Anahem Laboratorija
Mocartova 10, 11160 Beograd, Srbija
Matični broj: 17615980; Šifra delatnosti: 7120
PIB: 103604091; Tekući račun: 205-81605-04
www.anahem.org; E-mail: vazduh@anahem.org
Tel.: 011 3422 800; Fax: 011 3422 900

IZVEŠTAJ O ISPITIVANJU[1]
br. 75120810

Beograd, 18.02.2026. godine

[1] Izveštaj se ne sme umnožavati bez odobrenja ANAHEM Laboratorije. Kopija ovog izveštaja nije zvanični dokument. Izveštaj važi samo kao celina, sa originalom pečata;
Anahem doo Beograd je odgovoran za sve podatke iskazane u izveštaju o ispitivanju osim za one dobijene od korisnika ispitivanja.
Anahem doo Beograd se odriče odgovornosti na validnost rezultata za čije iskazivanje su korišćeni podaci dobijeni od korisnika.

1 OPŠTI PODACI O OVLAŠĆENOM PRAVNOM LICU KOJE JE OBAVILO ISPITIVANJE

Naziv:	ANAHEM DOO
Adresa:	Beograd, ul. Mocartova br. 10
Telefon:	(011) 3422 800
Telefaks:	(011) 3422 900
E-mail:	vazduh@anahem.org
Lice za kontakt:	Latinka Slavković Beškoski, Rukovodilac laboratorije za ispitivanje vazduha

2 OPŠTI PODACI O OPERATERU

Naziv:	VEOLIA WASTE VINČA OPERATOR DOO
Adresa:	Tošin Bunar 272, II sprat, 11070 BEOGRAD (NOVI BEOGRAD)
Telefon:	(066) 8809975
Matični broj:	21328723
E-mail:	dimitrije.hadzipavlovic@veolia.com
Lice za kontakt:	Dimitrije Hadži-Pavlović, Procesni inženjer postrojenja EFW-Vinča

3 PLAN, MESTO I VREME MERENJA

Cilj ispitivanja	Izrada Izveštaja o ispitivanju uzoraka dioksina/furana (PCDD/PCDF) i polihlorovanih bifenila (PCB dioxin-like) sa sistema za kontinualno uzorkovanje proizvođača TCR TECORA.
Lokacija ispitivanja	EFW Vinča - postrojenje za energetsko iskorišćenje komunalnog otpada
Parametri ispitivanja	Dioksini/furani (PCDD/PCDF) i polihlorovani bifenili (PCB dioxin-like)

4 ZAKONSKA REGULATIVA, PRIMENJENI STANDARDI

- Zakon o zaštiti vazduha ("Sl. glasnik RS", br. 51/2025);
- Uredba o merenjima emisija zagađujućih materija u vazduh iz stacionarnih izvora zagađivanja ("Sl. glasnik RS", br. 5/2016 i 10/2024);
- Uredba o tehničkim i tehnološkim uslovima za projektovanje, izdradnju, opremanje i rad postrojenja i vrstama otpada za termički tretman otpada, granične vrednosti emisije i njihovo praćenje („Sl. glasnik RS”, br. 103/2023).

4.1 Opis postupka uzorkovanja i analize

Kontinualno merenje koncentracija navedenih parametara zagađenja podrazumeva postupak uzorkovanja sistemom za kontinualno uzorkovanje proizvođača TCR TECORA (DECS - Dioxin Emission Continuous Sampling) uz praćenje parametara stanja otpadnog gasa pomoću automatizovanog kontrolnog sistema (kontrolne jedinice). Uzorkovanje se obavlja u emiteru (dimnjaku) kotla - insineratora (postrojenja za insineraciju otpada) u skladu sa zahtevima metode EN 1948-1. Uzorci se nakon predviđenog perioda uzorkovanja dalje transportuju na analizu u laboratoriju akreditovanog inostranog ugovarača ALS, Češka.
Napomena: Izveštaj akreditovane laboratorije ALS je sastavni deo ovog Izveštaja i nalazi se u prilogu.

Postrojenje	**Постројење за инсинерацију отпада**
Tip	Insineracija otpada
Proizvođač	CNIM (LICENCOR)
Gorivo	Komunalni otpad

Tehnički podaci o emiteru	
Merno mesto	**Emiter (dimnjak) insineratora otpada**
Visina emitera	60,5 m
Prečnik emitera	2,35 m
Tip emitera	Čelični
Položaj	Vertikalni
Oblik poprećnog preseka	Kružni
GPS koordinate	N 44.77982° E 20.58761°

Slika br. 1

4.2 Opis tehnološkog procesa postrojenja za energetsko iskorišćenje komunalnog otpada EfW Vinča

Tehnološki proces rada EfW postrojenja sastoji se iz više osnovnih tehnoloških celina, operacija i aktivnosti:

- Prijem, skladištenje i priprema otpada za insineraciju,
- Insineracija otpada,
- Prečišćavanje dimnog gasa,
- Tretman šljake,
- Solidifikacija letećeg pepela i čvrstog ostatka od prečišćavanja dimnog gasa,
- Iskorišćenje energije dobijene sagorevanjem otpada.

Za funkcionisanje osnovnih tehnoloških celina, EfW postrojenje je opremljeno sledećim pratećim tehnološkim celinama i sistemima:

- Pogon za proizvodnju demineralizovane vode,
- Sistem za proizvodnju komprimovanog - instrumentalnog i procesnog vazduha,
- Sistem za skladištenje i distribuciju dizel goriva,
- Sistem taložnika za reciklovanje drenažnih tokova iz procesa.

Kotlovsko postrojenje podrazumeva kotao sa pripadajućom opremom i pomoćnim sistemima i uređajima koji omogućavaju normalno funkcionisanje kotla od ulaza otpada do ispuštanja dimnih gasova i ulaza napojne vode do izlaza pregrejane pare. Kotlovsko postrojenje obuhvata:

- Sistem za sagorevanje otpada,
- Sistem za odvođenje i separaciju šljake,
- Sistem napojne kotlovske vode,
- Kotao (parni bubanj i ogrevne površine kotla - isparivači, pregrejači i ekonomajzeri),
- Sistem vazduha za sagorevanje,
- Dimni trakt kotla,

- Sistem pomoćnih, dizel gorionika, za start i zaustavljanje kotla i obezbeđivanje parametara (temperature) insineracije;
- Finalni ekonomajzer, za predgrevanje povratnog kondenzata,
- Ostalu opremu i uređaje.

