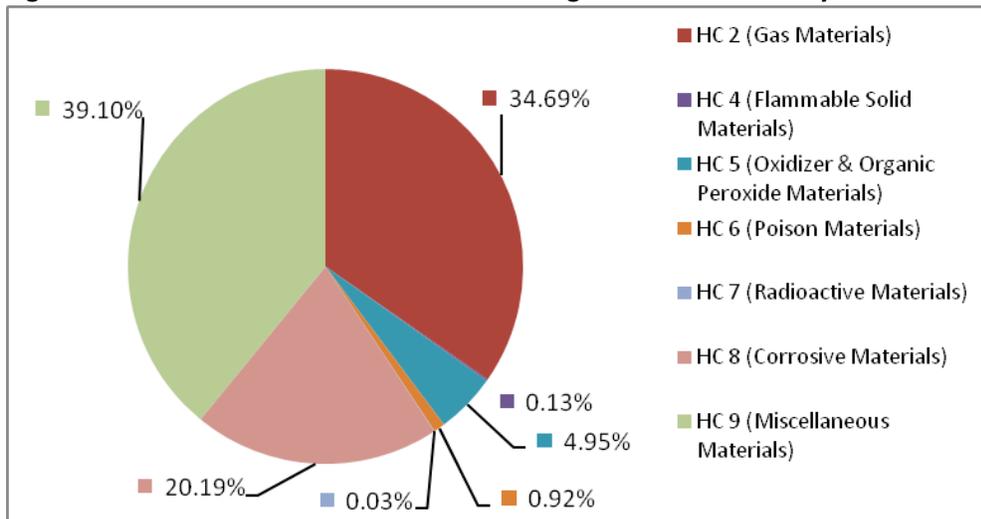
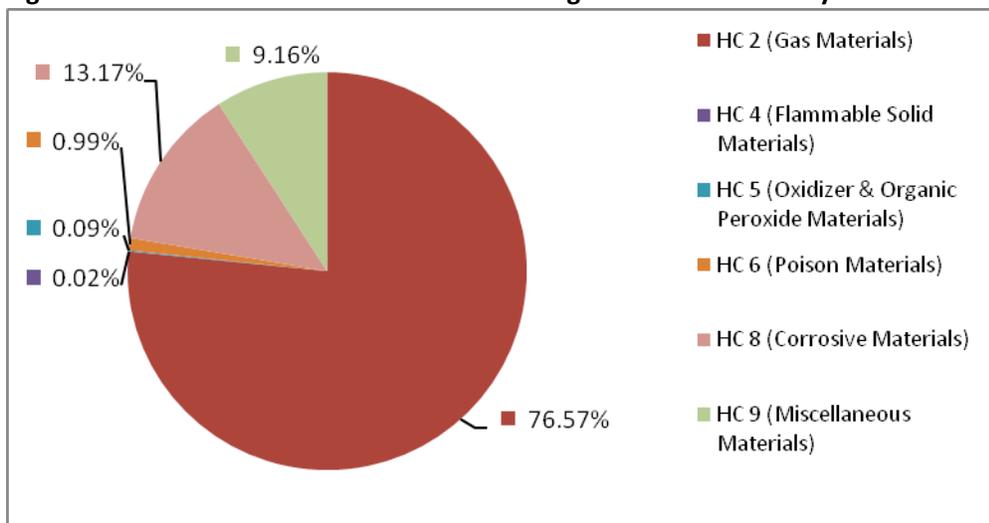


Figure 5-9. PWS Hazardous Materials Percentage of Total Volume by Hazard Class for 2009



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

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

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

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

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

<sup>32</sup> Largely based on the detail of the data made available from the military ammunition shipment manager.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

