

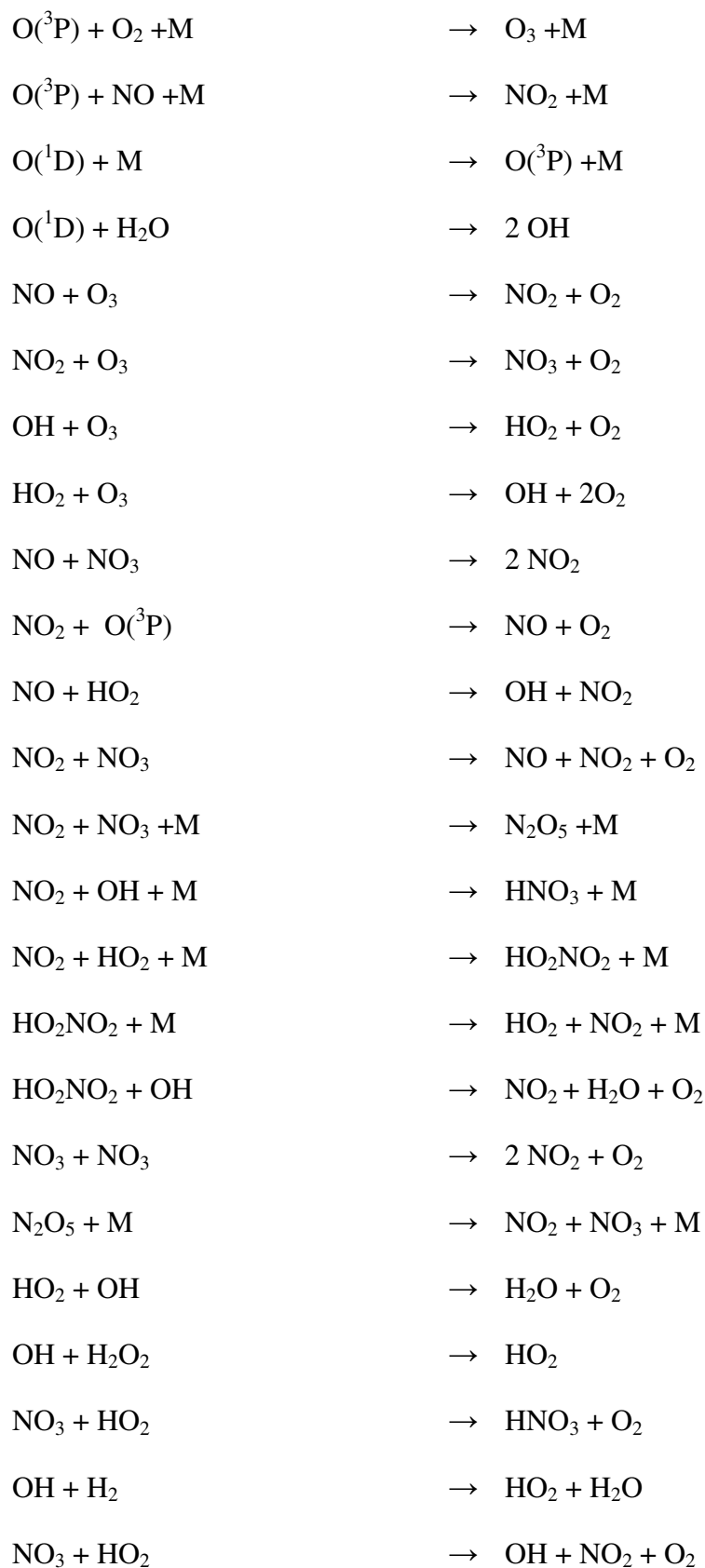
Supplementary Online Material

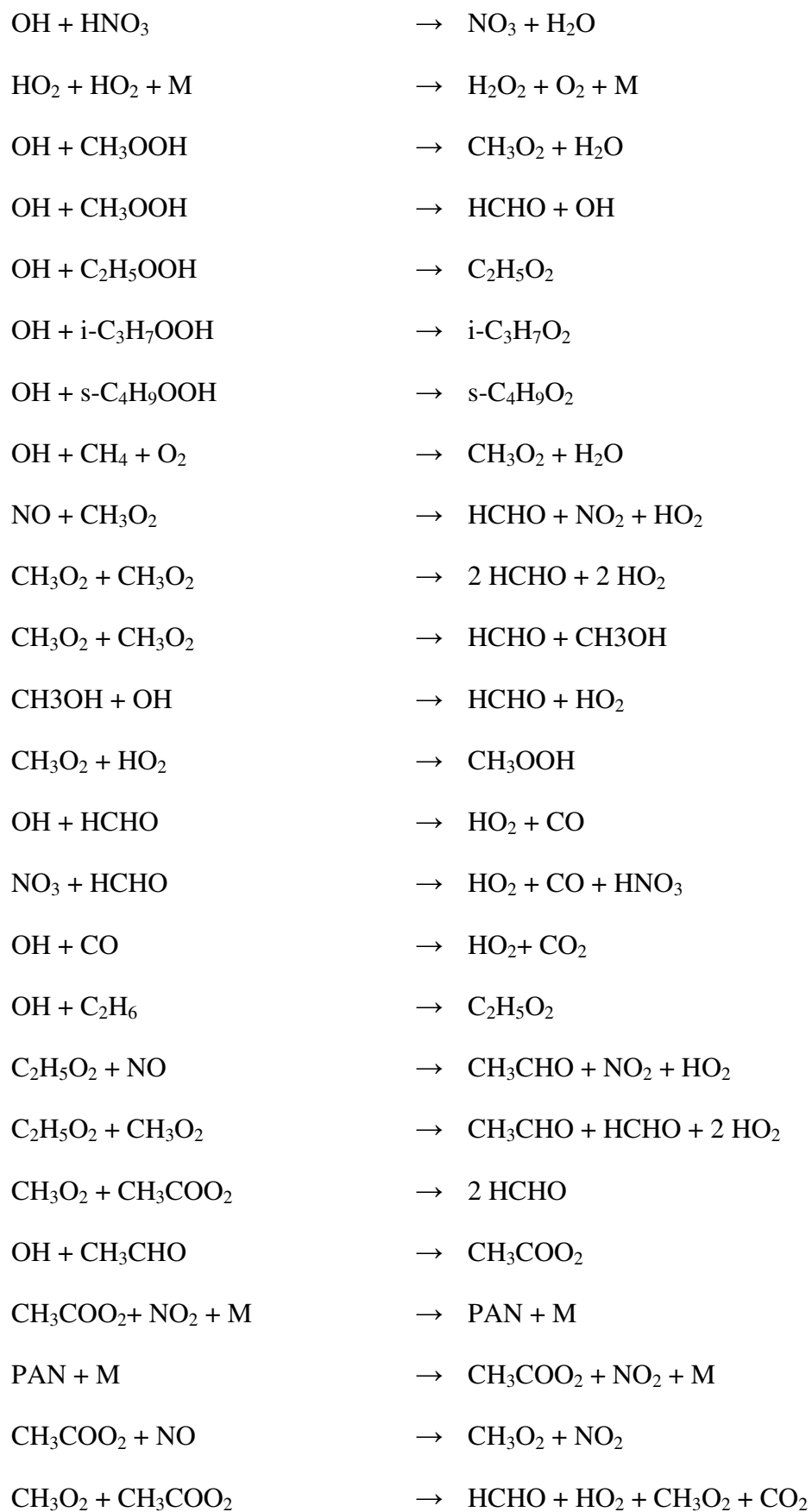
**Air quality modelling using the Met Office Unified Model:
model description and initial evaluation**

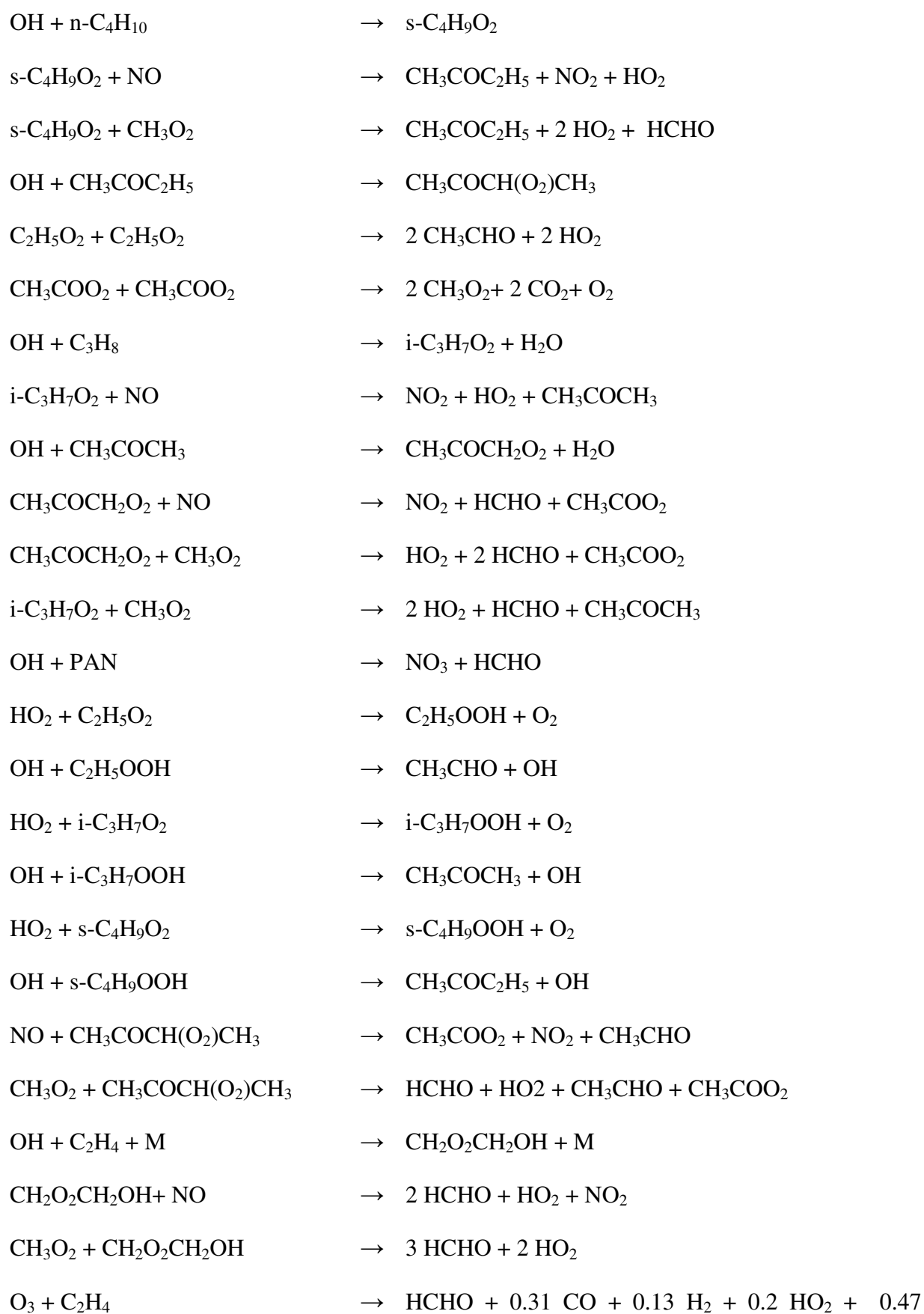
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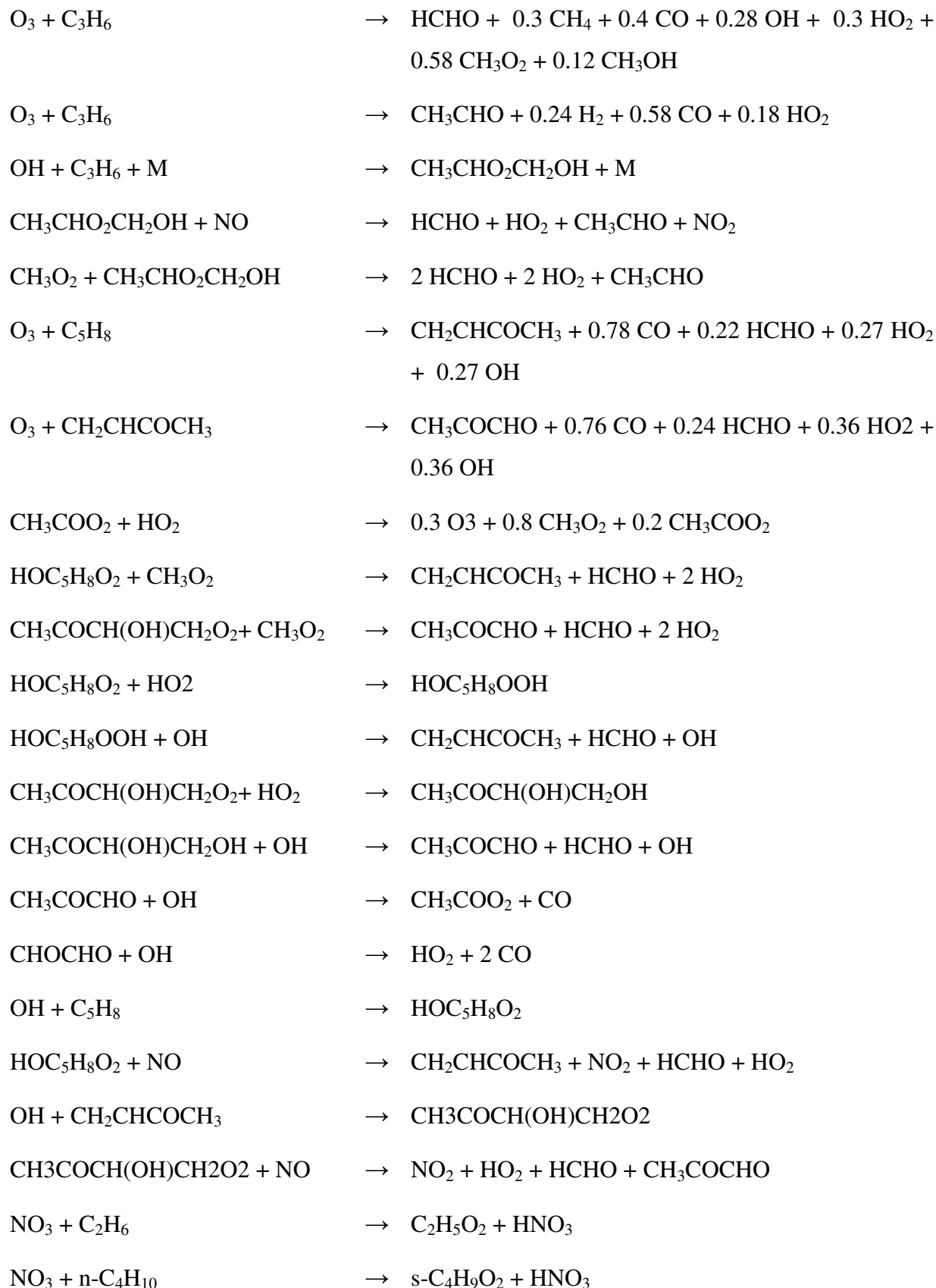
