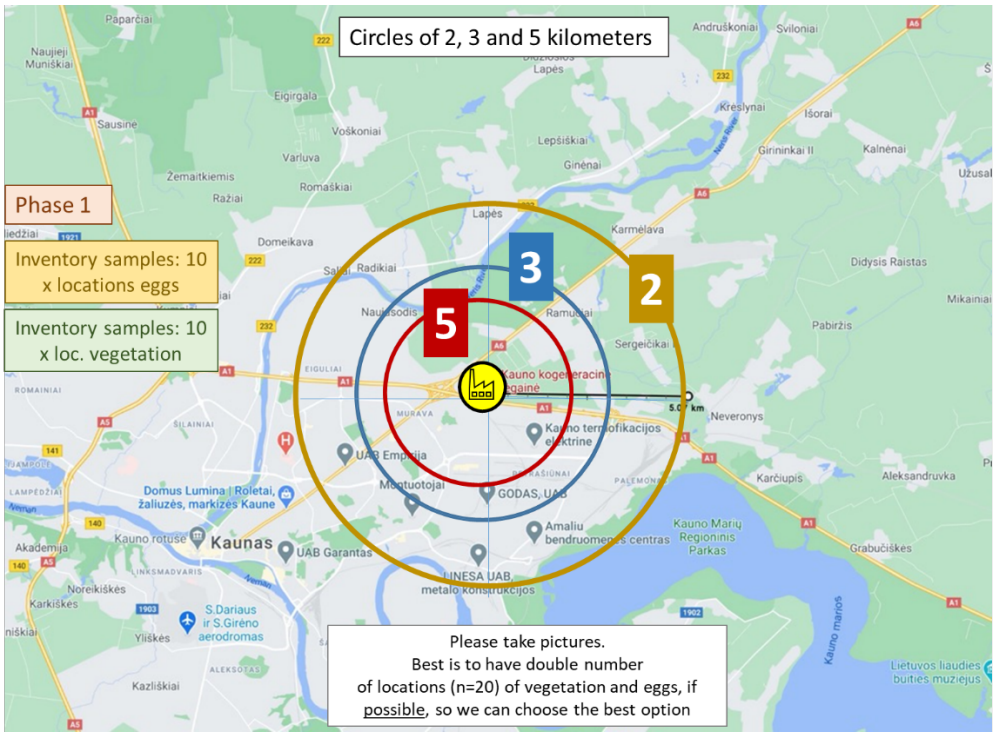
Annex I

SAMPLE Plan 2021 region Kaunas, Lithuania

ToxicoWatch Foundation - 2021



Biomonitoring 2021

Kaunas WtE incineration Lithuania

Three circle areas:

5x locations in the inner red circle (< 2km)

3x locations in the blue circle (<3 km)

2x locations in the outside circle (< 5 km)

In Total 20 analyses on:

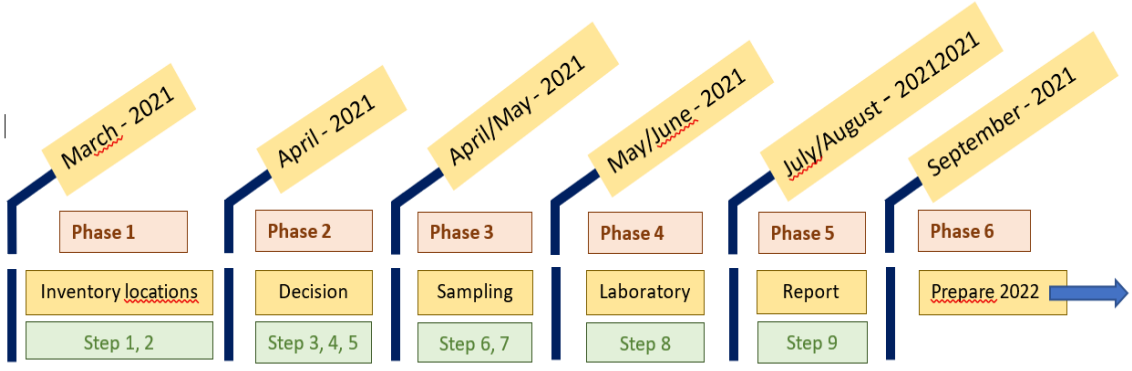
10 egg locations

(10 eggs per location)

10 vegetation locations

(pine needles, leaves, moss)

The initial biomonitoring sample timeline plan:



TW Biomonitoring Eggs Backyard Chicken - Kaunas, Lithuania 2021

Action TW	Action LT	9 Steps EGG sampling
		Phase 1
Step 1		**Inventarisation of suitable Egg locations of backyard chicken < 2, < 3, < 5 km**
		5x locations inner circle < 2 km, 3x locations <3 km, 2x locations outside circle < 5 km
		Total: 10 selected vegetation samples
		Please **Provide TW Questionnaire Eggs** of backyard Chicken **to cicken coop owners**
		and **send it back to TW**
		Locations located IN the winddirection comming undisturbed from the waste incinerator
		Locations at < 2km most wanted for research, at least 5 locations
		Locations <3 km at least 3 locations
		Locations outside circle < 5 km, at least 2 locations for reference research
		TW will check by Google earth and other studies, data
Step 2		**Check Chicken Coop owners willingness to Participate, Send back Questionairre**
		Location visit chicken coop owners , please take pictures/photo's of
		chicken enclosures, fences, building material, like roofs, feed cribs, water containers
		with **ordening of location nr.** and **coordinates** of Egg, Feed, Soil samples
		TW will assist you by mobile phone/video if needed directly on location
		<2 km (**5x vegetation locations needed for analyses**, if possible **10x locations so we can choose**)
		Photo's/pictures needed to be made of:
		1. the whole area chicken coop
		2. enclosure fences
		3. building material chicken enclosure, like roofs, Henhouse, chicken brood boxes
		4. feed cribs, water countainer suppliers
		5. the chicken coop itself
		SEND BACK the TW Questionairre for Biomonitoring backyard Chicken Eggs
		< 3 km (3x vegetation locations, if possible **6 x locations so TW can choose)**
		3- 5 km (2x vegetation locations, if possible **4 x locations so TW can choose)**
		Phase 2
Step 3		**Sending all** pictures/**photo material to ToxicoWatch** for study
		with **ordening of location+ photo nr.** and **coordinates** of possible egg locations,
		if needed **with TW assistance**
		TW will study on all the send photo material of Egg locations
		together with received quistionairres of Egg locations.
		After studying this photo input, **TW will select the best Egg locations options to use for sampling**
Step 4		**Review** with Kaunas Team **about possibilties of sampling** by TW selected
		Egg locations <2,<3, and <5 km (ideal **10 locations**), **10 Egg samples/location**!
		5x locations inner circle < 2 km, 3x locations <3 km, 2x locations outside circle < 5 km
		Discussion of the selected Egg locations **to make defintive selection of sample locations**
Step 5		**TW Providing** Reference lab sample Nr **(TW-REF-NR)** for **Egg samples**
		TW provides after studying the photomaterial of the Egg locations **TW-REF-NR**
		i.e. TW-LT21-Egg-L01
		The TW-REF-NR is important for the Lab analyses
		needed to be handled/documented very strictly
		Phase 3
Step 6		**Second visit to selected vegetation locations for COLLECTING SAMPLES**
		Collecting the eggs (10 per location) at the selected Egg locations as discussed in Review, step 4.
		The **collecting of the Eggs needed AGAIN covered by pictures/video** and **documented/numbered**
		TW assisting by video and mobile during collecting samples
		The photo material needs to be documented with numbers and data, **(see Step 2)**
		Collected samples needed directly **marked** with a **TW Reference/laboratorium number.**
		TW assist if needed by mobiele/video connection
		Collected Eggs needed to be stored as prescripted (dry, dark and cool) **till shipping to NL**
Step 7		**Send/shipping all the collected Egg samples** to TW as prescripted
		Shipping of the collected Egg samples **to the address of Laboratory**
		Please **take photo of packed Egg sample** before shipping to Lab
		TW will provide prescription for sending/shipping
		Phase 4
Step 8		**Handling by TW** of all the **received Egg samples** at the Lab
		TW Checking all the received Egg **samples on, TW/lab nr/ grams**
		with the photo/video material and other data
		Providing the collected samples to the lab with instructions for analyses
		TW: Proposal discussions with Lab: **analyse plan** for this collected biomarkers
		Phase 5
Step 9		**Lab Analyses results Egg** samples, **TW Report Kaunas Biomonitoring 2021**
		TW Studying, working out report LT 21
		TW finalising research Report Kaunas Biomonitoring 2021
		Phase 6
		Prepare Biomonitoring Kaunas, Lithuania 2022 on base of the results 2021

TW Biomonitoring Eggs Backyard Chicken - Kaunas, Lithuania 2021

Evergreen trees & Mosses

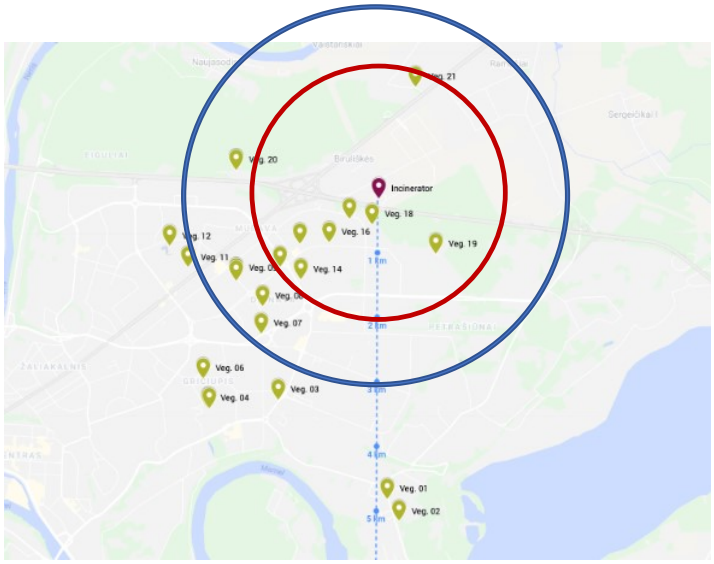
9 Steps Vegetation sampling

Action TW	Action LT	
		Phase 1
Step 1		**Inventarisation of available common vegetation species**
		Please check if the vegetation evergreen trees and mosses (preferable Pinus spp) can befound in the area around the incinerator. ***Pinus*** is the sole genus in the plant family *Pinaceae* .
		5x locations inner circle < 2 km, 3x locations <3 km, 2x locations outside circle < 5 km
		Total: 10 selected vegetation samples
		TW will check availabillity of vegegation by Google maps/earth and other studies, data
Step 2		**Team MD Check availability vegetation in the field circle: <2 km , <3km, <5km**
		Location visit, making pictures/photo's
		with **ordering of location nr.** and **coordinates** of vegetation samples
		TW will assist you by mobile phone/video if needed directly on location
		Please select vegetation which is easy accessible and aproachable, within:
		< 2 km (**5x vegetation locations needed for analyses**, if possible **10x locations so we can choose**)
		< 3 km (3x vegetation locations, if possible **6 x locations so we can choose)**
		3- 5 km (2x vegetation locations, if possible **4 x locations so we can choose)**
		Photo's/pictures needed to be made of:
		1. the whole tree/shrub/plant in the environment
		2. Close-up from the canopy of the tree
		3. Close-up from the pine needles / Mosses
		4. Close-up from the bark
		5. Extra pictures i.e. leaves, flowers, soil, cones
		Use **not only** the youngest needles on a twig
		accessible: meaning it is physically possible to enter the needles on the twigs of a tree
		The trees needs to be accessible for collecting the needles mosses + marking the wind direction.
		Phase 2
Step 3		**Sending all pictures/photo material to ToxicoWatch**
		with **ordening of location+ photo nr.** and **coordinates** of potential vegetation samples,
		if needed **with TW assistance**
		TW will identify the tree species and study on all the send photo material of vegetation.
		After studying this photo input, **TW will select the best vegetation sample options to use**
		for biomonitoring 2021
Step 4		**Review with LT Team about TW Decission of selected vegetation samples**
		Discussion of the selected vegetation locations **to make defintive selection of locations for biomonitoring**
Step 5		**TW Providing TW-Reference-lab (TW-REF-NR) sample numbers**
		TW provides after studying the photomaterial of the vegetation **TW-REF-NR**
		related to A. the location, B. The date of collecting, C. vegetation species and D. winddirection
		The TW-REF-NR is important for the Lab analyses
		and therefore, needed to be handled/documented very strictly
		Phase 3
Step 6		**Second visit to selected vegetation locations for COLLECTING SAMPLES**
		Collecting the selected vegetation samples as discussed in Review, step 4.
		the **collecting of the samples needed AGAIN covered by pictures/video** and **documented/numbered**
		TW will assist you by video and mobile during collecting samples
		The photo material needs to be documented with numbers and data
		Samples needed marked, so TW can provide a **TW-REF-NR/laboratorium number.**
		TW will assist you with this as much as possible
		Collected samples needed stored as prescripted (dry, dark and cool) **till shipping to NL**
Step 7		**Sending/shipping all the collected vegetation samples to TW as prescripted**
		Shipping of the collected vegetation samples to NL/TW
		as prescripted, **TW will provide prescription for sending/shipping**
		Phase 4
Step 8		**Handling by TW of the received vegetation samples**
		Checking all the received vegetation **samples on species, TW/lab nr/ grams**
		with the photo/video material and other data
		Providing the collected samples to the lab with instructions for analyses
		TW: Proposal discussions with Lab: **analyse plan** for this collected biomarkers
		Phase 5
Step 9		**Analyse results vegetation samples, TW Report Biomonitoring LT 2021**
		TW: Analyse results, studying and work out Report Biomonitoring Kaunas 2021
		Phase 6
		Prepare Biomonitoring 2022 on base of the results 2021

