

Correction to Sensitive and Comprehensive Detection of Chemical Warfare Agents in Air by Atmospheric Pressure Chemical Ionization Ion Trap Tandem Mass Spectrometry with Counterflow Introduction

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Anal. Chem. **2014**, *86*, 4316–4326. DOI: 10.1021/ac500042r

The authors regret to inform the readers that there are mistaken unit descriptions in Table 1. The corrected Table 1 is attached. The concentration unit ($\mu\text{g}/\text{m}^3$) for the calibration plot had been mistakenly described as “ mg/m^3 ”. In addition, zero concentration (concentration of blank measurement) is added to the range of each calibration plot, and accordingly, the calibration point is incremented by one. The authors would like to apologize for any inconvenience and misunderstanding caused by these errors.

Published: March 23, 2015



Table 1. Detection Performance of CFI-APCI-ITMS in Real-Time (1 s) for Gaseous, Volatile, And Nonvolatile Chemical Warfare Agents and a Precursor in Air

agent	ion monitored			calibration plot			LOD ^a ($\mu\text{g}/\text{m}^3$)	STEL/TWA ^b ($\mu\text{g}/\text{m}^3$)	TWA ^c (ppb)	LC ₅₀ ^d (mg/m ³)	false positive rate by gasoline vapor ^{e,f}
	polarity	transition (<i>m/z</i>)	assignment	range ($\mu\text{g}/\text{m}^3$)	point	R ²					
nerve gas	GB	141 → 99 → 97	MH ⁺	0, 0.16–3.1	6	0.988	0.58	0.1/0.03	0.02	70–100	ND
		99 → 97 → 79	[M – C ₃ H ₅] ⁺	0, 3.1	2	1.000	0.0076				ND
	GD	183 → 99 → 97	MH ⁺	0, 0.15–7.3	8	0.9596	4.3	(–)/0.03	0.004	70–100	ND
nerve gas		99 → 97 → 79	[M – C ₆ H ₁₁] ⁺		8	0.999	0.29				ND
	GF	181 → 99 → 97	MH ⁺	0, 0.065–3.2	8	0.9997	0.22	0.05/0.03	0.01	70–100 ^e	ND
		99 → 97 → 79	[M – C ₆ H ₉] ⁺	0, 0.065–3.2	8	0.9977	0.041				ND
nerve gas	GA	163 → 135	MH ⁺	0, 0.50–10	6	0.9968	0.028	0.1/0.03	0.02	300	0.0029
		163 → 135 → 126	MH ⁺			0.9983	0.0024				ND
	VX	268 → 128 → 86	MH ⁺	0, 0.057–2.9	8	0.9639	1.7	0.01/0.001	0.0009	30	ND
precursor	RVX	268 → 100 → 72	MH ⁺	0, 0.57–2.9	5	0.9852	1.3			40 ^f	ND
	DF	101 → 99 → 97	MH ⁺	0, 0.14–2.9	6	0.9942	1.5				ND
	HD	175 → 77	[M + O + H] ⁺	0, 1.5–30	6	0.9994	0.63	3/0.4		1 500	ND
blister agent	L1	185 → 123	[M – 2Cl + 3O + H] [–]	0, 1.0–9.5	6	0.9840	0.66	(–)/3		1 200–1 500	ND
	HN1	170 → 142 → 106	MH ⁺	0, 0.13–2.6	6	0.999	0.053	(–)/3	0.4	1 500	ND
	HN2	156 → 120 → 92	MH ⁺	0, 0.16–3.3	6	0.9996	0.11			3 000	ND
vomitor agent	HN3	204 → 106 → 70	MH ⁺	0, 0.18–3.5	6	0.9981	0.31			1 500	ND
	DA	265 → 229 → 227	MH ⁺	0, 0.3–2.7	6	0.9288	0.12			15 000	ND
	DC	256 → 229	MH ⁺	0, 0.2–1.25	5	0.9952	0.030			10 000	ND
lachrymator	DM	242 → 167 → 139	[M – Cl] ⁺	0, 5.7–29	4	0.9924	6.1			10 000	ND
	CN	155 → 77 → 49	MH ⁺	0, 0.14–2.9	6	0.9986	0.11	(–)/300	43	7 000	ND
	CS	189 → 162 → 127	MH ⁺	0, 0.14–2.9	6	0.9931	0.43			61 000	ND
blood agent	OC	306 → 137 → 122	MH ⁺	0, 0.14–2.9	6	0.9958	0.15				ND
	AC	26	[M – H] [–]	0, 4.3–71	6	0.9231	2.3	5 000/11 000	100 000	4 500	ND
	CK	42	[M + O – Cl] [–]	0, 3.3–670	7	0.9903	6.6			11 000	ND
choking agent	CL	70 → 35	M [–]	0, 2.2–220	6	0.9916	2.3	2 900/1 500	1 500	21 000 ^g	ND
	CG	70 → 35	Cl ₂ [–]	0, 3.1–310	8	0.996	23	(–)/400			ND
		35	Cl [–]			0.9976	14				ND
PS	–	128 → 46	[M – Cl] [–]	0, 170–1700	3	0.9994	540	(–)/700	100	2 200 ^g	ND

^aDefined as the concentration giving the ion signal of $3 \times \sigma_{\text{BG}}$, where σ_{BG} is the standard deviation of the background signal measured for the laboratory air. ^bShort-term exposure limit/time-weighted average (in reference 46). ^cTime-weighted average (in reference 44). ^d50% lethal concentration for 1 min exposure for humans (in reference 1 except for GF^{h,i}, RVX^{h,i}, CL^{h,i}, and PS^{h,i}). ^eAssumed to be same as that for GD. ^fReference 43. ^gReference 43. ^hFalse-positive rate by gasoline vapor [$\mu\text{g}/\text{m}^3$ of CWA]/($\mu\text{g}/\text{m}^3$ of gasoline)]; ND: not detected.