5.3 Cook Inlet

The transportation of hazardous materials through the Cook Inlet Subarea (CI) includes all modes of transportation. Not surprisingly due to the transportation infrastructure availability and the strategic positioning of this region as an ultimate receiver or transshipment point within the State, this Subarea has the highest total number of shipments and covers the entire spectrum of hazardous materials commodities to be shipped. The volumes transported are largely dominated by those volumes reported for shipment by pipeline (HC 3.0: Petroleum products, and HC 2.1: Natural Gas). The breakdown of hazardous materials volumes from year to year by Hazard Class is depicted in Figure 5-11 below.

Figure 5-11. Volumes of Hazardous Materials Shipped into CI presented on a log scale

Because HC 2.0 (Gas Materials) and 3.0 (Flammable Liquid Materials), specifically natural gas and petroleum products, make up 99.8% of the total volume shipped, the breakdown of volumes of Hazard Class shipments (inclusive of all hazard classes) as a percentage of subarea-wide volume does not provide any meaningful insight. However, excluding those two hazard classes provides a general breakdown of the remaining hazard classes by percentage of the total remaining volume. Figures 5-12, 5-13 and 5-14 depict the breakdown of hazardous material shipments within the Cook Inlet Subarea by a percentage of total remaining volume shipped. HC 8 (Corrosive Materials), HC 9 (Miscellaneous Materials) and HC 5 (Oxidizer & Organic Peroxide Materials) consistently dominate the volume of hazardous materials shipped from year to year.

Figure 5-12. CI Hazardous Materials Percentage of Total Volume by Hazard Class for 2007

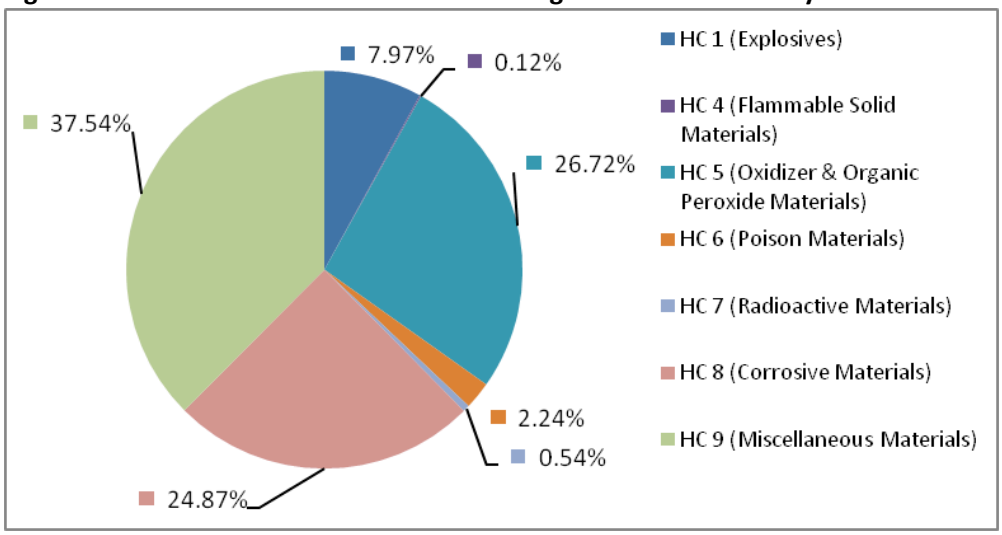


Figure 5-13. CI Hazardous Materials Percentage of Total Volume by Hazard Class for 2008