Kotao je vertikalne konstrukcije sa optimizovanom rekuperacijom energije, sistemom za redukciju azotnih oksida u ložištu i Martinovom pokretnom rešetkom. Rešetka je projektovana za kontinualni rad sa DTM u opsegu od 6.000 kJ/kg do 12.000 kJ/kg i sagorevanje različitih vrsta otpada. Maksimalni kapacitet sagorevanja iznosi 49,4 t/h otpada čija je DTM između 6.000 kJ/kg i 7.500 kJ/kg (MCR+), odnosno 43,6 t/h kada se koristi otpad čija je DTM 8.500 kJ/kg (MCR). Projektna donja toplotna moć - DTM pri maksimalnom trajnom kapacitetu (MCR) iznosi 8.500 kJ/kg.
Kotao i prateća oprema su po tipu i kvalitetu prilagođeni za spaljivanje (insineraciju) komunalnog otpada ispunjavaju zahteve u pogledu protoka pare za turbinsko postrojenje, kao i ostale zahteve u pogledu pare u samom postrojenju.

Kotao je dizajniran i izrađen u skladu sa EN12952 i sa odgovarajućom CE oznakom o usaglašenosti proizvoda. Na početku tehnološkog procesa rade se doziranje otpada u postrojenje, koje se vrši usipnim kanalom koji se sastoji od usipnog levka i padnog kanala. Otpad se dozira pomoću automatizovanog klipnog dodavača direktno na rešetku ložišta (tipa „Martin“). Otpad, koji se potiskuje gravitaciono u padnoj šahti, rastresa se pomoću klipa, čime se postiže ujednačena distribucija goriva na rešetki. Ciklus doziranja otpada je povezan sa sistemom za regulaciju sagorevanja.
Aktivan i stabilan proces sagorevanja, u kome sve faze procesa primarnog sagorevanja (sušenje, gasifikacija, potpala i sagorevanje) učestvuju istovremeno i uzastopno, odvija se na prednjem delu rešetke. Nakon sagorevanja otpada, nastaje šljaka.

Kotao je vertikalan sa prirodnom cirkulacijom, jednim bubnjem i ovešenom čeličnom konstrukcijom. Sastoji se od 4 vertikalna prolaza:

- Prvi prolaz: ozračena komora za sagorevanje, vertikalni prolaz
- Drugi prolaz: vertikalni prolaz sa isparivačkim paketima
- Treći prolaz: vertikalni prolaz sa isparivačkim paketom i pregrejačima
- Četvrti prolaz: vertikalni prolaz sa paketima zagrejača vode

Iz kotlovskog bubnja voda struji kroz negrejane spusne cevi i napojne cevi do donjih kolektora isparivačke sekcije i dalje delimično isparava u grejnim isparivačkim cevima (panelima i snopovima). Tako dobijena smeša voda/para struji preko usponskih cevi i vraća se do bubnja, gde se odvija proces separacije tj. odvajanja vode od pare. Na izlazu iz parnog kotla postavljen je krajnji ekonomajzer (spoljni ekonomajzer) za potrebe hlađenja dimnih gasova do 140°S pre ulaska u suvi reaktor - suvi reakcioni kanal. Za potrebe drenaže i pražnjenja kotla biće obezbeđen sistem za pražnjenje. Startni rezervoar pod pritiskom dobija alternativno paru/kondenzat iz linije duvača gara tokom zagrevanja ovih linija, i prilikom startovanja kotla koristi se za održavanje nivoa u bubnju. Drugo odvajanje se vrši u atmosferskom rezervoaru. Parna faza se šalje u atmosferu.

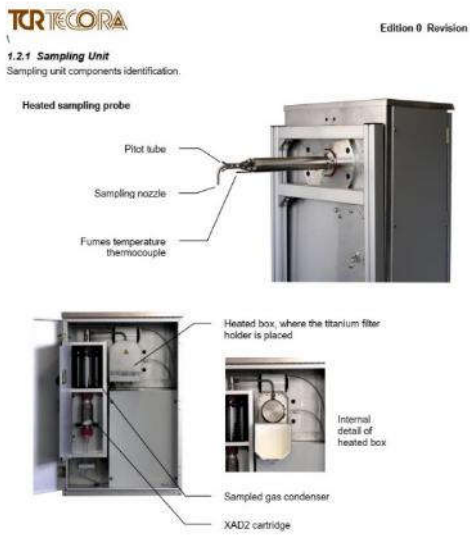
4.3 Opis sistema za kontinualno uzorkovanje

Sistem za kontinualno uzorkovanje proizvođača TCR TECORA (DECS - Dioxin Emission Continuous Sampling) u CEMS kontejneru postrojenja EFW - Vinča se sastoji iz 2 Tecora DECS ormana:

- Radni: Model - DECS, S/N - CU2040001
- Rezervni: Model - DECS, S/N - CU2040001

Slika br. 2 - Tecora DECS orman

Slika br. 3 - Izgled unutrašnjosti jednog Tecora DECS ormana



Slika br. 4 - komponente jedinice za uzorkovanje Tecora DECS sistema

1.1 Rezultati određivanja masenih koncentracija dioksina/furana (PCDD/PCDF)

Period uzorkovanja	25.09.2025. godine - 06.11.2025. godine			
Identifikaciona oznaka uzorka	Oznaka operatera: 21			
	Oznaka laboratorije ALS: PR2600457001			
	Oznaka laboratorije ANAHEM: 75120810 01			
Normalizovana zapremina suvog otpadnog gasa provučena kroz sistem za uzorkovanje tokom perioda uzorkovanja i svedena na vrednost referentnog O_2 od 11% (Nm^3) *Napomena: podatak dobijen od operatera	767,18			
Parametar ispitivanja	Jedinica	Masena koncentracija		
2378-TCDD	ng/Nm^3	< 0,0071		
12378-PeCDD	ng/Nm^3	0,00005	±	30%
123478-HxCDD	ng/Nm^3	0,00007	±	30%
123678-HxCDD	ng/Nm^3	0,00017	±	30%
123789-HxCDD	ng/Nm^3	0,00007	±	30%
1234678-HpCDD	ng/Nm^3	0,00094	±	30%
OCDD	ng/Nm^3	0,00085	±	30%

Parametar ispitivanja	Jedinica	Masena koncentracija		
2378-TCDF	ng/Nm^3	0,00009	±	30%
12378-PeCDF	ng/Nm^3	0,00006	±	30%
23478-PeCDF	ng/Nm^3	0,00022	±	30%
123478-HxCDF	ng/Nm^3	0,0001	±	30%
123678-HxCDF	ng/Nm^3	0,00011	±	30%
123789-HxCDF	ng/Nm^3	< 0,0013		
234678-HxCDF	ng/Nm^3	0,00011	±	30%
1234678-HpCDF	ng/Nm^3	0,00023	±	30%
1234789-HpCDF	ng/Nm^3	0,00002	±	30%
OCDF	ng/Nm^3	0,00006	±	30%
TEQ-Lowerbound	ng/Nm^3	0,00022	±	30%
I-TEQ-Upperbound	ng/Nm^3	0,00023	±	30%
WHO-TEQ-Upperbound	ng/Nm^3	0,00022	±	30%

