

**Comments by Texas Commission on Environmental Quality Regarding the
Primary National Ambient Air Quality Standard for Sulfur Dioxide
EPA Docket ID No. EPA-HQ-OAR-2007-0352**

Averaging Time

The Texas Commission on Environmental Quality (TCEQ) agrees with the proposal to set a new standard based on one-hour daily maximum sulfur dioxide (SO₂) concentrations and that setting a new shorter averaging time standard of one hour would be more appropriate to provide increased public health protection.

Form

The TCEQ recommends that the form of the SO₂ standard be the three year average of the fourth highest daily maximum one-hour average concentration in a year. Analyses of existing one-hour daily maximum concentrations show that there is very little difference between the 99th percentile and the fourth highest daily maximum per year. People are more familiar with the fourth highest method because it is the current form of the National Ambient Air Quality Standards (NAAQS) for ozone. Providing for a form consistent with the ozone NAAQS could enhance understanding and transparency for the public.

Level

Based on the data, scientific evidence supports a proposed one-hour maximum standard for SO₂ of 100 parts per billion (ppb). Evidence from controlled human exposure studies consistently show that with elevated ventilation rates a large percentage of asthmatic individuals (up to 60 percent) experience moderate or greater decrements in lung function, frequently accompanied by respiratory symptoms, following peak exposures to SO₂ at concentrations of 400-600 ppb (Balmes et al., 1987; Gong et al., 1995; Horstman et al., 1986; Linn et al., 1983b; 1987; 1988; 1990). Sulfur dioxide-induced decrements in lung function have also been observed at lower SO₂ concentrations (200-300 ppb) in a smaller fraction (~5-30 percent) of asthmatic subjects (Bethel et al., 1985; Linn et al., 1987; 1988; 1990; Sheppard et al., 1981), but are less likely to be accompanied by respiratory symptoms (Linn et al., 1983b; 1987; 1988; 1990; Roger et al., 1985) at these concentrations. Indications are that short exposure durations are sufficient to produce a response, and exposures at longer durations do not produce greater effects.

Findings from epidemiologic studies examining the association between SO₂ and respiratory symptoms and emergency department (ED) visits and hospitalizations for all respiratory causes were generally mixed, with some showing positive associations and others finding no relationship at current ambient levels. The strong correlation between SO₂ and various co-pollutants, particularly fine particulate matter (PM_{2.5}), in several studies and the limited evidence evaluating potential confounding by co-pollutants, limit interpretation of independent effects of SO₂, and do not provide clear evidence of an association in some cases.

Weight Placed on Criteria to Set Level

The TCEQ recommends that more weight should be placed on human data as opposed to the results of the epidemiological studies. Controlled human exposure studies offer directly applicable information for determining causality because these studies provide data relating health effects specifically to SO₂ exposures in the absence of the co-occurring pollutants present in ambient air. The degree of uncertainty introduced by confounding variables (i.e, other pollutants) in epidemiological studies affects the level of confidence that the health effects being observed are attributable to SO₂ exposures alone and/or in combination with co-occurring pollutants.

Revocation of Current SO₂ Standards

The TCEQ agrees with the proposal to revoke the current 24-hour and annual standards and recognizes that a one-hour standard set in the proposed range of 50-100 ppb will have the effect of maintaining concentrations well below the levels of the current 24-hour and annual standards.

Monitoring Network Design Changes

The proposal calls for a two-pronged approach to determine how many monitors will be needed and where they will be placed. The first approach uses a Population Weighted Emissions Index (PWEI) that uses population and emissions data to assign required monitoring for a given Core Based Statistical Area (CBSA). The TCEQ currently operates SO₂ monitors at six different sites considered the highest expected SO₂ concentration sites based on the PWEI. The TCEQ would need to deploy seven additional continuous ambient monitoring stations (CAMS) configured to monitor SO₂ at locations with the highest expected SO₂ concentrations in each CBSA based on the PWEI.

The second approach requires monitors based on the state's percent contribution to the national SO₂ inventory. The TCEQ would need to deploy six additional CAMS configured to monitor SO₂ based on the Texas percent contribution to the national SO₂ inventory at locations with the highest expected SO₂ concentrations.

Estimated Impact to Deploy New Monitors

Based on the proposed network design changes, Texas will be required to add a minimum of 13 additional CAMS equipped to monitor SO₂. The total cost to deploy these additional sites and operate them for one year is approximately \$1.4 million for the first year of service and approximately \$400,000 per year in annual operation costs in subsequent years. In order to meet the proposed deployment deadline of January 2013, federal funding will need to be identified and/or provided by early 2011.