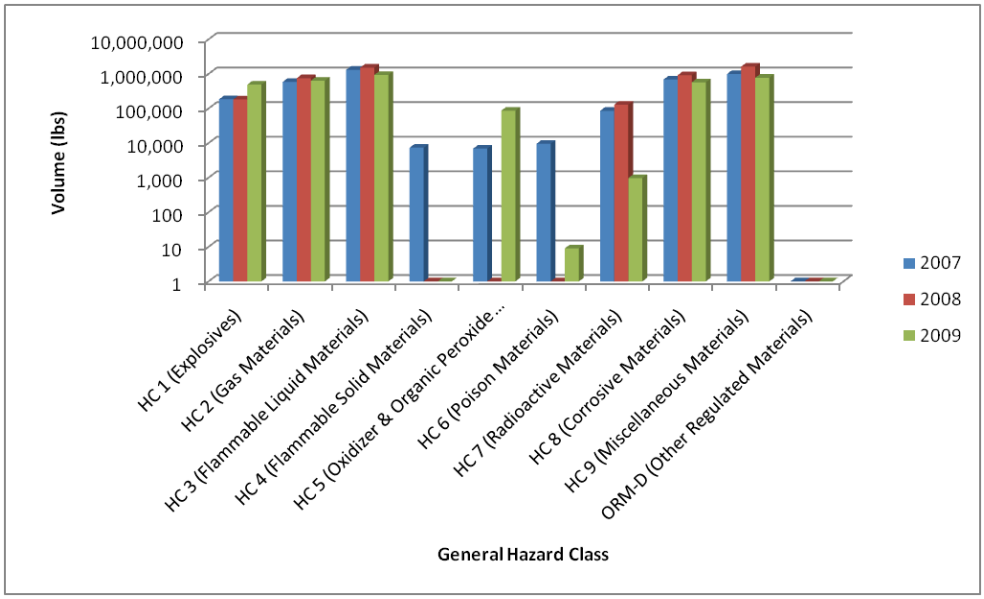
5.5 Aleutians

The transportation of hazardous materials through the Aleutian Subarea (AI) includes two modes of transportation: air and marine. Many of the commodities listed as transiting this subarea are destined for other subarea locations. For example, hazardous materials shipments that are delivered via barge/vessel to any of the subareas north of the Aleutians Subarea (e.g. Western Alaska, Northwest Arctic, and North Slope) will be noted as transiting within the Aleutians Subarea. Additionally, while not captured in this dataset, the Aleutian Subarea sees significant volume of commodities destined for other foreign and domestic ports. According to a September 3, 2010 Aleutian Islands Risk Assessment[34], the Aleutian Islands are the ideal route of passage for international trade. Commodities identified in this report that transit the Aleutian Islands enroute to other foreign and domestic ports include primarily HC 3 (Flammable Liquid Materials) and HC 2 (Gas Materials). These specific commodities are not captured in this dataset. The breakdown of hazardous materials volumes from year to year by Hazard Class is depicted in Figure 5-21 below.

Figure 5-21. Volumes of Hazardous Materials Shipped into the Aleutians presented on a log scale



In general, HC 3 commodities (Flammable Liquid Materials), HC 8 commodities (Corrosive Materials), HC 9 (Miscellaneous Materials), and HC 2 (Gas Materials) consistently dominated the volume of hazardous materials commodities shipped within the Aleutians Subarea. Figures 5-22, 5-23, and 5-24 depict the comparison of commodities shipped as a percentage of the total Aleutians Subarea volume.

[34] Aleutian Islands Risk Assessment Phase A – Preliminary Risk Assessment Task 1: Semi-quantitative Traffic Study Report, Det Norske Veritas and ERM – West, INC., September 2010.

Figure 5-22. AI Hazardous Materials Percentage of Total Volume by Hazard Class for 2007

