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EPA comments on flare task force report

RE: Flare Task Force Stakeholder Group – Draft Report

EPA appreciates the opportunity to provide comments on the DRAFT Flare Task Force Stakeholder Group Report. We support TCEQ's efforts to study sources of ozone precursors and resolve discrepancies between reported inventories and ambient monitored concentrations of ozone and ozone precursors. It seems clear from the information gathered in the report that flares are significant source of the mismatch between reported inventories and that ambient levels of VOC. This also has implications for air toxics concentrations as well. The evidence seems clear that flares are not always achieving the levels of destruction and removal efficiency that has been expected. Therefore, we applaud TCEQ efforts to address these emissions.

As the draft report indicates, results from TEXAQS I in 2000 and TEXAQS II in 2005-06, and countless other studies, continue to indicate that Volatile Organic Compounds (VOCs) and a subset of VOCs defined by TCEQ as Highly Reactive VOCs (HRVOCs) are present in the Houston-Galveston-Brazoria (HGB) airshed in much higher quantities than is reflected in reported inventories. The level of discrepancy between the reported emission inventory and ambient monitoring data has decreased since 2000, but a factor of 2-20 times still exists based on recent data. These underestimated emissions of VOCs and HRVOCs directly impact the monitored ozone levels in the HGB area. Resolving the source of these unreported emissions is key to the development and effectiveness of HGB ozone attainment State Implementation Plans (SIPs). The two field studies and other studies also indicate that flares are not always attaining a minimum Destruction and Removal Efficiency (DRE) of 98% or better which has significant implications for the total VOC emissions in the area. If some flares are only achieving an 80-90% DRE, the emissions are increased by factors of 5 to 10 times what they would be with a 98% DRE. As indicated in the DRAFT report, a recent TCEQ 2006 special inventory indicates flares emitted 61% of the HRVOCs in Harris county, even without considering that they may be operating at less than 98% destruction and removal efficiency. Clearly, proper operation of flares is critical for the success of efforts to protect air quality in the Houston area.

EPA supports the taskforce recommendations to increase the amount of monitoring of operational parameters. Adequate monitoring to ensure that flares are being operated within design parameters and within parameters to ensure achievement of flare DREs will be critical to resolving ambient air quality issues in the HGB area. Proper operation of control devices to achieve compliance with regulations is a fundamental element of any air quality plan. EPA is currently investigating concerns about routine flaring emissions and whether sources are operating flares in accordance with manufacturer guidelines to achieve a DRE of 98% in our case development work and surveillance/enforcement efforts.

An additional step that should be added to the recommendations, to help insure better operations, would be for facilities to supply general flare design parameters, the flare manufacturer's recommendations for air/steam assist operation, the ratio of assist to flow rate and BTU value for operating the flare to attain a 98% or greater DRE based on the manufacturer's recommendations. The manufacturer's recommendations for operating parameters could become part of permits or flare minimization plan. This, in combination with additional monitoring, would go a long way to improve performance by providing regulators easy access to information to determine whether flares are being operated as recommended by the manufacturer. Given the importance of proper operation of flare to success of efforts to improve air quality, requiring sources to provide additional information on manufacturer's operating guidelines that can be used to monitor future operations seems reasonable and necessary. This additional information would also be helpful in determining if manufacturer recommendations are sufficient for operating achieving the desired destruction efficiency.

EPA also supports the DRAFT report's recommendations that facilities develop Flare Minimization Plans. Flare minimization plans can be successful in reducing emissions and pollution prevention is always a preferable approach to reducing emissions. We hope TCEQ will follow through with this recommendation.

EPA agrees that to fully realize the needed improvements in flare combustion efficiency and consistency of DRE that additional data is needed. The proposed flare research projects, in conjunction with existing studies results, will generate additional data and information on selecting appropriate parameters to monitor and the acceptable ranges for those parameters to achieve the design DRE. In addition to the proposed testing, EPA's experience/analysis indicates that investigation of these additional items may be beneficial: The heating value in the combustion zone as a predictor of combustion efficiency, impact of flare tip designs, impact of wind on the ability to achieve the design DRE, and utilizing fundamental theory and dimensionless values when possible to make data transferable to different flare sizes. Since wind speeds are normally collected at a standard height, wind speed at the standard height and the elevated height of the flare plume should be monitored in testing for comparison with existing surface observations.