does not represent an appreciable sink for NO_2 because of the rapid thermal decomposition reaction 6-36. At lower temperatures HO_2NO_2 will achieve higher concentrations and its importance as a sink for NO_2 increases.

The reactions of RO, RO_2 and RCO_3 with NO and NO_2 represent key reactions in the conversion of NO to NO_2 and the formation of organic nitrites and nitrates.

The main alkoxyl radical reactions with NO and NO_2 are:

$$RO + NO \rightarrow RONO \qquad (6\text{-}37a)$$

or

$$\rightarrow RCHO + HNO \qquad (6\text{-}37b)$$

and

$$RO + NO_2 \rightarrow RONO_2 \qquad (6\text{-}38a)$$

or

$$\rightarrow RCHO + HONO \qquad (6\text{-}38b)$$

The reaction of alkylperoxyl radicals with NO is generally assumed to proceed by the oxidation of NO to NO_2 with formation of an alkoxyl radical:

$$RO_2 + NO \rightarrow NO_2 + RO \qquad (6\text{-}22)$$

Reaction 6-22 is believed to be an important route for the oxidation of NO to NO_2 in the atmosphere (the alkoxyl radical may react further to produce HO_2, which also converts NO to NO_2).

It has been postulated that longer chain peroxyalkyl radicals (n>4) from alkane photooxidation will add to NO to form an excited complex that can be stablized to produce an