1.2 Rezultati određivanja masenih koncentracija polihlorovanih bifenila (PCB)

Period uzorkovanja	25.09.2025. godine - 06.11.2025. godine	
Identifikaciona oznaka uzorka	Oznaka operatera: 21	
	Oznaka laboratorije ALS: PR2600457001	
	Oznaka laboratorije ANAHEM: 75120810 01	
Normalizovana zapremina suvog otpadnog gasa provučena kroz sistem za uzorkovanje tokom perioda uzorkovanja i svedena na vrednost referentnog O_2 od 11% (Nm^3) *Napomena: podatak dobijen od operatera	767,18	
Parametar ispitivanja	Jedinica	Masena koncentracija
PCB 77	ng/Nm^3	< 0,00016
PCB 81	ng/Nm^3	< 0,00016
PCB 105	ng/Nm^3	< 0,00143
PCB 114	ng/Nm^3	< 0,00003
PCB 118	ng/Nm^3	< 0,00326
PCB 123	ng/Nm^3	< 0,00003
PCB 126	ng/Nm^3	< 0,00004
PCB 156	ng/Nm^3	< 0,00078

Parametar ispitivanja	Jedinica	Masena koncentracija
PCB 157	ng/Nm^3	< 0,00012
PCB 167	ng/Nm^3	< 0,00008
PCB 169	ng/Nm^3	< 0,00017
PCB 170	ng/Nm^3	< 0,0021
PCB 180	ng/Nm^3	< 0,00365
PCB 189	ng/Nm^3	< 0,00044
TEQ (dl-PCB) - lower	ng/Nm^3	0,000001
TEQ (dl-PCB) - upper	ng/Nm^3	0,00009
WHO-TEQ-Upperbound	ng/Nm^3	0,000009

1.3 Rezultati određivanja masenih koncentracija dioksina/furana (PCDD/PCDF)

Period uzorkovanja	06.11.2025. godine - 04.12.2025. godine			
Identifikaciona oznaka uzorka	Oznaka operatera: 22			
	Oznaka laboratorije ALS: PR2600457002			
	Oznaka laboratorije ANAHEM: 75120810 02			
Normalizovana zapremina suvog otpadnog gasa provučena kroz sistem za uzorkovanje tokom perioda uzorkovanja i svedena na vrednost referentnog O_2 od 11% (Nm^3) *Napomena: podatak dobijen od operatera	727,033			
Parametar ispitivanja	Jedinica	Masena koncentracija		
2378-TCDD	ng/Nm^3	0,00009	±	30%
12378-PeCDD	ng/Nm^3	0,00067	±	30%
123478-HxCDD	ng/Nm^3	0,00045	±	30%
123678-HxCDD	ng/Nm^3	0,00151	±	30%
123789-HxCDD	ng/Nm^3	0,00077	±	30%
1234678-HpCDD	ng/Nm^3	0,00289	±	30%
OCDD	ng/Nm^3	0,00165	±	30%

Parametar ispitivanja	Jedinica	Masena koncentracija		
2378-TCDF	ng/Nm^3	0,00151	±	30%
12378-PeCDF	ng/Nm^3	0,00165	±	30%
23478-PeCDF	ng/Nm^3	0,00248	±	30%
123478-HxCDF	ng/Nm^3	0,00103	±	30%
123678-HxCDF	ng/Nm^3	0,00106	±	30%
123789-HxCDF	ng/Nm^3	0,00009	±	30%
234678-HxCDF	ng/Nm^3	0,00151	±	30%
1234678-HpCDF	ng/Nm^3	0,00131	±	30%
1234789-HpCDF	ng/Nm^3	0,00017	±	30%
OCDF	ng/Nm^3	0,00021	±	30%
TEQ-Lowerbound	ng/Nm^3	0,00261	±	30%
I-TEQ-Upperbound	ng/Nm^3	0,00261	±	30%
WHO-TEQ-Upperbound	ng/Nm^3	0,00248	±	30%

1.4 Rezultati određivanja masenih koncentracija polihlorovanih bifenila (PCB)

Period uzorkovanja	06.11.2025. godine - 04.12.2025. godine			
Identifikaciona oznaka uzorka	Oznaka operatera: 22			
	Oznaka laboratorije ALS: PR2600457002			
	Oznaka laboratorije ANAHEM: 75120810 02			
Normalizovana zapremina suvog otpadnog gasa provučena kroz sistem za uzorkovanje tokom perioda uzorkovanja i svedena na vrednost referentnog O_2 od 11% (Nm^3) *Napomena: podatak dobijen od operatera	727,033			
Parametar ispitivanja	Jedinica	Masena koncentracija		
PCB 77	ng/Nm^3	0,0385	±	30%
PCB 81	ng/Nm^3	0,0151	±	30%
PCB 105	ng/Nm^3	0,0303	±	30%
PCB 114	ng/Nm^3	0,00619	±	30%
PCB 118	ng/Nm^3	0,0289	±	30%
PCB 123	ng/Nm^3	0,00619	±	30%
PCB 126	ng/Nm^3	0,0234	±	30%
PCB 156	ng/Nm^3	0,0206	±	30%

Parametar ispitivanja	Jedinica	Masena koncentracija		
PCB 157	ng/Nm^3	0,0179	±	30%
PCB 167	ng/Nm^3	0,0098	±	30%
PCB 169	ng/Nm^3	0,00495	±	30%
PCB 170	ng/Nm^3	0,01926	±	30%
PCB 180	ng/Nm^3	0,01926	±	30%
PCB 189	ng/Nm^3	0,0107	±	30%
TEQ (dl-PCB) - lower	ng/Nm^3	0,00248	±	30%
TEQ (dl-PCB) - upper	ng/Nm^3	0,00248	±	30%
WHO-TEQ-Upperbound	ng/Nm^3	0,00248	±	30%

1.5 Upoređivanje rezultata ispitivanja sa graničnim vrednostima emisije (GVE)

Period uzorkovanja	25.09.2025. godine - 06.11.2025. godine
Identifikaciona oznaka uzorka	Oznaka operatera: 21
	Oznaka laboratorije ALS: PR2600457001
	Oznaka laboratorije ANAHEM: 75120810 01

Parametar	*Jedinica*	*Masena koncentracija*			*Granična vrednost emisije (GVE)*
I-TEQ-Upperbound (PCDD/PCDF)	ng/Nm^3	0,00023	±	30%	0,06 ng/Nm^3
WHO-TEQ-Upperbound (PCDF/PCFD) + WHO-TEQ-Upperbound (PCB)	ng/Nm^3	0,00023	±	30%	0,08 ng/Nm^3

Period uzorkovanja	06.11.2025. godine - 04.12.2025. godine
Identifikaciona oznaka uzorka	Oznaka operatera: 22
	Oznaka laboratorije ALS: PR2600457002
	Oznaka laboratorije ANAHEM: 75120810 02

Parametar	*Jedinica*	*Masena koncentracija*			*Granična vrednost emisije (GVE)*
I-TEQ-Upperbound (PCDD/PCDF)	ng/Nm^3	0,00261	±	30%	0,06 ng/Nm^3
WHO-TEQ-Upperbound (PCDF/PCFD) + WHO-TEQ-Upperbound (PCB)	ng/Nm^3	0,00496	±	30%	0,08 ng/Nm^3

*GVE definisane u Prilogu 2, Deo II_Postrojenja za energetsko iskorišćenje netretiranog komunalnog otpada Uredbe o tehničkim i tehnološkim uslovima za projektovanje, izdradnju, opremanje i rad postrojenja i vrstama otpada za termički tretman otpada, granične vrednosti emisije i njihovo praćenje („Sl. glasnik RS", br. 103/2023).