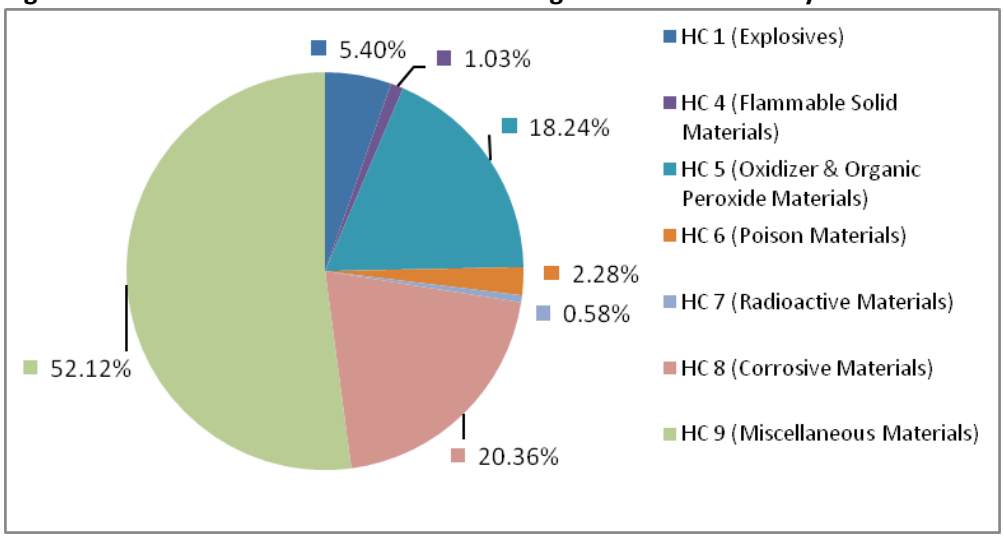
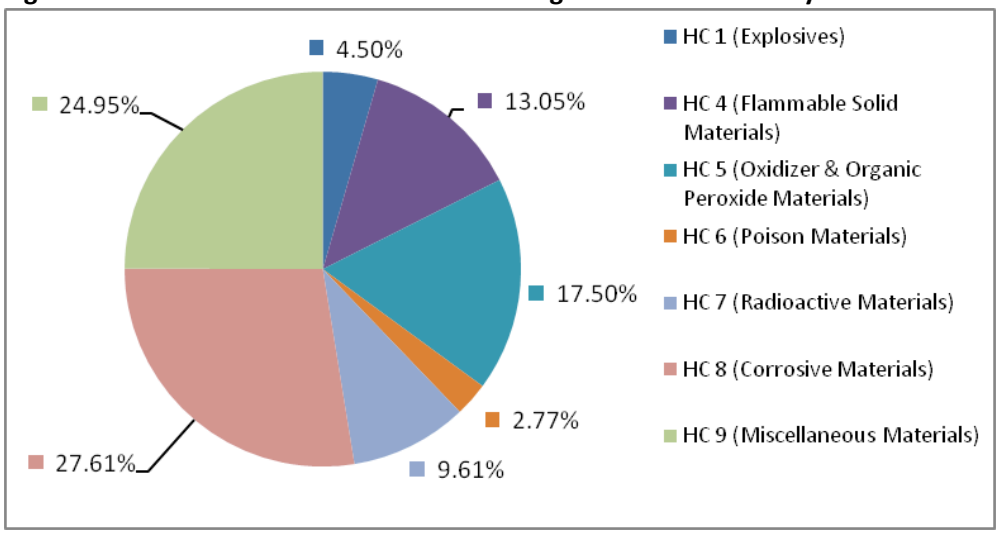


Figure 5-14. CI Hazardous Materials Percentage of Total Volume by Hazard Class for 2009



In general, HC 2 commodities (Gas Materials), specifically Natural Gas, dominated the volume of hazardous materials shipped in the Cook Inlet Subarea by over two (2) orders of magnitude.

This observation is consistent with the fact that Natural Gas is transported via the Cook Inlet Pipeline. The total volumes of hazardous materials shipped within the Cook Inlet subarea, by hazard class, for each calendar year evaluated for this study are listed in Table 5-17.

Table 5-17. Volumes of Hazard Class Transported within CI Subarea by Calendar Year

Hazard Class	2007 (Total Volume in lbs)	2008 (Total Volume in lbs)	2009 (Total Volume in lbs)
HC 1 (Explosives)	23,777,943	22,750,090	22,278,874
HC 2 (Gas Materials)	10,492,451,607,239	9,533,783,569,273	8,652,326,419,057
HC 3 (Flammable Liquid Materials)	15,576,027,730	14,088,937,179	11,874,523,207
HC 4 (Flammable Solid Materials)	351,462	4,324,312	64,618,509
HC 5 (Oxidizer & Organic Peroxide Materials)	79,702,456	76,897,232	86,639,264
HC 6 (Poison Materials)	6,679,978	9,603,623	13,722,201
HC 7 (Radioactive Materials)	1,619,968	2,449,819	47,584,991
HC 8 (Corrosive Materials)	74,181,289	85,837,452	136,681,823
HC 9 (Miscellaneous Materials)	111,969,641	219,711,495	123,510,058
ORM-D (Other Regulated Materials)	-	-	-

