Analytical and Bioanalytical Chemistry

Electronic Supplementary Material

The strength in numbers: comprehensive characterization of house dust

using complementary mass spectrometric techniques

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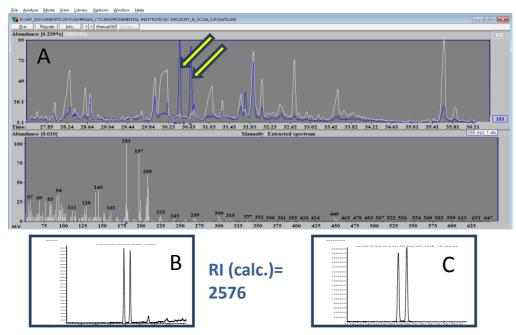


Fig. S1 Tentative identification of cyhalothrin in house dust extract. A) Total ion chromatogram (TIC), electron ionization (EI) spectrum, and base peak chromatogram (m/z 181). The base peak chromatogram displays two peaks, indicated with yellow arrows that were tentatively identified as cyhalothrin isomers. B) Positive chemical ionization (PCI) mass fragmentogram of cyhalothrin pseudo-molecular ions (m/z 449.7). C) Negative chemical ionization (NCI) mass fragmentogram of a characteristic cyhalothrin fragment (m/z 240.7), demonstrating an excellent signal-to-noise ratio as a result of high response in NCI because of the presence of halogens (at m/z 240.7)

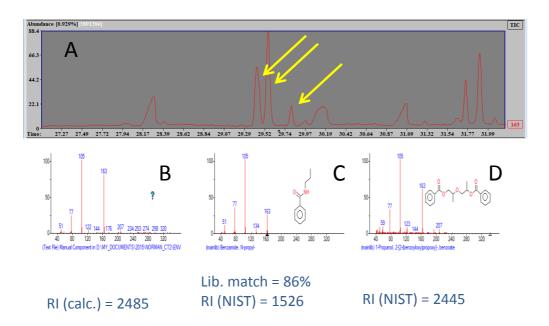


Fig. S2 Tentative identification of dipropyleneglycol dibenzoates in house dust extract. A) Extracted ion chromatogram (m/z 163) with three peaks labelled with yellow arrows. B) Manually extracted spectrum of one of the three peaks (all spectra very similar). C) NIST electron ionization (EI) spectrum of the best matching compound N-propyl benzamide (match 86%). D) Electron ionization (EI) spectrum of an alternative compound dipropyleneglycol dibenzoate; obtained after applying constraints. The retention index (RI) of sample constituent "B" and the two NIST entries are shown below each spectrum

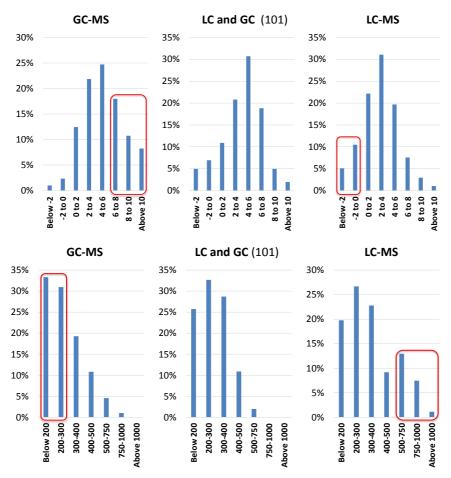


Fig. S3 Lipophilicity distribution (top row) and size distribution of (tentatively) identified compounds in house dust

Table S1a Information about the compounds used for the calculation of RTI for the LC-MS techniques. LogP was calculated using ChemAxon

Substance name	LogP
Metformin	-1.36
Chloridazon	1.11
Carbetamide	1.65
Monuron	1.93
Metobromuron	2.24
Chlorbromuron	2.85
Metconazole	3.59
Diazinon	4.19
Quinoxyfen	4.98
Fenofibrate	5.28

Table S1b Information about the compounds used for the calculation of RTI for the LCMS techniques (TrAMS RTI model)

Type of calibrant	Substance name	CAS number		
ESI+	Guanylurea	141-83-3		
ESI+	Amitrol	61-82-5		
ESI+	Histamine	51-45-6		
ESI+	Chlormequat	999-81-5		
ESI+	Methamidophos	10265-92-6		
ESI+	Vancomycin	1404-90-6		
ESI+	Cefoperazone	62893-19-0		
ESI+	Trichlorfon (Dylox)	52-68-6		
ESI+	Butocarboxim	34681-10-2		
ESI+	Dichlorvos	62-73-7		
ESI+	Tylosin	1401-69-0		
ESI+	TCMTB	21564-17-0		
ESI+	Rifaximin	80621-81-4		
ESI+	Spinosad A (Spinosyn A)	131929-60-7		
ESI+	Emamectin B1a	121124-29-6		
ESI+	Avermectin B1a (Abamectin)	71751-41-2		
ESI+	Nigericin	28380-24-7		
ESI+	Ivermectin B1a	70288-86-7		
ESI-	Amitrole	61-82-5		
ESI-	Benzoic acid	65-85-0		
ESI-	Acephate	30560-19-1		
ESI-	Salicylic acid	69-72-7		
ESI-	Simazine 2-Hydroxy	2599-11-3		
ESI-	Tepraloxydim	149979-41-9		
ESI-	Bromoxynil	1689-84-5		
ESI-	MCPA	94-74-6		
ESI-	Valproic acid	99-66-1		
ESI-	Phenytoin	57-41-0		
ESI-	Flamprop	58667-63-3		
ESI-	Benodanil	15310-01-7		
ESI-	Dinoterb	1420-07-1		
ESI-	Inabenfide	82211-24-3		
ESI-	Coumaphos	56-72-4		
ESI-	Triclosan	3380-34-5		
ESI-	AvermectinB1a (Abamectin)	65195-55-3		
ESI-	Salinomycin	53003-10-4		

Table S2 Information about the LC-MS equipment and LC conditions used by the participants in the collaborative trial

Participant	Instrument and model	Column	Dimensions	Solvent	Injection	Flow (ml/min);
number					(µL)	run time (min)
Lab 1	Agilent 6550	Agilent Poroshell 120 SB-C18	3.5 μm	positive mode: A= 0.1% FA, B= ACN, 0.1% FA	2	0.4; 55
	Q-TOF		2.1x50mm	negative mode: A= 0.1% AcA, B= ACN, 0.1% AcA		
Lab 2	Agilent 6560	Phenomenex	2.6 µm	A= 0.1% FA	1	0.5; 60
	IM-QTOF		2.1x150mm	B= MeOH, 0.1% FA		
Lab 4	Agilent 6530	Zorbax Eclipse Plus C18	1.8 μm	positive mode: A= 0.1% FA, B=ACN, 0.1% FA	10	0.35; 22
	Q-TOF		2.1x100mm	Negative mode: A= 1mM NH4F B=ACN		
Lab 5	Agilent 6550	Acquity HSS T3	1.8 μm	A= 10nM NH4Ac, pH 4.7 FA	50	0.4; 20
	Q-TOF		2.1x50mm	B= MeOH		
Lab 6	Bruker Maxis Impact	Acclaim RSLC C18	2.2 μm	A= 10% MeOH, 0.01% FA, 5mM ammonium formate	5	0.2-0.48; 20
			2.1x100mm	B= MeOH, 0.01% FA, 5mM ammonium formate		
Lab 7	Agilent 6550	Waters Acquity HSS T3	1.8 μm	A= water	3	0.3, 30
	Q-TOF		2.1x150	B= MeOH		
Lab 8	Exactive	Agilent, Poroshell C18	2.7 μm	A= water, B= ACN	5	0.2; 40
	Orbitrap LC-MS		2.1x50mm	C= Isopropanol		
Lab 9	Agilent 6550	Phenomenex Kinetex-EVO C18	2.6 µm	A= 10mM NH4Ac	2	0.4; 25
	Q-TOF		2.1x100mm	B= MeOH		
Lab 10	Waters XEVO G2 QTOF	Waters	3.5 μm	A= 0.01% FA	20	0.3; 14
		Cortecs C18	2.1x100mm	B= MeOH, 0.01% FA		
Lab 11	Agilent 6545 QTOF	Agilent Poroshell 120 Phenyl-	2.7 um	A = 1 mM NH4F	5	0.4; 16
		Hexyl	3.0x100mm	B = MeOH		
Lab 12	Q Exactive HF	Hypersil GOLD aQ (Thermo)	1.9 µm	A= 0.1% FA,	5	0.4; 10
	Orbitrap	C18 (aq)	2.1x100mm	B= ACN, 0.1% FA		
Lab 13	Agilent 6530	Phenomenex	2.6 µm	A= 0.04% FA, pH 2.6	2	0.4; 25.5
	Q-TOF	Kinetex Biphenyl	2.1x100mm	B= 95 % ACN, 5 % A		
Lab 14	Bruker micro TOF II	GL Sciences InertSustain C18	3.5µm	A: water	0.3	
			2.1x100mm	B: MeOH		
Lab 15	Q Exactive Focus	Thermo Accucore C18	2.6 μm	A= 10mM HOAc	2	0.3; 21
	Orbitrap		2.1x50mm	B= MeOH		
Lab 16	Agilent 6540	Phenomenex Kinetex C18	1.7 μm	positive mode: A= 0.1% FA, B= ACN, 0.1% FA	2	0.3; 47
	Q-TOF		2.1x100mm	negative mode: A=water; B=ACN		
Lab 17	Agilent 6550	Waters Acquity UPLC BEH	1.7µm	A= 10%MeOH, 0.1% FA	2	0.3; 22.5
	Q-TOF	C18	2.1x100mm	B= MeOH, 0.1%FA		
Lab 18	Agilent 6530	Zorbax Eclipse Plus C18	1.8 µm	A= 5mM NH4Ac	2	0.3; 45
	Q-TOF		2.1x100 mm	B = 5mM NH4Ac in MeOH		
Lab 19	Agilent 6230	C18 and Zic-HILIC	5 μm, 2.1x150mm	A= CAN, B= water (HILIC),	10	0.05 (C18);
	TOF		(HILIC), 2.7 μm	A= 90% 10mM NH4Ac: 10% ACN, B= 90% ACN:		0.4 (HILIC)
			3.0x50mm (C18)	10% 10mM NH4Ac (C18)		
Lab 20	AB Sciex Triple TOF	Agilent Zorbax XDB C18	ESi+: 1.8 μm, 2.1x100mm	positive mode: A= 0.1% FA, B= MeOH, 0.1% FA	ESI+: 5	ESI+: 0.4,
	5600		ESI-: 1.8 μm, 4.6x50mm	negative mode: A= 1% MeOH, 5nM NH4Ac	ESI-: 10	16.50
				B= 95% MeOH, 5mM NH4Ac		ESI-: 10