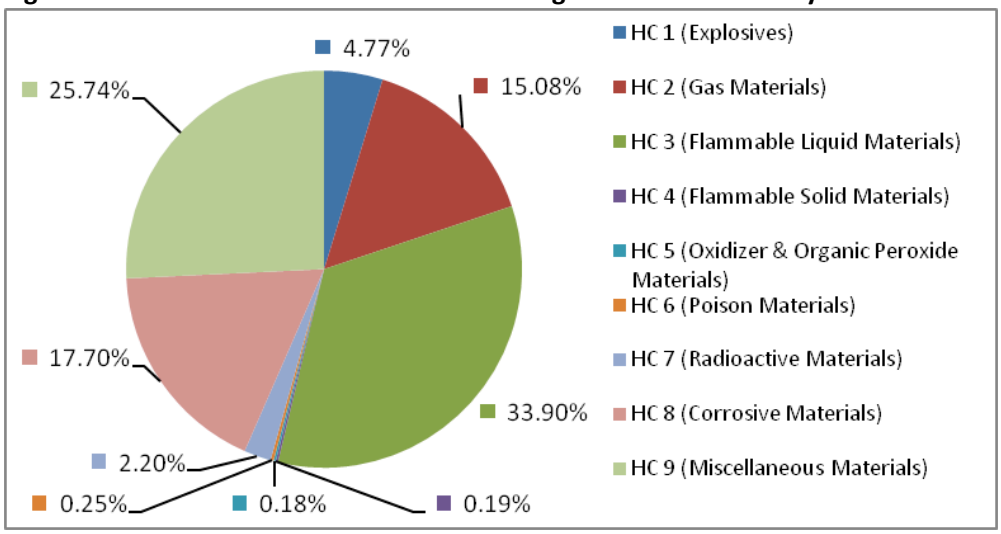


Figure 5-23. AI Hazardous Materials Percentage of Total Volume by Hazard Class for 2008

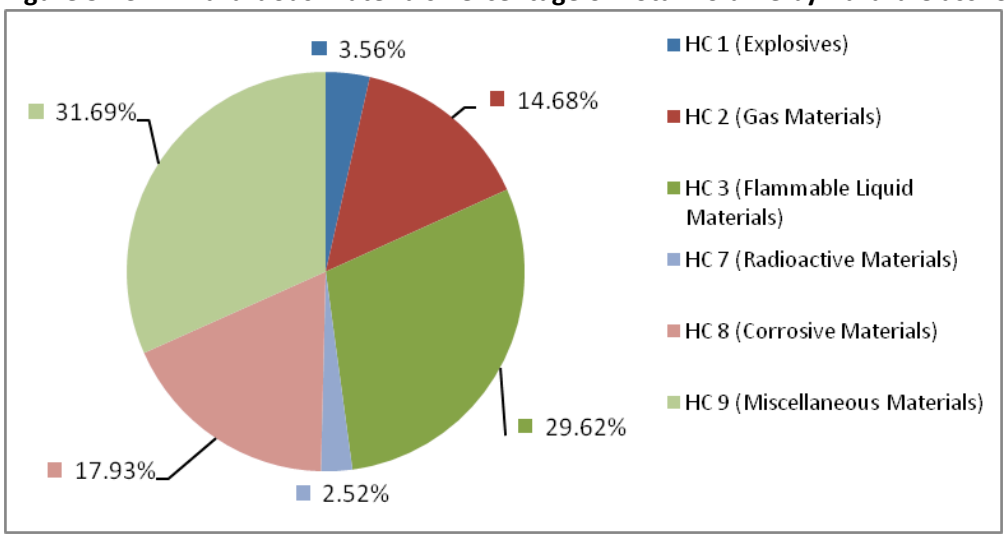


Figure 5-24. AI Hazardous Material percentage of total volume by Hazard Class for 2009

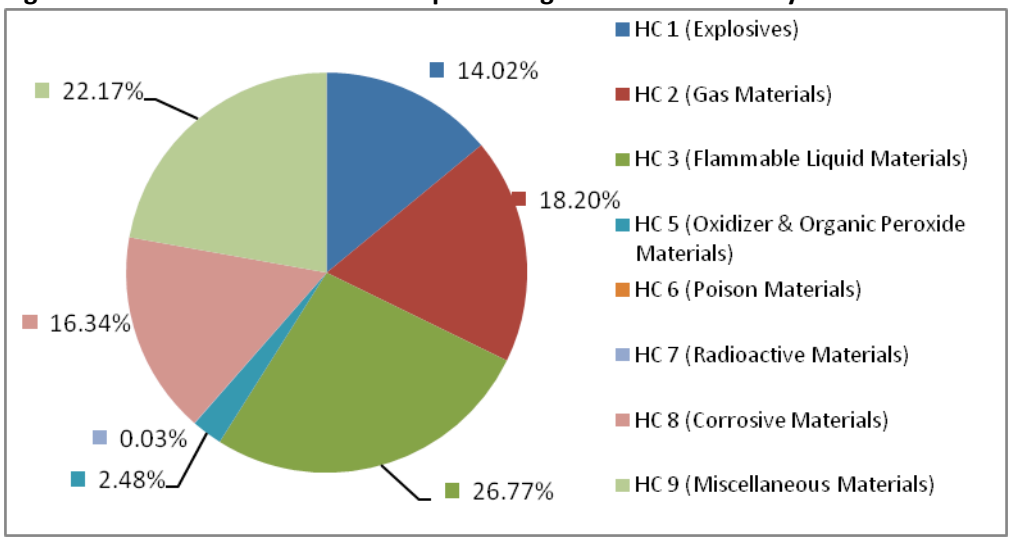


Table 5-34 lists the volumes of hazardous materials shipped within the Aleutians Subarea by hazard class for each calendar year evaluated for this study.

