

Strategy for Reducing Flare Emissions

Presented by Industry Professionals for Clean Air, November 2006

Flares are a major source of air pollution in the Houston area. Recent studies such as TexAQS-II confirm flare emissions are bigger and more serious than most realize. Flares are neither properly represented in planning and permitting nor adequately controlled by regulation. Therefore, IPCA calls for greater attention and action on the part of state officials, starting with more comprehensive monitoring, record keeping and reporting of flare emissions.

Current Texas regulations are based on flare combustion efficiencies that assume ideal conditions with no crosswinds and steam assist. These unrealistic assumptions lead to low estimates of emissions. However, achieving actual reduction in emissions requires strong emphasis on reducing the volumes of gases sent to elevated flares.

IPCA firmly believes that reducing flare emissions can be managed in a cost effective way. Experience from other states shows that even modest regulatory changes, mostly related to focusing more attention on flaring, can yield substantial improvements (see box).

Recommendations

In light of the need to reduce emissions from flares and of these demonstrated successes, IPCA urgently recommends that TCEQ require:

1. better monitoring of all flares (not just those that emit certain highly reactive compounds), with data reported and posted on a public TCEQ website; and
2. submission of Flare Minimization Plans patterned after those required by the Bay Area Air Quality Management District.

In addition, IPCA urges TCEQ to:

3. initiate flare efficiency studies aimed at defining more realistic combustion efficiency assumptions and accounting for crosswinds and steam assist.

We at IPCA are willing and eager to discuss these recommendations in person. We also stand ready to provide additional information.

Flare Reduction Successes

in California...

Flaring has dropped about 75% in the Bay Area Air Quality Management District (BAAQMD), staff reports. This occurred in anticipation of its new Flare Monitoring Rule, which prohibits routine flaring and requires monitoring of flare streams. In addition, reports on volumes of key pollutants in each flare are posted to a public web site.

Also, every plant operator must submit a Flare Minimization Plan. Major flaring incidents must be followed by the operators' root cause analysis. The guidelines strongly encourage the use of flare gas recovery systems and high efficiency combustion systems, such as incinerators, ground flares or thermal oxidizers, but operators (with BAAQMD feedback and approval) develop their own flare reduction strategies. Thus, the agency sets the standard for flare operation, and industry decides how to meet it.

In addition, as a result of new flare monitoring rules, **SO_x emissions from flares dropped from 2633 tons to 735 tons** from 2000 to 2003 in the South Coast Air Quality Management District of California. Only a small fraction of the reduction has been attributed to new equipment, the rest to expanded use of improved management practices.

...and in Texas

Dow Chemical's Light Hydrocarbons Plant in Freeport **experienced an 89% reduction in overall upset flaring** (using a two-year running average). Moreover, from 2001 to the end of 2003, the plant achieved **documented savings of \$2.5 million**. These reductions and cost savings were accomplished by optimizing equipment and procedures related to plant start-up, shutdown, and upsets, and improving overall plant reliability.

Shell Chemicals in Deer Park **reduced flaring by 50%** between 2002 and 2003. The facility developed a "parking mode" to reduce feed rates during upset conditions at its two ethylene units.