Table S3 Information about the MS conditions and workflows used by the LC-MS participants in the collaborative trial

Participant	Scan Range	Resolution	Ionization	Fragmentation	Target Software	Suspect, NT procedure
number				method		
Lab 1	110-1100	42,000 (m/z=922)	ESI	NA (MS only)	Mass Hunter	Mass Hunter, in-house library, Find by formula
Lab 2	50-1700	40,000 (m/z=922)	ESI	CID	Mass Hunter	Mass Hunter, Forensic Tox, Melin, in-house library
Lab 4	50-1050	10,000 (m/z=600)	ESI	CE	Agilent Mass Hunter Quant	Agilent Mass Hunter Qual, MS, MS/MS library, MS/MS prediction, correlation RT vs. log D (Jchem), R2=0.70, Agilent Molecular Structure Correlator
Lab 5	100-1000	Ca 40,000	ESI	CID	Mass Hunter Suite	PCDL Forensic & Tox and Pesticides, MetFrag, MassFrontier
Lab 6	50-1000	35,000 (m/z=500)	ESI	CID	TASQ 1.0	xcms+nontarget R-packages
Lab 7	100-1700	12,000 (m/z=119)	ESI	CID	Mass Hunter	Mass Hunter, Agilent Forensic Tox, NILU suspect database
Lab 8	120-1200	100,000 (m/z=200)	ESI		Xcalibur	ExactFinder
Lab 9	50-1700	25,000 (m/z=1000)	ESI	CID	Mass Hunter	Mass Profiler
Lab 10	50-1000	20,000 (m/z=556)	ESI	CID	ChromaLynx XS	MS, RT, MSE, prediction, MassFragment, MetFrag, Mass Frontier
Lab 11	20-1700	21,000 (m/z 622)	ESI	NA (MS only)	Mass Hunter	Metlin, In-house library
Lab 12	100-1000	120,000 (m/z=200)	ESI	HCD	Xcalibur	Compound Discoverer, mzCloud and MetFrag
Lab 13	59-1100	10,000 (m/z=200)	ESI	CID	Mass Hunter	Mass Hunter Qual, METLIN, MetFrag, manual fragmentation
Lab 14	100-1000	16,500	ESI		Target Analysis (Bruker)	RT prediction on logP, number of references in Chemspider
Lab 15	75-1000	70,000 (m/z=200)	ESI	AIF	Trace Finder	
Lab 16	50-1000	12,000 (m/z=113) 21,000 (m/z=602)	ESI	CID	Mass Hunter	Mass Hunter, Forensic Tox, Melin, MassBank, MetFrag, Pesticides
Lab 17	50-1000	Ca 40,000	ESI, APCI, APPI			
Lab 18	100-1500	Ca 10,000	ESI	NA	Mass Hunter Qual	
Lab 19		10,000 (m/z 1700)	ESI	NA	NA	Profinder, STOFF-IDENT
Lab 20	100-1000	30,000 (m/z=956)	ESI	CID	PeakView (MasterView)	isotopic pattern, distribution, double bonds and rings, different chemical DBs (chemspider etc)

Table S4 Information about the GC-MS equipment and GC conditions used by the participants in the collaborative trial

Lab	Instrument and model	Column ^a	Dimensions	Injection	Temperature program	Carrier	IS ^b
				Volume		gas/flow	
						(ml/min)	
ab 1	Agilent 7000A	DB-PAH	30 m, 0.25 mm, 0.15 μm	SSL	50C (2min)-2.35C/min-310C (8 min)	Не	D8-NAPH, D10-ACEN/PHEN, D12-
	GC-QQQ			2 μL		1.0	PER/CRYS
Lab 2	EI: Leco Pegasus 4D	Rtx-5sil ms	30 m, 0.25 mm, 0.25 μm	SSL	35C (1 min)-4C/min-310C (3 min)	Не	D10-PHEN
	GC×GC-QTOF	BPX-50	2 m, 0.18 mm, 0.18 μm	1 μL	60C (1 min)-4C/min-335C (3 min)	1.0	
	CI:Agilent 7200B	DB-5ms UI	30 m, 0.25 mm, 0.25 μm		90(1)-4C/min-310C (3 min)	He	
	GC-QTOF					0.8	
Lab 3	Waters Xevo G2-XS	Rtx-5	60 m, 0.25 mm, 0.25 μm	SSL	90C (2 min)-40C/min-200C-	Не	¹³ C-PBDE mix
	GC×GC-QTOF	Rtx-17	1 m, 0.15 mm, 0.15 μm	1 μL	2.8C/min-330C (5min)	2.0	
Lab 4	Agilent 7200B	DB-5ms UI	30 m, 0.25 mm, 0.25 μm	SSL	35C(3 min)-4C/min-325 (3 min)	Не	DBOFB
	QTOF			1 μL		1.0	
Lab 5	Agilent 5795C	DB-5ms	30 m, 0.25 mm, 1.00 μm	LVI,	50C (2min)-8C/min-320C (10 min)	H_2	D10-chlorpyrifos
	GC-MS			20 μL		1.8	D10-PHEN
Lab 7	Agilent 7200 Q-TOF	HP-5MS UI	30 m, 0.25 mm, 0.25 μm	PTV	45(2 min)- 310°C	He	-
	GC 7890B			1μ1		1.2	
Lab 8	Agilent 7200	DB-5ms	30 m, 0.25 mm, 0.25 μm	SSL	40C (1 min)-5C/min-310C (25 min)	He	D14-Terphenyl
	GC-QTOF			1 μL		1.0	
Lab 9	Agilent 5793	EI: ZB-volatiles	30 m, 0.25 mm, 0.50 μm	PTV	EI: 40C (5 min)-5C/min-320C (5 min)	Не	Deuterated mix: nitro-PAH and quinone
	GC-MS	NCI: Rxi-PAH	30 m, 0.25 mm, 0.1 μm	1 μL	NCI: 70C (5 min)-45C/min-190C-	1.2	PAH
					5C/min-320 (5 min)		
Lab 10	Xevo G2, GC-QTOF	DB-5ms	30 m, 0.25 mm, 0.25 μm	SSL	90C (0 min)-5C/min-315C (4 min)	H ₂ , 2.0	D8-DDT
	Shimadzu 2010, GC-MS	DB-5ms	30 m, 0.25 mm, 0.25 μm	1 μL	60C (3 min)-10C/min-240C-30C/min-	H_2 , 2.0	
			15 m, 0.25 mm, 0.10 μm		320 (5 min)		
	Waters TSQ, GC-QQQ	DB-HT1			140C (1 min)-10C/min-200C-	H_2 , 4.0	
					20C/min-300C-40C/min-350C		
					(1 min)		
Lab 13	Agilent 7200	HP-5ms	30 m, 0.25 mm, 0.25 μm	SSL	90C (2 min)-20C/min-200C-5C/min-	He	_
	GC-QTOF			1 μL	290C (32 min)	1.0	
Lab 16	Agilent 7200	Rtx-1614	30 m, 0.25 mm, 0.10 μm	SSL	50C (2 min)-2C/min- 310C (10 min)	Не	-
	GC-QTOF			1 μL		1.0	
Lab 17	GC-Q Exactive	TG-5sil-ms	30 m, 0.25 mm, 0.25 μm	SSL	80C (1 min)-7C/min-310C (2 min)	Не	-
	GC-Orbitrap			1 μL		1.0	
Lab 18	Agilent 7000C	DB-5ms	15 m, 0.25 mm, 0.10 μm	On-column	100°C (1 min)-10°C/min-310°C	Не	¹³ C-PBDE mix
	GC-QQQ			2 μL	(10 min)	1.0	
Lab 20	Thermo TSQ	DB-5ms	30 m, 0.25 mm, 0.25 μm	SSL	80C (2 min)-20C/min-180C-10C/min-	H_2	DCDD
	GC-QQQ			1 μL	300C (10 min)	1.0	