Table 5-34. Volumes of Hazard Class Transported within Al Subarea by Calendar Year

Hazard Class	2007 (Total Volume in lbs)	2008 (Total Volume in lbs)	2009 (Total Volume in lbs)
HC 1 (Explosives)	185,044	182,475	491,133
HC 2 (Gas Materials)	585,380	752,882	637,228
HC 3 (Flammable Liquid Materials)	1,316,011	1,519,413	937,361
HC 4 (Flammable Solid Materials)	7,358	-	-
HC 5 (Oxidizer & Organic Peroxide Materials)	6,884	-	86,754
HC 6 (Poison Materials)	9,583	-	9
HC 7 (Radioactive Materials)	85,512	129,487	975
HC 8 (Corrosive Materials)	687,092	919,493	572,083
HC 9 (Miscellaneous Materials)	999,266	1,625,431	776,443
ORM-D (Other Regulated Materials)	-	-	-

A more detailed evaluation of each hazard class is provided below. For the Aleutians Subarea, the volume shipped threshold was established at 10,000 lbs.

HC 1 Explosives: The primary explosives that were transported through the Aleutians Subarea were HC 1.0 and 1.4 in 2007, HC 1.0 in 2008, and HCs 1.0, 1.1, 1.3 and 1.4 in 2009. Table 5-35 lists the primary HC 1 commodities shipped within the Aleutians Subarea.

Table 5-35. Primary Hazard Class 1 Commodities Shipped within the Aleutians Subarea

Hazard Class	Hazardous Material Description (Greater than 10,000 lbs Shipped)	UN ID Number
1.0	Ammunition	0006
1.1	Boosters	0042
	Cord Detonating	0065
	Explosive, Blasting, Type A	0081
	Explosive, Blasting, Type E	0241
1.3	Rocket Motors	0186
1.4	Articles, Explosive, N.O.S.	0349

There were no HC 1.2 or 1.5 commodities shipped in a volume that exceeded the 10,000 lb threshold.

HC 2 Gas Materials: HCs 2.0 (unspecified hazard class), 2.1 and 2.2 were transported in the Kodiak Subarea. Volumes transported remained relatively consistent from year to year. Table 5-36 lists the primary HC 2 commodities shipped within the Aleutians Subarea.

Table 5-36. Primary Hazard Class 2 Commodities Shipped within the Aleutians Subarea

Hazard Class	Hazardous Material Description (Greater than 10,000 lbs Shipped)	UN ID Number
2.1	Acetylene, Dissolved	1001
2.2	Argon, Compressed	1006
	Carbon Dioxide	1013
	Dichlorodifluoromethane or Refrigerant Gas R12	1028
	Chlorodifluoromethane or Refrigerant Gas R22	1018
	Helium, Compressed	1046
	Nitrogen, Compressed	1066
	Oxygen, Compressed	1072
	Compressed Gas, N.O.S.	1956
	Carbon Dioxide Refrigerated Liquid	2187
	Liquefied Gas, N.O.S.	3163
	1,1,1,2-Tetrafluoroethane or Refrigerant Gas R134A	3159
	Fire Extinguishers	1044

HC 3 Flammable Liquid Materials: HC 3.0 materials were shipped to the Aleutians Subarea via aircraft and marine methods. No discernible trend was displayed from the data received and compiled. However, it has been stated in the Vessel Traffic in the Aleutians Subarea Report of 2005[35] that as much as 800 million gallons (approximately 5,800,000,000 lbs) per year of persistent and non-persistent oil cargo moves through the Aleutians Subarea in innocent passage in about 30 to 40 tank ship voyages. Table 5-37 lists the primary HC 3 commodities shipped within the Aleutians Subarea.

