

# Fugitive Liquids and Gases

*By Larry Pyle, LFP Technologies*

As producers of gaskets and gasket materials, we are in the business of sealing gases and liquids. Based on our experiences, most gaskets do an adequate job of performing their sealing function within limits, however, every gasket leaks, some very little and some a lot. Most seal within the limits that the end user sets or will tolerate. The changing dynamics of the system often diminish the effectiveness of the seal or gasket. Improper installation or maintenance procedures often diminish the sealing potential of the gasket or seal and can lead to disastrous consequences.

Fugitive emissions are those gases or liquids which escape either through or past the gasket. These emissions are accelerated by the differential pressures on either side of the gasketed joint or by changing conditions in the joint such as reduced clamping pressure, thermal expansion and contraction and a myriad of other factors.

Losses due to these leaked gases and fluids carry an economic cost as well as contribute to air pollution and possible global warming. Emissions also present other risks and hazards such as long term health risks to workers or local communities. This is particularly true in large industrial plants or refineries. These fugitive gases or liquids could be highly toxic and lethal. The chemical leak which killed thousands in Bhopal, India in 1984 is but one example of this.

In chemical plants processing substantial amounts of flammable liquids and gases contained under pressure, leaks also increase the risk of fire and explosion. If a fire were to occur, the gasketed joint must be able to continue to seal in extreme conditions of temperature and thermal expansion without leaking. Any leaks would further feed the fire with fuel making containment much more difficult. A typical chemical plant or refinery has thousands of gasketed joints at valves, pipe connections, mechanical seals and related pressure vessels and tanks. Someone once calculated the losses from the total amount of gaskets leaking in all the refineries and chemical processing plants to be an enormous.

Design gaskets for the appropriate end use, allowing for extenuating circumstances, and adhere to established standards.

A recent study shows that the Permian basin, which produces a substantial portion of our oil and natural gas, loses almost 4% of their output into the atmosphere. There is a billion dollar commitment to reduce these losses potentially to zero. It showed that the use of natural gas in place of coal reduces the CO2 emissions by 50% but that the methane losses to the atmosphere negates a sizable portion of that reduction.

We, and all our clients, have made great strides over the last twenty or so years but we all can strive to make our sealing products seal better with longer durability.

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