



Figure 1. SR quantitative risk criteria presented on an example FN graph, as provided in NFPA 59A for fixed (stationary) LNG facilities. The definitions of the tolerable risk region, ALARP (As Low as Reasonably Practicable), and unacceptable risk region are provided by NFPA 59A, and do not necessarily reflect the tolerability criteria for transportation risk. The representation of NFPA 59A risk criteria in this report has been done for the purposes of comparing the transportation risk to a set of existing criteria used in the U.S. and may not necessarily be appropriate or applicable for assessing acceptability of transportation risk.

1.2 LNG Hazards

LNG poses unique hazards relative to other non-pressurized liquid fuels. LNG has a shipping identification number of UN1972 for refrigerated cryogenic methane. LNG, comprised primarily of methane, has a flammable range when mixed with air in concentrations of approximately 5% to 15%; outside of this range, the fuel will not burn. The liquefaction of natural gas is achieved by cooling the material to its normal boiling point, - 260°F. This is unlike other low molecular weight hydrocarbon fuels, like propane, which can be liquefied by pressurization. At the boiling point temperature, LNG does not need to be stored under pressure but it must be insulated to avoid excessive boiling due to heat transfer. As the liquid boils, it does so at its constant, low boiling point temperature. To avoid excessive pressure buildup under extended duration (e.g., on the order of 50 days) storage conditions, LNG ISO containers will vent low volumes of natural gas to the atmosphere via a pressure relief valve.