Inventory of vegetation, Kaunas 2021

Step 1 and 2

Number	Distance to WtE	location direction from incinerator	Species
Veg. 01_LT21	4680	South	*Pinus nigra*
Veg. 02_LT21	5060 m	South	*Pinus sylvestris*
Veg. 03_LT21	3550 m	South-West	*Picea abies*
Veg. 04_LT21	4180 m	South-West	*Cedrus altantica glauca*
Veg. 05_LT21	4180 m	South-West	*Chamaecyprus*
Veg. 06_LT21	3880 m	South-West	*Pinus sylvestris*
Veg. 07_LT21	2810 m	South-West	*Picea abies*
Veg. 08_LT21	2540 m	South-West	*Picea abies*
Veg. 09_LT21	2500 m	South-West	*Pinus nigra*
Veg. 10_LT21	2600 m	South-West	*Pinus nigra*
Veg. 11_LT21	3070 m	South-SouthWest	*Pinus mugo*
Veg. 12_LT21	3340 m	South-SouthWest	*Abies grandis*
Veg. 13_LT21	1900 m	South-West	*Picea abies*
Veg. 14_LT21	1820 m	South-West	*Picea abies*
Veg. 15_LT21	1390 m	South-West	*Pinus sylvestris*
Veg. 16_LT21	1100 m	South-West	*Picea abies*
Veg. 17_LT21	555 m	South-West	*Picea abies*
Veg. 18_LT21	462 m	South-West	*Picea abies*
Veg. 19_LT21	1270 m	South-East	*Picea abies*
Veg. 20_LT21	555 m	West	*Pinus sylvestris*
Veg. 21_LT21	1700 m	North	*Picea abies*
Veg. 22_LT21	2230	West	*Pinus sylvestris*



Instructions for shipping samples to ToxicoWatch, The Netherlands

Egg samples:

1. **Egg boxes need to be:**
   a. **numbered per location**, i.e. egg 1, egg 2, (TW provides TW-REF-NR)
   b. the **same for the back-up samples** taken on the locations for
      soil; i.e. soil 1, soil 2, etc. (TW provides TW-REF-NR)
      feed; i.e. feed 1, feed 2, etc (TW provides TW-REF-NR)
      See list below
   c. put **egg boxes in a (HDPE) plastic bag** as used with sampling vegetation
   d. put also **number location** on the plastic bag
   e. plus **address/coordinates of location on a list**
   f. date of sampling of the eggs
   g. each egg box in (HDPE) plastic bag **need to packed with a protected thick layer** of newspapers or if you have available foam or cotton wool to protect breaking of the eggs.
   h. TW will measure the weight of the pooled samples

2. **Place all the wrapped eggboxes careful in a (polystyrene) box together with the backup samples of soil and feed.**
3. shipping of the egg samples with a **Track & Trace within 24-48 hours to the Netherlands by a trustful post delivery service**

Vegetation samples:

1. **Please check if all the bags** of pine needles/leaves and mosses have
   a. the **location numbers**, **date of sampling** and **coordinates on it or on a list**
   For samples : Veg 1, veg 2 , veg 3 etc (TW provides TW-REF-NR)
   Mosses 1, Mosses 2, etc (TW provides TW-REF-NR)
   b. TW will measure the weight of each sample in NL
   c. Store the vegetation samples in (HDPE) bags dark and cool until shipping

2. For shipping put all the (HDPE) plastic vegetation bags in a (polystyrene) box (preferable one big box), strong enough for shipping
   a. Close the box well with tided tape
   b. Mark the box with text “Handel with care!”
   c. TW provided address where to send
   d. Preferable a **courier service for quick delivery 24-48 hours**

Please **take pictures of how the sample material is placed in the shipping box(es)** and from the outside of the sealed marked boxes with the address on it and ready for shipping to the Netherlands (NL).

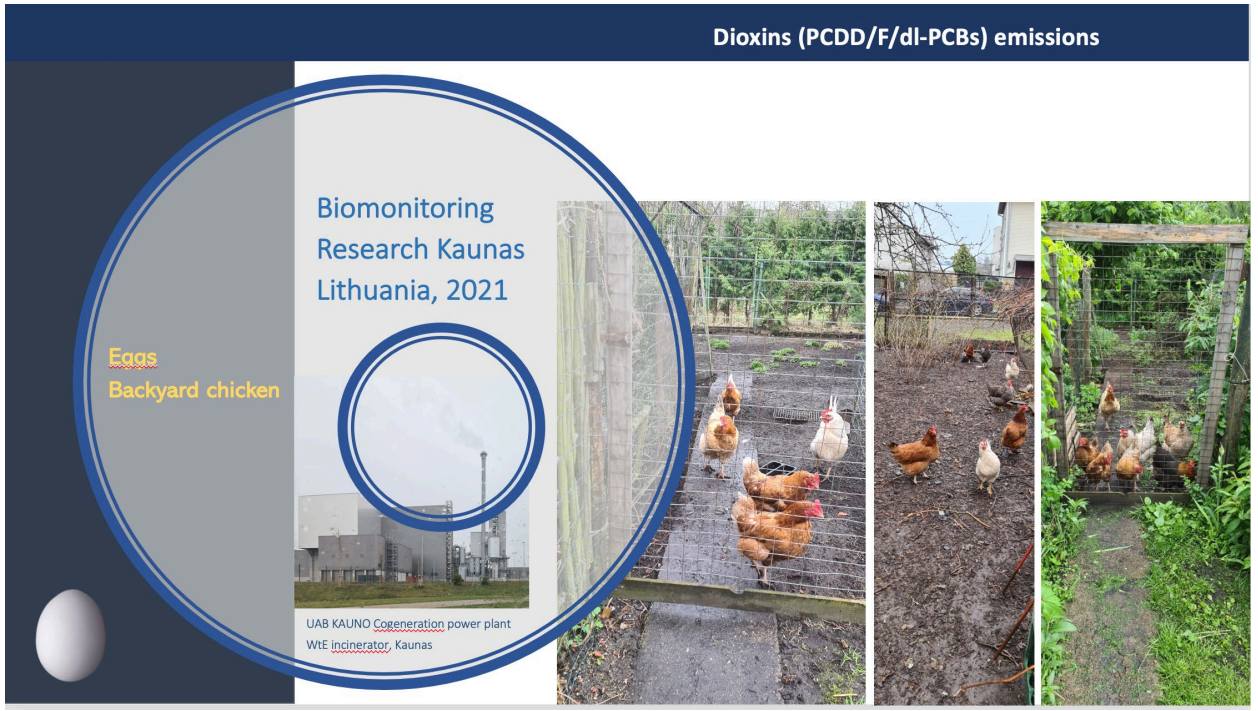
Please **send us the pictures you have taken on the locations during sampling**. TW need the exact coordinates of the samples

Thanks you to the Sampling Team for taking care of collecting the biomonitoring samples at the locations!

TOXICO WATCH

Annex II

Egg locations Kaunas, Lithuania - 2021

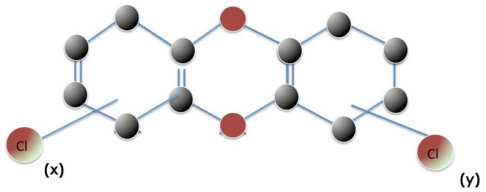


GC-MS chlorinated dioxins (PCDD/F/dl-PCB)

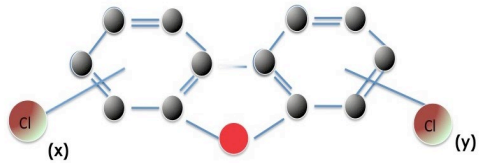
Halogen elements:

Chlorine (Cl)
Bromine (Br)
Fluorine (F)
Iodine (I)

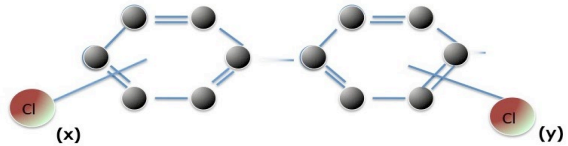
Dioxin
PCDD (75)
n = 7



Furan
PCDF (135)
n = 10



dioxin-like Polychlorinated biphenyl
dl-PCB (209)
n = 12



Congeners of chlorinated compounds (chemical GC-MS analysis)

Dioxins, furans (PCDD/F) and dioxin-like PCBs		
Abbreviation	**Congeners**	**TEF**
Dioxins (n=7)		
TCDD	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1
PCDD	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	1
HxCDD1	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	0,1
HxCDD2	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	0,1
HxCDD3	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	0,1
HpCDD	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	0,01
OCDD	Octachlorodibenzo-p-dioxin	0,0003

Furans (n=10)		
TCDF	2,3,7,8-Tetrachlorodibenzofuran	0,1
PCDF1	1,2,3,7,8-Pentachlorodibenzofuran	0,03
PCDF2	2,3,4,7,8-Pentachlorodibenzofuran	0,3
HxCDF1	1,2,3,4,7,8-Hexachlorodibenzofuran	0,1
HxCDF2	1,2,3,6,7,8-Hexachlorodibenzofuran	0,1
HxCDF3	1,2,3,7,8,9-Hexachlorodibenzofuran	0,1
HxCDF4	2,3,4,6,7,8-Hexachlorodibenzofuran	0,1
HPCDF1	1,2,3,4,6,7,8-Heptachlorodibenzofuran	0,01
HPCDF2	1,2,3,4,7,8,9-Heptachlorodibenzofuran	0,01
OCDF	Octachlorodibenzofuran	0,0003

Polychlorinated biphenyl (n=12)		
PCB77	3,3',4,4'-Tetrachlorobiphenyl (#77)	0,0001
PCB81	3,4,4',5-Tetrachlorobiphenyl (#81)	0,0003
PCB126	3,3',4,4',5-Pentachlorobiphenyl (#126)	0,1
PCB169	3,3',4,4',5,5'-Hexachlorobiphenyl (#169)	0,03
PCB105	2,3,3',4,4'-Pentachlorobiphenyl (#105)	0,00003
PCB114	2,3,4,4',5-Pentachlorobiphenyl (#114)	0,00003
PCB118	2,3',4,4',5-Pentachlorobiphenyl (#118)	0,00003
PCB123	2,3,4,4',5-Pentachlorobiphenyl (#123)	0,00003
PCB156	2,3,3',4,4',5-Hexachlorobiphenyl (#156)	0,00003
PCB157	2,3,3',4,4',5'-Hexachlorobiphenyl (#157)	0,00003
PCB167	2,3',4,4',5,5'-Hexachlorobiphenyl (#167)	0,00003
PCB189	2,3,3',4,4',5,5'-Heptachlorobiphenyl (#189)	0,00003

EU regulations for dioxins (PCDD/F/dl-PCB)

Halogens

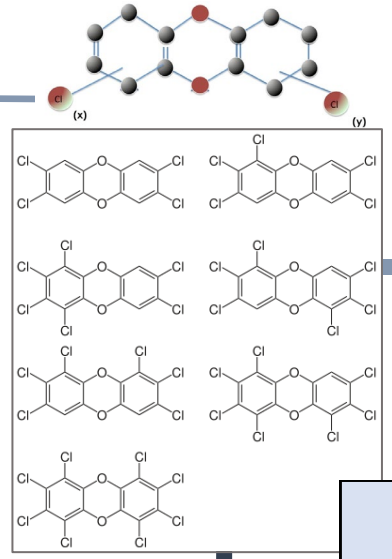
Chlorine (Cl)
Bromine (Br)
Fluorine (F)
Iodine (I)

Chlorine can be substituted by an other halogen

EU regulations only for **PCDD/F in emissions**

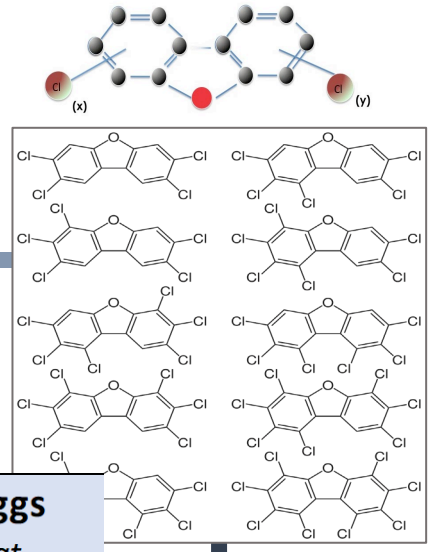
EU regulations only on **Chlorinated** Persistent Organic Pollutants (POP)

Dioxin
PCDD (75)
n = 7

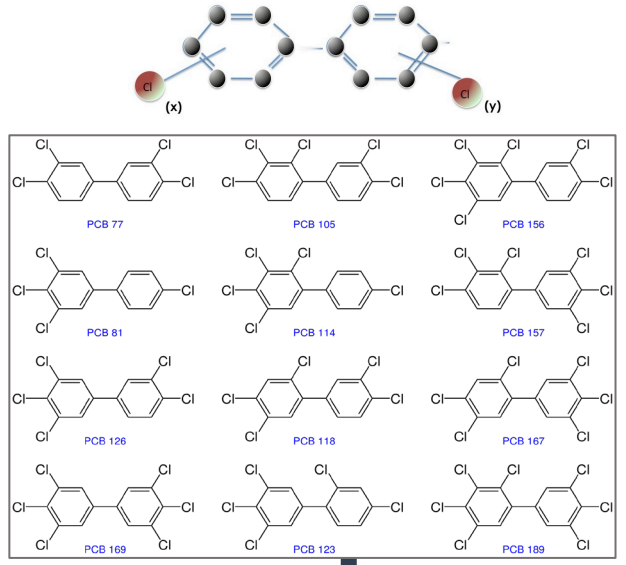


Furan
PCDF (135)
n = 10

0.1 ng TEQ/Nm3



dioxin-like Polychlorinated biphenyl
dl-PCB (209)
n = 12



EU regulation Eggs
GC-MS pg TEQ/g fat

Action limit PCDD/F	≥ 1.75 pg

EU regulation Eggs
GC-MS pg TEQ/g fat

Limit PCDD/F	≥ 2.5 pg

EU regulation Eggs
GC-MS pg TEQ/g fat

Limit PCDD/F/dl-PCB	≥ 5.0 pg

EU regulation Eggs
GC-MS pg TEQ/g fat

Action limit dl-PCB	≥ 1.75 pg

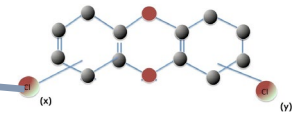
Chemical analysis (GC-MS) vs Bioassay (CALUX)