Table S1. Gas phase chemistry in RAQ mechanism







HCHO



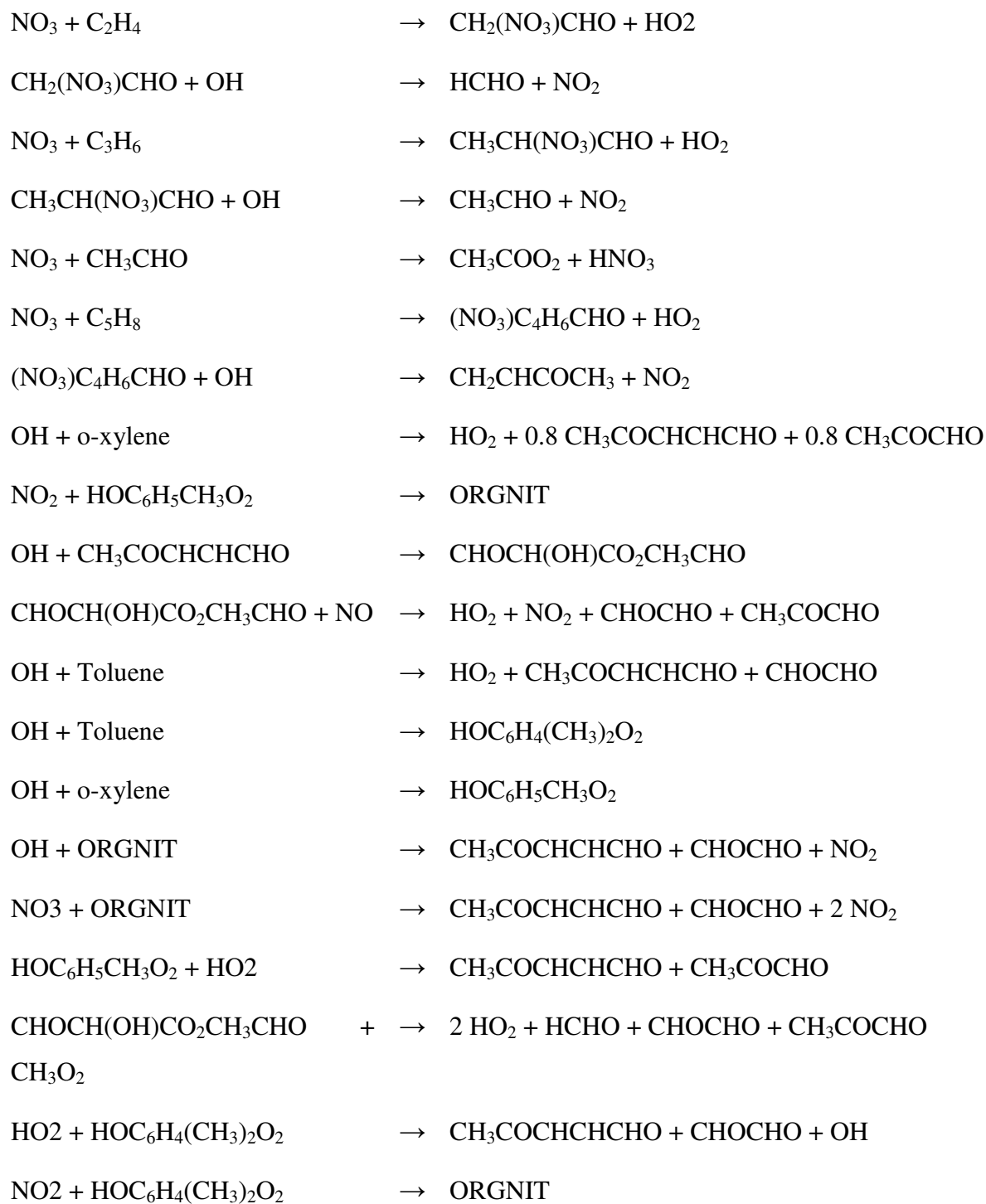


Table S2. Photochemical reactions in RAQ mechanism

$O_3 + hv$	\rightarrow	$O(^3P)$
$O_3 + hv$	\rightarrow	$O(^1D)$
$NO_2 + hv$	\rightarrow	$NO + O(^3P)$