- Rezultati merenja koncentracija izmerenih parametara ispitivanja su svedeni na suv otpadni gas i normalne uslove ($t=273,15^0$ K; p=101,3 kPa);
- Rezultati merenja se odnose samo na navedeno postrojenje u uslovima merenja definisanim od strane naručioca ispitivanja.

Izradio:

Aleksandar Jeremić, dipl.hem.

m.p.

Rukovodilac laboratorije za ispitivanje vazduha

Latinka Slavković Beškoski, dipl. fiz.hem.

Prilog 1: Izveštaj laboratorije ALS br. PR2600457

CERTIFICATE OF ANALYSIS

Work Order	: **PR2600457**	Issue Date	: 09-Feb-2026
Amendment	: **1**		
Customer	: **ANAHEM DOO**	Laboratory	: ALS Czech Republic, s.r.o.
Contact	: vazduh	Contact	: Client Service
Address	: Mocartova 10 11000 Belgrade Serbia	Address	: Na Harfe 336/9 Prague 9 - Vysocany 190 00 Czech Republic
E-mail	: vazduh@anahem.org	E-mail	: customer.support@alsglobal.com
Telephone	: ---	Telephone	: +420 226 226 228
Project	: Dioxins emissions analyses	Page	: 1 of 3
Order number	:	Date Samples Received	: 05 Jan 2026
		Quote number	: PR2022ANADO-RS0001 (CZ-205-22-0768)
Site	: ---	Date of test	: 05-Jan-2026 - 16-Jan-2026
Sampled by	: customer	QC Level	: ALS CR Standard Quality Control Schedule

General Comments

This report shall not be reproduced except in full, without prior written approval from the laboratory. The laboratory is not responsible for the sample data supplied by the customer and their impact on the validity of the result.
The laboratory declares that the test results relate only to the listed samples. If "ALS" is not included in the test report in the "Sampled by" section, then the results refer to the sample as received.
Amendment No. 1: PR2600457 - sample ID, project and e-mail updated. This report replaces CoA PR2600457 issued on 16-01-2026.

Responsible for accuracy

Testing Laboratory No. 1163
Accredited by CAI according to
CSN EN ISO/IEC 17025:2018

Signatories	*Position*
Lubomír Pokorný	Country Manager

L 1163

The company is certified according to ČSN EN ISO 14001 (Environmental management systems) and ČSN ISO 45001 (Occupational health and safety management systems)

Analytical Results

Sub-Matrix: **EMISSIONS**			Client sample ID	7512081001 sampling period is 25.09.2025 - 06.11.2025		7512081002 sampling period is 06.11.2025 - 04.12.2025		----	
			Laboratory sample ID	PR2600457001		PR2600457002		----	
			Client sampling date / time	[05-Jan-2026]		[05-Jan-2026]		----	
Parameter	*Method*	*LOR*	*Unit*	**Result**	**MU**	**Result**	**MU**	**Result**	**MU**
PCDDs and PCDFs (Dioxins and Furans)									
2378-TCDD	A-DFHMS02	-	ng/sample	<0.0071	----	**0.063**	----	**----**	----
12378-PeCDD	A-DFHMS02	-	ng/sample	**0.041**	----	**0.49**	----	**----**	----
123478-HxCDD	A-DFHMS02	-	ng/sample	**0.05**	----	**0.33**	----	**----**	----
123678-HxCDD	A-DFHMS02	-	ng/sample	**0.13**	----	**1.1**	----	**----**	----
123789-HxCDD	A-DFHMS02	-	ng/sample	**0.057**	----	**0.56**	----	**----**	----
1234678-HpCDD	A-DFHMS02	-	ng/sample	**0.72**	----	**2.1**	----	**----**	----
OCDD	A-DFHMS02	-	ng/sample	**0.65**	----	**1.2**	----	**----**	----
2378-TCDF	A-DFHMS02	-	ng/sample	**0.068**	----	**1.1**	----	**----**	----
12378-PeCDF	A-DFHMS02	-	ng/sample	**0.045**	----	**1.2**	----	**----**	----
23478-PeCDF	A-DFHMS02	-	ng/sample	**0.17**	----	**1.8**	----	**----**	----
123478-HxCDF	A-DFHMS02	-	ng/sample	**0.078**	----	**0.75**	----	**----**	----
123678-HxCDF	A-DFHMS02	-	ng/sample	**0.082**	----	**0.77**	----	**----**	----
123789-HxCDF	A-DFHMS02	-	ng/sample	<0.013	----	**0.064**	----	**----**	----
234678-HxCDF	A-DFHMS02	-	ng/sample	**0.083**	----	**1.1**	----	**----**	----
1234678-HpCDF	A-DFHMS02	-	ng/sample	**0.18**	----	**0.95**	----	**----**	----
1234789-HpCDF	A-DFHMS02	-	ng/sample	**0.018**	----	**0.12**	----	**----**	----
OCDF	A-DFHMS02	-	ng/sample	**0.049**	----	**0.15**	----	**----**	----
TEQ-Lowerbound	A-DFHMS02	-	ng/sample	**0.17**	----	**1.9**	----	**----**	----
TEQ-Upperbound	A-DFHMS02	-	ng/sample	**0.18**	----	**1.9**	----	**----**	----
PCB dioxin-like HRMS									
PCB 77	A-PCBHMS03	-	ng/sample	<0.12	----	**28.0**	± 30.0%	**----**	----
PCB 81	A-PCBHMS03	-	ng/sample	<0.12	----	**11.0**	± 30.0%	**----**	----
PCB 105	A-PCBHMS03	-	ng/sample	<1.1	----	**22.0**	± 30.0%	**----**	----
PCB 114	A-PCBHMS03	-	ng/sample	<0.023	----	**4.50**	± 30.0%	**----**	----
PCB 118	A-PCBHMS03	-	ng/sample	<2.5	----	**21.0**	± 30.0%	**----**	----
PCB 123	A-PCBHMS03	-	ng/sample	<0.022	----	**4.50**	± 30.0%	**----**	----
PCB 126	A-PCBHMS03	-	ng/sample	<0.029	----	**17.0**	± 30.0%	**----**	----
PCB 156	A-PCBHMS03	-	ng/sample	<0.6	----	**15.0**	± 30.0%	**----**	----
PCB 157	A-PCBHMS03	-	ng/sample	<0.094	----	**13.0**	± 30.0%	**----**	----
PCB 167	A-PCBHMS03	-	ng/sample	<0.062	----	**7.10**	± 30.0%	**----**	----
PCB 169	A-PCBHMS03	-	ng/sample	<0.13	----	**3.60**	± 30.0%	**----**	----
PCB 170	A-PCBHMS03	-	ng/sample	<1.6	----	**14.0**	± 30.0%	**----**	----
PCB 180	A-PCBHMS03	-	ng/sample	<2.8	----	**14.0**	± 30.0%	**----**	----
PCB 189	A-PCBHMS03	-	ng/sample	<0.34	----	**7.80**	± 30.0%	**----**	----
TEQ (dl-PCB) - lower	A-PCBHMS03	-	ng/sample	**0**	----	**1.8**	----	**----**	----
TEQ (dl-PCB) - upper	A-PCBHMS03	-	ng/sample	**0.0071**	----	**1.8**	----	**----**	----

