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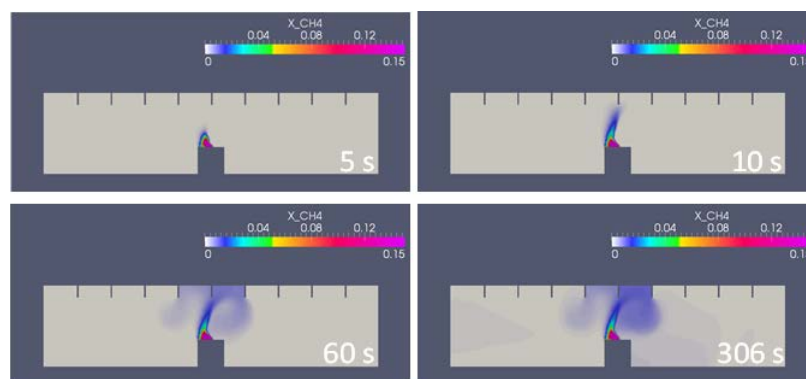
Natural Gas Vehicle Leaks in a Maintenance Garage

Data from "Analyses in Support of Risk-Informed Natural Gas Vehicle Maintenance Facility Codes and Standards: Phase I", Ekoto, et al. SAND2014-2342.

Garage: 100' x 50' x 20'

Ventilation: 5 Air Changes per Hour

Scenario 1: LNG "weeping" to relieve excess pressure in tank produces flammable concentrations (shown in yellow and pink) only near the leak from the top of the vehicle. Constant release (7.6 g/s) of cool gas-phase NG (160 K) for 306 s. Overpressure if ignited: 0.13-0.3 kPa (1kPa will break glass).



Scenario 2: CNG or LNG fuel system line cracking downstream of safety valve. 3.3 liters @ 248 bar; 3% area leak 1.27 cm ID tubing. Takes ~30 sec for lines to empty. Maximum flammable region (shown in white) extends about 10-15' from the vehicle. Overpressure if ignited: 0.5-1.3 kPa (1kPa will break glass).