GC-QQQ 1 μL 300C (10 min)

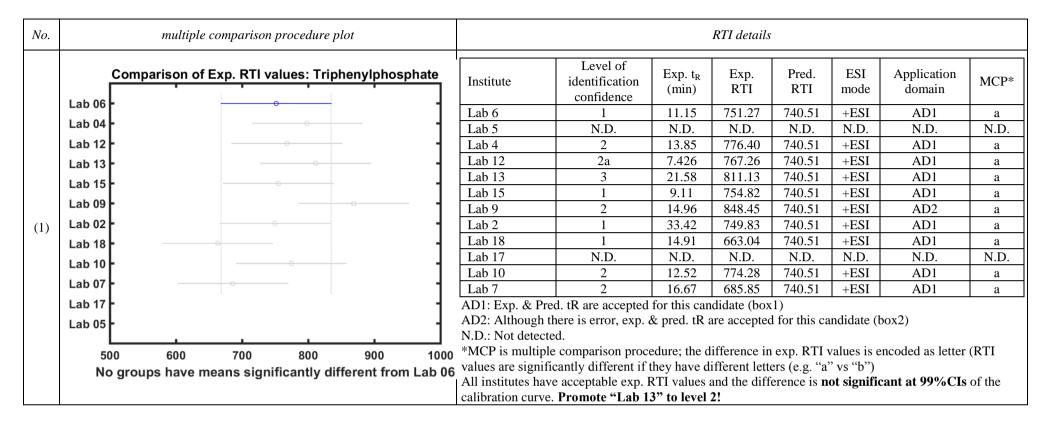
a Column manufactures: DB: J&W, HP: Agilent, Rtx: Restek, BPX: SGE, TG: Thermo, ZB: Phenomenex,

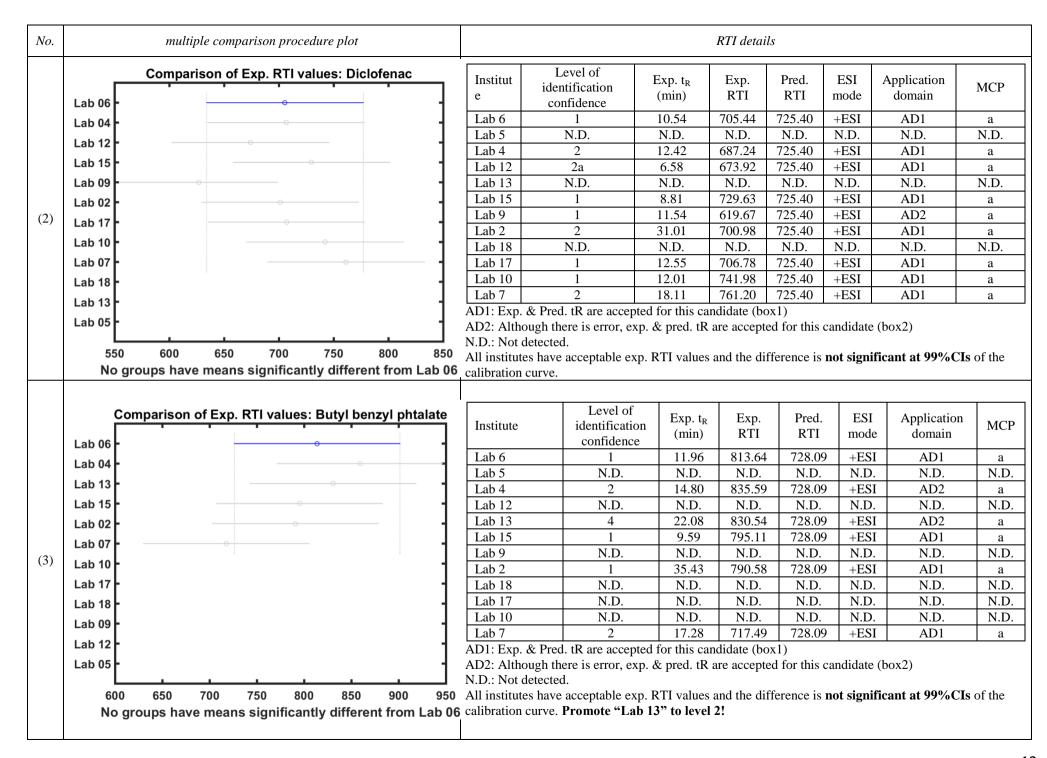
Abbreviations: PHEN: Phenanthrene, ACEN: Acenaphthalene, Per: Perylene, CRYS: Crysene, DBOFB: 4,4'-dibromo-octaflurobiphenyl.

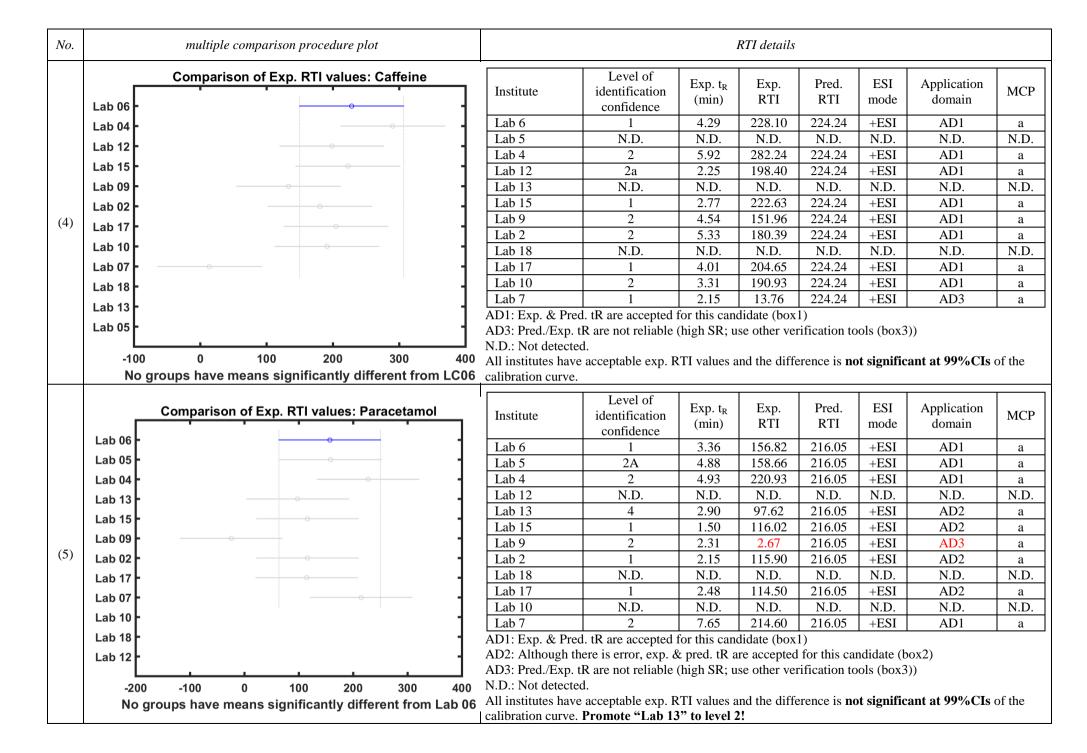
Table S5 Information about the MS conditions and workflows used by the GC-MS participants in the collaborative trial