When sampling date is not provided by the client, the laboratory determines it for procedural reasons, then it is equal to the date of receipt of the sample to the laboratory and is displayed in brackets. Measurement uncertainty is expressed as expanded measurement uncertainty with coverage factor k = 2, representing 95% confidence level.
Key: LOR = Limit of reporting; MU = Measurement Uncertainty. The MU does not include sampling uncertainty.

Brief Method Summaries

Analytical Methods	*Method Descriptions*
Location of test performance: Cacke 261 Pardubice Czech Republic 530 02	
A-DFHMS02	CZ_SOP_D06_06_174 (CSN EN 1948-2, CSN EN 1948-3): Determination of polychlorinated dibenzo-p-dioxins and dibenzofuranes in emission samples by isotope dilution method using HRGC-HRMS and calculation of TEQ parameters from measured values. The samples were stored in laboratory in the darkness and under temperature <4°C. Actual LOQ are noticed in the attachment.

Analytical Methods	*Method Descriptions*
A-PCBHMS03	CZ_SOP_D06_06_179 (ČSN EN 1948-4, US EPA Method TO-4A) Determination of PCB by isotope dilution method using HRGC-HRMS and calculation of PCB sums from measured values. The samples were stored in laboratory in the darkness and under temperature <4°C. Actual LOQ are noticed in the annex.

The symbol "*" for the method indicates a test outside the scope of accreditation of the laboratory or subcontractor. If the UNICO-SUB code is stated in the method table, this only informs that the tests have been performed by a subcontractor and the results are given in an annex to the test report, including information on test accreditation. If the lab used for matrix outside the scope of accreditation or non-standard sample matrix procedure specified in the accredited method and issues non-accredited results, this fact is stated on the title page of this protocol in the section "Notes". If the test report shows the results of subcontracting, the place of performance of the test is outside the laboratories of ALS Czech Republic, s.r.o.
The method for calculating of the summation parameters is available on request in the customer service.

The end of the certificate of analysis

Attachment no. 1 to the Certificate of Analysis for work order PR2600457

Sample: 7512081001

ALS SAMPLE ID: **PR2600457/ 001**

Measurement results PCDD/Fs:

Sample:	7512081001		Final extract [µl]:		60
			Injection volume [µl]:		4
			Acquisition date [d.m.y h:m]:		13.1.26 13:59
2,3,7,8-PCDD/Fs	Result [ng/sample]	Limit of Detection [ng/sample]	Limit of Quantification [ng/sample]	[1]I-TEFs	I-TEQ Upperbound [ng/sample]
2,3,7,8-TCDD	< 0.0071	0.0035	0.0071	1	0.0071
1,2,3,7,8-PeCDD	0.041	0.0081	0.016	0.5	0.02
1,2,3,4,7,8-HxCDD	0.05	0.0075	0.015	0.1	0.005
1,2,3,6,7,8-HxCDD	0.13	0.0075	0.015	0.1	0.013
1,2,3,7,8,9-HxCDD	0.057	0.0075	0.015	0.1	0.0057
1,2,3,4,6,7,8-HpCDD	0.72	0.0094	0.019	0.01	0.0072
OCDD	0.65	0.017	0.034	0.001	0.00065
2,3,7,8-TCDF	0.068	0.0032	0.0063	0.1	0.0068
1,2,3,7,8-PeCDF	0.045	0.0062	0.012	0.05	0.0023
2,3,4,7,8-PeCDF	0.17	0.0062	0.012	0.5	0.085
1,2,3,4,7,8-HxCDF	0.078	0.0065	0.013	0.1	0.0078
1,2,3,6,7,8-HxCDF	0.082	0.0065	0.013	0.1	0.0082
1,2,3,7,8,9-HxCDF	< 0.013	0.0065	0.013	0.1	0.0013
2,3,4,6,7,8-HxCDF	0.083	0.0065	0.013	0.1	0.0083
1,2,3,4,6,7,8-HpCDF	0.18	0.0058	0.012	0.01	0.0018
1,2,3,4,7,8,9-HpCDF	0.018	0.0058	0.012	0.01	0.00018
OCDF	0.049	0.013	0.026	0.001	0.000049
I-TEQ from quantified 2,3,7,8-PCDD/Fs -"Lowerbound"					**0.17**
I-TEQ from 2,3,7,8-PCDD/Fs -„Mediumbound"					0.18
Maximum possible I-TEQ -"Upperbound"					**0.18**

PCDDs	Result [ng/sample]	**PCDFs**	Result [ng/sample]
Tetra-CDDs	5.9	Tetra-CDFs	4.7
Penta-CDDs	6.2	Penta-CDFs	2.4
Hexa-CDDs	4.6	Hexa-CDFs	1.2
Hepta-CDDs	1.6	Hepta-CDFs	0.38
OCDD	0.65	OCDF	0.049

[1]I-TEF according to NATO.

Limits of quantification are defined as double of the detection limits.

The limit of detection is defined as the amount of analyte producing a signal with S/N≥3.

The value of the detection limit is mentioned as the actual value at the acquisition date.

Measurement uncertainty is expressed as a double (k=2) relative standard deviation (RSD%), and corresponds to 95% confidence interval.

Estimation of uncertainty of each 2,3,7,8-PCDD/F congener is 30% and total I-TEQ is 20%.

These values were ensured by analyses of certified reference material under conditions of internal reproducibility.

Results marked with "<" are bellow limit of detection or quantification.

