

Steven Labalme
9 February 2023

23 February 2023

5 GCMS ANALYSIS OF BENZENE IN GASOLINE

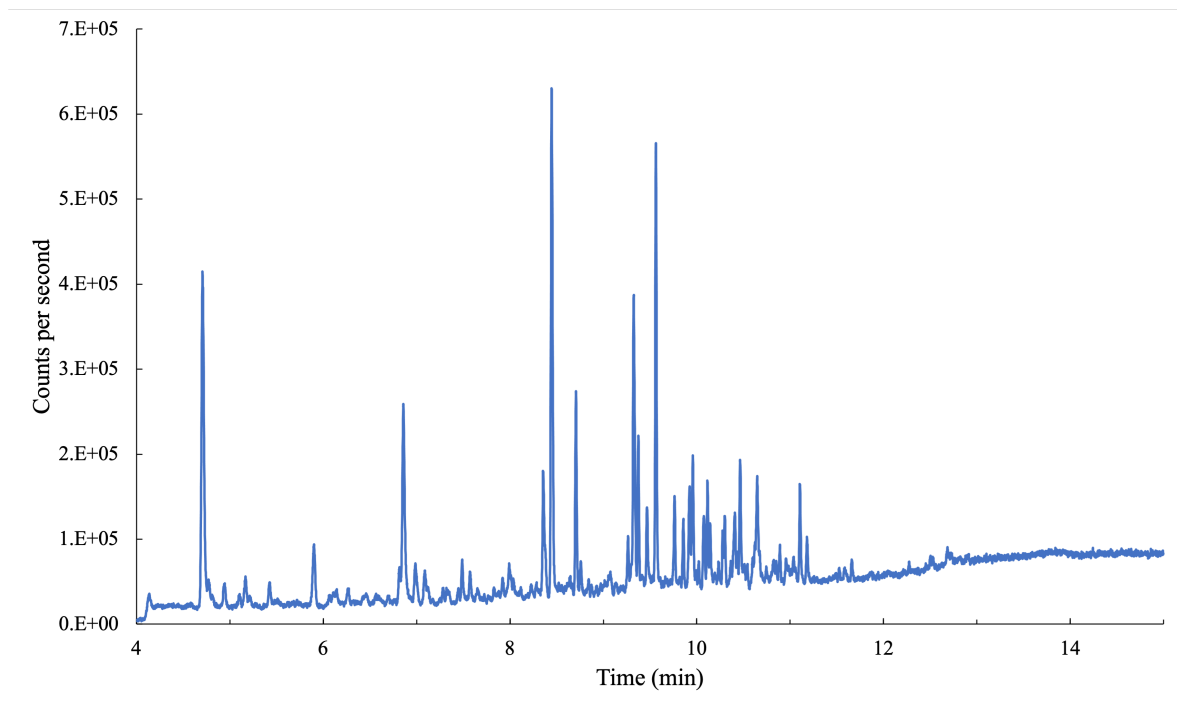
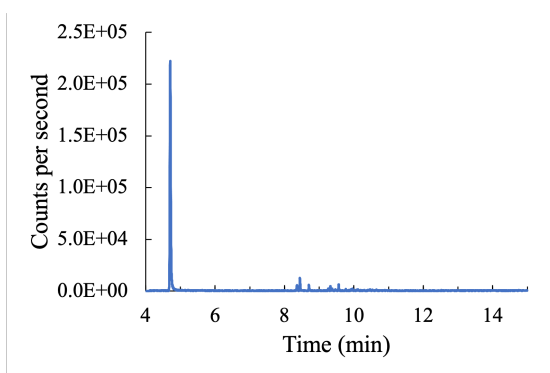
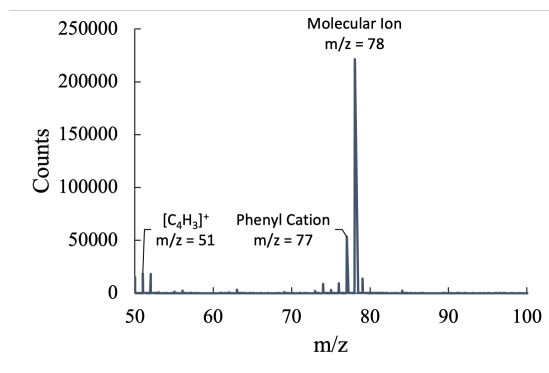