A more detailed evaluation of each hazard class is provided below. For the Cook Inlet Subarea, the volume cutoff for more detailed analysis was set at 100,000 lbs due to the higher numbers of hazmat commodities shipped in this region.

HC 1 Explosives: The primary explosives that were transported through the Cook Inlet Subarea in 2007, 2008 and 2009 were 1.0 (unspecified hazard class), 1.1, 1.2, 1.3, 1.4 and 1.5. Shipment volumes were very consistent from year to year. Table 5-18 lists the primary HC 1 commodities shipped within the Cook Inlet Subarea.

Table 5-18. Primary Hazard Class 1 Commodities Shipped within the CI Subarea

Hazard Class	Hazardous Material Description (Greater than 100,000 lbs Shipped)	UN ID Number
1.1	Explosive Material (Military Shipments)	Unspecified
1.2	Explosive Material (Military Shipments)	Unspecified
1.3	Explosive Material (Military Shipments)	Unspecified
1.4	Explosive Material (Military Shipments)	Unspecified
1.5	Explosive, Blasting, Type B or Agent Blasting, Type B	0331

HC 2 Gas Materials: HCs 2.0, 2.1, 2.2 and 2.3 were shipped in the Cook Inlet Subarea. The most significant volume shipped within Cook Inlet was Natural Gas, HC 2.1, which was transported via the Cook Inlet Pipeline. The shipments of HC 2.0 were primarily the gas materials commodities transported via the Alaska Railroad from year to year that

did not have a specified hazard class, UN ID number or detailed hazardous materials description. Table 5-19 lists the primary HC 2 commodities shipped within the Cook Inlet Subarea.

Table 5-19. Primary Hazard Class 2 Commodities Shipped within the CI Subarea

Hazard Class	Hazardous Material Description (Greater than 100,000 lbs Shipped)	UN ID Number
2.1	Natural Gas (Methane)	1971
	Petroleum Gases, Liquefied or Liquefied Petroleum Gas	1075
	Methane, Refrigerated Liquid or Natural Gas, Refrigerated Liquid	1972
2.2	Oxygen, Compressed	1072
	Compressed Gas, N.O.S.	1956
	Fire Extinguishers	1044
2.3	Chlorine	1017

HC 2.2 were the only grouping of gas material commodities to display an increase in volume from year to year. The primary source of shipment into this subarea was via the marine mode as the commodity was shipped from Tacoma, WA.

HC 3 Flammable Liquid Materials: HC 3.0 commodities are transported in the Cook Inlet Subarea by all five (5) modes of transportation that were evaluated in this study. The volumes transported decreased consistently from year to year between 2007 and 2009. The decrease appears to follow the changes in throughput of the regional pipelines during this time period. Table 5-20 lists the primary HC 3 commodities shipped within the Cook Inlet Subarea.

Table 5-20. Primary Hazard Class 3 Commodities Shipped within the CI Subarea

Hazard Class	Hazardous Material Description (Greater than 100,000 lbs Shipped)	UN ID Number
3.0	Paint	1263
	Petroleum Crude Oil	1267
	Jet Fuel	1863
	Diesel, Flammable Liquids	1993
	Petroleum Distillates, N.O.S. or Petroleum Products, N.O.S.	1268
	Diesel Fuel; Fuel Oil; Gas Oil or Heating Oil Light	1202
	Flammable Liquids	Unspecified

HC 4 Flammable Solid Materials: HCs 4.0 (unspecified hazard class), 4.1, 4.2 and 4.3 were shipped within the Cook Inlet Subarea. Volumes and HC varied from year to year and no discernible trends were noted. It appears that there may have been an entry

error by the data provider for the volume of a single 2008 shipment of HC 4.1. The volume of HC 4.1 shipped in 2008 is two orders of magnitude higher than either 2007 or 2009. Table 5-21 lists the primary HC 4 commodities shipped within the Cook Inlet Subarea.