"Lowerbound" and "Upperbound" are levels defined in Regulation 2017/644 and EN 1948-4.

"Mediumbound" is levels defined in Regulation 2017/644.

Attachment no. 1 to the Certificate of Analysis for work order PR2600457

Sample: 7512081001

Standards recovery:

Sample:	7512081001			
	Final extract [µl]:	60		
	Injection volume [µl]:	4		
	Acquisition date [d.m.y h:m]:	13.1.26 13:59		

Extraction standard	Recovery	Acceptable range [%]		Accept. rec. with respect to	
PCDDs	[%]	Basic	Extended	basic range	extended range
13C12 - 2,3,7,8-TCDD	97	50 - 130	30 - 150	YES	-
13C12 - 1,2,3,7,8-PeCDD	79	50 - 130	30 - 150	YES	-
13C12 - 1,2,3,4,7,8-HxCDD	68	50 - 130	30 - 150	YES	-
13C12 - 1,2,3,6,7,8-HxCDD	76	50 - 130	30 - 150	YES	-
13C12 - 1,2,3,4,6,7,8-HpCDD	57	40 - 130	20 - 150	YES	-
13C12 - OCDD	45	40 - 130	20 - 150	YES	-
PCDFs					
13C12 - 2,3,7,8-TCDF	90	50 - 130	30 - 150	YES	-
13C12 - 2,3,4,7,8-PeCDF	86	50 - 130	30 - 150	YES	-
13C12 -1,2,3,4,7,8-HxCDF	56	50 - 130	30 - 150	YES	-
13C12 -1,2,3,6,7,8-HxCDF	60	50 - 130	30 - 150	YES	-
13C12 -2,3,4,6,7,8-HxCDF	58	50 - 130	30 - 150	YES	-
13C12 -1,2,3,4,6,7,8-HpCDF	61	40 - 130	20 - 150	YES	-
13C12 - OCDF	45	40 - 130	20 - 150	YES	-

Sampling standard	Recovery	Acceptable range	Rec. in range?
	[%]	[%]	
13C12-1,2,3,7,8-PeCDF	87	> 50	YES
13C12-1,2,3,7,8,9-HxCDF	82	> 50	YES
13C12-1,2,3,4,7,8,9-HpCDF	88	> 50	YES

Attachment no. 2 to the Certificate of Analysis for work order PR2600457

Sample: 7512081002

ALS SAMPLE ID: **PR2600457/ 002**

Measurement results PCDD/Fs:

Sample:	7512081002		Final extract [µl]:		60
			Injection volume [µl]:		4
			Acquisition date [d.m.y h:m]:		13.1.26 14:50
2,3,7,8-PCDD/Fs	Result [ng/sample]	Limit of Detection [ng/sample]	Limit of Quantification [ng/sample]	[1]I-TEFs	I-TEQ Upperbound [ng/sample]
2,3,7,8-TCDD	0.063	0.0051	0.01	1	0.063
1,2,3,7,8-PeCDD	0.49	0.0068	0.014	0.5	0.25
1,2,3,4,7,8-HxCDD	0.33	0.0079	0.016	0.1	0.033
1,2,3,6,7,8-HxCDD	1.1	0.0079	0.016	0.1	0.11
1,2,3,7,8,9-HxCDD	0.56	0.0079	0.016	0.1	0.056
1,2,3,4,6,7,8-HpCDD	2.1	0.0069	0.014	0.01	0.021
OCDD	1.2	0.009	0.018	0.001	0.0012
2,3,7,8-TCDF	1.1	0.0017	0.0035	0.1	0.11
1,2,3,7,8-PeCDF	1.2	0.005	0.01	0.05	0.062
2,3,4,7,8-PeCDF	1.8	0.005	0.01	0.5	0.9
1,2,3,4,7,8-HxCDF	0.75	0.0046	0.0092	0.1	0.075
1,2,3,6,7,8-HxCDF	0.77	0.0046	0.0092	0.1	0.077
1,2,3,7,8,9-HxCDF	0.064	0.0046	0.0092	0.1	0.0064
2,3,4,6,7,8-HxCDF	1.1	0.0046	0.0092	0.1	0.11
1,2,3,4,6,7,8-HpCDF	0.95	0.0049	0.0098	0.01	0.0095
1,2,3,4,7,8,9-HpCDF	0.12	0.0049	0.0098	0.01	0.0012
OCDF	0.15	0.0077	0.015	0.001	0.00015
I-TEQ from quantified 2,3,7,8-PCDD/Fs -"Lowerbound"					**1.9**
I-TEQ from 2,3,7,8-PCDD/Fs -„Mediumbound"					1.9
Maximum possible I-TEQ -"Upperbound"					**1.9**

PCDDs	Result [ng/sample]	**PCDFs**	Result [ng/sample]
Tetra-CDDs	90	Tetra-CDFs	120
Penta-CDDs	84	Penta-CDFs	54
Hexa-CDDs	44	Hexa-CDFs	13
Hepta-CDDs	6.1	Hepta-CDFs	2.3
OCDD	1.2	OCDF	0.15

[1]I-TEF according to NATO.

Limits of quantification are defined as double of the detection limits.

The limit of detection is defined as the amount of analyte producing a signal with S/N≥3.

The value of the detection limit is mentioned as the actual value at the acquisition date.

Measurement uncertainty is expressed as a double (k=2) relative standard deviation (RSD%), and corresponds to 95% confidence interval.

Estimation of uncertainty of each 2,3,7,8-PCDD/F congener is 30% and total I-TEQ is 20%.

These values were ensured by analyses of certified reference material under conditions of internal reproducibility.

Results marked with "<" are bellow limit of detection or quantification.

"Lowerbound" and "Upperbound" are levels defined in Regulation 2017/644 and EN 1948-4.

"Mediumbound" is levels defined in Regulation 2017/644.

