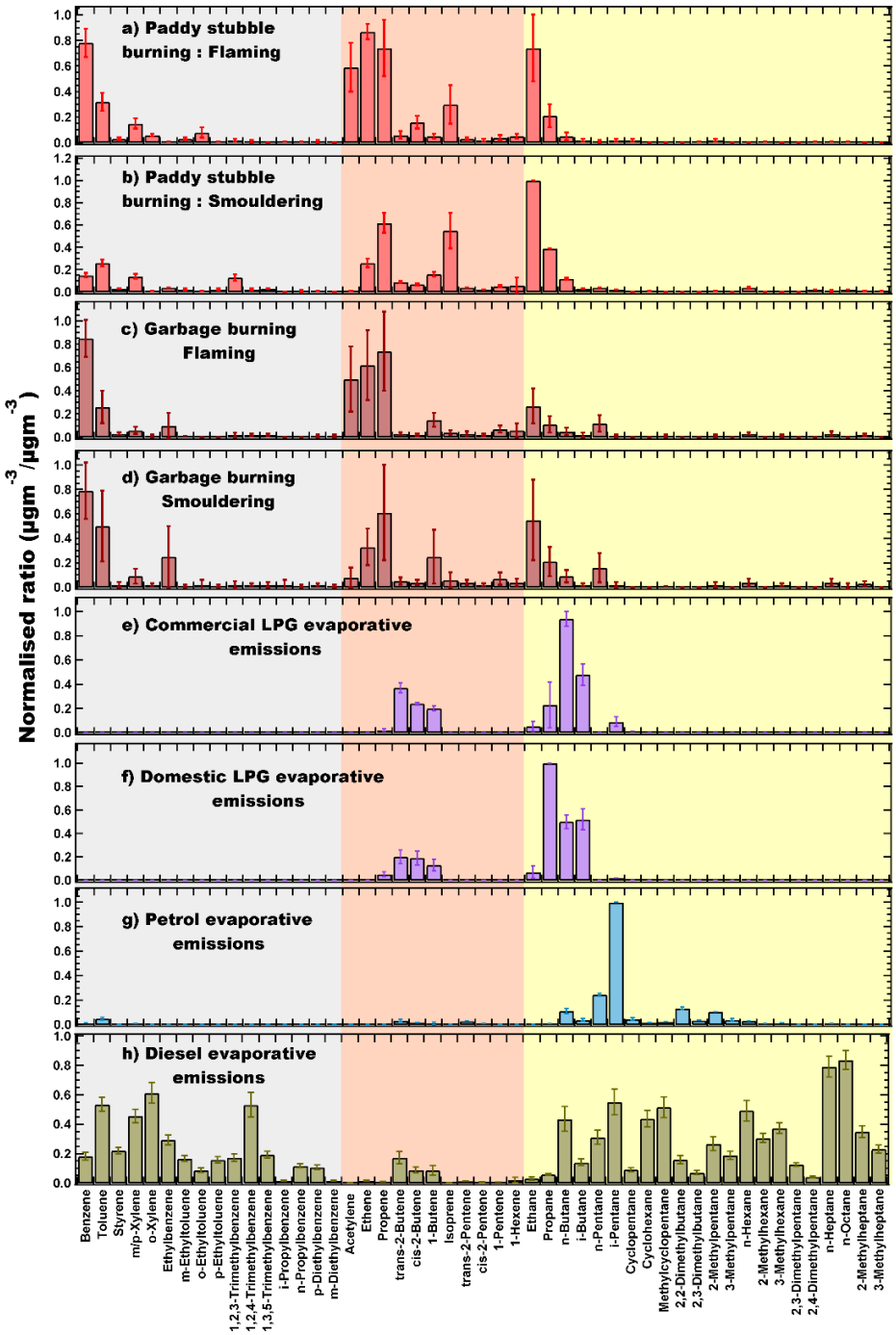

Figure 1: Normalised source profiles of **a)** Paddy stubble burning: Flaming; **b)** Paddy stubble burning: Smouldering; **c)** Garbage burning: Flaming; **d)** Garbage burning: Smouldering; **e)** Commercial LPG evaporative emissions; **f)** Domestic LPG evaporative emissions; **g)** Petrol evaporative emissions; **h)** Diesel evaporative emissions, derived from the TD-GC-FID measurements. Error bars represent the standard error of averaged normalized ratio. The grey colour highlights the aromatics, red colour highlights the alkenes and alkyne and the yellow colour highlights the alkanes.