Halogen elements:

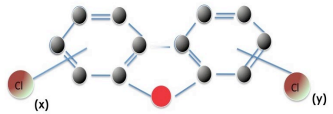
Chlorine (Cl)
Bromine (Br)
Fluorine (F)
Iodine (I)

Chlorine can be substituted by an other halogen in dioxins, UPOP

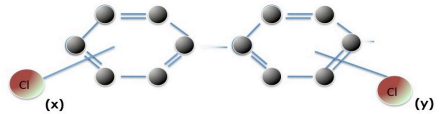
Dioxin PXDD



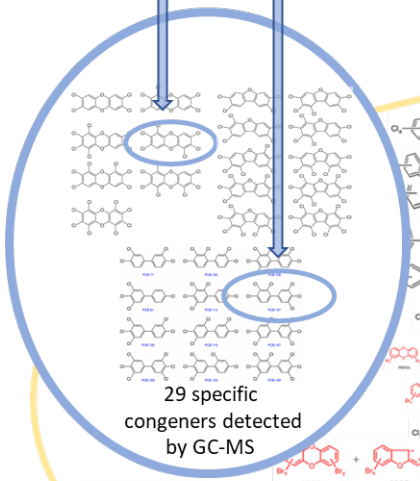
Furan PXDF



dioxin-like Poly-X-biphenyl dl-PXB



GC-MS individual chemical analyses



DR CALUX, analyses of the whole group of dioxin-like activity

TW Indicative scale for Non-food DR CALUX	
> 5.0	*pg TCDD eq./g product*
> 2.0	*pg TCDD eq./g product*
1.0 - 2.0	*pg TCDD eq./g product*
0.5 - 1.0	*pg TCDD eq./g product*
< 0.5	*pg TCDD eq./g product*

DR CALUX Food (Eggs)	
pg BEQ / g fat	
≥ 1.7	EU Cut-off-Value PCDD/F
≥ 3.3	EU Cut-off-Value PCDD/F/dl-PCB

What are the real emissions & residues of a modern waste (WtE) incineration plant ?

Does the emissions of waste incineration comply with EU emission standard ?

PFAS ?

PAH ?

PXDD/F ?

HF 0,5 t

SOx 50 t

HCl 10 t

NOx 200 t

dl-PCBs ?

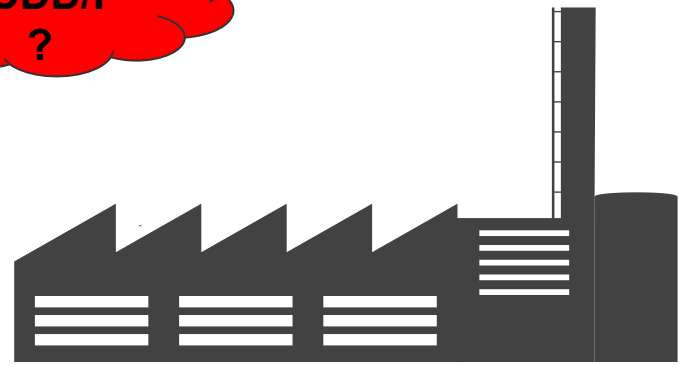
Heavy metals 600 kg

Exhaust gas emissions 480 000 000 m³

Dust 10 t

PCDD/F ?

CO_2 41 500 t



Sludges 5 880 m³

Waste input 100 000 t

Bottom ash 30 240 t

Fly ash 5 594 t

Other hazardous 6 t

Natural gas 504 000 m³

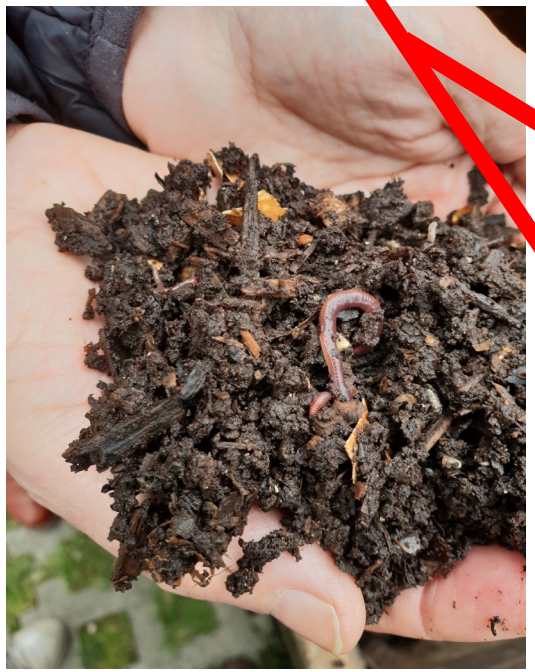
water 21 000 m³

chemicals 2 910 t

TW/AA©

Why use eggs of backyard chicken for biomonitoring?