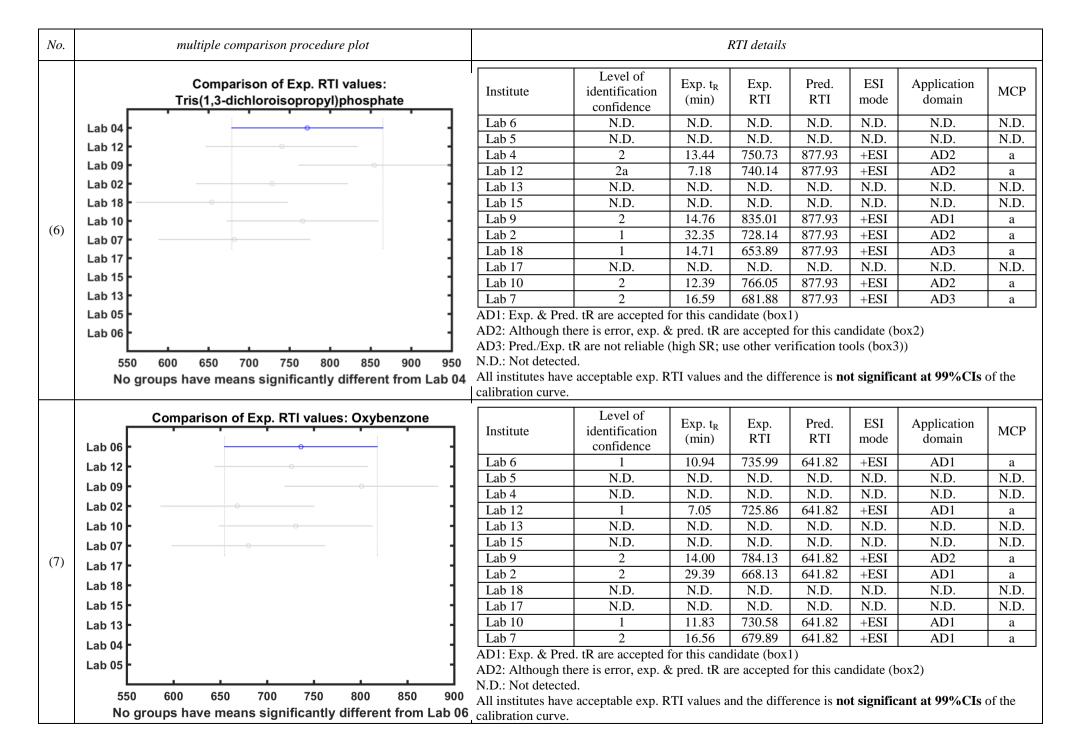
Lab	Mass Range	Resolution,	Ionization	Target Software	Suspect, NT procedure	RI mixture
		mass				
		accuracy				
Lab 1	50-600	Unit	EI	Mass Hunter	Mass Hunter, manual interpretation	Yes
Lab 2	29-750	Unit	EI	-	ChromaTOF, NIST14, manual interpretation, RI matching, RT correlation,	Yes
	30-1000	12,000	CI(-)	-	Chemspider	
		5 ppm			Masshunter, Br and Cl detection, full-spectrum extraction, manual review, RI	
					matching, Chemspider	
Lab 3	50-1200	25,000	APCI(+)	-	GCImage v2.5	No
		5 ppm	APCI(-)			
Lab 4	50-1050	8,400	EI	Mass Hunter Quantitative	Masshunter Qualitative incl. Unknown Analysis, RI matching	Yes
		15 ppm				
Lab 5	45-800	Unit	EI, CI(+) and	Chemstation, Amdis,	Library search, RI matching, manual interpretation	Yes
			CI(-) (CH ₄)	NIST14		
Lab 7	50-1000	2ppm, 16-	EI	Mass Hunter Quantitative	Mass Hunter Unknown Analysis, Library Search (NIST 17, Agilent Pesticides),	Yes
		17000			manual interpretation, RI matching	
		FWHM				
Lab 8	50-750	10,000	EI	Mass Hunter	Mass Hunter, manual interpretation	Yes
		5 ppm				
Lab 9	EI: 50-800	Unit	EI,	Chemstation	Chemstation, Amdis, NIST11	Yes
	NCI: 50-400		CI(-)			
Lab 10	QTOF: 50-650	12,000	APCI	Chromalynx, Shimadzu	Chromalynx, PARAFAC, NIST search, manual interpretation	Yes
	GC-MSD: 50-650	Unit	EI	GCMSsolution		
	GC-QQQ: MRM	Unit	APCI			
Lab 13	50-1000	8,000	EI	-	Masshunter, NIST	Yes
		20 ppm				
Lab 16	50-1000	8,000	EI	-	Masshunter Qualitative incl. Unknown Analysis, NIST, manual interpretation	Yes
		10 ppm				
Lab 17	66-1000	60,000	EI	Tracefinder,	-	No
		10 ppm		In-house library		
Lab 18	MRM	Unit	EI	Mass Hunter Quant	-	Yes
						(C16-C30)
Lab 20	50-700	Unit	EI	_	NIST search	Yes

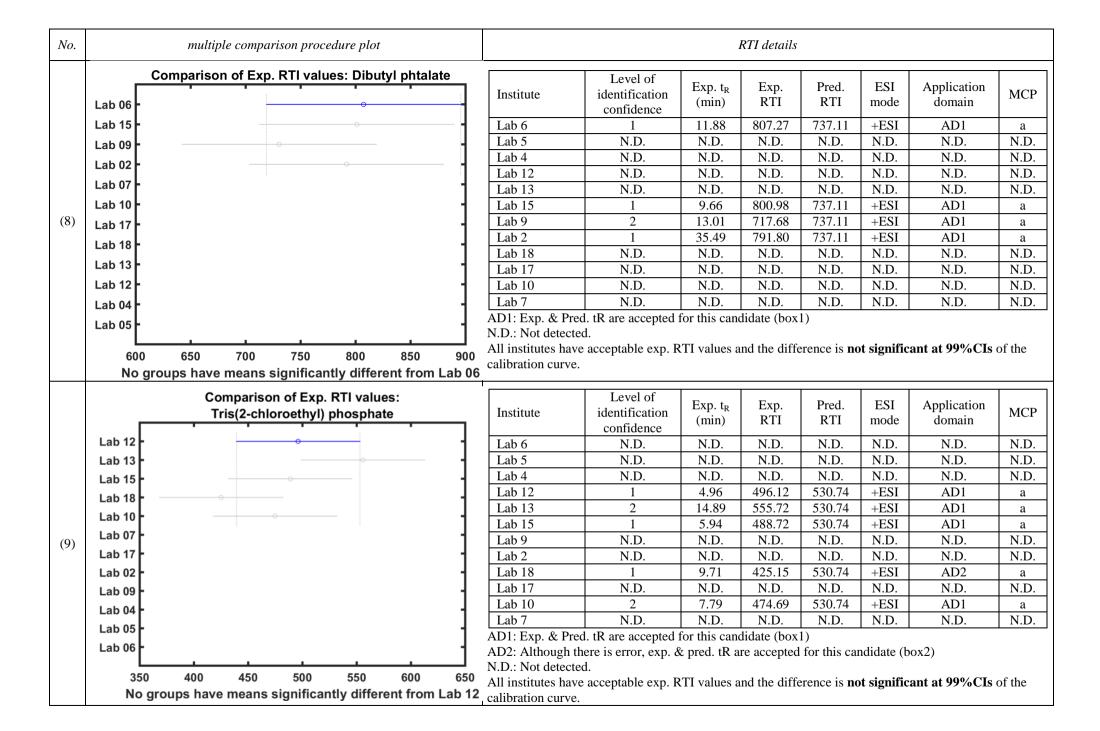
Table S6 Practical application of RTI for improving identification of emerging pollutants