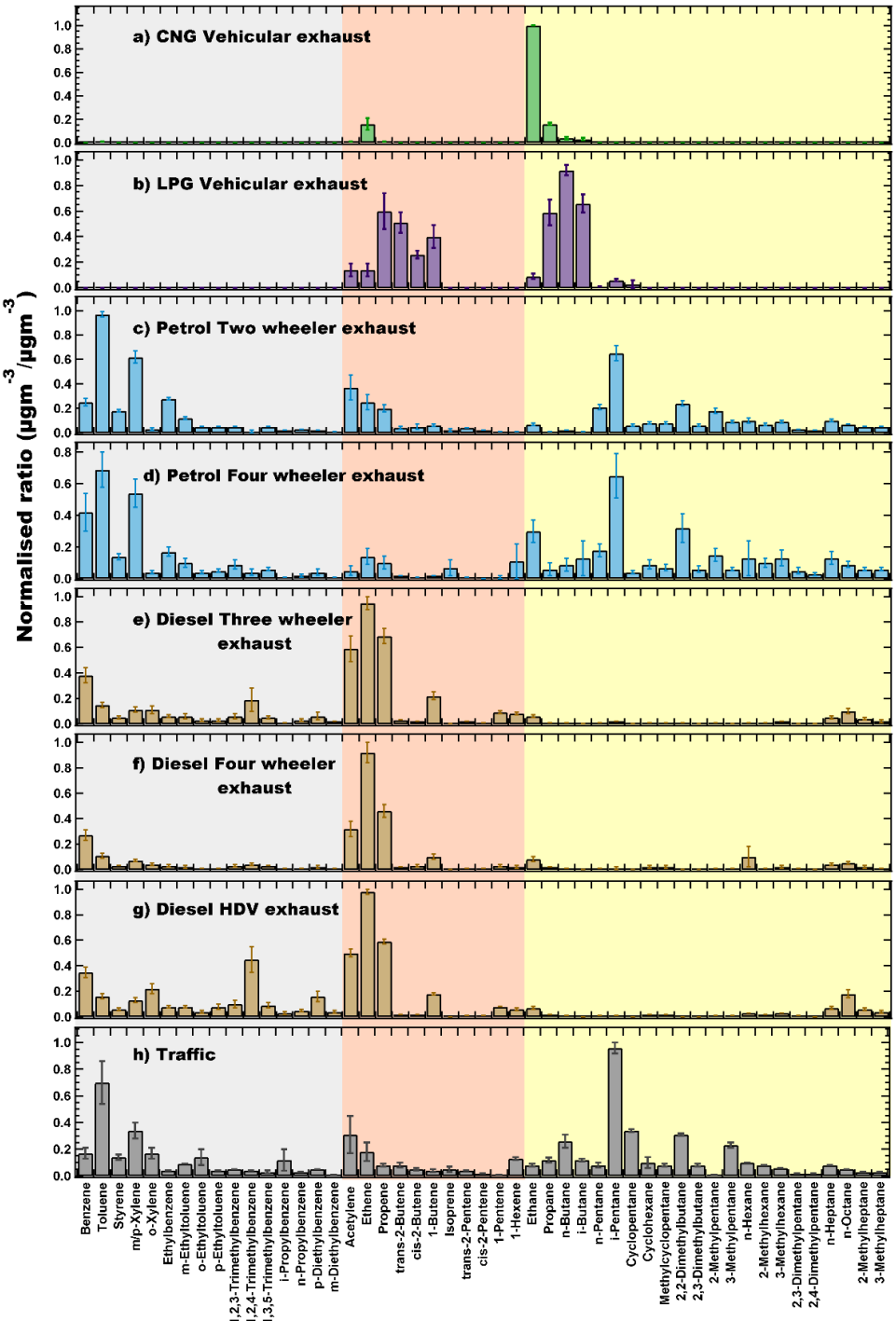

Figure 2: Normalised **s**ource profiles of **a)** CNG vehicular exhaust; **b)** LPG vehicular exhaust; **c)** Petrol two wheeler vehicular exhaust; **d)** Petrol four wheeler vehicular exhaust; **e)** Diesel three wheeler vehicular exhaust; **f)** Diesel four wheeler vehicular exhaust; **g)** Diesel heavy duty vehicle (HDV) exhaust; **h)** Traffic, derived from the TD-GC-FID measurements. Error bars represent the standard error of averaged normalized ratio. The grey colour highlights the aromatics, red colour highlights the alkenes and alkyne and the yellow colour highlights the alkanes.