$H_2O_2 + hv$	\rightarrow	$OH + OH$
$HNO_3 + hv$	\rightarrow	$NO_2 + OH$
$HCHO + hv$	\rightarrow	$CO + HO_2 + HO_2$
$HCHO + hv$	\rightarrow	$CO + H_2$
$CH_3CHO + hv$	\rightarrow	$CH_3O_2 + HO_2 + CO$
$CH_3COC_2H_5 + hv$	\rightarrow	$C_2H_5O_2 + CH_3COO_2$
$CH_3COCH_3 + hv$	\rightarrow	$CH_3COO_2 + CH_3O_2$
$HO_2NO_2 + hv$	\rightarrow	$HO_2 + NO_2$
$CH_3COCHO + hv$	\rightarrow	$CH_3COO_2 + HO_2 + CO$
$CHOCHO + hv$	\rightarrow	$HO_2 + HO_2 + CO + CO$
$NO_3 + hv$	\rightarrow	$NO + O_2$
$NO_3 + hv$	\rightarrow	$NO_2 + O(^3P)$
$N_2O_5 + hv$	\rightarrow	$NO_2 + NO_3$
$CH_3OOH + hv$	\rightarrow	$HCHO + HO_2 + OH$
$PAN + hv$	\rightarrow	$CH_3COO_2 + NO_2$
$C_2H_5OOH + hv$	\rightarrow	$OH + HO_2 + CH_3CHO$
$i-C_3H_7OOH + hv$	\rightarrow	$OH + HO_2 + CH_3COCH_3$
$s-C_4H_9OOH + hv$	\rightarrow	$OH + HO_2 + CH_3COC_2H_5$
$HOC_5H_8OOH + hv$	\rightarrow	$OH + CH_2CHCOCH_3 + HCHO + HO_2$
$CH_3COCH(OH)CH_2OH + hv$	\rightarrow	$OH + CH_3COCHO + HCHO + HO_2$