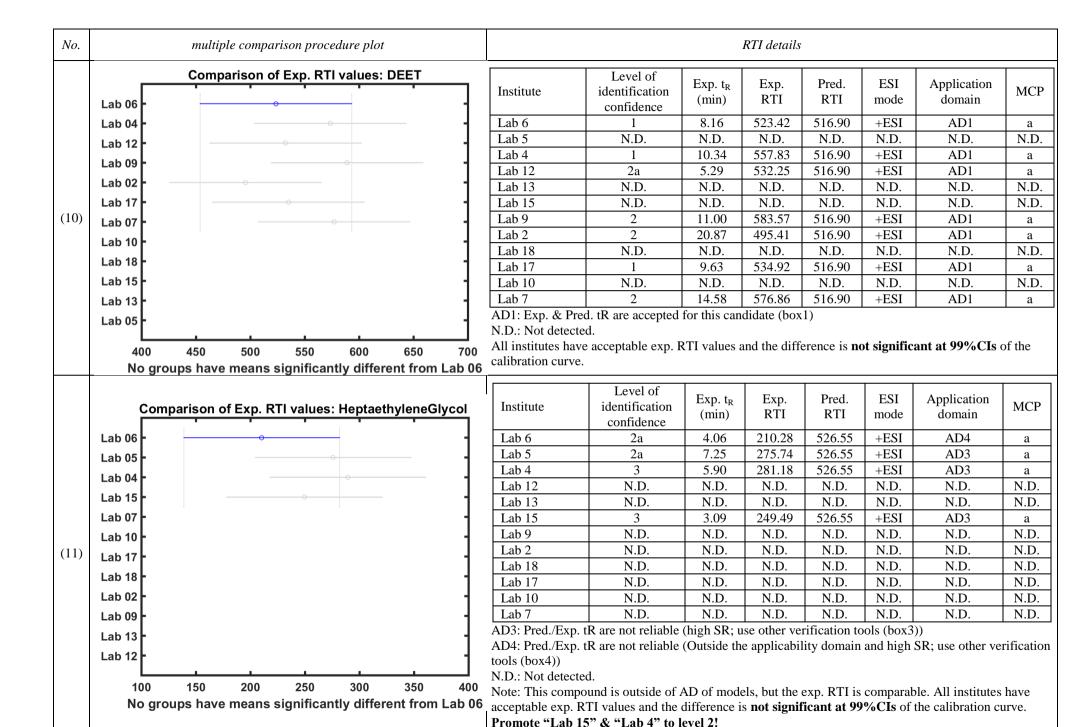


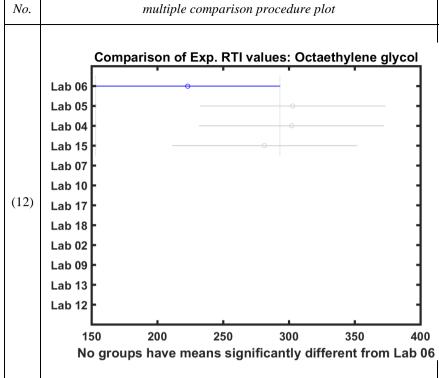












Institute	Level of identification confidence	Exp. t _R (min)	Exp. RTI	Pred. RTI	ESI mode	Application domain	МСР
Lab 6	2a	4.23	223.01	540.33	+ESI	AD4	a
Lab 5	2a	7.80	302.91	540.33	+ESI	AD3	a
Lab 4	3	6.10	293.64	540.33	+ESI	AD3	a
Lab 12	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Lab 13	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Lab 15	3	3.47	281.39	540.33	+ESI	AD3	a
Lab 9	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Lab 2	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Lab 18	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Lab 17	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Lab 10	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.

AD3: Pred./Exp. tR are not reliable (high SR; use other verification tools (box3))

N.D.

AD4: Pred./Exp. tR are not reliable (Outside the applicability domain and high SR; use other verification tools (box4))

N.D.

N.D.

N.D.

N.D.

N.D.

N.D.: Not detected.

Lab 7

Note: This compound is outside of AD of models, but the exp. RTI is comparable. All institutes have acceptable exp. RTI values and the difference is **not significant at 99%CIs** of the calibration curve.

Promote "Lab 15" & "Lab 4" to level 2!

N.D.

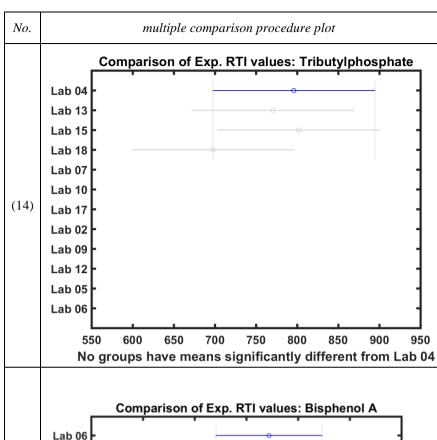
			Co	mpariso	n of Exp.	. RTI valu	es: (-)-cc	odeine	
		Lab 06	-		•	•			7
		Lab 04	-						4
		Lab 12	-				_		4
		Lab 17							+
		Lab 07	-						-
		Lab 10	-						4
	(13)	Lab 18	-						4
		Lab 02	-						+
		Lab 09	-						+
		Lab 15	-						4
		Lab 13	-						+
		Lab 05	-						+
		5	0	100	150	200	250	300	350
		No	groups	s have m	eans sig	nificantly	differen	t from La	b 0

Institute	Level of identification confidence	Exp. t _R (min)	Exp. RTI	Pred. RTI	ESI mode	Application domain	МСР
Lab 6	1	3.56	172.00	163.83	+ESI	AD1	a
Lab 5	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Lab 4	2	5.44	252.27	163.83	+ESI	AD1	a
Lab 12	2a	2.08	179.95	163.83	+ESI	AD1	a
Lab 13	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Lab 15	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Lab 9	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Lab 2	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Lab 18	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Lab 17	3	2.57	119.95	163.83	+ESI	AD1	a
Lab 10	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Lab 7	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.

AD1: Exp. & Pred. tR are accepted for this candidate (box1)

N.D.: Not detected.

All institutes have acceptable exp. RTI values and the difference is **not significant at 99%CIs** of the calibration curve. **Promote "Lab 17" to level 2!**



Institute	Level of identification confidence	Exp. t _R (min)	Exp. RTI	Pred. RTI	ESI mode	Application domain	МСР
Lab 6	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Lab 5	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Lab 4	1	13.81	774.28	800.96	+ESI	AD1	a
Lab 12	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Lab 13	3	20.51	770.25	800.96	+ESI	AD1	a
Lab 15	1	9.67	801.82	800.96	+ESI	AD1	a
Lab 9	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Lab 2	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Lab 18	1	15.67	697.81	800.96	+ESI	AD2	a
Lab 17	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Lab 10	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Lab 7	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.

AD1: Exp. & Pred. tR are accepted for this candidate (box1)

AD2: Although there is error, exp. & pred. tR are accepted for this candidate (box2)

N.D.: Not detected.

All institutes have acceptable exp. RTI values and the difference is **not significant at 99%CIs** of the calibration curve. **Promote "Lab 13" to level 2!**

	_	Comparis	son of Ex	p. RTI va	lues: Bis	phenol A	<u> </u>
(15)	Lab 06 Lab 13 Lab 09 Lab 07 Lab 10 Lab 17 Lab 18 Lab 02 Lab 15 Lab 12 Lab 04 Lab 05	•			•		
	200	300	400	500	600	700	800
	The mean	s of group	os Lab 06	and Lab	13 are si	gnificant	ly differe

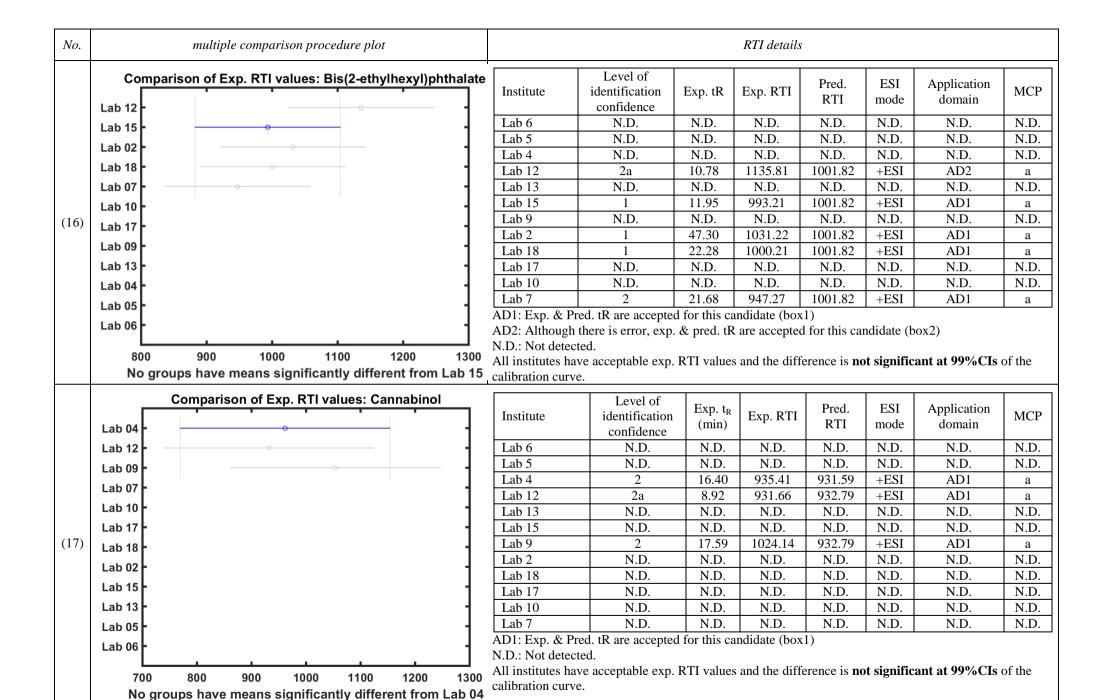
Institute	Level of identification confidence	Exp. t _R (min)	Exp. RTI	Pred. RTI	ESI mode	Application domain	МСР
Lab 6	1	8.42	543.50	679.28	+ESI	AD1	a
Lab 5	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Lab 4	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Lab 12	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Lab 13	4	8.33	304.97	679.28	+ESI	AD4	b
Lab 15	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Lab 9	1	11.65	626.76	679.28	+ESI	AD1	a
Lab 2	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Lab 18	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Lab 17	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Lab 10	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Lab 7	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.