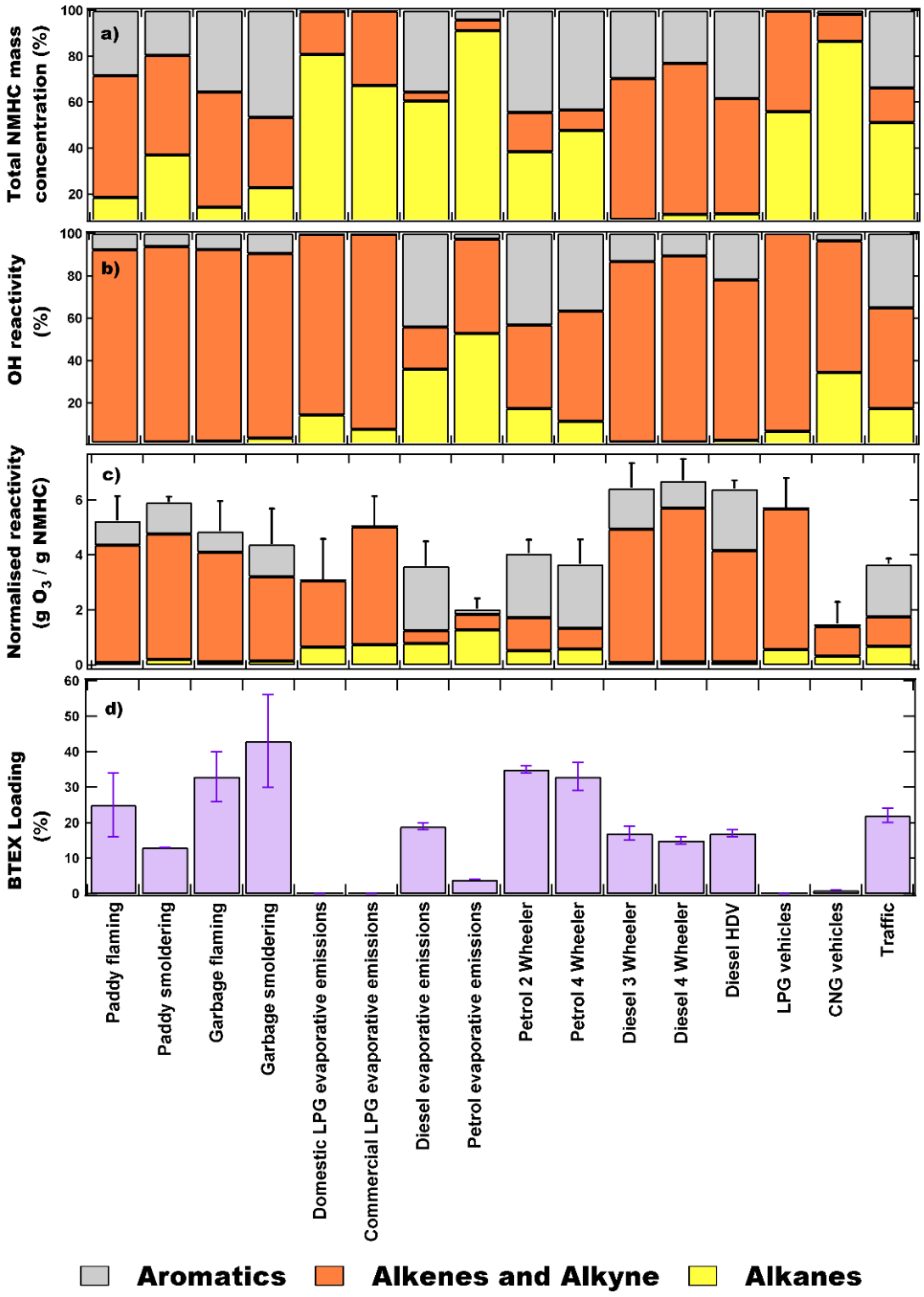

Figure 3: Comparison of contribution of chemical compositions in groups (aromatics, alkene and alkyne and alkanes) to **a)** NMHCs mass concentrations, **b)** OH reactivity (s^{-1}), and **c)** Normalised reactivity ($gO_3/gNMHC$) and **d)** BTEX loading (%) from various emission sources. Error bars represent the standard error of averaged normalized ratio.