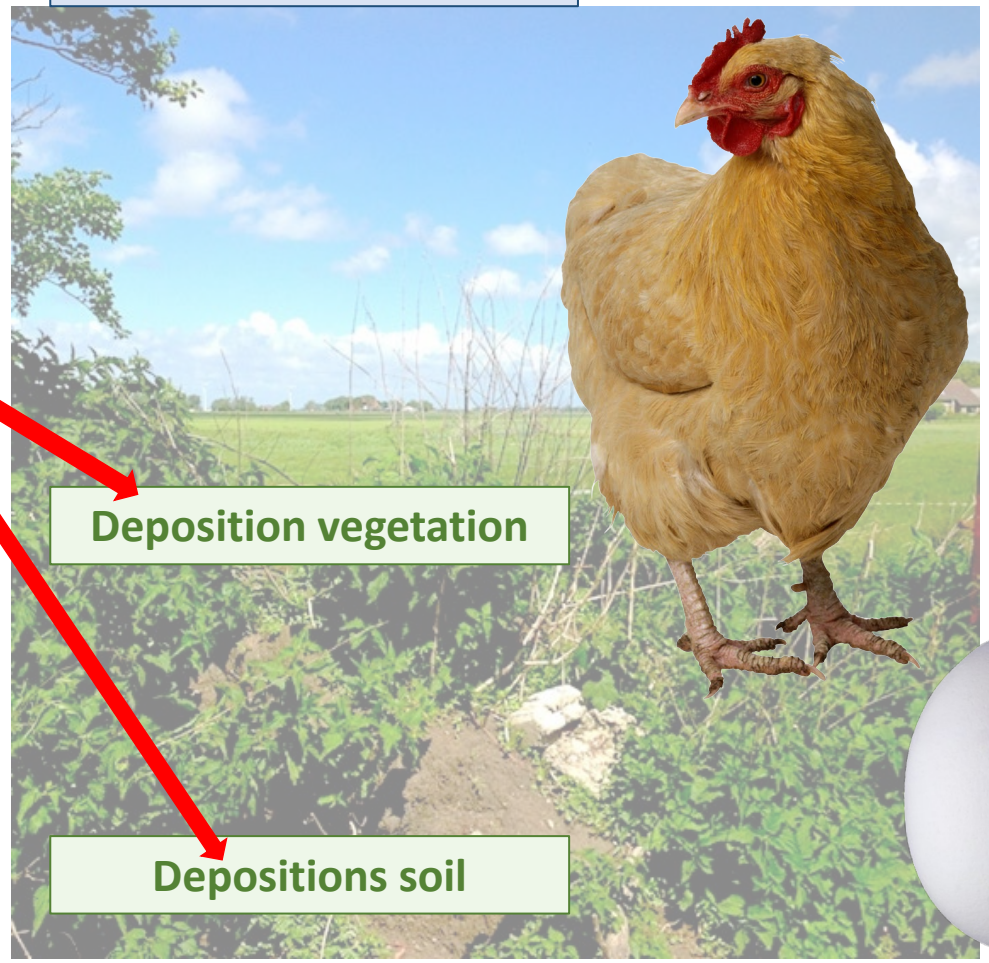
WtE incineration
Emissions SVHC

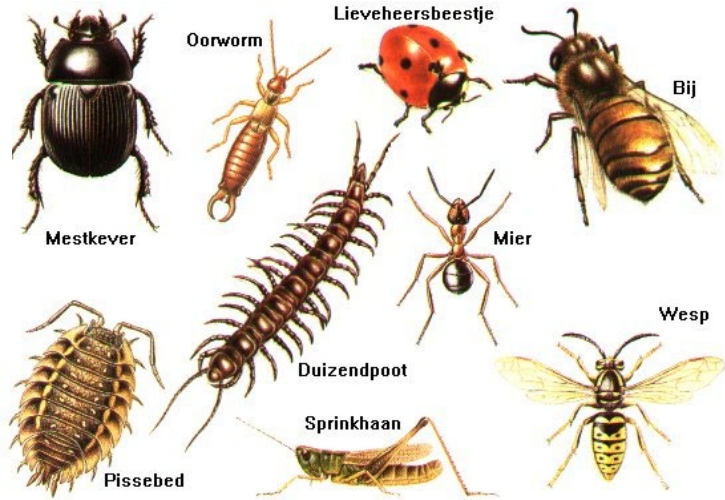


Air emissions

Deposition vegetation

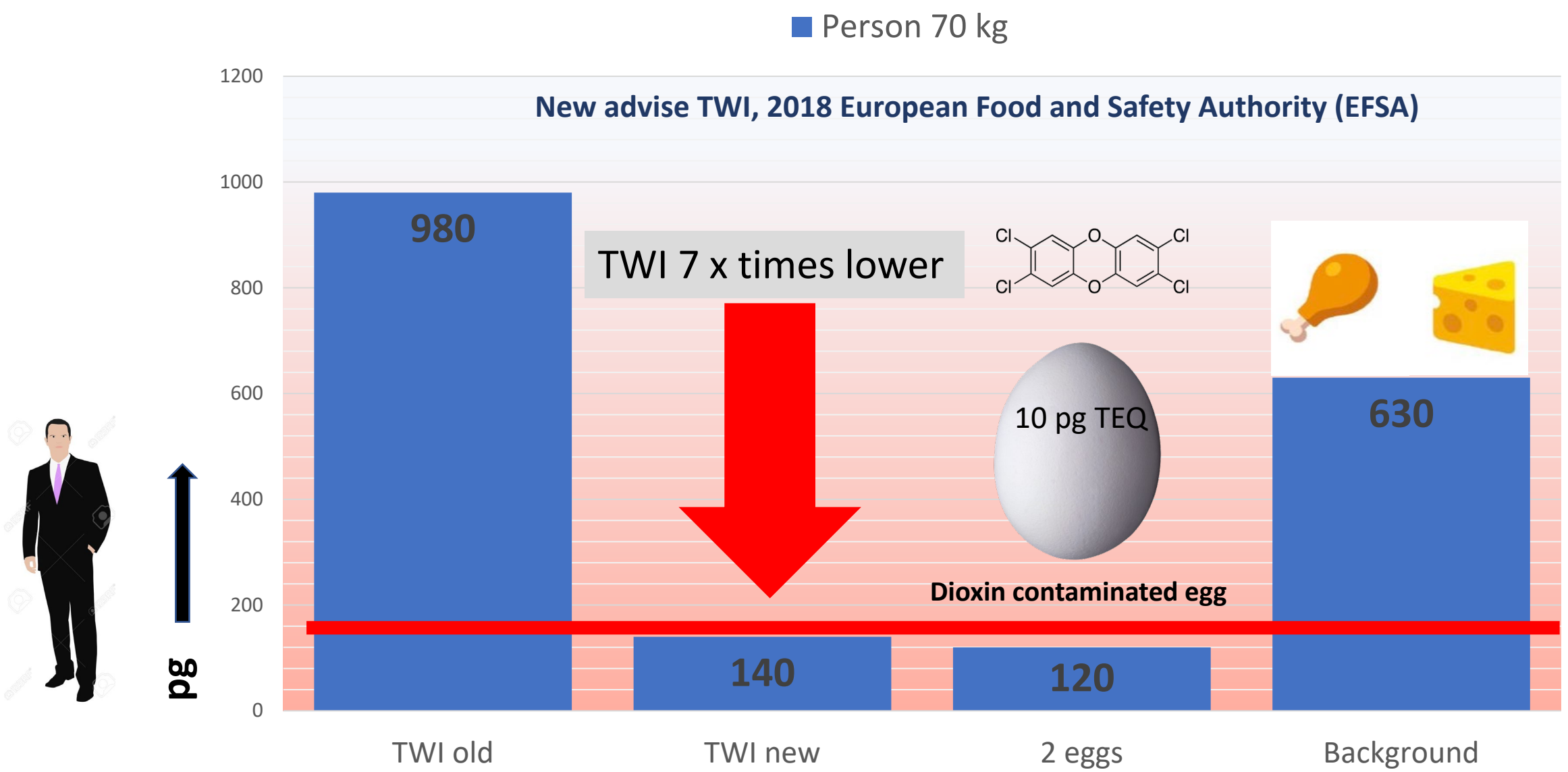
Depositions soil





Bioaccumulation
Biomagnification
Biotransformation
Xenobiotical metabolism

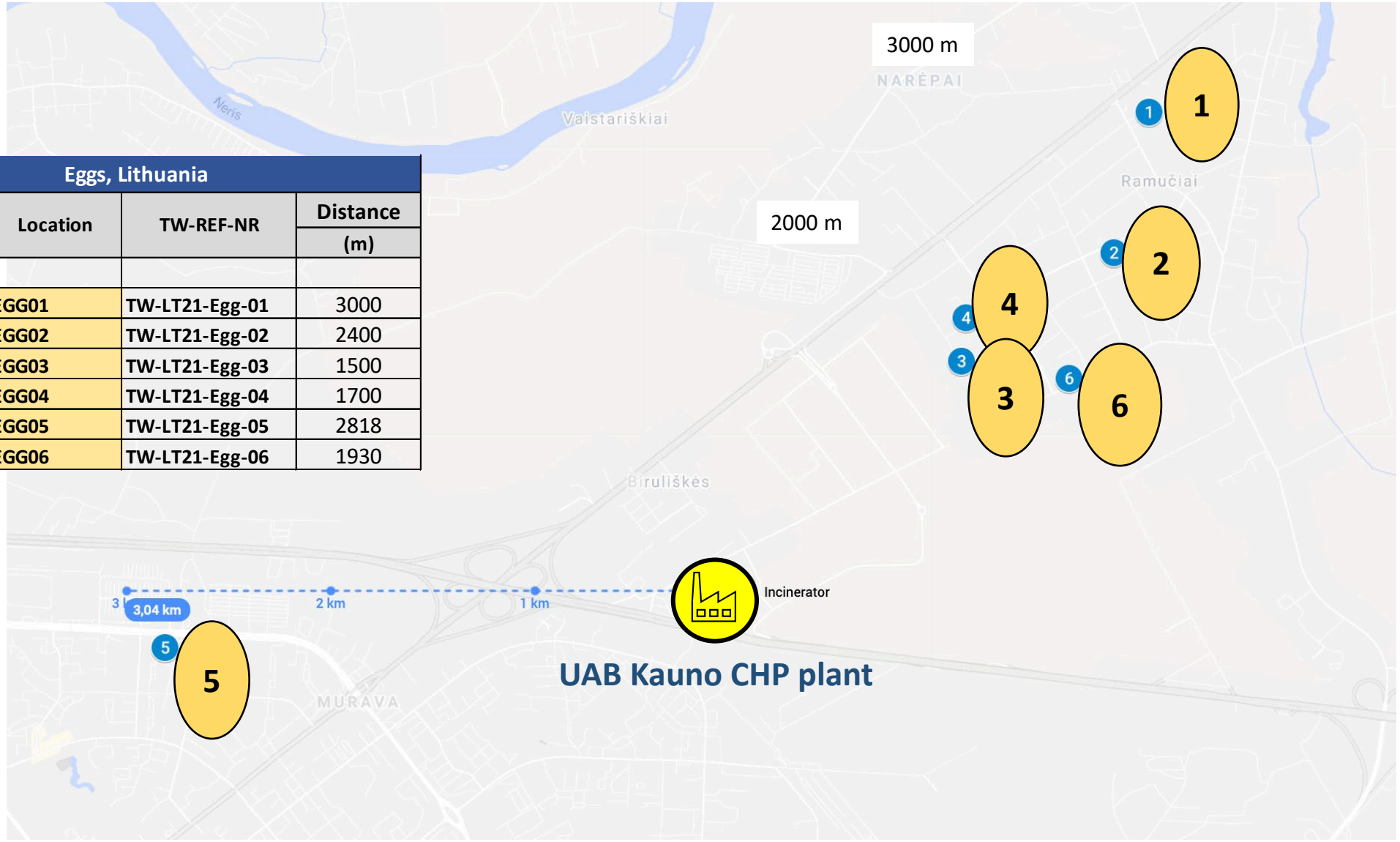
EFSA advise: Tolerable Weekly Intake (TWI) dioxins



Red line: New TWI EFSA : 2 pg TEQ/kg bodyweight/ PER WEEK (old: 2 pg/day)

Sample location eggs Kaunas, Lithuania - 2021

Eggs, Lithuania			
Sample data	Location	TW-REF-NR	Distance (m)
12-6-2021	EGG01	TW-LT21-Egg-01	3000
13-6-2021	EGG02	TW-LT21-Egg-02	2400
12-6-2021	EGG03	TW-LT21-Egg-03	1500
12-6-2021	EGG04	TW-LT21-Egg-04	1700
12-6-2021	EGG05	TW-LT21-Egg-05	2818
12-6-2021	EGG06	TW-LT21-Egg-06	1930



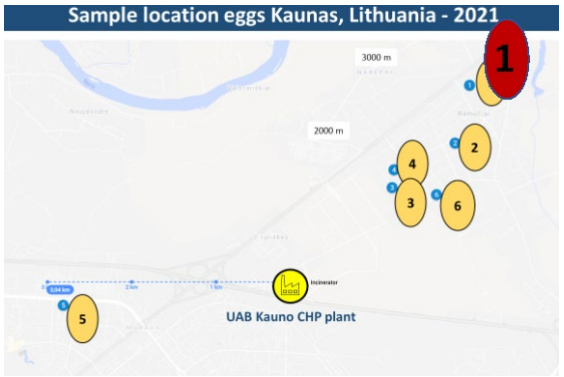
Sample locations Kaunas, Lithuania - 2021

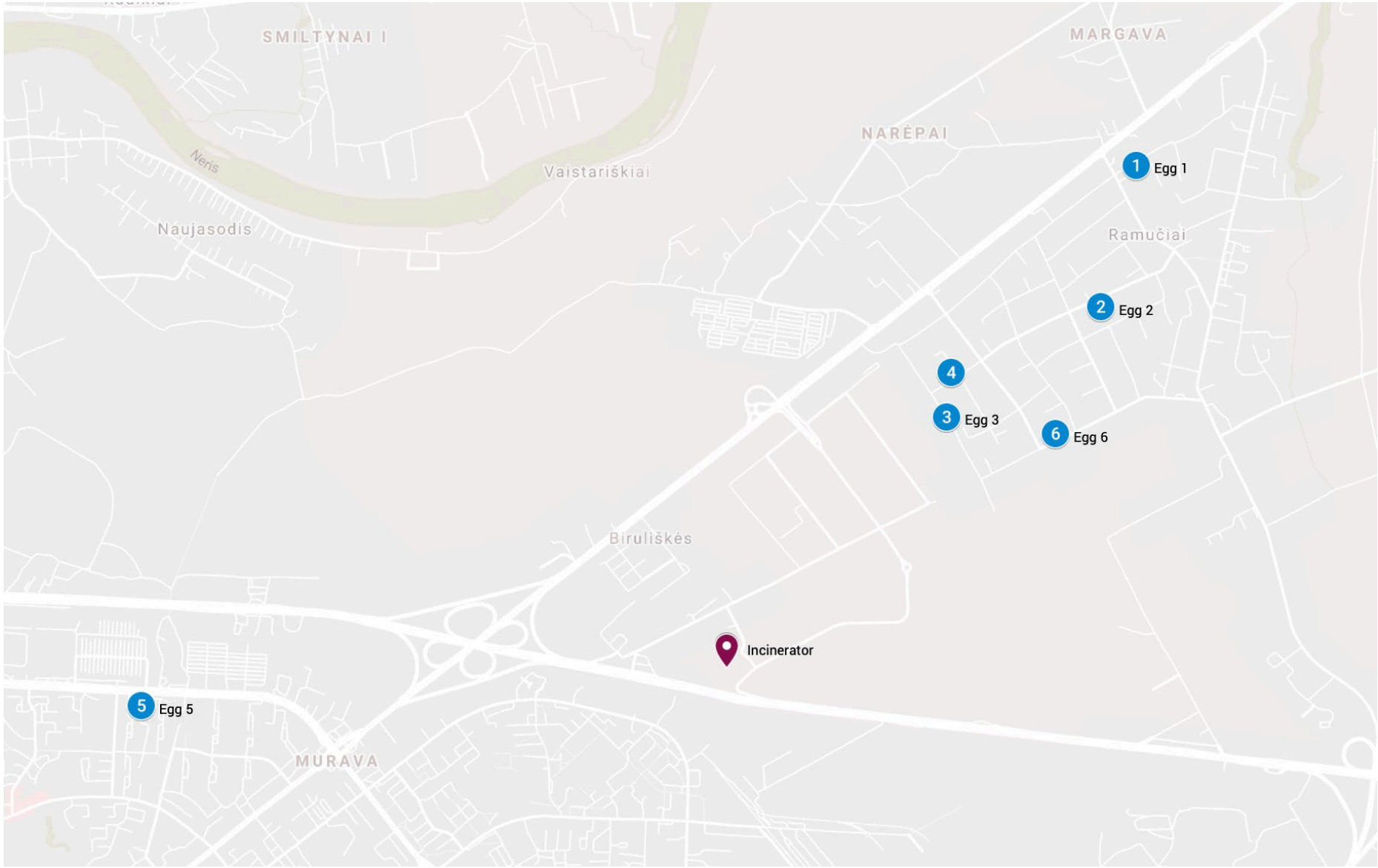
1

Sample egg location questionnairy Kaunas, Lithuania 2021						
TW-REF-NR	TW-LT21-Egg-01	TW-LT21-Egg-02	TW-LT21-Egg-03	TW-LT21-Egg-04	TW-LT21-Egg-05	TW-LT21-Egg-06
Distance (m)	3000	2400	1500	1700	2818	1930
Pics permissions	No	Yes	Yes	Yes	Yes	Yes
Breed	unknown	unknown	unknown	Bovans brown	unknown	unknown
Hens (n)	7	30	9	6	2	19
Rooster (n)						1
Age (month)	12 mnd	12-36 mnd	12 mnd	12-24 mnd	12 mnd	12-24 mnd
Eggs/day	7	10	6	5	0,7	15
Eggs/week	46					
Eggs/month	180	300	180	150	21	450
Foraging area	20	200	60	144	1.27	1500
		summer				
Housing	3		20	3	2	12
Terrain	soil	grass	soil	soil	soil	soil
	grass	concrete	grass	grass	vegetation	grass
	trees			trees		
Feed	corn	grain	grain	corn	grain	corn
	grain	comb. food	vegetables	grain	vegetables	grain
	combined food	vegetables	fruit	food scraps		
	vegetables	fruit	peas	comp. grain		
Outdoor fireplace	neighbours	no	moderately	very rare	moderately	no
Housing material	straw	straw	straw	straw	straw	straw
	saw dust			wood	wood	saw dust
				plastic	concrete	concrete
All purpose burner	regular	regular	regular	moderate	not	moderate
Pesticides use	not	not	not	moderate	not	not
DR CALUX BEQ						
PCDD/F BEQ	4,50	5,00	1,20	2,10	5,00	2,80
dl-PCB	1,40	1,70	0,90	0,90	2,00	6,50
PCDD/F/dl-PCB	5,90	6,70	2,10	3,00	7,00	9,30
GC-MS TEQ						
PCDD/F	2,40	2,30	0,78	1,90	2,20	1,70
dl-PCB	1,40	0,93	0,76	1,10	2,10	18,00
PCDD/F/dl-PCB	3,80	3,20	1,50	3,00	4,30	20,00

Egg location 1 Kaunas, Lithuania - 2021

TW-REF-NR	TW-LT21-Egg-01
Sample date	12/06/2021
Distance (m)	3000
Hens (n)	7
Age (month)	12 mnd
Eggs/month	180
DR CALUX (*pg BEQ/g fat*)	
PCDD/F BEQ	**4,50**
dl-PCB	1,40
PCDD/F/dl-PCB	5,90
GC-MS (*pg TEQ/g fat*)	
PCDD/F	2,40
dl-PCB	1,40
PCDD/F/dl-PCB	3,80