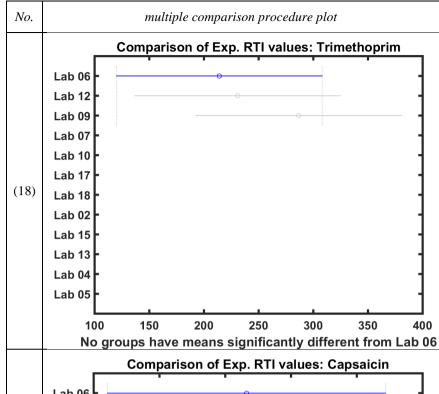
AD1: Exp. & Pred. tR are accepted for this candidate (box1)

AD4: Pred./Exp. tR are not reliable (Outside the applicability domain and high SR; use other verification tools (box4))

N.D.: Not detected.

All institutes have acceptable exp. RTI values and the difference is **not significant at 99%CIs** of the calibration curve with the exception of "Antwerp". **Don't increase the level of identification confidence from 4 to 2 for this compound in "Lab 13" data!** (It is most probably a false positive).





Institute	Level of identification confidence	Exp. t _R (min)	Exp. RTI	Pred. RTI	ESI mode	Application domain	МСР
Lab 6	1	4.11	214.10	276.11	+ESI	AD1	a
Lab 5	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Lab 4	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Lab 12	2a	2.54	230.69	254.91	+ESI	AD1	a
Lab 13	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Lab 15	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Lab 9	2	6.72	297.30	254.91	+ESI	AD1	a
Lab 2	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Lab 18	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Lab 17	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Lab 10	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.

AD1: Exp. & Pred. tR are accepted for this candidate (box1)

N.D.

N.D.: Not detected.

Lab 7

All institutes have acceptable exp. RTI values and the difference is **not significant at 99%CIs** of the calibration curve.

N.D.

N.D.

N.D.

N.D.

N.D.

N.D.

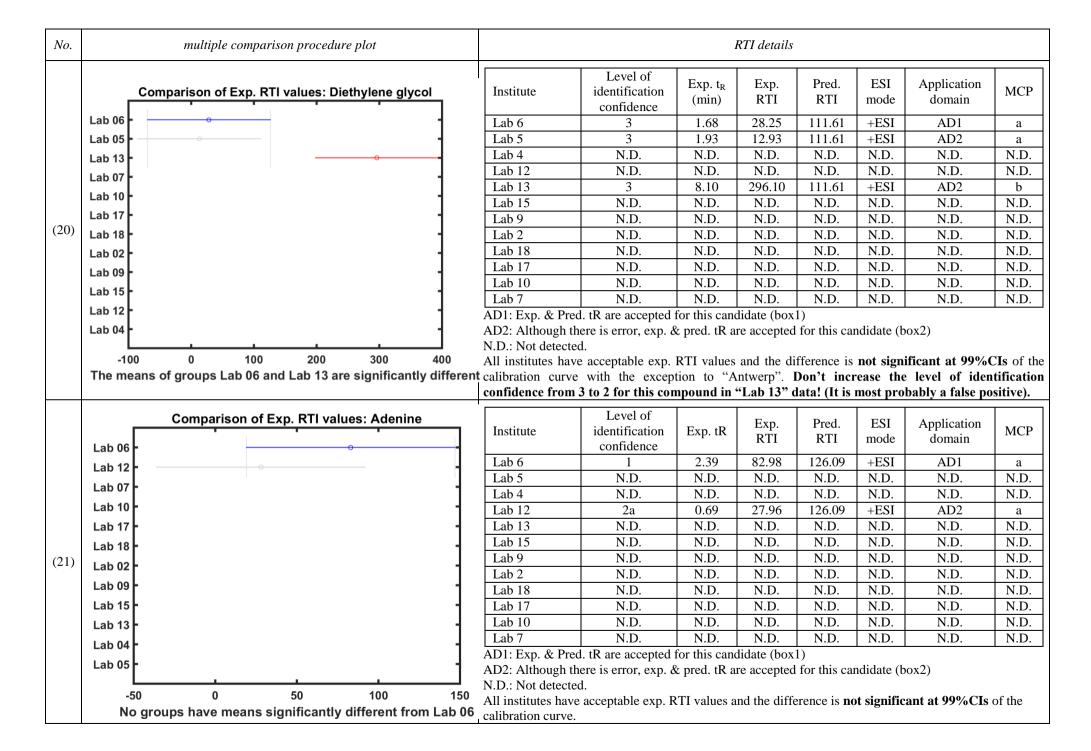
		Compariso	on of Exp. I	RTI values:	Capsaicin	
	Lab 06 -	•	•	•	•	4
	Lab 04					
	Lab 07					
	Lab 10					
	Lab 17					
	Lab 18					- 1
(19)	Lab 02					- 1
	Lab 09					- 1
	Lab 15					- 1
	Lab 13					- 1
	Lab 12					- 1
	Lab 05					
	550	600	650	700	750	800
	No gro	ups have m	eans signi	ficantly dif	ferent from	Lab 0

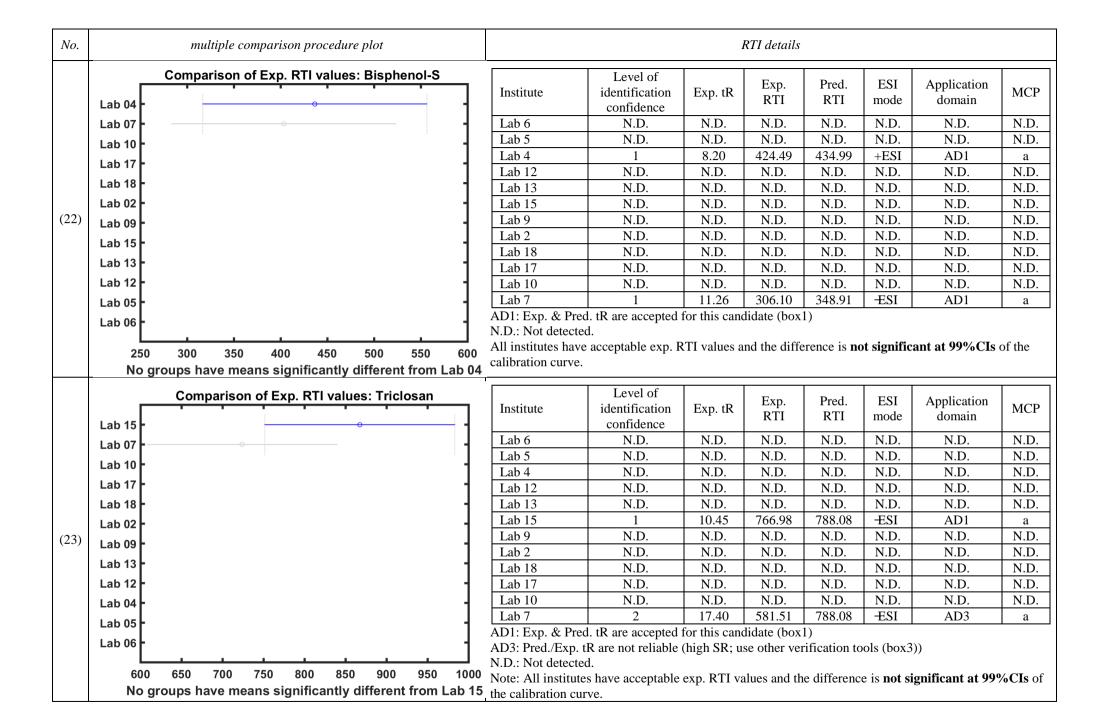
Institute	Level of identification confidence	Exp. t _R (min)	Exp. RTI	Pred. RTI	ESI mode	Application domain	МСР
Lab 6	1	10.03	666.17	655.26	+ESI	AD1	a
Lab 5	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Lab 4	2	11.89	654.47	655.26	+ESI	AD1	a
Lab 12	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Lab 13	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Lab 15	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Lab 9	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Lab 2	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Lab 18	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Lab 17	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Lab 10	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Lab 7	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.