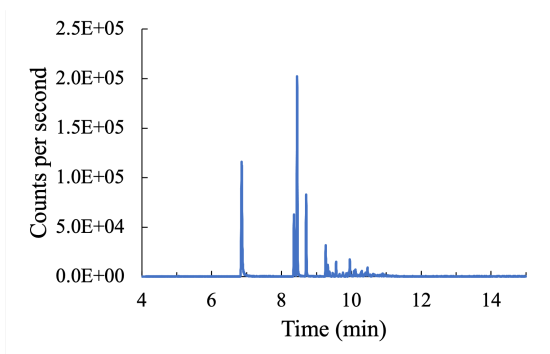
Figure 1: Total ion chromatogram of diluted 87-gasoline in pentane.



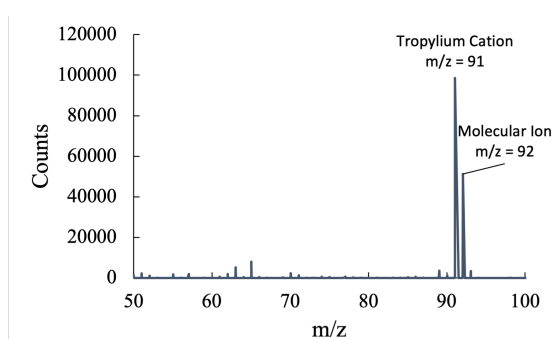
(a) Benzene EIC.



(b) Benzene MS.



(c) Toluene EIC.



(d) Toluene MS.

Figure 2: Extracted ion chromatograms and extracted mass spectra for benzene and toluene.

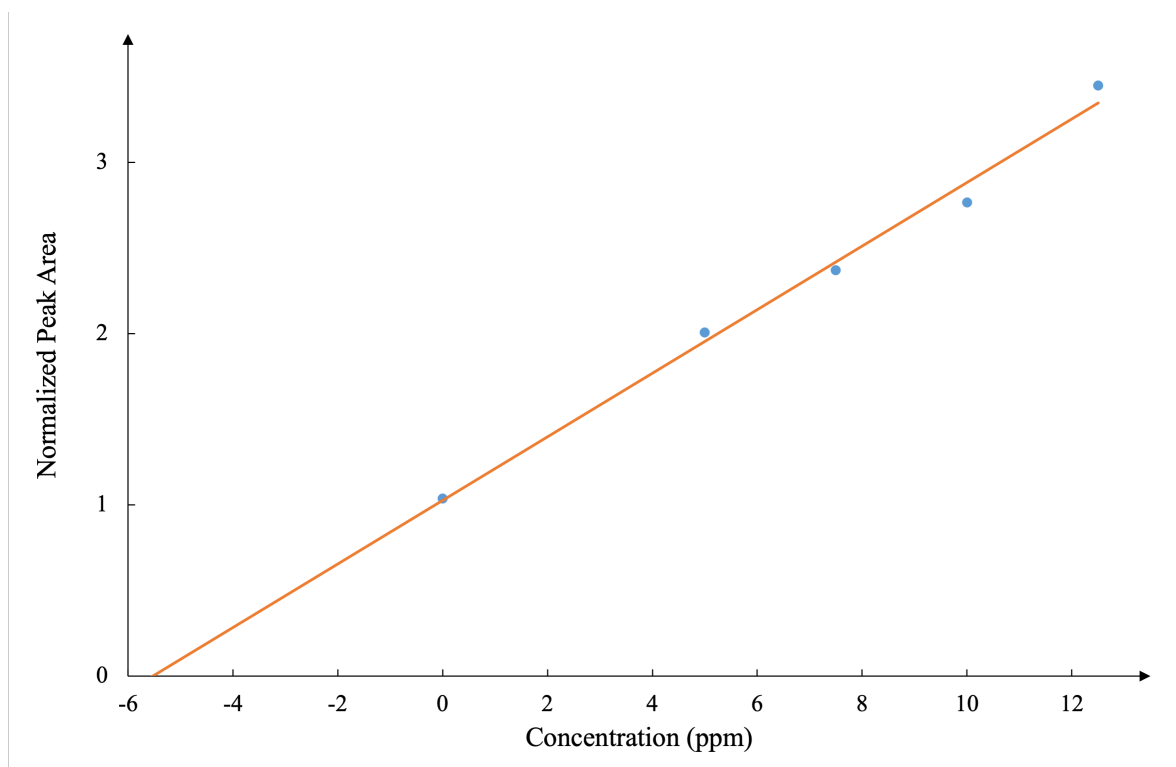


Figure 3: Standard addition of benzene.