Table 5-21. Primary Hazard Class 4 Commodities Shipped within the CI Subarea

Hazard Class	Hazardous Material Description (Greater than 100,000 lbs Shipped)	UN ID Number
4.0	Flammable Solid Material	Unspecified
4.1	Sulfur	1350

There were no HC 4.2 or 4.3 commodities shipped that exceeded 100,000 lbs.

HC 5 Oxidizer and Organic Peroxide Materials: HC 5.1 and 5.2 were transported in this Subarea each year. HC 5.1 shipped within the Cook Inlet Subarea represented the largest volume of HC 5.1 transported within the State. The volume showed no discernible trend. HC 5.2 increased approximately 35% between 2007 and 2008, and then increased an order of magnitude between 2008 and 2009. Table 5-22 lists the primary HC 5 commodities shipped within the Cook Inlet Subarea.

Table 5-22. Primary Hazard Class 5 Commodities Shipped within the CI Subarea

Hazard Class	Hazardous Material Description (Greater than 100,000 lbs Shipped)	UN ID Number
5.1	Ammonium Nitrate	3375

There were no HC 5.2 commodities shipped that exceeded 100,000 lbs.

HC 6 Poisons: HC 6.1 and 6.2 were shipped within the Cook Inlet Subarea. The volume of HC 6.1 shipped was primarily dominated by the Alaska Railroad shipments of Sodium Cyanide and consistently increased from year to year. HC 6.2 commodities were primarily regulated medical waste products and consistently decreased from year to year. Table 5-23 lists the primary HC 6 commodities shipped within the Cook Inlet Subarea.

Table 5-23. Primary Hazard Class 6 Commodities Shipped within the CI Subarea

Hazard Class	Hazardous Material Description (Greater than 100,000 lbs Shipped)	UN ID Number
6.1	Sodium Cyanide	1689

There were no HC 6.2 commodities shipped that exceeded 100,000 lbs.

HC 7 Radioactive Materials: HC 7.0 was transported within the Cook Inlet Subarea from year to year. The volume increased each year seeing a substantial order of magnitude

increase between 2008 and 2009. Table 5-24 lists the primary HC 7 commodities shipped within the Cook Inlet Subarea.

Table 5-24. Primary Hazard Class 7 Commodities Shipped within the CI Subarea

Hazard Class	Hazardous Material Description (Greater than 100,000 lbs Shipped)	UN ID Number
7.0	Radioactive Materials	Unspecified

HC 8 Corrosive Materials: HC 8.0 commodities shipped within the Cook Inlet Subarea also increased from year to year. Volumes shipped increased by approximately 15% between 2007 and 2008, and by approximately 38% between 2008 and 2009. Table 5-25 lists the primary HC 8 commodities shipped within the Cook Inlet Subarea.

Table 5-25. Primary Hazard Class 8 Commodities Shipped within the CI Subarea

Hazard Class	Hazardous Material Description (Greater than 100,000 lbs Shipped)	UN ID Number
8.0	Corrosive Cleaning Supplies	1760
	Batteries, Wet, Filled with Acid	2794
	Paint	3066
	Corrosive Liquid, Basic, Inorganic, N.O.S.	3266
	Corrosive Materials	Unspecified

HC 9 Miscellaneous Materials: The volume of HC 9.0 commodities shipped within the Cook Inlet Subarea saw a dramatic increase between 2007 and 2008, nearly doubling, and then dropped but remained 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 5-26 lists the primary HC 9 commodities shipped within the Cook Inlet Subarea.

Table 5-26. Primary Hazard Class 9 Commodities Shipped within the CI Subarea

Hazard Class	Hazardous Material Description (Greater than 100,000 lbs Shipped)	UN ID Number
9.0	Engines / Vehicles	3166
	Elevated Temperature Liquid, N.O.S.	3257
	Hazardous Waste	Unspecified
	Miscellaneous Hazardous Material Gases	Unspecified

Figure 5-15 depicts the volume of hazardous materials shipped each year within Cook Inlet by Hazardous Material Name for volumes exceeding 100,000 pounds.