Table 5-37. Primary Hazard Class 3 Commodities Shipped within the Aleutians Subarea

Hazard Class	Hazardous Material Description (Greater than 10,000 lbs Shipped)	UN ID Number
3.0	Gasoline	1203
	Isopropanol or Isopropyl Alcohol	1219
	Paint	1263
	Butanols	1120
	Adhesives	1133
	Methanol	1230
	Kerosene	1223

[35] Vessel Traffic in the Aleutians Subarea, Report to Alaska Department of Environmental Conservation, Nuka Research and Planning Group, LLC and Cape International, Inc., April 29, 2005

Hazard Class	Hazardous Material Description (Greater than 10,000 lbs Shipped)	UN ID Number
	Flammable Liquids, N.O.S.	1993
	Flammable Liquids, Corrosive, N.O.S.	2924
	Fuel, Aviation, Turbine Engine	1863
	Petroleum Distillates, N.O.S. or Petroleum Products, N.O.S.	1268

HC 4 Flammable Solid Materials: Small volumes of HC 4.1 were transported through the Aleutians Subarea in 2007 that did not exceed 10,000 lbs. There were no other shipments noted for 2008 or 2009 based on the data evaluated for this study.

HC 5 Oxidizer and Organic Peroxide Materials: HC 5.1 and 5.2 were shipped within the Aleutians Subarea in 2007 and 2009. The volume of HC 5.1 increased by an order of magnitude between 2007 and 2009 while HC 5.2 shipments stopped. Table 5-38 lists the primary HC 5 commodities shipped within the Aleutians Subarea.

Table 5-38. Primary Hazard Class 5 Commodities Shipped within the Aleutians Subarea

Hazard Class	Hazardous Material Description (Greater than 10,000 lbs Shipped)	UN ID Number
5.1	Hydrogen Peroxide, Aqueous Solutions	2014

There were no shipments of HC 5.2 commodities that exceeded 10,000 lbs.

HC 6 Poisons: A relatively small volume of HC 6.1 was shipped in the Aleutians Subarea in 2007 and no shipments were reported in 2008 according to the data received and evaluated for this study. A very small volume of Mercuric Chloride was shipped in 2009. The small volume was retained for reporting purposes because it is classified as an EHS. These volumes did not exceed 10,000 lbs.

HC 7 Radioactive Materials: HC 7.0 was transported within the Aleutians Subarea in 2007, 2008 and 2009. Volumes shipped increased between 2007 and 2008, and then decreased sharply in 2009. Table 5-39 lists the primary HC 7 commodities shipped within the Aleutians Subarea.

Table 5-39. Primary Hazard Class 7 Commodities Shipped within the Aleutians Subarea

Hazard Class	Hazardous Material Description (Greater than 10,000 lbs Shipped)	UN ID Number
7.0	Radioactive Material, Type A Package	2915
	Radioactive Material, Excepted Package-Articles Manufactured From Natural or Depleted Uranium or Natural Thorium	2910
	Radioactive Material, Type A Package, Special Form	3332

HC 8 Corrosive Materials: The volume of HC 8.0 commodities shipped within the Aleutians Subarea increased by approximately 30% between 2007 and 2008 and then decreased by approximately 40% between 2008 and 2009. Table 5-40 lists the primary HC 8 commodities shipped within the Aleutians Subarea.

Table 5-40. Primary Hazard Class 8 Commodities Shipped within the Aleutians Subarea

Hazard Class	Hazardous Material Description (Greater than 10,000 lbs Shipped)	UN ID Number
8.0	Corrosive Cleaning Supplies	1760
	Batteries, Wet, Filled with Acid	2794
	Sulfuric Acid	2796
	Batteries, Wet, Non-Spillable	2800
	Corrosive, Liquid, Basic, Inorganic, N.O.S.	3266
	Formic Acid	1779
	Phosphoric Acid	1805
	Sodium Hydroxide Solution	1824
	Batteries, Wet, Filled with Alkali	2795

HC 9 Miscellaneous Materials: The volume of HC 9.0 commodities shipped within the Aleutians Subarea saw a dramatic increase between 2007 and 2008 and then dropped below the 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 5-41 lists the primary HC 9 commodities shipped within the Aleutians Subarea.

Table 5-41. Primary Hazard Class 9 Commodities Shipped within the Aleutians Subarea

Hazard Class	Hazardous Material Description (Greater than 10,000 lbs Shipped)	UN ID Number
9.0	Engines / Vehicles	3166
	Environmentally Hazardous Substances, Liquid, N.O.S.	3082
	Lithium Batteries, Contained in Equipment	3091

Figure 5-25 depicts the volume of hazardous materials shipped each year within the Aleutians Subarea by Hazardous Material Name for volumes exceeding 10,000 pounds.

Figure 5-25. Hazardous Material Commodities by Hazardous Material Name (Greater than 10,000 lbs) for the Aleutians Subarea, for 2007 through 2009, presented on a log scale.