The paths for ozone destruction in the troposphere include the reactions sequence

$$HO_2 + O_3 \rightarrow HO_2 + 2O_2 \qquad (2\text{-}18)$$

$$HO + O_3 \rightarrow HO_2 + O_2 \qquad (2\text{-}19)$$

Hydroxyl radical abundances predicted by the tropospheric photochemical models, $10^5$ to $10^6$ molecules $cm^{-3}$, are in qualitative agreement with recent measurements by Davis et al. (1976), Perner et al. (1976), and Campbell et al. (1979) and inferred HO levels based on measured trace gas abundances in the troposphere by Singh (1977).

In the case of the chemistry of polluted atmospheres, extensive discussions on the mechanism of photochemical smog and its computer simulation have been presented by Demerjian et al. (1974), Calvert and McQuigg (1975), Niki et al. (1972), Hecht et al. (1974) and Carter et al. (1979).

Perturbations introduced by man's emissions on the photochemical oxidation cycle within the atmosphere are predominately due to two classes of compounds, volatile organics and nitrogen oxides. The reaction chain sequence discussed earlier for the clean troposphere has now been immensely complicated by the addition of scores of volatile organic compounds which participate in the chain propagating cycle. Figure 2-4 depicts a schematic of the polluted atmospheric photooxidation cycle (Demerjian, 1981). The addition of volatile organic compounds (VOC) in the atmosphere introduces a variety of new peroxyl radical species.