Supplementary Information

Table S1 Estimated range in total VOC concentration and total OH reactivity of each mixture injected into the reactor.

Mixture no.	total [VOC] / ppb	total OH reactivity / s^{-1}
1	22-110	50-250
2	22-110	20-100
3	25-100	30-130

Table S2 O$_3$ + VOC literature data for compounds in the ambient air analysis.

compound	literature[a] k_{O3} / 10^{-17} cm^3 molecule^{-1} s^{-1} 298 K
tridecane	$< 1 \times 10^{-6}$
isoprene	1.27
styrene	1.70
3-ethyltoluene	$< 1 \times 10^{-3}$
dodecane	$< 1 \times 10^{-6}$
1,2,3-trimethylbenzene	$< 1 \times 10^{-3}$
1,2,4-trimethylbenzene	$< 1 \times 10^{-3}$
naphthalene	0.02
2-ethyltoluene	$< 1 \times 10^{-3}$
n-decane	$< 1 \times 10^{-6}$
ethylbenzene	$< 1 \times 10^{-3}$
n-heptane	$< 1 \times 10^{-6}$
n-propylbenzene	$< 1 \times 10^{-3}$
toluene	$< 1 \times 10^{-3}$
benzene	$< 1 \times 10^{-3}$
isopropylbenzene	$< 1 \times 10^{-3}$
n-hexane	$< 1 \times 10^{-6}$
ethyl acetate	
dichloromethane	

[a] Atkinson and Arey, 2003
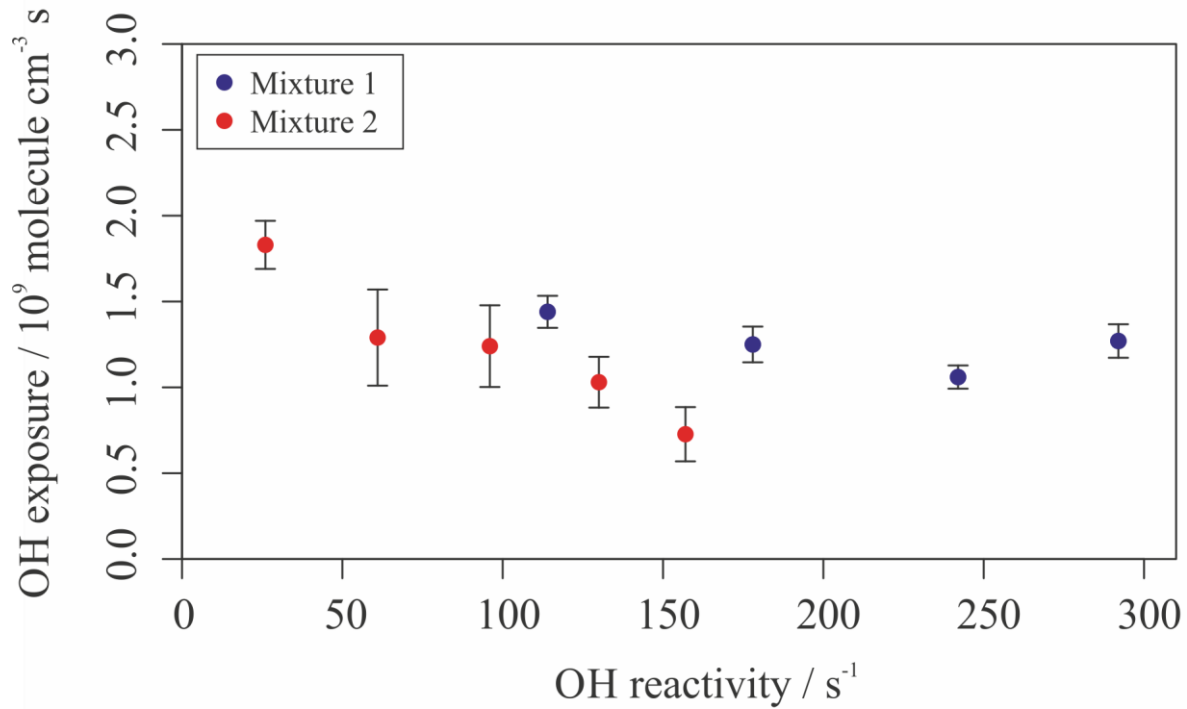
Figure S1 Plot of OH exposure against estimated OH reactivity for the synthetic gas mixtures 1 and 2 showing the trend in OH exposure with increasing OH reactivity.