Table 1: Number of samples investigated per source for the measurements of NMHCs source profiles

Sources	Description	# samples
Paddy stubble burning (Flaming stage)	Agricultural field in Kurari, Mohali (30.605^{o} N, 76.744^{o} E) on 4 Nov 2017	3
Paddy stubble burning (Smouldering stage)	Agricultural field in Kurari, Mohali (30.605^{o} N, 76.744^{o} E) on 4 Nov 2017	3
Garbage burning (Flaming stage)	Waste sorting and disposing stations in Mohali and surrounding villages (30.642-30.699^{o}N, 76.713-76.729^{o}E) in February 2017	5
Garbage burning (Smouldering stage)	Waste sorting and disposing stations in Mohali and surrounding villages (30.642-30.699^{o}N, 76.713-76.729^{o}E) in February 2017	5
Traffic	Busy traffic junctions in Chandigarh and Mohali (30.691^{o} N, 76.698^{o} E; 30.678^{o} N, 76.721^{o} E and 30.717^{o} N, 76.812^{o} E) in on 3rd, 8th and 15 th March 2017 b/w 11-17 local time	3
Petrol vehicular exhaust	Petrol LDV and 2 wheelers in idling stage in Chandigarh and Mohali (30.660-30.750^{o}N,76.700-76.840^{o}E) between Mar 2017-Oct 2018	23
Diesel vehicular exhaust	Diesel LDV 4 wheelers and 3 wheelers and HDV in idling stage in Chandigarh and Mohali (30.660-30.750^{o}N,76.700-76.840^{o}E) between Mar 2017- Oct 2018	33
LPG vehicular exhaust	LPG 3 wheelers in idling stage in Chandigarh and Mohali (30.660-30.750^{o}N,76.700-76.840^{o}E) between Mar 2017- Oct 2018	9
CNG vehicular exhaust	CNG 3 wheelers and LDV 4 wheelers in idling stage in Chandigarh and Mohali (30.660-30.750^{o}N,76.700-76.840^{o}E) between Mar 2017- Oct 2018	7
LPG evaporative emissions	LPG vapors collected directly from domestic (5) and commercial LPG cylinders (5) in Mohali, Chandigarh and Panchkula on 13-14 August 2020	10
Petrol evaporative emissions	Petrol vapors collected directly from the headspace of fuel tank of the petrol vehicles between on 13-14 August 2020 in IISER Mohali campus (30.665° N, 76.730° E)	10
Diesel evaporative emissions	Diesel vapors collected directly from the headspace of fuel tank of the diesel vehicles between on 13-14 August 2020 in IISER Mohali campus (30.665° N, 76.730° E)	10

Table 2: Compound specific Precision errors (%), Limit of Detection (LOD) (in ppt) and Total measurement uncertainties (%).

Compounds	Precision at 1ppb (%)	Precision at 5ppb (%)	LOD (ppt)	Uncertainty (%)	Compounds	Precision at 1ppb (%)	Precision at 5ppb (%)	LOD (ppt)	Uncertainty (%)
Aromatics (n=16)									
Benzene	1	0.2	21	5.9	*p*-Ethyltoluene	1	0.3	9	9.3
Toluene	2	0.3	87	6.2	1,2,3-Trimethylbenzene	2	0.2	104	11.3
Styrene	2	0.4	19	7.0	1,2,4-Trimethylbenzene	1	0.2	56	9.0
m/p-Xylene	1	0.1	45	7.1	1,3,5-Trimethylbenzene	3	0.2	14	9.0
o-Xylene	2	0.2	24	5.8	*i*-Propylbenzene	2	0.3	7	6.6
Ethylbenzene	1	0.3	41	6.5	*n*-Propylbenzene	1	0.2	8	8.0
m-Ethyltoluene	1	0.4	9	8.8	*m*-Diethylbenzene	1	0.1	5	12.3
o-Ethyltoluene	2	0.3	9	8.9	*p*-Diethylbenzene	2	0.1	17	14.7
Alkyne (n=1)									
Acetylene	5	0.2	64	5.9					
Alkenes (n=10)									
Ethene	6	0.3	103	5.9	Isoprene	3	0.2	4	6.0
Propene	4	0.3	47	5.8	1-Pentene	2	0.1	2	5.8
1-Butene	3	0.2	3	5.8	*trans*-2-Pentene	1	0.2	4	5.8
trans-2-Butene	2	0.3	18	6.0	*cis*-2-Pentene	2	0.2	2	5.8
cis-2-Butene	1	0.2	8	5.8	1-Hexene	2	0.3	4	5.8
Alkanes (n=22)									
Ethane	3	0.3	15	7.3	*n*-Hexane	2	0.5	3	5.8
Propane	5	0.2	20	5.8	2-Methylpentane	1	0.2	2	5.8
n-Butane	2	0.1	3	5.8	3-Methylpentane	1	0.2	3	5.8
i-Butane	4	0.2	6	5.8	2-Methylhexane	2	0.2	15	5.8
i-Pentane	2	0.2	4	7.3	3-Methylhexane	2	0.3	7	5.8
n-Pentane	1	0.1	4	5.8	2,3-Dimethylpentane	1	0.1	1	5.8
Cyclopentane	1	0.2	3	6.3	2,4-Dimethylpentane	2	0.2	11	5.8
Cyclohexane	1	0.2	2	5.8	*n*-Heptane	2	0.3	15	5.9
Methylcyclopentane	2	0.3	13	5.8	*n*-Octane	3	0.2	103	5.8
2,2-Dimethylbutane	2	0.2	4	5.8	2-Methylheptane	2	0.2	85	5.8
2,3-Dimethylbutane	1	0.1	2	5.8	3-Methylheptane	4	0.2	81	5.8