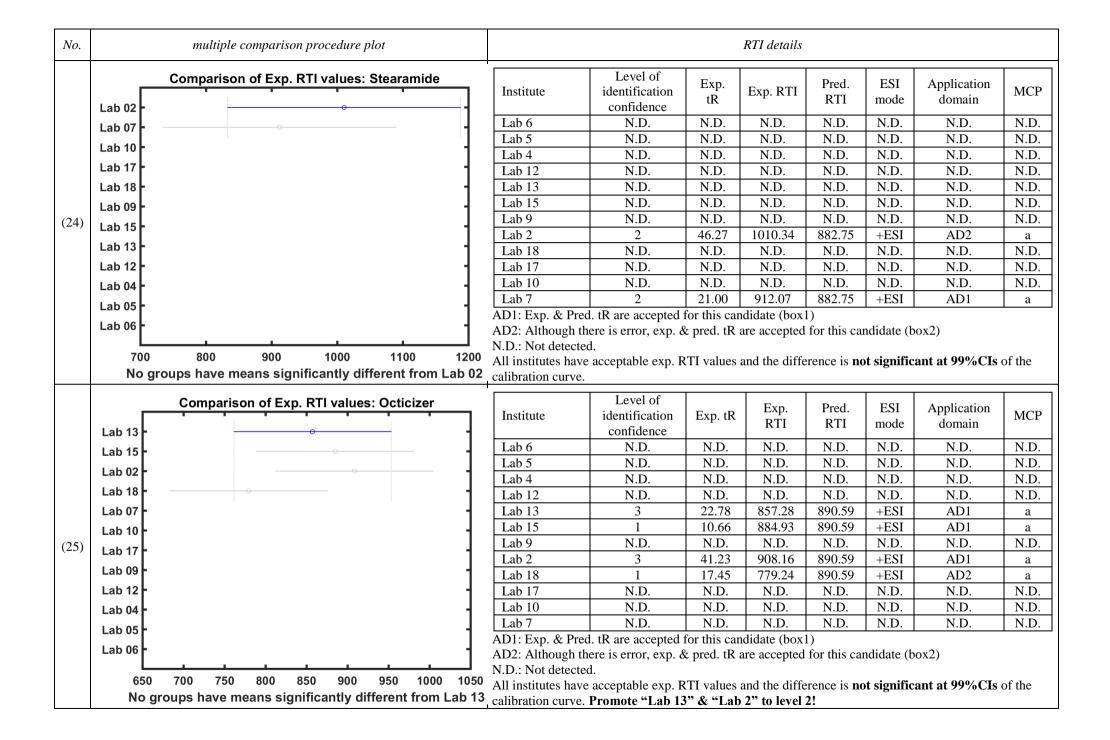
AD1: Exp. & Pred. tR are accepted for this candidate (box1)

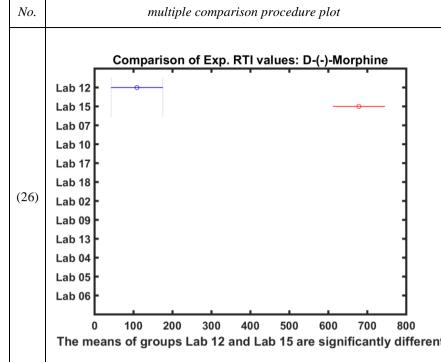
N.D.: Not detected.

All institutes have acceptable exp. RTI values and the difference is **not significant at 99%CIs** of the calibration curve.









Institute	Level of identification confidence	Exp. tR	Exp. RTI	Pred. RTI	ESI mode	Application domain	MCP
Lab 6	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Lab 5	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Lab 4	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Lab 12	2a	1.43	108.79	111.19	+ESI	AD1	a
Lab 13	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Lab 15	4	8.20	678.43	111.19	+ESI	AD4a	b
Lab 9	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Lab 2	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Lab 18	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Lab 17	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Lab 10	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.

AD1: Exp. & Pred. tR are accepted for this candidate (box1)

N.D.

AD4a: Pred./Exp. tR are not reliable (high SR; the LC method used is not well suited for this compound, it could be a false positive) (box4)

N.D.

N.D.

N.D.

N.D.

N.D.: Not detected.

Lab 7

The means of groups Lab 12 and Lab 15 are significantly different Note: This compound is false positive in "Lab 15" data, as the experimental and predicted RTI do not match comparing to "Lab 12" data which is at level of identification 2a.

	_	Comp	arison	of Exp	. RTI va	alues:	lmidac	loprid	_
	Lab 06 -			-				•	4
	Lab 04 -						0		- 1
	Lab 12 -								- 1
	Lab 15 -								- 1
	Lab 09 -								4
	Lab 17 -				-				- 1
(27)	Lab 10 -								- 1
	Lab 07 -								
	Lab 18 -								- 1
	Lab 02 -								- 1
	Lab 13 -								- 1
	Lab 05 -								- 1
	100	150	200	250	300	350	400	450	500
	No gr	oups h	ave m	eans si	gnifica	ntly di	fferent	from L	.ab 00

Institute	Level of identification confidence	Exp. tR	Exp. RTI	Pred. RTI	ESI mode	Application domain	МСР
Lab 6	1	4.74	262.47	248.89	+ESI	AD1	a
Lab 5	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Lab 4	1	7.55	383.99	248.89	+ESI	AD2	a
Lab 12	2a	3.30	314.37	248.89	+ESI	AD1	a
Lab 13	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Lab 15	4	3.36	272.15	248.89	+ESI	AD1	a
Lab 9	2	5.56	220.01	248.89	+ESI	AD1	a
Lab 2	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Lab 18	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Lab 17	3	5.23	276.40	248.89	+ESI	AD1	a
Lab 10	1	4.18	246.04	248.89	+ESI	AD1	a
Lab 7	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.

AD1: Exp. & Pred. tR are accepted for this candidate (box1)

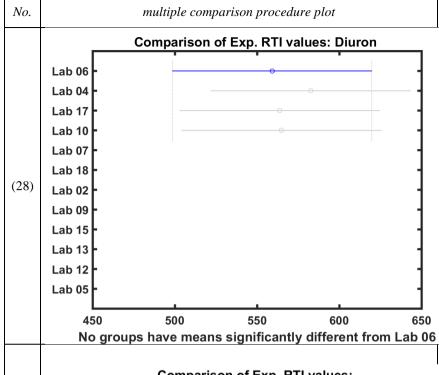
AD2: Although there is error, exp. & pred. tR are accepted for this candidate (box2)

N.D.: Not detected.

All institutes have acceptable exp. RTI values and the difference is **not significant at 99%CIs** of the calibration curve. **Promote "Lab 15" & "Lab 17" to level 2!**

N.D.

N.D.



Institute	Level of identification confidence	Exp. tR	Exp. RTI	Pred. RTI	ESI mode	Application domain	МСР
Lab 6	1	8.63	559.05	550.53	+ESI	AD1	a
Lab 5	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Lab 4	1	10.48	566.55	550.53	+ESI	AD1	a
Lab 12	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Lab 13	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Lab 15	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Lab 9	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Lab 2	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Lab 18	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Lab 17	1	10.11	563.60	570.79	+ESI	AD1	a
Lab 10	1	9.21	564.63	550.53	+ESI	AD1	a
Lab 7	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.

AD1: Exp. & Pred. tR are accepted for this candidate (box1)

N.D.: Not detected.

All institutes have acceptable exp. RTI values and the difference is **not significant at 99%CIs** of the calibration curve.