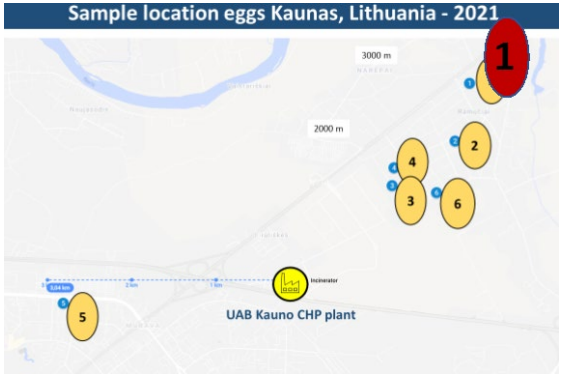




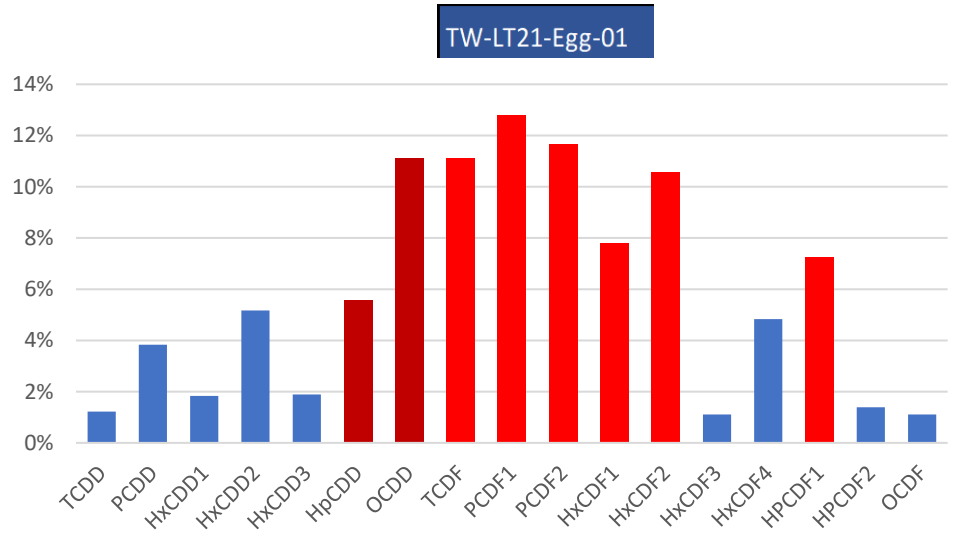
No pics permission

Egg location 1 Kaunas, Lithuania - 2021

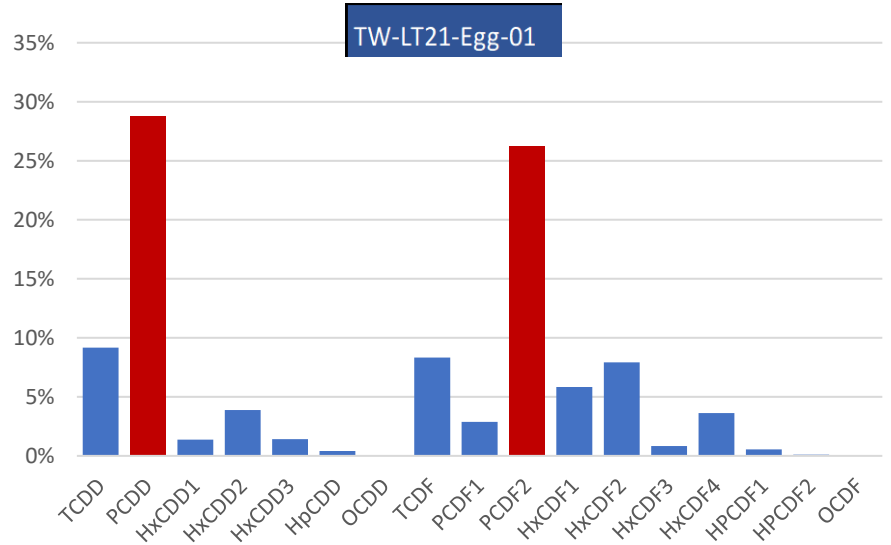
TW-REF-NR	TW-LT21-Egg-01
Sample date	12/06/2021
Distance (m)	3000
Hens (n)	7
Age (month)	12 mnd
Eggs/month	180
DR CALUX (*pg BEQ/g fat*)	
PCDD/F BEQ	4,50
dl-PCB	1,40
PCDD/F/dl-PCB	5,90
GC-MS (*pg TEQ/g fat*)	
PCDD/F	2,40
dl-PCB	1,40
PCDD/F/dl-PCB	3,80



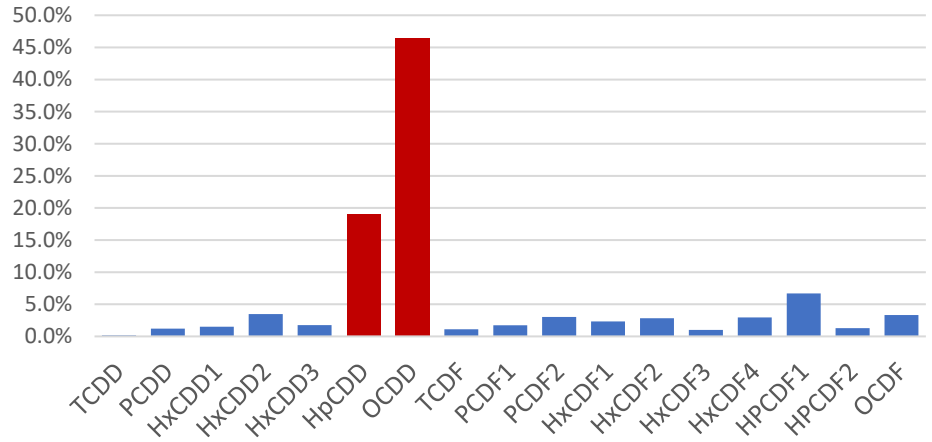
Fraction of total (%)



Fraction of total TEQ (%)

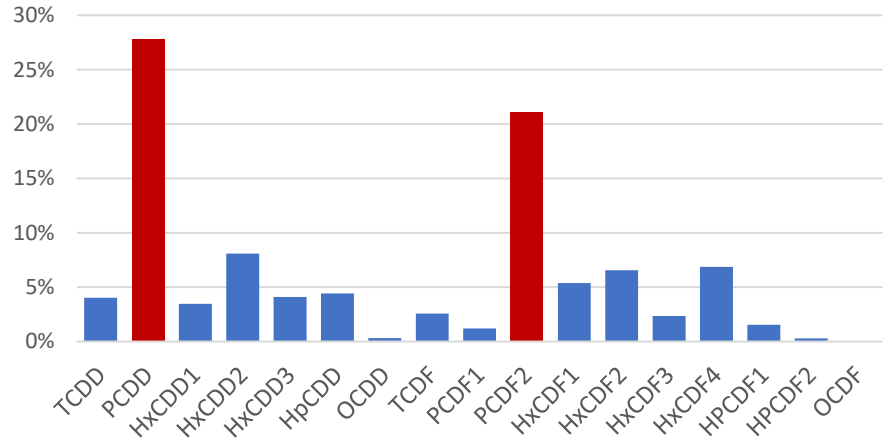


Fraction of total (%)



Incinerator REC/NL (20,000 hrs)

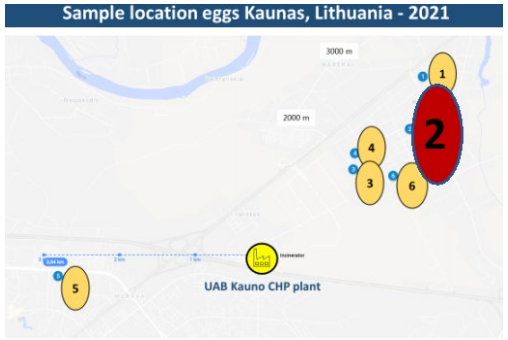
Fraction of total TEQ (%)



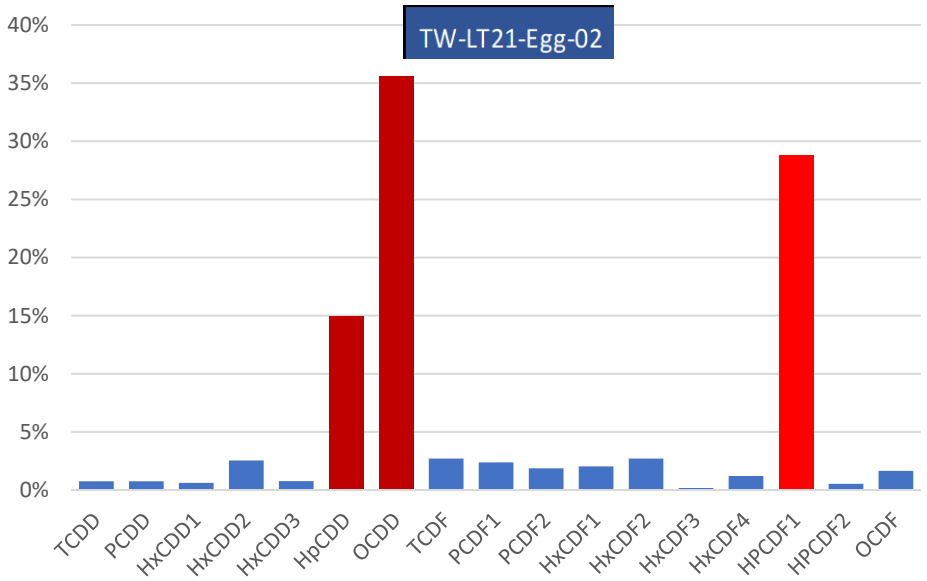
Egg location 2 Pics - Kaunas, Lithuania - 2021

Egg location 2 Kaunas, Lithuania - 2021

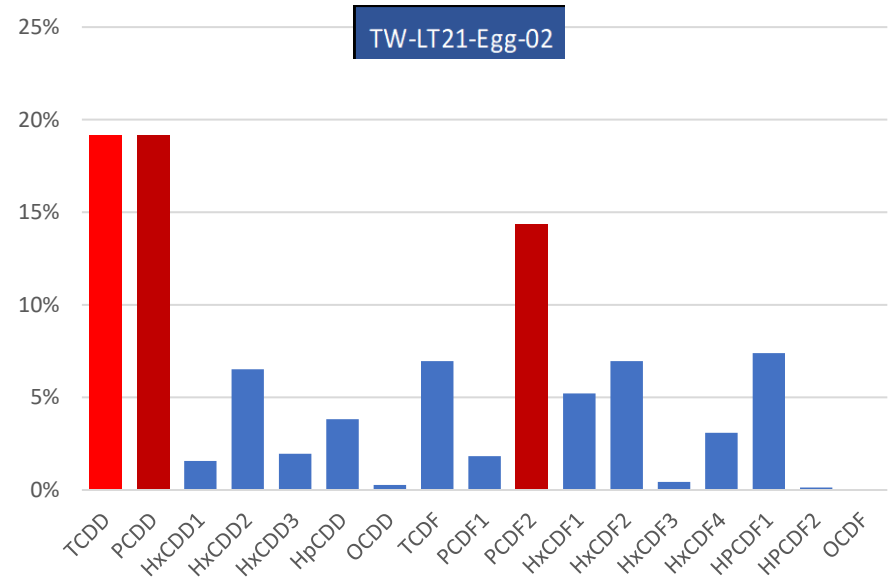
TW-REF-NR	TW-LT21-Egg-02
Sample date	12/06/2021
Distance (m)	2400
Hens (n)	30
Age (month)	
Eggs/month	12-36 mnd
DR CALUX (*pg BEQ/g fat*)	
PCDD/F BEQ	5,00
dl-PCB	1,70
PCDD/F/dl-PCB	6,70
GC-MS (*pg TEQ/g fat*)	
PCDD/F	2,30
dl-PCB	0,93
PCDD/F/dl-PCB	3,20



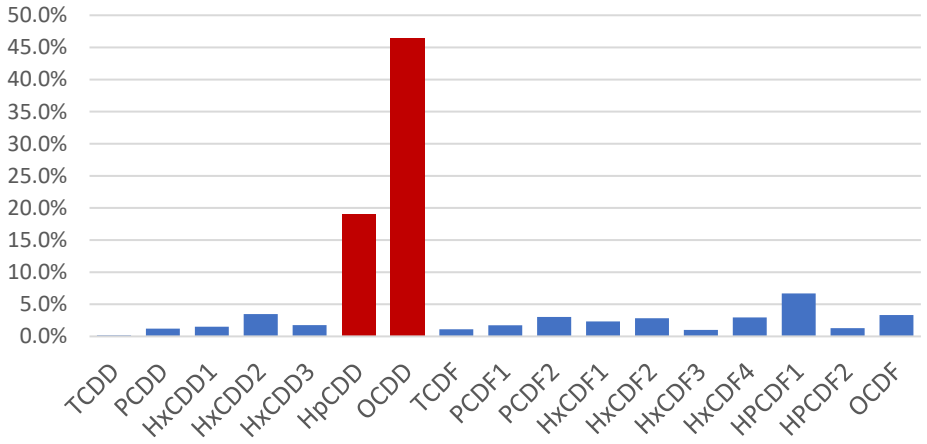
Fraction of total (%)



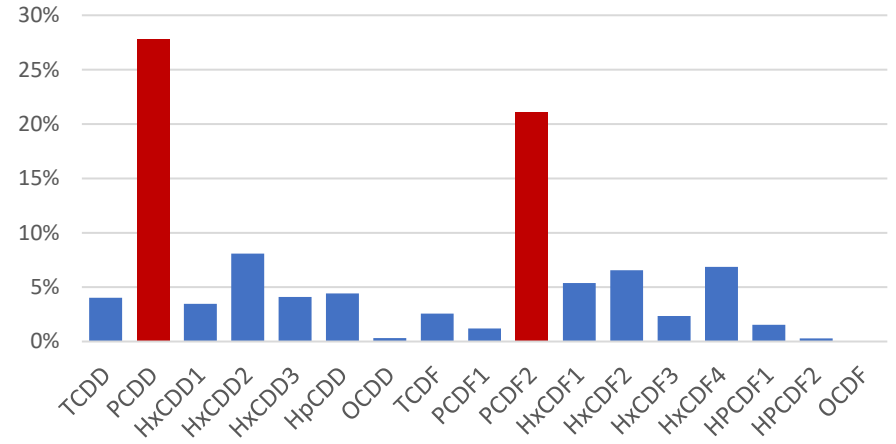
Fraction of total TEQ (%)



Fraction of total (%) Incinerator REC/NL (20,000 hrs)



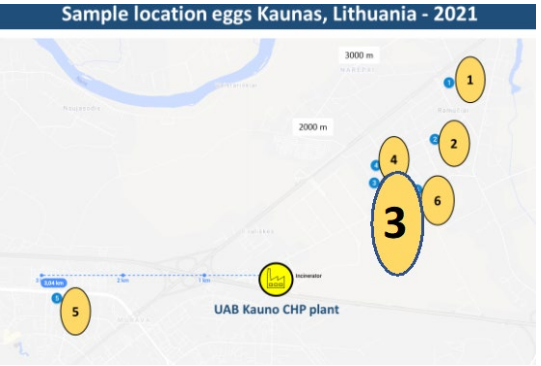
Fraction of total TEQ (%)



