

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

To: Chairman Townsend and Members
of the Board of Directors

From: Jack P. Broadbent
Executive Officer/APCO

Date: December 14, 2005

Re: Public Hearing to Consider Approval of Report on 2001 Ozone
Attainment Plan Further Study Measure 8: Atmospheric Blowdown
Systems

RECOMMENDED ACTION:

Approve staff recommendation that no regulatory amendments regarding atmospheric blowdown systems are necessary or appropriate at this time.

BACKGROUND

In the 2001 Ozone Attainment Plan the District discussed the need to study emissions from atmospheric blowdown systems and to undertake rulemaking to address the emissions if warranted. Blowdown systems at petroleum refineries provide for the safe disposal of hydrocarbons, liquids and gases that are either automatically vented from a process component through pressure relief devices (PRDs) or manually drawn from units using control valves or block valves. The blowdown systems separate liquids from vapors and recover any condensable oil and water. Gases in the typical blowdown systems are then sent to fuel gas recovery, or to a flare. In *atmospheric* blowdown systems, the hydrocarbon vapors are treated with steam and emitted to the atmosphere without any controls. Along with hydrocarbons from PRDs, blowdown systems handle other material such as industrial water, steam, gasoline and diesel fuel used for cleaning and maintenance during shutdowns and prior to startups. Although all Bay Area refineries have blowdown systems in their process, atmospheric blowdown systems are only found at the Tesoro Refinery in Avon, CA near Martinez. The most significant source of emissions from atmospheric blowdown systems is the PRDs that vent to these systems.

Staff has discussed the issues related to atmospheric blowdown systems with the stakeholders in various forums. In addition to the workgroup meetings on Regulation 8, Rule 28 concerning PRDs, staff held a separate workgroup meeting specifically to discuss atmospheric blowdown systems on September 15. The workgroup meeting was attended by representatives from Western States Petroleum Association, Tesoro refinery,

Communities for a Better Environment and the California Air Resources Board. A public workshop was held in Martinez on October 27, 2005.

DISCUSSION:

There are two types of emissions from atmospheric blowdown systems. The most significant are episodic emissions that occur when a PRD vents. The other type are periodic emissions, which are from processes that occur intentionally but are not part of the normal refinery operation, such as depressurization of process vessels and from cleaning of vessels during maintenance operations.

Staff has identified 167 unique input streams that are plumbed into the four atmospheric blowdown systems at Tesoro; 42 of these are PRDs. The remaining streams originate from a large variety of sources including heat exchangers, pumps and compressors, process vessels, distillation columns, and steam lines. During normal refinery operations, there is no flow to the blowdown systems. However, during process upsets that may cause a PRD to vent, or during periodic cleaning and maintenance operations, emissions to the atmosphere may occur.

Because the Tesoro blowdown systems are open to the atmosphere, any episodic emissions from PRDs are subject to Regulation 8, Rule 28: Episodic Releases from Pressure Relief Devices at Petroleum Refineries and Chemical Plants.

Periodic emissions from the atmospheric blowdown systems are subject to a variety of Regulation 8 rules: Rule 8-10, Process Vessel Depressurization; Rule 8-18, Equipment Leaks; and Rule 8-2, Miscellaneous Operations. The emissions from periodic operations such as depressurization or cleaning and maintenance activities can be calculated from the concentration of gases or the vapor pressure and quantities of liquids introduced to the blowdown system before being drained from the blowdown system. Consequently, compliance with the applicable standards in the Regulation 8 rules can be determined.

Theoretically, the episodic and periodic emissions from the atmospheric blowdown systems could be controlled by venting the blowdown systems to some control device such as a flare. For a number of reasons, including the difficulties presented by the need to control low and high pressure streams that vent to these blowdown systems, it would be inordinately expensive to control these systems as a whole, which, during normal operation, have no emissions. Because the existing regulatory controls in Regulation 8 are sufficient to limit emissions from all input streams (and in fact would require control of pressure relief devices if they have two releases from the same source), staff does not recommend development of further regulations for atmospheric blowdown systems at this time.

ISSUES

Issues raised during the public workshop, comment period and at the technical workgroup session centered on 1) the need to control all emissions from atmospheric blowdown systems to avoid the potential for catastrophic emissions that could lead to an

incident such as the one that occurred at the BP refinery in Texas City, Texas; and 2) concerns that atmospheric blowdown systems are insufficiently regulated and monitored.

Staff has reviewed the investigation into the incident at the Texas City BP refinery. The Chemical Safety Board found multiple causes that contributed to the Texas City incident, including operator errors, malfunctioning alarms, and disregard of safety practices. Venting blowdown systems to a flare would not, in itself, ensure that an accident of this sort could not happen. In Contra Costa County where the Tesoro Refinery is located, the county's Industrial Safety Ordinance is designed to insure that the atmospheric blowdown systems at Tesoro are operated in a safe manner.

The existence of the atmospheric blowdown systems at Tesoro does make monitoring for compliance with Regulation 8 rules more difficult. District staff is working closely with Tesoro to address the monitoring issues and to enforce existing regulations applicable to the atmospheric blowdown systems. Tesoro has installed flow monitoring equipment on all four blowdown systems. These monitors will indicate whether there are any unexpected flows. Further, the facility is required to report any venting from any PRD plumbed to a blowdown system. The proposed amendments to Rule 8-28 would require that each PRD is monitored with a system that is capable of detecting a release of as little as ten pounds.

CONCLUSION

Based on staff analysis and consideration of public comments, no further regulatory amendments are warranted at this time.

BUDGET CONSIDERATION / FINANCIAL IMPACT

None

Respectfully submitted,

Jack P. Broadbent
Executive Officer / Air Pollution Control Officer

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Attachment:

Staff Report for Further Study Measure 8: Atmospheric Blowdown Systems