Attachment no. 2 to the Certificate of Analysis for work order PR2600457

Sample: 7512081002

Standards recovery:

Sample: 7512081002

Final extract [µl]:	60
Injection volume [µl]:	4
Acquisition date [d.m.y h:m]:	13.1.26 14:50

Extraction standard	Recovery	Acceptable range [%]		Accept. rec. with respect to	
PCDDs	[%]	Basic	Extended	basic range	extended range
13C12 - 2,3,7,8-TCDD	89	50 - 130	30 - 150	YES	-
13C12 - 1,2,3,7,8-PeCDD	54	50 - 130	30 - 150	YES	-
13C12 - 1,2,3,4,7,8-HxCDD	87	50 - 130	30 - 150	YES	-
13C12 - 1,2,3,6,7,8-HxCDD	68	50 - 130	30 - 150	YES	-
13C12 - 1,2,3,4,6,7,8-HpCDD	73	40 - 130	20 - 150	YES	-
13C12 - OCDD	79	40 - 130	20 - 150	YES	-
PCDFs					
13C12 - 2,3,7,8-TCDF	94	50 - 130	30 - 150	YES	-
13C12 - 2,3,4,7,8-PeCDF	61	50 - 130	30 - 150	YES	-
13C12 -1,2,3,4,7,8-HxCDF	75	50 - 130	30 - 150	YES	-
13C12 -1,2,3,6,7,8-HxCDF	77	50 - 130	30 - 150	YES	-
13C12 -2,3,4,6,7,8-HxCDF	57	50 - 130	30 - 150	YES	-
13C12 -1,2,3,4,6,7,8-HpCDF	67	40 - 130	20 - 150	YES	-
13C12 - OCDF	71	40 - 130	20 - 150	YES	-

Sampling standard	Recovery	Acceptable range	Rec. in range?
	[%]	[%]	
13C12-1,2,3,7,8-PeCDF	95	> 50	YES
13C12-1,2,3,7,8,9-HxCDF	90	> 50	YES
13C12-1,2,3,4,7,8,9-HpCDF	91	> 50	YES

Attachment no. 5 to the Certificate of Analysis for work order PR2600457

Sample: 7512081001

ALS SAMPLE ID: **PR2600457/ 001**

Measurement results PCDD/Fs:

Sample:	7512081001		Final extract [µl]:		60
			Injection volume [µl]:		4
			Acquisition date [d.m.y h:m]:		13.1.26 13:59
2,3,7,8-PCDD/Fs	Result [ng/sample]	Limit of Detection [ng/sample]	Limit of Quantification [ng/sample]	[1]WHO-TEFs	WHO-TEQ Upperbound [ng/sample]
2,3,7,8-TCDD	< 0.0071	0.0035	0.0071	1	0.0071
1,2,3,7,8-PeCDD	0.041	0.0081	0.016	1	0.041
1,2,3,4,7,8-HxCDD	0.05	0.0075	0.015	0.1	0.005
1,2,3,6,7,8-HxCDD	0.13	0.0075	0.015	0.1	0.013
1,2,3,7,8,9-HxCDD	0.057	0.0075	0.015	0.1	0.0057
1,2,3,4,6,7,8-HpCDD	0.72	0.0094	0.019	0.01	0.0072
OCDD	0.65	0.017	0.034	0.0003	0.00019
2,3,7,8-TCDF	0.068	0.0032	0.0063	0.1	0.0068
1,2,3,7,8-PeCDF	0.045	0.0062	0.012	0.03	0.0014
2,3,4,7,8-PeCDF	0.17	0.0062	0.012	0.3	0.051
1,2,3,4,7,8-HxCDF	0.078	0.0065	0.013	0.1	0.0078
1,2,3,6,7,8-HxCDF	0.082	0.0065	0.013	0.1	0.0082
1,2,3,7,8,9-HxCDF	< 0.013	0.0065	0.013	0.1	0.0013
2,3,4,6,7,8-HxCDF	0.083	0.0065	0.013	0.1	0.0083
1,2,3,4,6,7,8-HpCDF	0.18	0.0058	0.012	0.01	0.0018
1,2,3,4,7,8,9-HpCDF	0.018	0.0058	0.012	0.01	0.00018
OCDF	0.049	0.013	0.026	0.0003	0.000015
WHO-TEQ from quantified 2,3,7,8-PCDD/Fs -"Lowerbound"					**0.16**
WHO-TEQ from 2,3,7,8-PCDD/Fs -„Mediumbound"					0.16
Maximum possible WHO-TEQ -"Upperbound"					**0.17**

PCDDs	Result [ng/sample]	**PCDFs**	Result [ng/sample]
Tetra-CDDs	5.9	Tetra-CDFs	4.7
Penta-CDDs	6.2	Penta-CDFs	2.4
Hexa-CDDs	4.6	Hexa-CDFs	1.2
Hepta-CDDs	1.6	Hepta-CDFs	0.38
OCDD	0.65	OCDF	0.049

[1]WHO 2005 TEF according to Van den Berg et al: Toxicological Sciences Advance Acces, 7 July 2006)

Limits of quantification are defined as double of the detection limits.

The limit of detection is defined as the amount of analyte producing a signal with S/N≥3.

The value of the detection limit is mentioned as the actual value at the acquisition date.

Measurement uncertainty is expressed as a double (k=2) relative standard deviation (RSD%), and corresponds to 95% confidence interval.

Estimation of uncertainty of each 2,3,7,8-PCDD/F congener is 30% and total WHO-TEQ is 20%. These values were ensured by analyses of certified reference material under conditions of internal reproducibility.

Results marked with "<" are bellow limit of detection or quantification.

"Lowerbound" and "Upperbound" are levels defined in Regulation 2017/644 and EN 1948-4.

"Mediumbound" is levels defined in Regulation 2017/644.

Attachment no. 6 to the Certificate of Analysis for work order PR2600457

Sample: 7512081002

ALS SAMPLE ID: **PR2600457/ 002**

Measurement results PCDD/Fs:

Sample:	7512081002		Final extract [µl]:		60
			Injection volume [µl]:		4
			Acquisition date [d.m.y h:m]:		13.1.26 14:50
2,3,7,8-PCDD/Fs	Result [ng/sample]	Limit of Detection [ng/sample]	Limit of Quantification [ng/sample]	[1]WHO-TEFs	WHO-TEQ Upperbound [ng/sample]
2,3,7,8-TCDD	0.063	0.0051	0.01	1	0.063
1,2,3,7,8-PeCDD	0.49	0.0068	0.014	1	0.49
1,2,3,4,7,8-HxCDD	0.33	0.0079	0.016	0.1	0.033
1,2,3,6,7,8-HxCDD	1.1	0.0079	0.016	0.1	0.11
1,2,3,7,8,9-HxCDD	0.56	0.0079	0.016	0.1	0.056
1,2,3,4,6,7,8-HpCDD	2.1	0.0069	0.014	0.01	0.021
OCDD	1.2	0.009	0.018	0.0003	0.00037
2,3,7,8-TCDF	1.1	0.0017	0.0035	0.1	0.11
1,2,3,7,8-PeCDF	1.2	0.005	0.01	0.03	0.037
2,3,4,7,8-PeCDF	1.8	0.005	0.01	0.3	0.54
1,2,3,4,7,8-HxCDF	0.75	0.0046	0.0092	0.1	0.075
1,2,3,6,7,8-HxCDF	0.77	0.0046	0.0092	0.1	0.077
1,2,3,7,8,9-HxCDF	0.064	0.0046	0.0092	0.1	0.0064
2,3,4,6,7,8-HxCDF	1.1	0.0046	0.0092	0.1	0.11
1,2,3,4,6,7,8-HpCDF	0.95	0.0049	0.0098	0.01	0.0095
1,2,3,4,7,8,9-HpCDF	0.12	0.0049	0.0098	0.01	0.0012
OCDF	0.15	0.0077	0.015	0.0003	0.000045
WHO-TEQ from quantified 2,3,7,8-PCDD/Fs -"Lowerbound"					**1.8**
WHO-TEQ from 2,3,7,8-PCDD/Fs -„Mediumbound"					1.8
Maximum possible WHO-TEQ -"Upperbound"					**1.8**

PCDDs	Result [ng/sample]	**PCDFs**	Result [ng/sample]
Tetra-CDDs	90	Tetra-CDFs	120
Penta-CDDs	84	Penta-CDFs	54
Hexa-CDDs	44	Hexa-CDFs	13
Hepta-CDDs	6.1	Hepta-CDFs	2.3
OCDD	1.2	OCDF	0.15

[1]WHO 2005 TEF according to Van den Berg et al: Toxicological Sciences Advance Acces, 7 July 2006)

Limits of quantification are defined as double of the detection limits.

