experimental data base must be taken into consideration when comparing predictions to observations.

The chemistry of the inorganic portion of the photochemical smog mechanism is, by and large, well understood. Uncertainties remaining include:

- photolysis rates
- alkane-HO product distributions
- olefin-HO and olefin-O_3 product distributions
- aromatic chemistry
- alkoxyl radical reactions
- RO_x/NO_x reactions

Uncertainty in the model prediction can result from inappropriate specification of photolysis rate constants. In the case of computer simulations of smog chamber data, photolysis rate constants relative to the reported value for NO_2 are frequently used. While under real atmospheric conditions theoretical estimates are used corrected relative to empirical measurements, if available.

$$K_j = \int_0^\infty \sigma_j(\lambda)\phi_j(\lambda)I(\lambda)d\lambda \qquad (6\text{-}45)$$

where

K_j = photolysis rate constant for species j

$\sigma_j(\lambda)$ = absorption cross section of species j

$\phi_j(\lambda)$ = quantum yield for the photolysis of species j

$I(\lambda)$ = actinic irradiance

A recent review of theoretical estimates of photolytic rate constants in the lower troposphere by Demerjian, Schere and