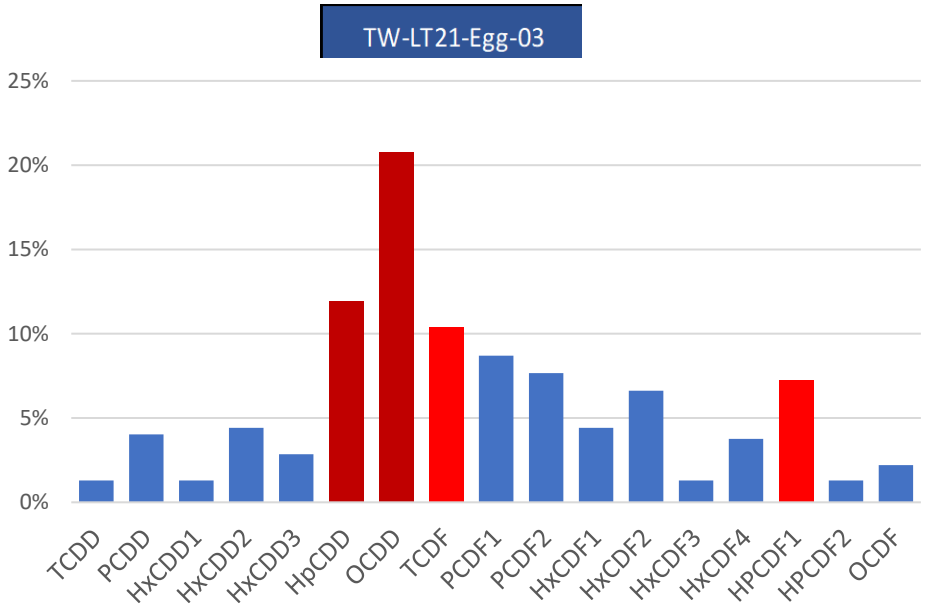
Egg location 3 Kaunas, Lithuania - 2021

Egg location 3 Kaunas, Lithuania - 2021

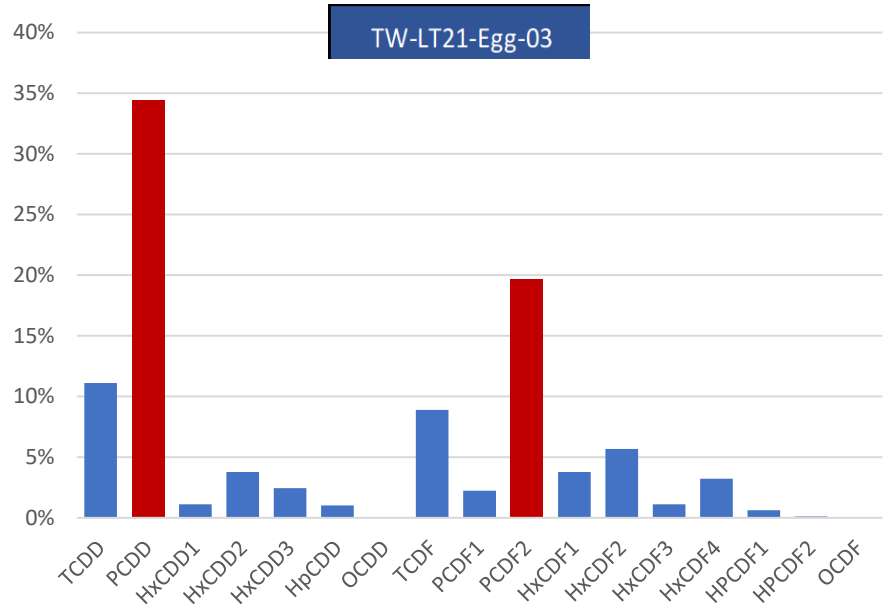
TW-REF-NR	TW-LT21-Egg-03
Sample date	12/06/2021
Distance (m)	1500
Hens (n)	9
Age (month)	12 mnd
Eggs/month	*180*
DR CALUX (*pg BEQ/g fat*)	
PCDD/F BEQ	1,20
dl-PCB	0,90
PCDD/F/dl-PCB	2,10
GC-MS (*pg TEQ/g fat*)	
PCDD/F	0,78
dl-PCB	0,76
PCDD/F/dl-PCB	1,50



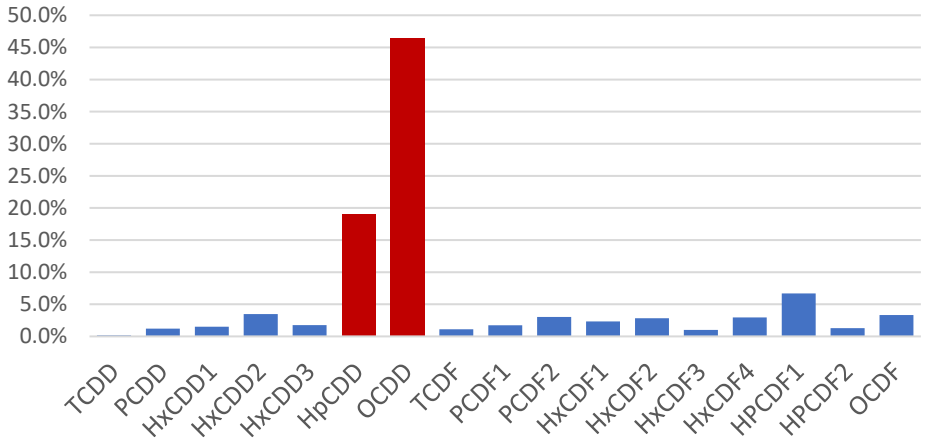
Fraction of total (%)

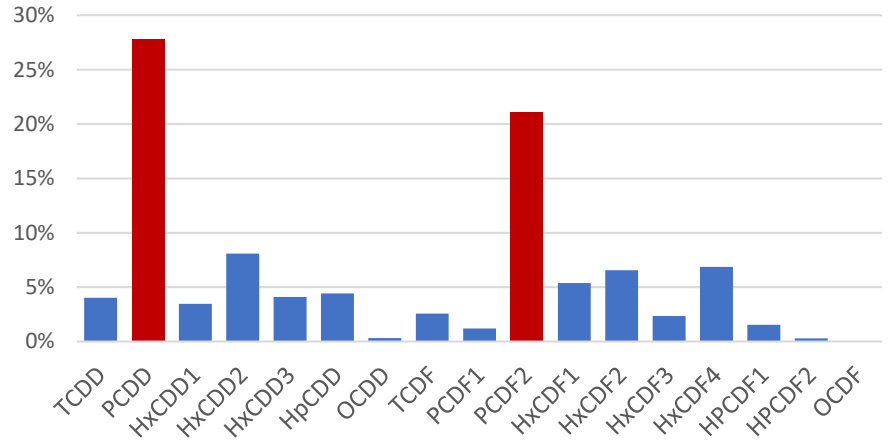


Fraction of total TEQ (%)



Fraction of total (%) Incinerator REC/NL (20,000 hrs) Fraction of total TEQ (%)

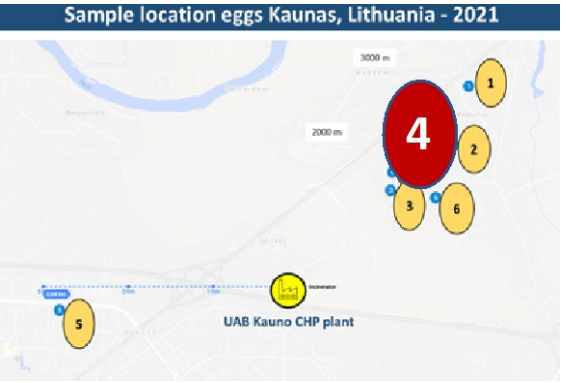




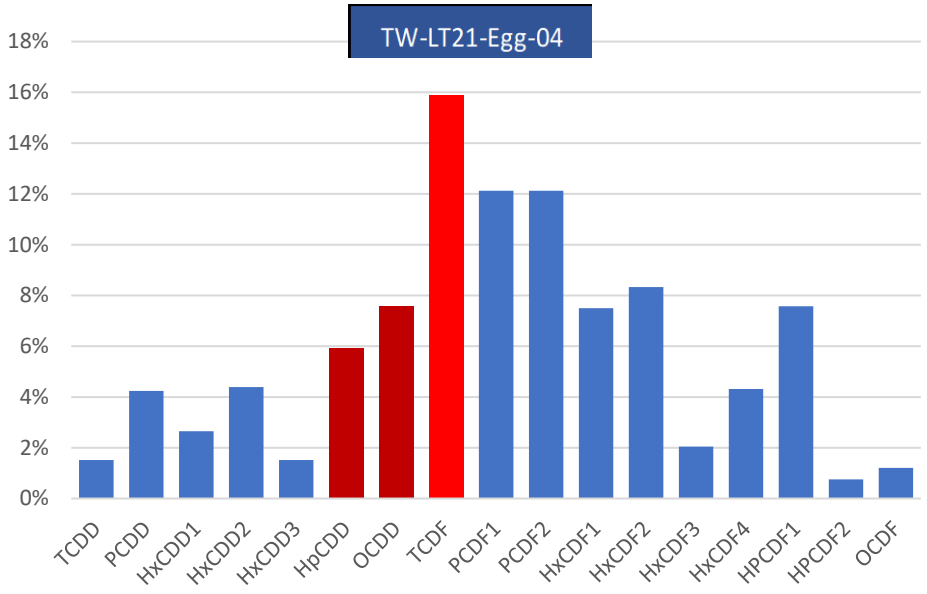
Egg location 4 Kaunas, Lithuania - 2021

Egg location 4 Kaunas, Lithuania - 2021

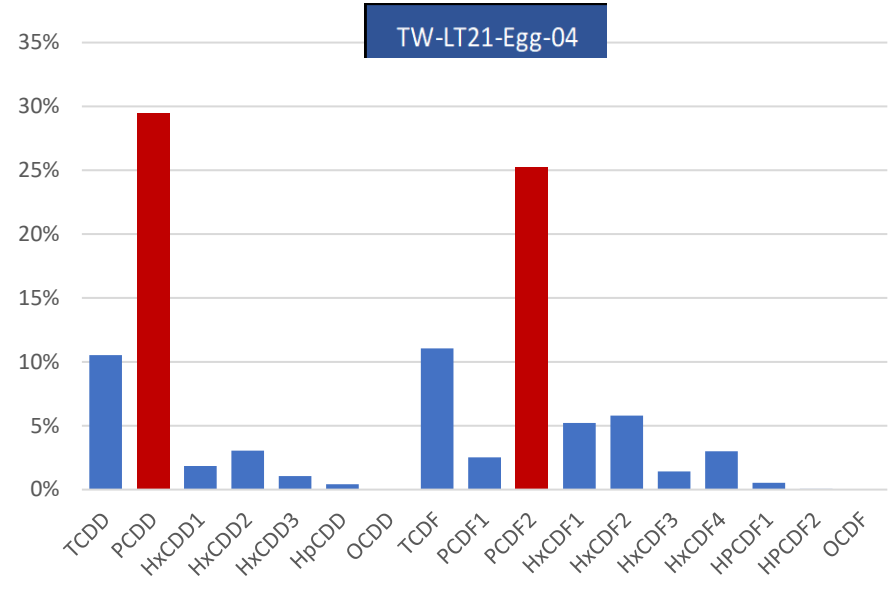
TW-REF-NR	TW-LT21-Egg-04
Sample date	12/06/2021
Distance (m)	1700
Hens (n)	6
Age (month)	12-24 mnd
Eggs/month	*150*
DR CALUX (*pg BEQ/g fat*)	
PCDD/F BEQ	2,10
dl-PCB	0,90
PCDD/F/dl-PCB	3,00
GC-MS (*pg TEQ/g fat*)	
PCDD/F	1,90
dl-PCB	1,10
PCDD/F/dl-PCB	3,00



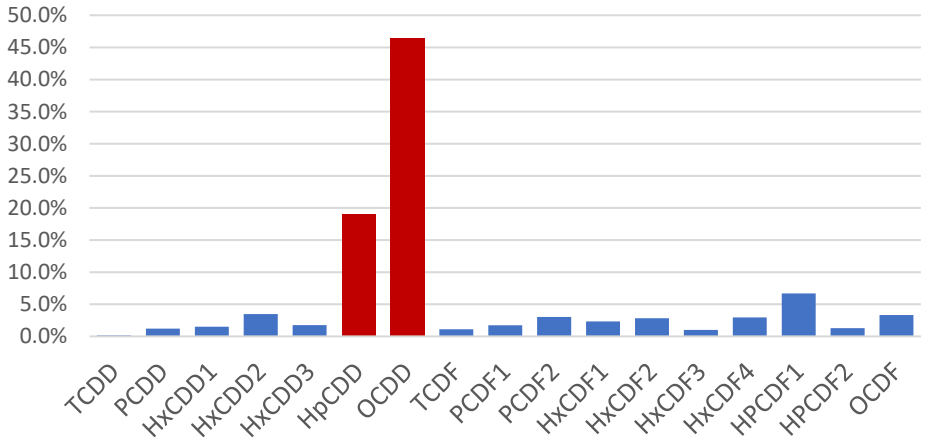
Fraction of total (%)



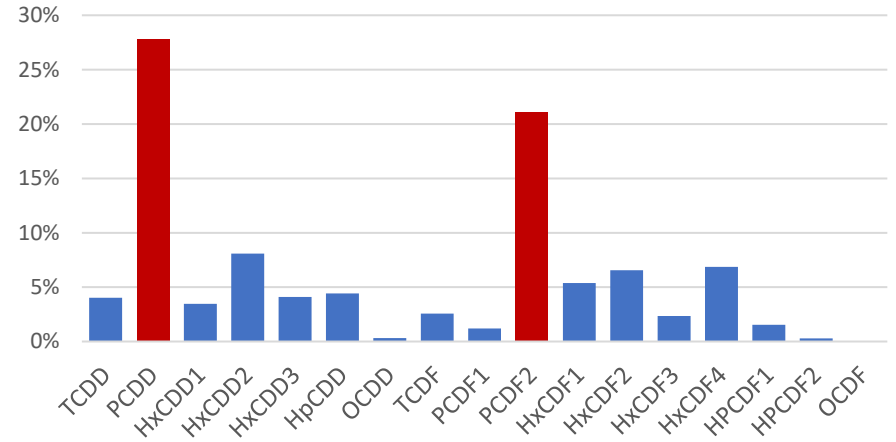
Fraction of total TEQ (%)