The limit of detection is defined as the amount of analyte producing a signal with S/N≥3.

The value of the detection limit is mentioned as the actual value at the acquisition date.

Measurement uncertainty is expressed as a double (k=2) relative standard deviation (RSD%), and corresponds to 95% confidence interval.

Estimation of uncertainty of each 2,3,7,8-PCDD/F congener is 30% and total WHO-TEQ is 20%. These values were ensured by analyses of certified reference material under conditions of internal reproducibility.

Results marked with "<" are bellow limit of detection or quantification.

"Lowerbound" and "Upperbound" are levels defined in Regulation 2017/644 and EN 1948-4.

"Mediumbound" is levels defined in Regulation 2017/644.

Attachment no. 3 to the Certificate of Analysis for work order PR2600457

Sample: 7512081001

ALS SAMPLE ID: PR2600457/ 001
Measurement results PCBs:

Sample:			7512081001		
			Final extract [µl]:		250
			Injection volume [µl]:		4
			Acquisition date [d.m.y h:m]:		14.1.26 21:53
PCBs	Result [ng/sample]	Limit of Detection [ng/sample]	Limit of Quantification [ng/sample]	[1]WHO-TEFs	WHO-TEQ Upperbound [ng/sample]
PCB #77	< 0.12	0.12	0.41	0.0001	0.000012
PCB #81	< 0.12	0.12	0.41	0.0003	0.000037
PCB #126	< 0.029	0.029	0.097	0.1	0.0029
PCB #169	< 0.13	0.13	0.44	0.03	0.004
PCB #105	< 1.1	0.028	1.1	0.00003	0.000034
PCB #114	< 0.023	0.023	0.078	0.00003	0.0000007
PCB #118	< 2.5	0.024	2.5	0.00003	0.000075
PCB #123	< 0.022	0.022	0.075	0.00003	0.00000067
PCB #156	< 0.6	0.11	0.6	0.00003	0.000018
PCB #157	< 0.094	0.094	0.31	0.00003	0.0000028
PCB #167	< 0.062	0.062	0.21	0.00003	0.0000018
PCB #170	< 1.6	0.13	1.6	-	0
PCB #180	< 2.8	0.13	2.8	-	0
PCB #189	< 0.34	0.1	0.34	0.00003	0.00001
WHO-TEQ from quantified PCBs -"Lowerbound"					0
WHO-TEQ from PCBs -„Mediumbound"					0.0035
Maximum possible WHO-TEQ -"Upperbound"					**0.0071**

[1]WHO 2005 TEF according to Van den Berg et al: Toxicological Sciences Advance Acces, 7 July 2006

Limits of quantification are defined on the base of blank level.

The limit of detection is defined as the amount of analyte producing a signal with S/N≥3.

The value of the detection limit is mentioned as the actual value at the acquisition date.

Measurement uncertainty is expressed as a double (k=2) relative standard deviation (RSD%), and corresponds to 95% confidence interval.

Estimation of uncertainty of each PCB congener is 30% , total WHO-TEQ and PCB6/PCB7 is 20%. These values were ensured by analyses of certified reference material under conditions of internal reproducibility.

Results marked "<" are lower than the limit of detection or quantification.

"Lowerbound" and "Upperbound" are levels defined in Regulation 2017/644 and EN 1948-4.

"Mediumbound" is level defined in Regulation 2017/644.

Attachment no. 4 to the Certificate of Analysis for work order PR2600457

Sample: 7512081002

ALS SAMPLE ID: PR2600457/ 002
Measurement results PCBs:

Sample:			7512081002		
			Final extract [µl]:		250
			Injection volume [µl]:		4
			Acquisition date [d.m.y h:m]:		13.1.26 16:10
PCBs	Result [ng/sample]	Limit of Detection [ng/sample]	Limit of Quantification [ng/sample]	[1]WHO-TEFs	WHO-TEQ Upperbound [ng/sample]
PCB #77	28	0.013	0.44	0.0001	0.0028
PCB #81	11	0.012	0.041	0.0003	0.0034
PCB #126	17	0.01	0.035	0.1	1.7
PCB #169	3.6	0.012	0.04	0.03	0.11
PCB #105	22	0.01	1.2	0.00003	0.00065
PCB #114	4.5	0.0098	0.097	0.00003	0.00014
PCB #118	21	0.0097	2.4	0.00003	0.00063
PCB #123	4.5	0.0098	0.04	0.00003	0.00014
PCB #156	15	0.011	0.36	0.00003	0.00046
PCB #157	13	0.011	0.036	0.00003	0.00039
PCB #167	7.1	0.011	0.17	0.00003	0.00021
PCB #170	14	0.016	1.1	-	0
PCB #180	14	0.016	2.4	-	0
PCB #189	7.8	0.013	0.043	0.00003	0.00023
WHO-TEQ from quantified PCBs -"Lowerbound"					1.8
WHO-TEQ from PCBs -„Mediumbound"					1.8
Maximum possible WHO-TEQ -"Upperbound"					**1.8**

[1]WHO 2005 TEF according to Van den Berg et al: Toxicological Sciences Advance Acces, 7 July 2006

Limits of quantification are defined on the base of blank level.

The limit of detection is defined as the amount of analyte producing a signal with S/N≥3.

The value of the detection limit is mentioned as the actual value at the acquisition date.

Measurement uncertainty is expressed as a double (k=2) relative standard deviation (RSD%), and corresponds to 95% confidence interval.

Estimation of uncertainty of each PCB congener is 30% , total WHO-TEQ and PCB6/PCB7 is 20%. These values were ensured by analyses of certified reference material under conditions of internal reproducibility.

Results marked "<" are lower than the limit of detection or quantification.

"Lowerbound" and "Upperbound" are levels defined in Regulation 2017/644 and EN 1948-4.

"Mediumbound" is level defined in Regulation 2017/644.