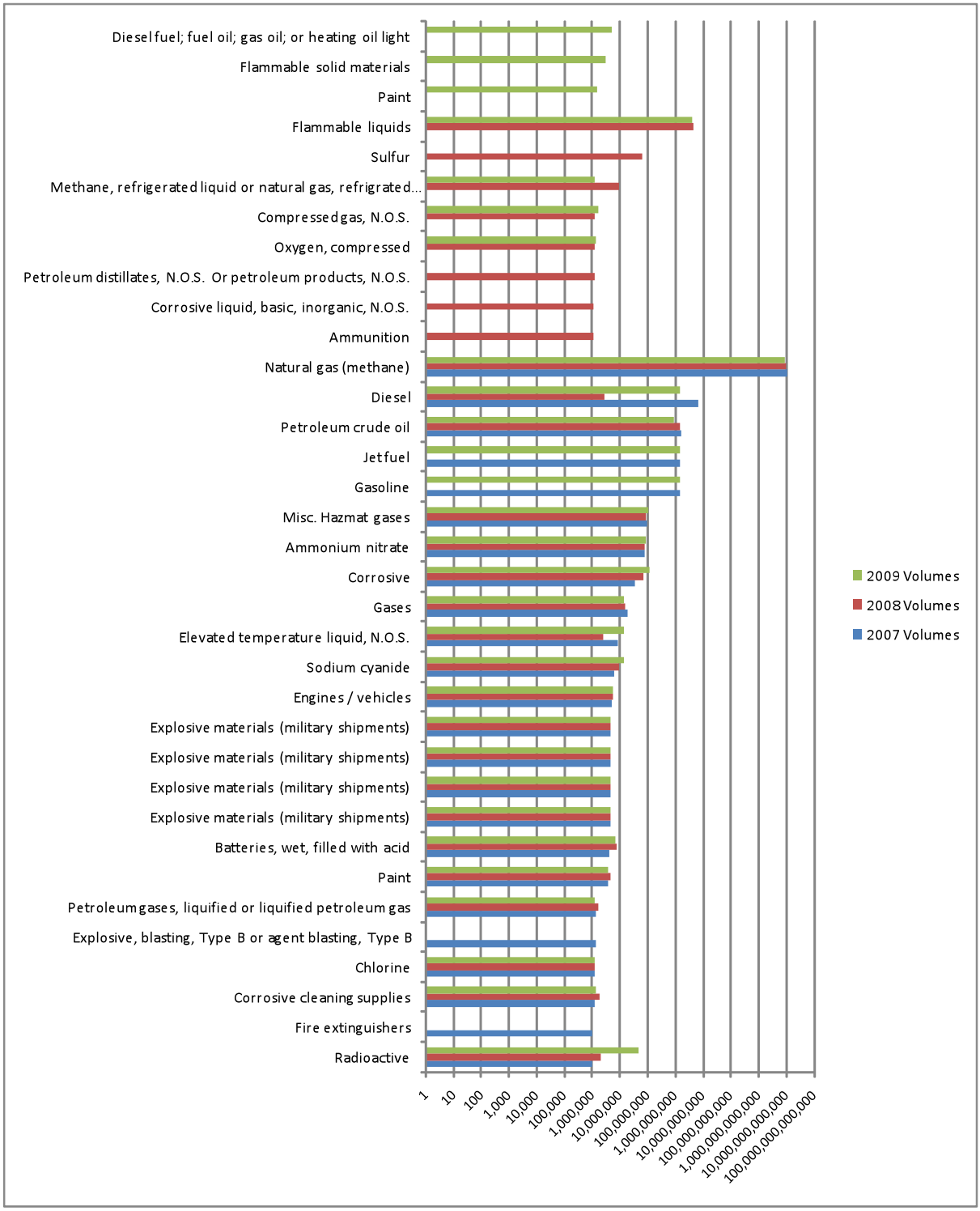



Figure 5-15. 2007 hazardous materials Commodity by Hazardous Material Name (Greater than 100,000 lbs) for CI