



The history of diesel engine runaway accidents and related Regulations

1984 - API issued Recommended Practice 2001 (4.2.10) for refineries stating "Consideration should be given to the use of spark arrestors on exhaust pipes and rapid shutoff valves on air inlets to diesel engine maintenance vehicles."

1985 - Saskatchewan Oil & Gas Conservation Regulations require operators to install "adequate air intake shutoff valves" for engines within 75 ft (23 m) from the well. Other Canadian provinces issue similar requirements for "positive air shutoff devices." In Edmonton, Canada, Roda Deaco and Rigsaver manual and electrical swing gate valves are developed and installed to meet these Regulations.

May 1989 - US Federal Minerals Management Services (MMS) regulations require automatic shutoff devices to be fitted to unattended diesel engines on offshore installations in the Gulf of Mexico.

September 1996 - Triodyne Inc. Consultants publish a Safety Bulletin "The Runaway Diesel-External Fuel Ingestion."

August 1999 - American Petroleum Institute (Drilling) Recommended Practice 54 9.15 states: "Emergency shut-down devices that will close off the combustion air should be installed on all diesel engines. Spark arrestors or equivalent equipment shall be provided on all internal combustion engine exhausts located within 100 ft (30.5 m) of the wellbore."

January 2003 - BLSR, Ltd. Rosharon, Texas has a fatal accident where hydrocarbon vapors were drawn into the intakes of two idling vacuum trucks, causing runaway and explosion. Two workers are killed and 3 more are injured. The Chemical Safety Board investigation of the BLSR accident reported "We have located government records of other incidents in Texas and elsewhere where diesel engines revved up just before deadly fires and explosions due to the presence of flammable petroleum vapors."

March 2005 - BP Texas City refinery (near Houston) has a fatal accident where a vapor cloud is ignited by an idling diesel pickup truck, reported to over-rev and backfire. The workers fled, unable to switch off the racing diesel engine. The flashback ignited the flammable cloud. Much of the refinery is damaged by the blast. 15 people die and 170 are injured. The burned Ford truck is shown at right.



March 2007 - The Final Investigation Report (2.5.13) stated "This truck was parked about 25 ft from the blowdown drum, and several eye witnesses reported seeing or hearing the truck's engine over-revving when the vapor cloud reached it. Two witnesses saw the truck catch fire, followed shortly by the vapor cloud explosion."

2007 - BP issues a draft of new internal standards with many safety requirements including an "air intake system shall have approved device to automatically stop engine if overspeed above governed speed occurs."

June 2007 - OSHA issues Directive CPL 03-00-004. The Compliance Guidance explains "Motorized equipment, if not properly controlled, can be a potential ignition source..."

OSHA asks: "Does the employer have a safe work practice which it implements for motorized equipment to enter operating units and adjacent roadways?" If the answer is 'no,' possible violations include 119(f)(4) if the employer either: 1) did not develop a safe work practice to control fire or explosion hazards when motorized equipment enter or travel (includes parking with the equipment running) on adjacent roadways to operating units that contain flammable or combustible materials, or 2) developed but failed to implement the safe work practice.



The history of diesel engine runaway accidents and related Regulations - continued

October 2007 – Explosion of leaking propane tanker truck in Tacoma, Washington killed 1 and injured 4.

January 2008 – Greely, Colorado. 3 workers are killed and 17 injured when a truck sparks an oil tank.

August 2008 – Bristow, Oklahoma. 1 killed and 3 injured when a truck ignites a gas well.

September 2008 – Chickasha, Oklahoma. 1 killed when a truck ignites a gas pocket.

October 2008 – Calumet Refinery, Shreveport, Louisiana. The fire Chief reports that refinery tank vapors are ignited when a pickup truck ingests vapors from a nearby parked vacuum truck. The runaway soon led to an explosion. 2 firefighters were slightly injured during the firefighting operations.

April 2010 - Offshore Rig Explosion at Macondo Well, Gulf of Mexico - BP Deepwater Horizon. 11 killed. Diesel engine overspeed in the engine/generator room is considered one contributing factor and identified as the source of ignition of the escaping gas. The 3 engine intakes were at least 70 ft from the gas leak on the rig.

August 19, 2010 – Ackerly Texas. One death and one serious burn injury results when a leak is ignited. The local Sheriff reported a fireball from the gas being ignited by the running vehicle.

July 2011 – North Dakota. A truck driver is seriously burned when his truck has diesel runaway and ignites the fumes of the oily salt water cargo transferring into a flow back tank. The driver sued the employer as they had not followed the safety policies of the site oil field operator requiring a positive inlet air shutoff.

August 2012 – Explosion at Chevron Refinery, Richmond, CA USA - Don Holmstrom, investigator for US Chemical Safety Board overseeing the investigation noted, "...that a possible source of ignition was the idling rig's diesel engine." (Picture of the burned fire truck at right)



2012 - OSHA publishes Fact Sheet 3589 "Internal Combustion Engines as Ignition Sources." This highlights Evaluation and Preventive Measures.

September 2012 - Cal OSHA adopts new safety standards for California oil and gas drilling and production facilities. These require approved automatic air intake shutoff valves for diesel engines within 50 feet of the well bore. The standard also extends to chemical production areas including refinery type plants.

November 2012 - Wyoming OSHA introduces safety standards for oil and gas drilling and production facilities. It states "Emergency shut-down device(s) that will close off the combustion air shall be properly installed and identified on all diesel engines that are an integral part of the drilling rig or are operated as a stationary or mobile engine of a drilling rig within the radius of the rig anchors or within seventy five feet of the well bore, whichever is greater."

2014 – OSHA reports 3 workers killed and 2 hospitalized following an explosion during Frac flow-back operations. The source of ignition was the runaway of a diesel-powered light tower parked 12 ft from the trucks.

2016/2017 – Transport Canada and Canadian CSA introduce regulations requiring automatic shutoff valves on all trucks carrying hazardous cargo Class 2 and Class 3 including gasoline.

"as of 1 Jan 2016, diesel engines on highway tanks and portable tanks containing Dangerous Goods of primary Class 3, or subsidiary Class 3, and being used during loading or off-loading shall be equipped with an automatic engine air intake shut off device that will prevent engine runaway in case of exposure to flammable vapors. The device shall activate automatically if engine runaway is detected and remain activated until manually reset."