Concentration (v/v)	Error (v/v)
3.95×10^{-4}	$\pm 1.66 \times 10^{-4}$

Table 1: Concentration of benzene in gasoline.

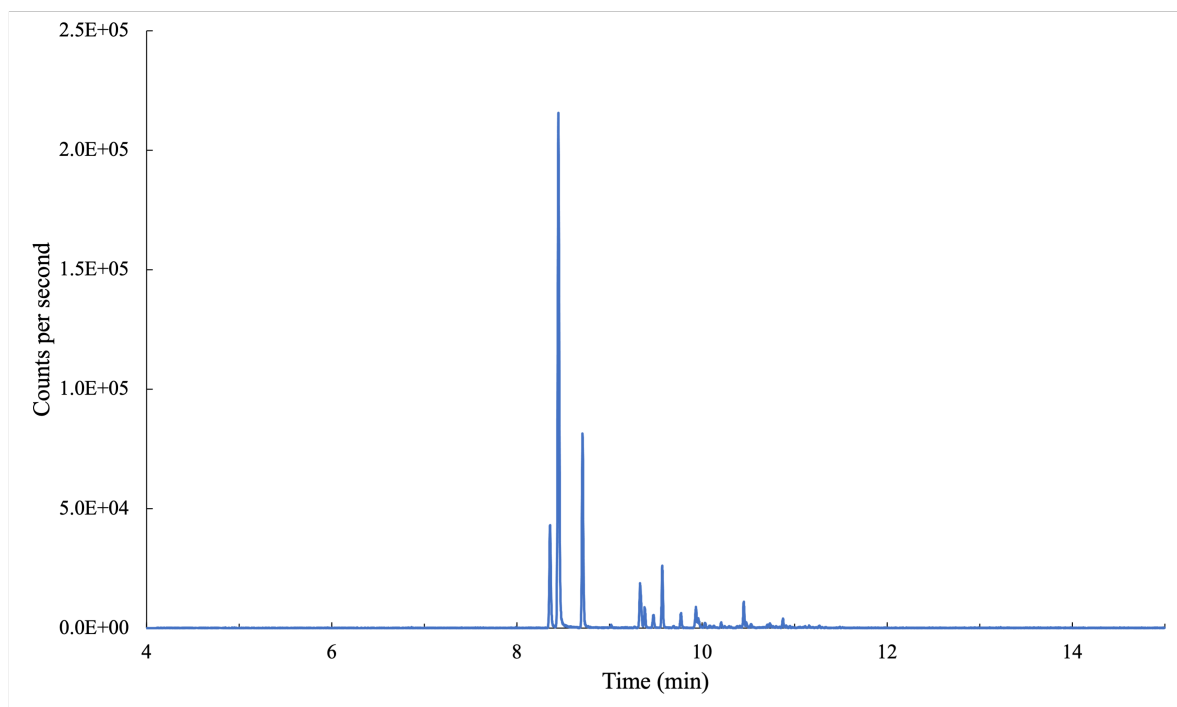


Figure 4: Extracted ion chromatogram of ethylbenzene.