	Lab 06 -	•	•	•	•	
	Lab 05 -					
	Lab 04					
	Lab 12 -		0			
	Lab 15 -		0		_	
20)	Lab 07					
29)	Lab 10					
	Lab 17					
	Lab 18 -					
	Lab 02 -					
	Lab 09 -					

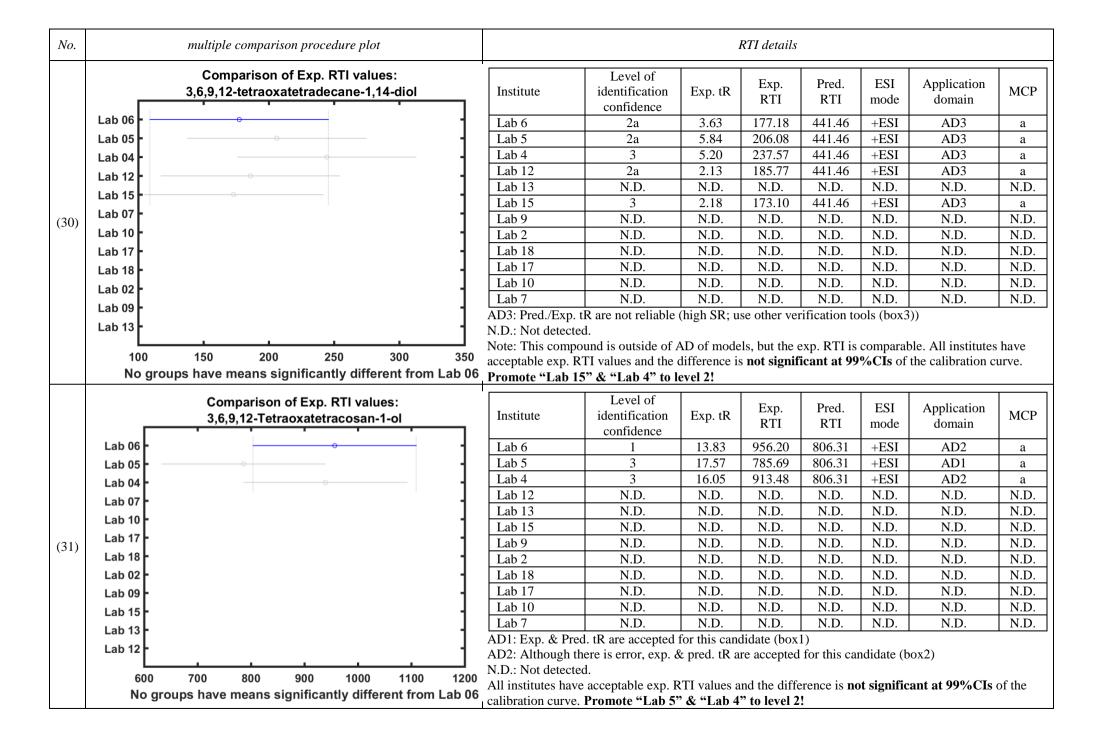
Institute	Level of identification confidence	Exp. tR	Exp. RTI	Pred. RTI	ESI mode	Application domain	МСР
Lab 6	2a	3.79	189.91	498.74	+ESI	AD4a	a
Lab 5	2a	6.63	245.11	498.74	+ESI	AD3	a
Lab 4	3	5.60	262.49	498.74	+ESI	AD3	a
Lab 12	2a	2.30	204.22	498.74	+ESI	AD4a	a
Lab 13	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Lab 15	3	2.67	214.23	498.74	+ESI	AD4a	a
Lab 9	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Lab 2	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Lab 18	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Lab 17	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Lab 10	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Lab 7	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.

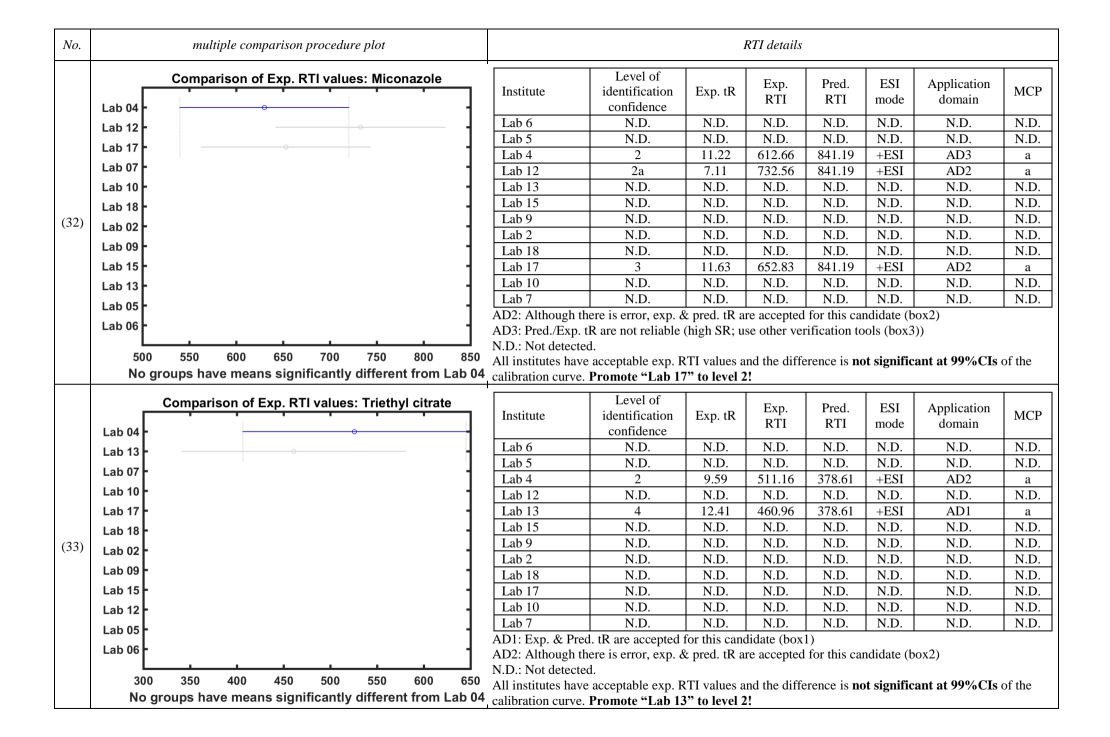
AD3: Pred./Exp. tR are not reliable (high SR; use other verification tools (box3))

AD4a: Pred./Exp. tR are not reliable (Outside the applicability domain and high SR; use other verification tools (box4))

N.D.: Not detected.

Note: This compound is outside of AD of models, but the exp. RTI is comparable. All institutes have acceptable exp. RTI values and the difference is **not significant at 99%CIs** of the calibration curve. **Promote "Lab 15" & "Lab 4" to level 2!**





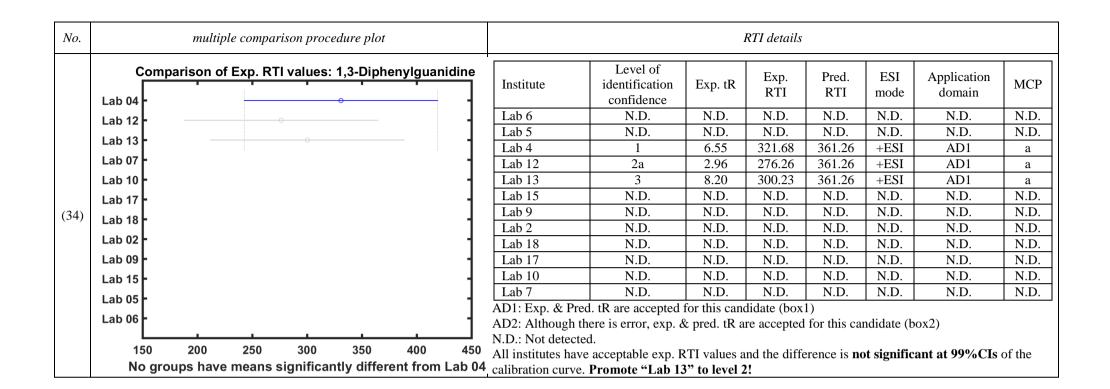


Table S7 Practical application of RTI and FOR-IDENT platform for identification of emerging pollutants. Compounds removed from the list as likely wrongly identified

Name	InChi key	CAS	Δ logD
pipamperone	AXKPFOAXAHJUAG-UHFFFAOYSA-N	1893-33-0	8.98
etamiphyllin	AWKLBIOQCIORSB-UHFFFAOYSA-N	314-35-2	6.47
fleroxacin	XBJBPGROQZJDOJ-UHFFFAOYSA-N	79660-72-3	6.14
Dipropetryn	NPWMZOGDXOFZIN-UHFFFAOYSA-N	4147-51-7	5.94
morphine	BQJCRHHNABKAKU-KBQPJGBKSA-N	57-27-2	5.39
norcodeine	HKOIXWVRNLGFOR-YANNOFPNSA-N	467-15-2	5.37
galantamine	ASUTZQLVASHGKV-JDFRZJQESA-N	357-70-0	5.34
adenosine	OIRDTQYFTABQOQ-UHFFFAOYSA-N	58-61-7	5.24
Vidarabine	OIRDTQYFTABQOQ-UHTZMRCNSA-N	5536-17-4	5.24
betaxolol	NWIUTZDMDHAVTP-UHFFFAOYSA-N	63659-18-7	5.20
Morphine, dihydro	IJVCSMSMFSCRME-KBQPJGBKSA-N	509-60-4	5.10
tranylcypromine	AELCINSCMGFISI-DTWKUNHWSA-N	13492-01-8	5.09
tranylcypromine	AELCINSCMGFISI-YGPZHTELSA-N	155-09-9	5.09