Fraction of total (%) Incinerator REC/NL (20,000 hrs)



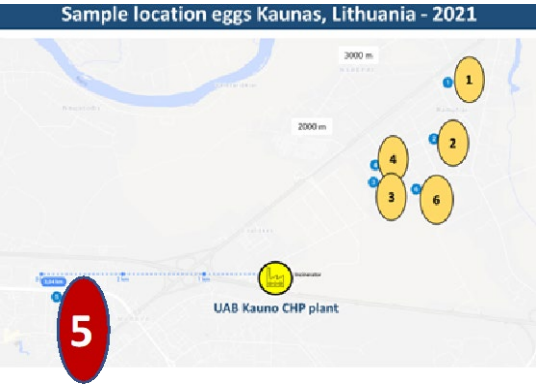
Fraction of total TEQ (%)



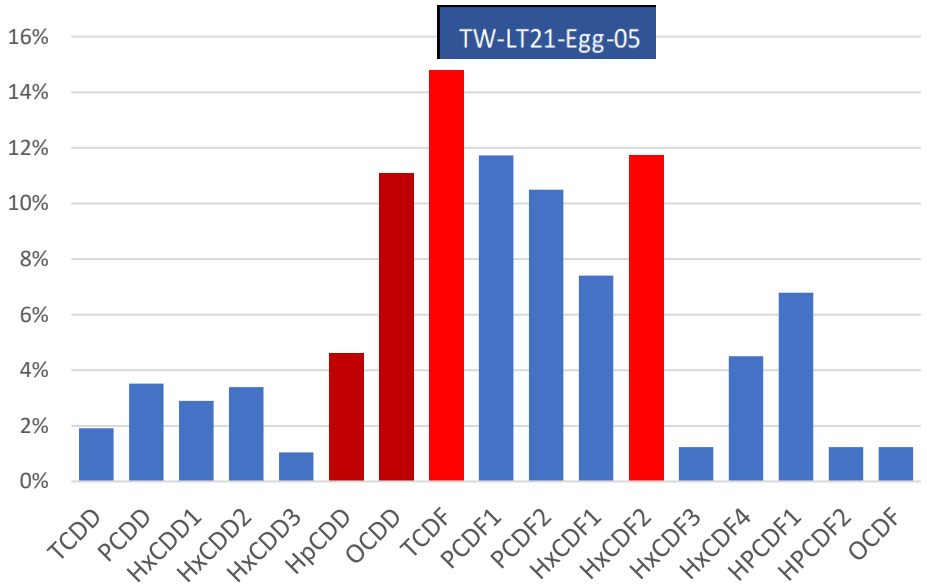
Egg location 5 Kaunas, Lithuania 2021

Egg location 5 Kaunas, Lithuania 2021

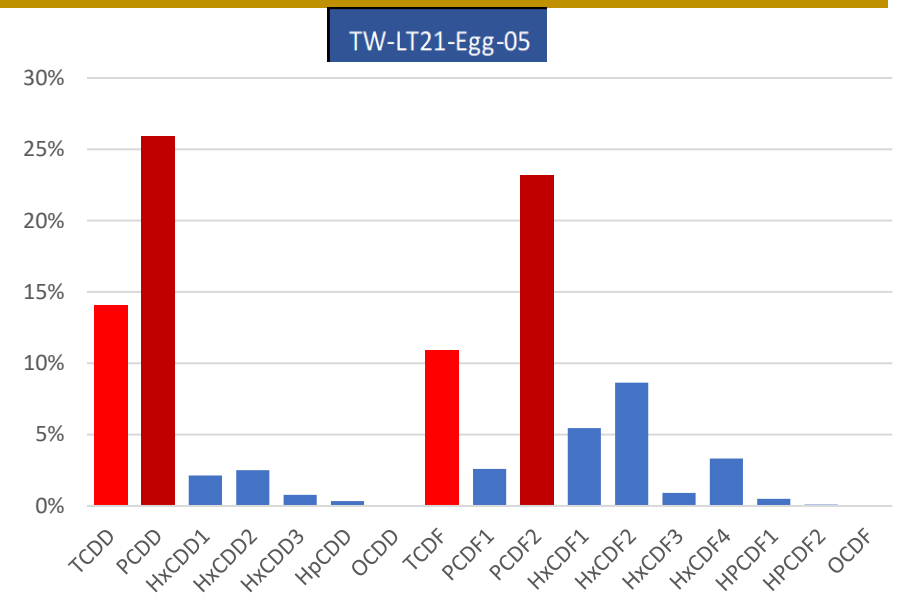
TW-REF-NR	TW-LT21-Egg-05
Sample date	12/06/2021
Distance (m)	2818
Hens (n)	2
Age (month)	12 mnd
Eggs/month	*21*
DR CALUX (*pg BEQ/g fat*)	
PCDD/F BEQ	5,00
dl-PCB	2,00
PCDD/F/dl-PCB	**7,00**
GC-MS (*pg TEQ/g fat*)	
PCDD/F	2,20
dl-PCB	2,10
PCDD/F/dl-PCB	4,30



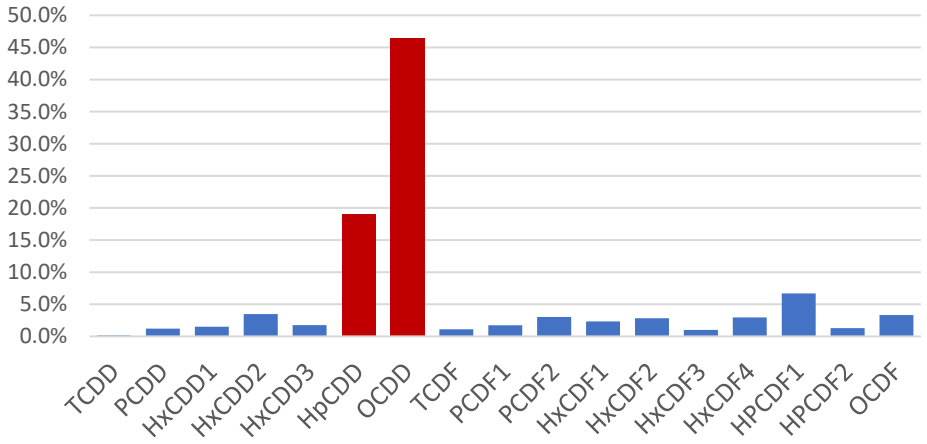
Fraction of total (%)



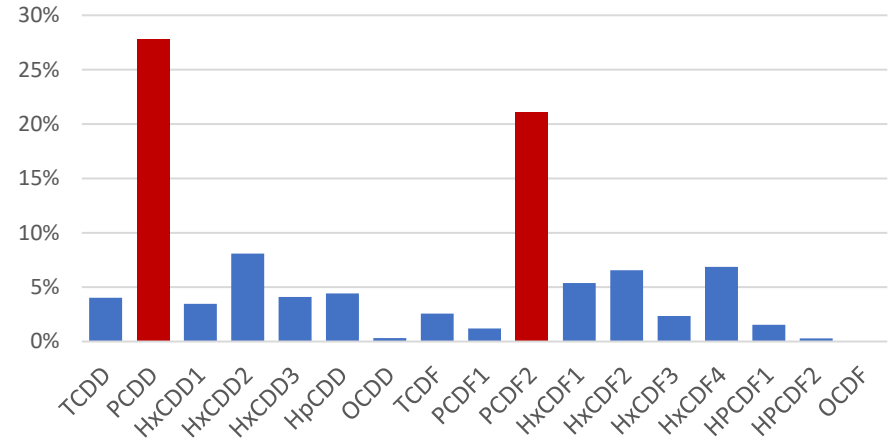
Fraction of total TEQ (%)



Fraction of total (%) Incinerator REC/NL (20,000 hrs)



Fraction of total TEQ (%)

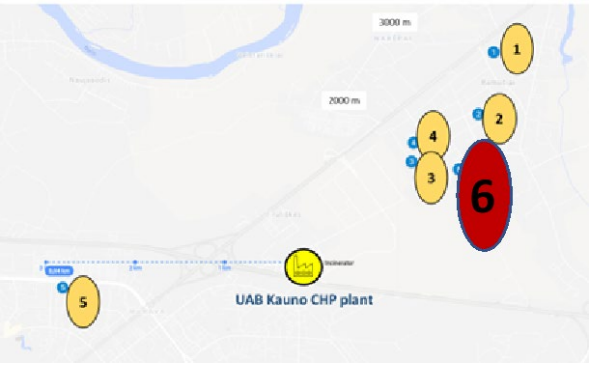


Egg location 6 Kaunas, Lithuania - 2021

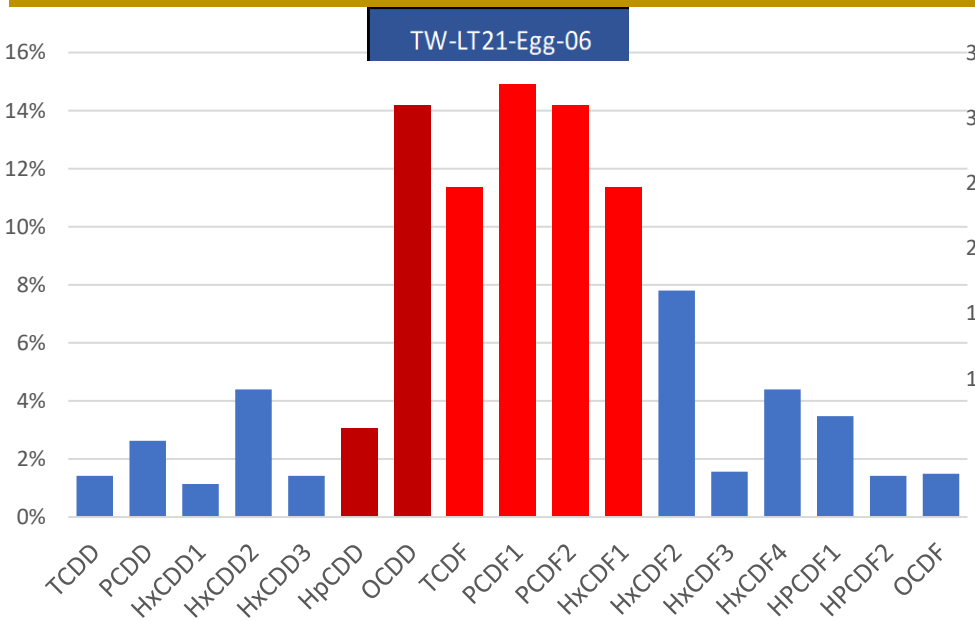
Egg location 6 Kaunas, Lithuania - 2021

TW-REF-NR	TW-LT21-Egg-06
Sample date	12/06/2021
Distance (m)	1930
Hens (n)	19
Age (month)	12-24 mnd
Eggs/month	*450*
DR CALUX (*pg BEQ/g fat*)	
PCDD/F BEQ	**2,80**
dl-PCB	6,50
PCDD/F/dl-PCB	**9,30**
GC-MS (*pg TEQ/g fat*)	
PCDD/F	1,70
dl-PCB	18,00
PCDD/F/dl-PCB	**20,00**

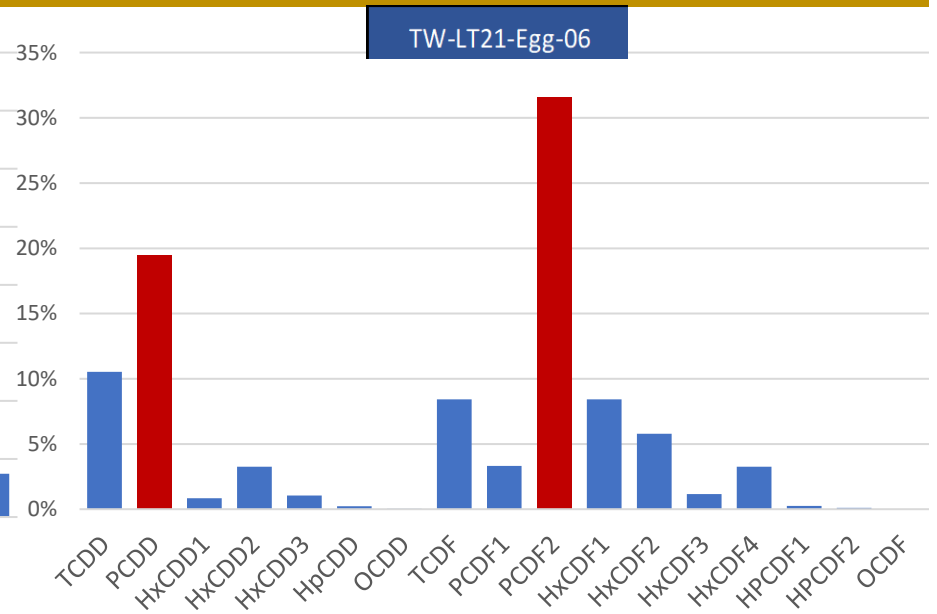
Sample location eggs Kaunas, Lithuania - 2021