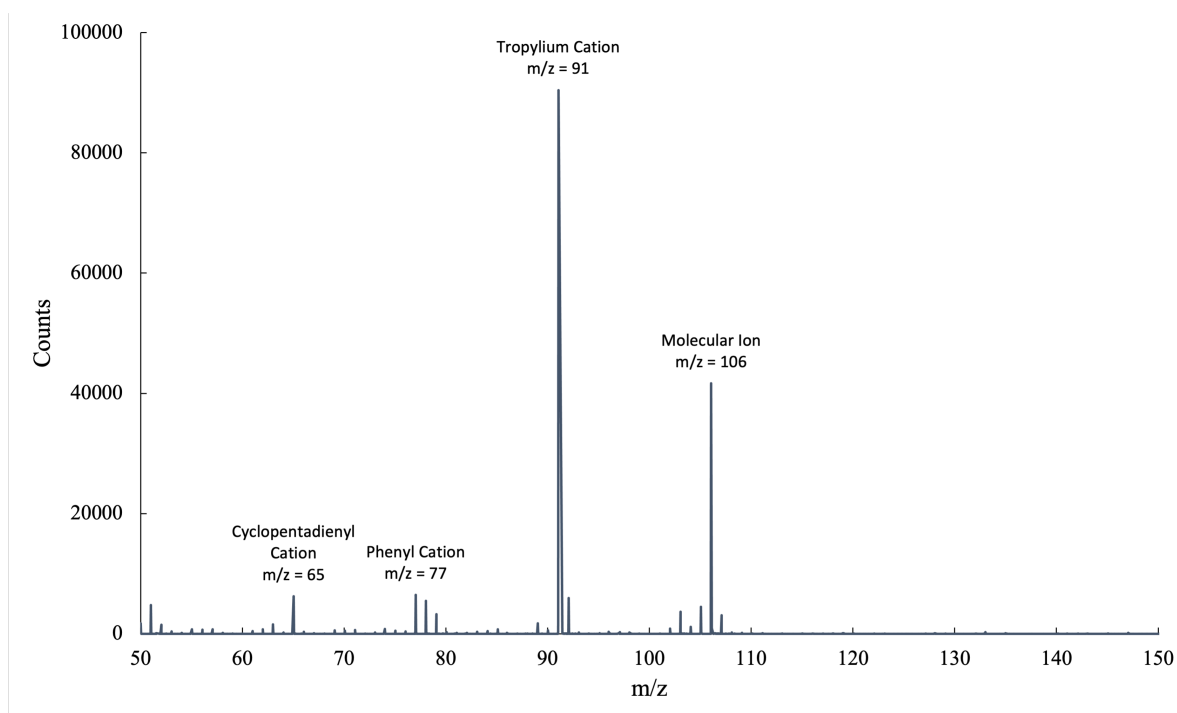


Figure 5: Extracted mass spectra of ethylbenzene.

