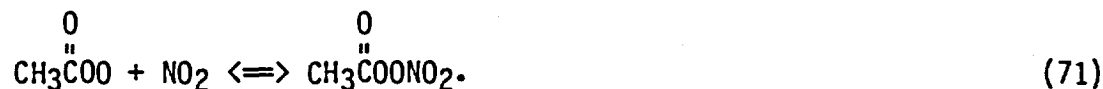


Peroxyacyl nitrates have been recognized as important components of photochemical air pollution (U.S. EPA, 1978). Peroxyacetyl nitrate (PAN) exists in equilibrium with the peroxyacyl radical and NO_2 :



There exists a competition between NO and NO_2 for the peroxyacyl radical through:



The acetyl radical will rapidly decompose as follows:



followed by:



Thus, PAN chemistry is intimately interwoven in the NO to NO_2 conversion process. Rate constants for reactions 71 and 72 have recently been reported by two groups of investigators (Cox and Roffey, 1977; Hendry and Kenley, 1977).

The chemistry of the oxides of nitrogen in a hydrocarbon-containing atmosphere can be summarized as follows: the major observed phenomenon in the system is conversion of NO to NO_2 and formation of a variety of nitrogen-containing species, such as nitrites and nitrates. The conversion of NO to NO_2 is accompanied by accumulation of O_3 . NO_2 serves both as initiator and terminator of the chain reactions that result in conversion of NO to NO_2 and buildup of O_3 . Termination of the chain reactions leads to nitric acid