dependence of SO_2 conversion rate has also been observed in field measurements within power plants plumes, Husar et al. (1978), but should be viewed cautiously in light of the complicating factors introduced by the dispersion and local chemistry of the primary source emissions.

The most important impact on SO_2 homogenous gas phase reactions has come from recent experimental determinations of the reaction rate constants of SO_2 with HO_2 by Graham et al. (1979) and by Burrows et al. (1979) and SO_2 with CH_3O_2 by Sander and Watson (1981). As a result of these recent determinations, HO_2 and CH_3O_2 must be considered as questionable contributing sources to oxidation of SO_2 in the atmosphere. Therefore, in the theoretical estimates of SO_2 oxidation rates, by Calvert et al. (1978), and by Altshuller (1979), only the hydroxyl radical portion of the contribution is now accepted as established, in view of these recent experimental rate constant determinations. This results in maximum established SO_2 oxidation rates of the order of 1.5 percent/h for both clean and polluted atmosphere during July at mid-northern latitudes, a factor of 2.5 less than previous theoretical estimates for polluted atmospheres. The revised rate is equivalent to a diurnally averaged rate of the order 0.4 percent/hr. Field measurements on the rates of SO_2 oxidation, discussed in Section 2.3.7, indicate that maximum SO_2 oxidation rates of the order of 10 percent/h are typical