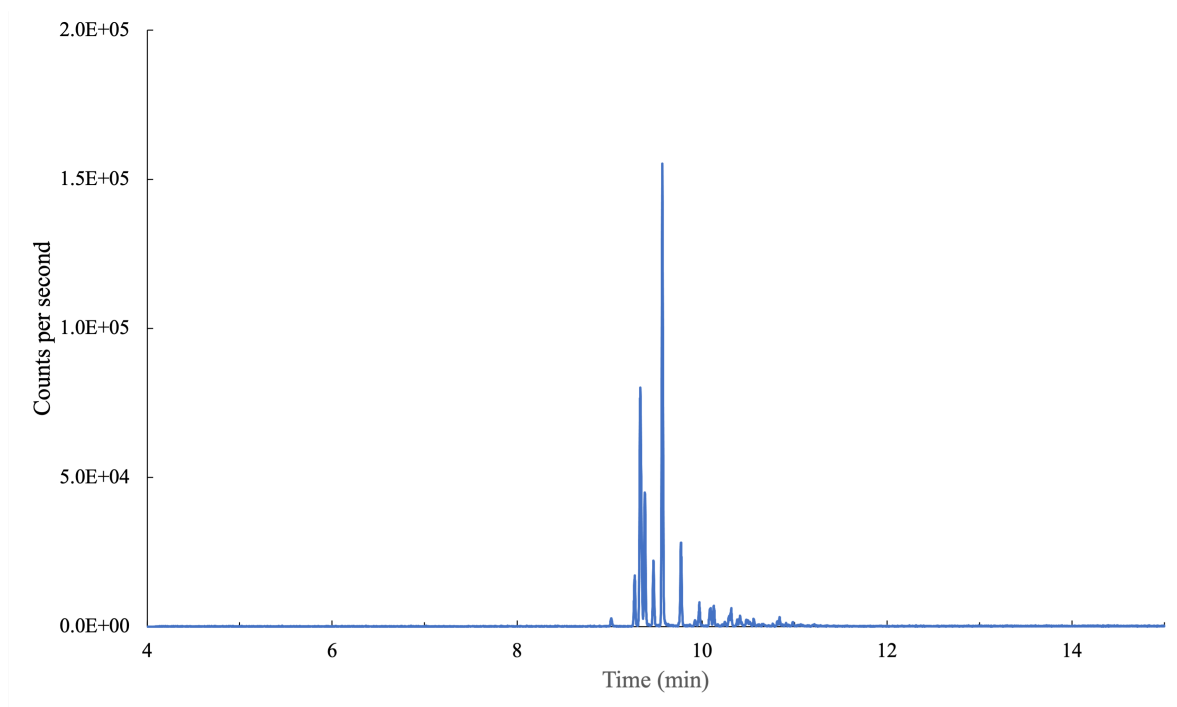


Figure 6: Extracted ion chromatogram of mesitylene.

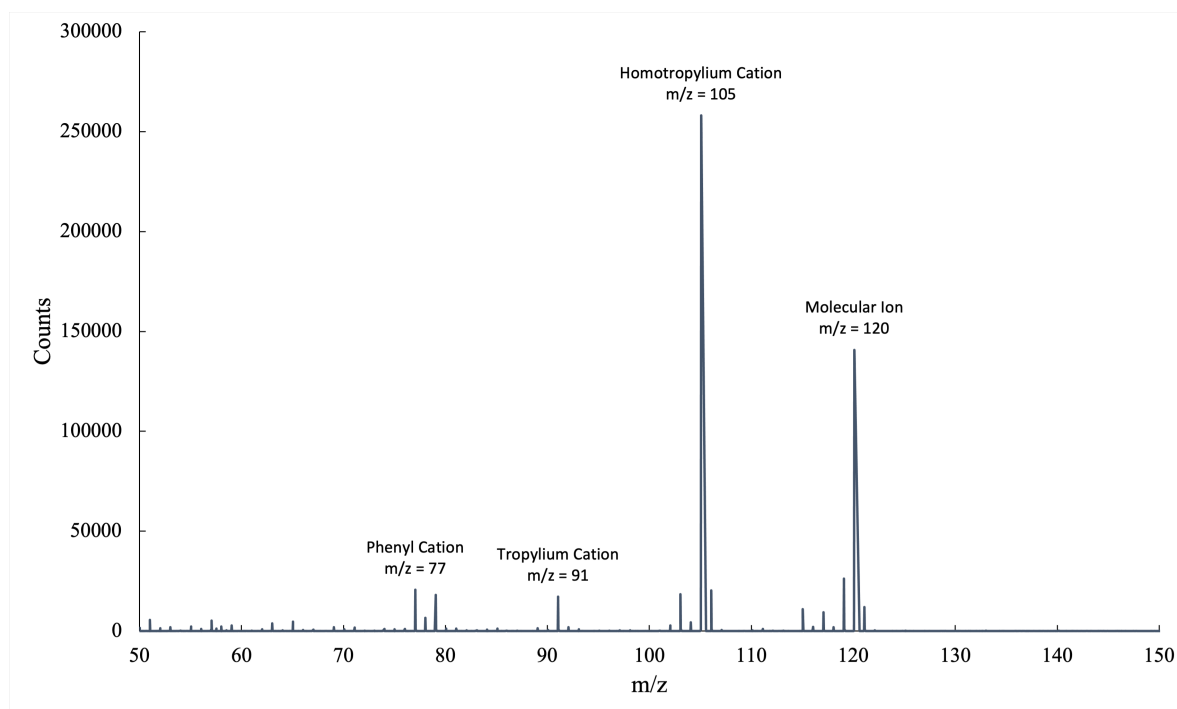


Figure 7: Extracted mass spectra of mesitylene.

	Ethylbenzene	Mesitylene
Concentration (ppm)	1.71	2.48

Table 2: Concentrations of additional aromatic molecules.

These substances may not follow the same peak area-to-concentration fit as benzene (Figure 3). Indeed, to more accurately determine the concentrations of these substances in gasoline, it would be appropriate to do a standard addition analysis for both of them, individually, instead of relying on more distantly related correspondences.