# BAY AREA REFINERY FLARE FACT SHEET

The Bay Area Air Quality Management District ("Air District") has developed a proposal to minimize flaring at petroleum refineries. This fact sheet provides basic information about flaring and the Air District's flare control proposal.

**What is a flare?**

A flare is a device that burns gases as an alternative to releasing the vapors directly to the atmosphere. Flare systems at petroleum refineries provide for the safe combustion of excess gases that may be produced during startups and shutdowns of process units and equipment and handle emergency or upset conditions to prevent serious incidents from occurring.

**How does it work?**

A flare needs to be ready to burn vent gases, i.e., excess gases directed to the flare, at a moment's notice. To do this there is a pilot flame, which is fueled by natural gas. Like a stove, when you turn on the gas either the pilot automatically ignites and the gas burns or, like in old stoves, the continuously burning pilot flame ignites the gas. In a flare the same process takes place. Vent gases are ignited when they reach the flare tip.

**How do I know when a flare is working?**

Flare systems are in operation all of the time. Most of the time the system is in standby mode ready to combust gases as soon as they reach the flare. When vent gases reach a flare and are properly combusted, a flame is generally visible at the flare tip. Sometimes steam, which is used to help burn the vent gases completely, is seen at the flare tip.

**How many refinery flares are there?**

Every petroleum refinery operating in the Bay Area has one or more flares to control emissions from process units, storage vessels, loading operations including trucks and ships, and some waste water processes. There are twenty three of these flares currently in operation at the five petroleum refineries in the Bay Area.

**How are flares regulated in the Bay Area?**

Many agencies and organizations have established rules and recommended practices applicable to flares. These provisions cover a wide range of issues, from safe operating practices to design criteria. The U.S. Environmental Protection Agency incorporates many of these practices and criteria in its regulations. The Air District implements EPA regulations in addition to its own rules.

Existing Air District rules include emission limits and design criteria for flares. The standards and other requirements currently in force for Bay Area flares include limits on

visible emissions (smoke), odors, sulfur dioxide and hydrogen sulfide, prohibitions on public nuisance, and monitoring requirements under Regulation 12, Rule 11.

**Why is the Air District proposing this rule?**

The Bay Area 2001 Ozone Attainment Plan, which is the District's road map for meeting federal air quality standards for ozone, included a commitment to study emissions from flares. The Air District is proposing this rule to control emissions of air pollutants that contribute to the formation of ozone and toxic air contaminants to protect public health and the environment and to attain and maintain ambient air quality standards.

Regulation 12, Rule 11: Flare Monitoring at Petroleum Refineries was adopted in June of 2003. The results of the study and the information obtained from the monitoring rule have been used to develop the current Air District flare control rule proposal.

**What does the proposed flare control rule require?**

The proposed rule prohibits routine flaring. Routine flaring does not include flaring that occurs as a result of process malfunctions, start-ups and shutdowns or where due to its quality or quantity gas produced in the refining process cannot be used in refinery fuel gas system or otherwise redirected.

Under the proposal, a refinery will be required to prepare a Flare Management Plan (FMP) for each flare at its facility. The FMP must include details regarding the flare, associated process units and equipment, operating practices and procedures, and steps the refinery has taken and can take in the future to minimize the frequency and duration of flaring events at that flare. Each FMP will be reviewed and approved by the District. Requiring each refinery to prepare the FMPs applicable to its flares allows each refinery to determine how best to minimize flaring while considering its needs for operating flexibility.

**Why a flare management plan?**

The Air District staff has spent a considerable amount of time studying flaring at refineries. Each refinery's operation is unique, making it difficult to impose a one-size-fits-all solution to flaring. The proposed rule will set criteria for what needs to be included in a flare management plan but allows each refinery to develop its own strategy to reduce flaring. Under the proposed rule, Air District staff will disapprove plans that do not include all the necessary elements required by the rule.

**How will this reduce emissions from flares?**

Emissions from flares have already been substantially reduced. Since the time that the initial study of flare emissions was published in December, 2002, one refinery has added 8,000,000 cubic feet of compressor capacity, others have improved compressor reliability and all have implemented programs to reduce flaring. As a result of these efforts, flare

emissions have been reduced from about 8 tons/day to about 2 tons/day of organic compounds, along with an equivalent reduction in organic toxic emissions, sulfur dioxide, and nitrogen oxides. The proposed rule will ensure that refineries do not return to past flaring practices, and will further require refineries to look for additional ways to reduce or eliminate flaring.

**Will this rule eliminate flaring?**

No. From time to time refinery process upsets will require the release of gases to prevent a safety hazard. These gases will continue to be combusted in flares, rather than released directly to the atmosphere. Over the long term, the Air District expects refiners to be able to make improvements to their equipment and operations so that flaring from other operations, such as start-ups and shutdowns or poor gas quality, can be reduced or eliminated.

**Other information**

You can find information on refinery flare emissions on the District's website at http://www.baaqmd.gov/enf/flares/ .

**Questions or Comments?**

For questions or information on the proposed rule, please contact Alex Ezersky, Principal Air Quality Specialist at the Bay Area Air Quality Management District, 939 Ellis Street, San Francisco, California 94109, by phone at 451.749.4650 or by e-mail at aezersky@baaqmd.gov.