Table 3: Characteristic **i**nter-NMHC molar ratios (ppb/ppb) for the whole air samples collected from paddy stubble fires, garbage fires, evaporative fuel emissions (petrol, diesel and LPG), traffic and vehicular exhaust from different fuel types (petrol, diesel, LPG and CNG). The standard error of the mean ratio is provided in the parentheses.

Emission ratio (ppb/ppb)	Paddy stubble burning (F)	Paddy stubble burning (S)	Garbage burning (F)	Garbage burning (S)	Evaporative emissions			Traffic	Vehicular exhaust emissions			
					Petrol	Diesel	LPG		Petrol	Diesel	LPG	CNG
Toluene/Benzene	0.38 (0.11)	1.40 (0.10)	0.26 (0.07)	0.59 (0.16)	3.13 (0.34)	2.88 (0.38)	3.41 (0.55)	3.54 (0.21)	3.68 (0.58)	0.38 (0.02)	0.59 (0.17)	10.90 (2.98)
i-Butane/*n*-Butane	0.41 (0.13)	0.26 (0.00)	0.24 (0.10)	0.22 (0.04)	0.34 (0.02)	0.35 (0.02)	0.79 (0.13)	0.48 (0.03)	0.50 (0.12)	0.38 (0.02)	0.73 (0.08)	0.77 (0.11)
i-Pentane/*n*-Pentane	1.46 (0.71)	0.56 (0.02)	0.06 (0.02)	0.12 (0.04)	4.13 (0.08)	1.84 (0.13)	12.13 (2.56)	2.83 (0.17)	3.27 (0.19)	1.42 (0.10)	14.99 (2.69)	3.45 (0.32)
Propane/*n*-Butane	8.05 (3.17)	4.30 (0.04)	2.81 (0.28)	2.99 (0.28)	0.04 (0.01)	0.21 (0.02)	1.61 (0.47)	0.58 (0.05)	0.64 (0.11)	3.72 (0.35)	0.89 (0.18)	8.93 (3.01)
Propene/Ethene	0.55 (0.14)	1.52 (0.02)	0.79 (0.15)	1.06 (0.23)	3.38 (3.38)	0.27 (0.11)	14.74 (11.78)	0.38 (0.10)	0.64 (0.06)	0.40 (0.02)	7.22 (3.64)	0.06 (0.02)
trans-2-Butene/*cis*-2-Butene	1.28 (0.03)	1.33 (0.02)	1.32 (0.03)	1.42 (0.04)	2.51 (0.39)	1.89 (0.03)	1.82 (0.09)	1.80 (0.07)	1.90 (0.60)	1.35 (0.02)	1.93 (0.17)	1.71 (0.16)
trans-2-Pentene/*cis*-2-Pentene	1.53 (0.05)	1.83 (0.05)	1.74 (0.02)	1.54 (0.14)	2.83 (0.28)	2.91 (0.63)	1.70 (0.43)	2.04 (0.07)	4.56 (2.54)	1.65 (0.05)	1.51 (0.08)	0.99 (0.31)
Styrene/1,3,5-TMB	1.77 (0.32)	1.45 (0.04)	3.29 (1.13)	2.29 (1.10)	7.42 (0.83)	1.48 (0.19)	1.68 (0.45)	3.73 (0.76)	4.19 (0.31)	1.48 (0.27)	2.67 (0.37)	2.10 (0.18)
1,2,3-TMB/1,2,4-TMB	6.70 (3.35)	8.36 (1.37)	0.68 (0.35)	1.39 (0.49)	2.17 (1.46)	0.33 (0.02)	0.74 (0.53)	1.78 (0.55)	8.37 (0.89)	1.21 (0.64)	3.49 (1.62)	3.29 (2.05)

TMB: Trimethylbenzene, F: Flaming, S: Smouldering