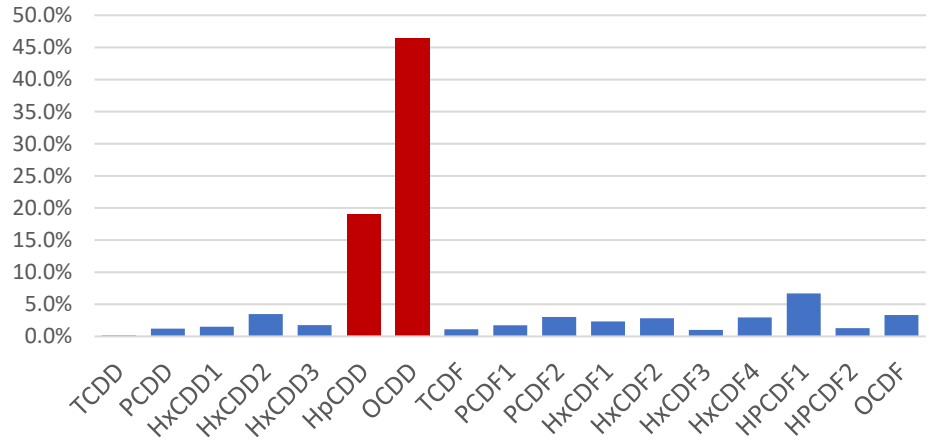
Fraction of total (%)



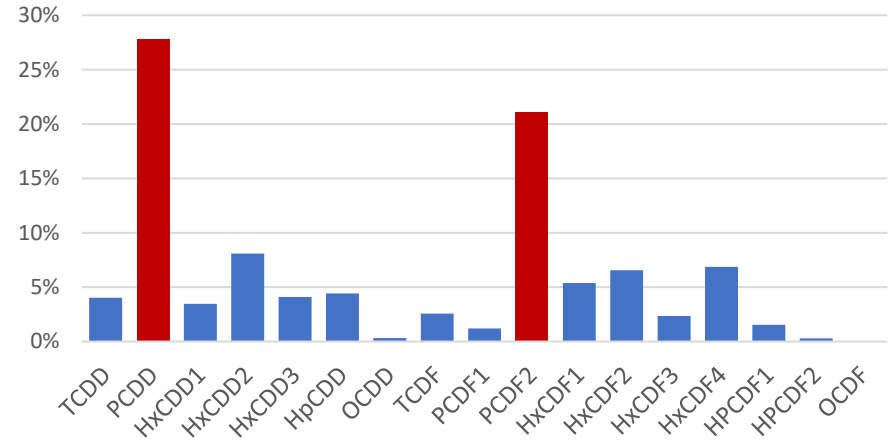
Fraction of total TEQ (%)



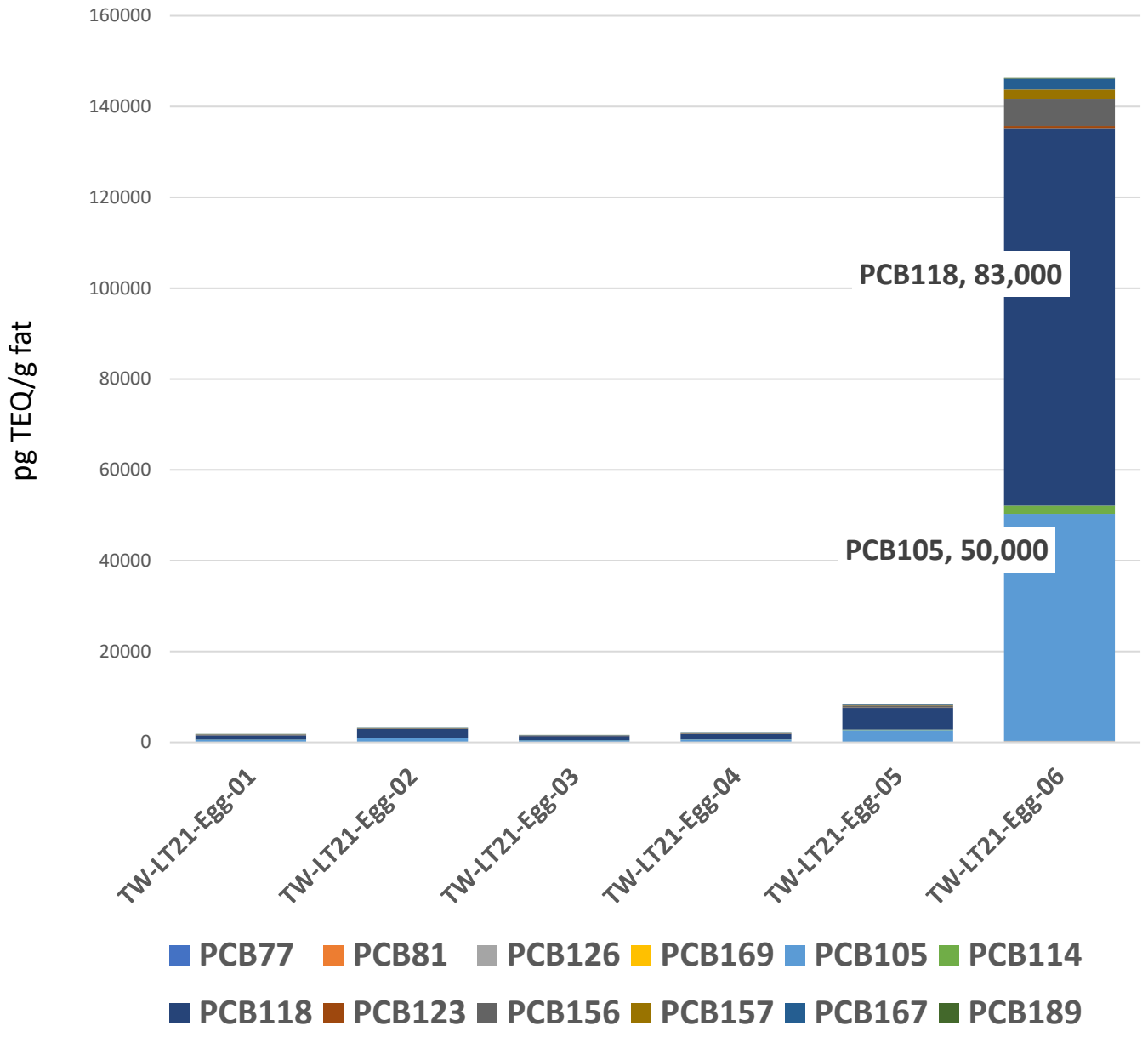
Fraction of total (%) Incinerator REC/NL (20,000 hrs)



Fraction of total TEQ (%)



DL-PCB congeners in eggs on location 6, Kaunas - 2021



Fraction congeners dl-PCB (%) eggs Kaunas, Lithuania 2021						
TW-LT21	Egg-01	Egg-02	Egg-03	Egg-04	Egg-05	Egg-06
PCB77	3%	1%	1%	1%	1%	0%
PCB81	0%	0%	0%	0%	0%	0%
PCB126	1%	0%	0%	0%	0%	0%
PCB169	0%	0%	0%	0%	0%	0%
PCB105	29%	29%	26%	27%	31%	34%
PCB114	1%	2%	1%	1%	1%	1%
PCB118	51%	60%	59%	58%	57%	57%
PCB123	1%	1%	1%	1%	1%	0%
PCB156	7%	3%	5%	5%	6%	4%
PCB157	2%	1%	2%	2%	1%	1%
PCB167	4%	2%	3%	3%	3%	2%
PCB189	1%	0%	0%	0%	1%	0%

Concentrations dl-PCB eggs Kaunas, Lithuania 2021						
TW-LT21	Egg-01	Egg-02	Egg-03	Egg-04	Egg-05	Egg-06
PCB77	49	39	18	23	47	130
PCB81	4	1	2	3	4	22
PCB126	13	8	7	9	18	140
PCB169	3	1	1	2	2	2
PCB105	520	920	410	560	2600	50000
PCB114	23	49	16	28	110	1800
PCB118	920	1900	940	1200	4800	83000
PCB123	24	26	19	23	53	650
PCB156	130	110	79	96	470	6000
PCB157	45	34	31	33	120	2000
PCB167	74	63	55	72	220	2400
PCB189	15	8	7	10	48	150
Total PCB pg/g	**1819**	**3159**	**1585**	**2059**	**8492**	**146294**

Results biomonitoring - Kaunas, Lithuania 2021

DR CALUX: 75% of pine needles have elevated dioxin (PCDD/F) levels

DR CALUX: High levels of dioxins (PCDD/F) in mosses

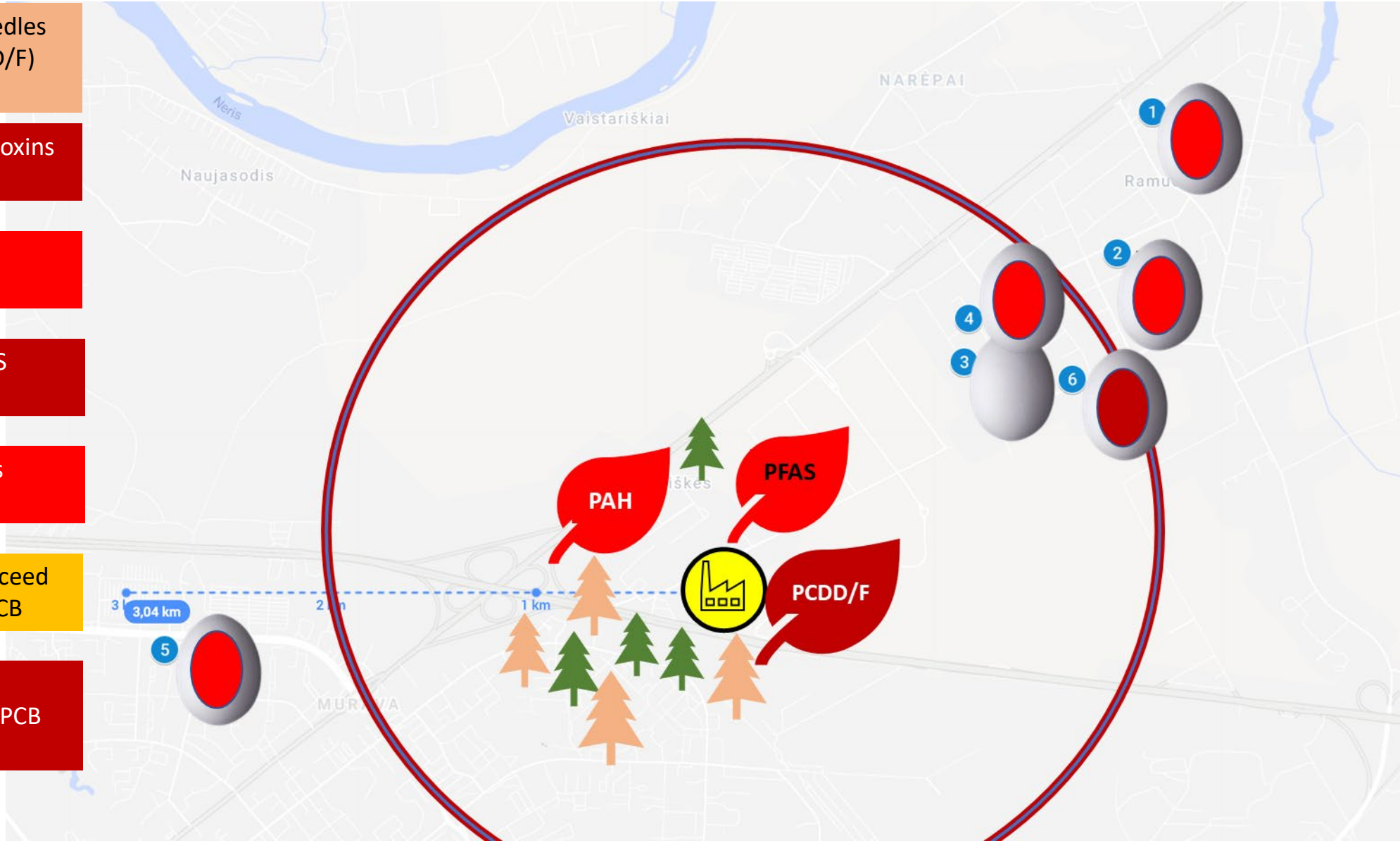
PAH CALUX: High levels of Benzo[a]pyrene in mosses

FITC-T4: High levels of PFAS found in mosses

DR CALUX: 83% of the eggs exceeding the EU limit

GC-MS: 33% of the eggs exceed the EU action limit for dl-PCB

GC-MS: One egg location exceeds the EU limit for dl-PCB with a factor 4



TW indicative scale vegetation			TW Indicative scale	TW Indicative scale	EU limit - Eggs		EU limit - Eggs	EU limit - Eggs	EU limit - Eggs
PCDD/F/dl-PCB	PCDD/F	dL-PCB	PFAS	PAH	PCDD/F/dl-PCB	PCDD/F	PCDD/F/dl-PCB	PCDD/F	dl-PCB
DR CALUX	DR CALUX	DR CALUX	FITC-T4/PFAS CALUX	PAH CALUX	DR CALUX		GC-MS	GC-MS	GC-MS
pg TCDD eq./g product	*pg TCDD eq./g product*	*pg TCDD eq./g product*	*µg PFOA eq./g product*	*ng Benzo[a]pyrene (B[a]P) eq./g product*	*pg BEQ/g fat*		*pg TEQ/g fat*	*pg TEQ/g fat*	*pg TEQ/g fat*
> 5.0	> 5.0	> 5.0	> 50	> 500					
> 2.0	> 2.0	> 2.0	> 20	> 250					
> 1.0	> 1.0	> 1.0	> 10	> 100	≥ 3.3	≥ 1. 7	≥ 5.0	≥ 2.5	
> 0.5	> 0.5	> 0.5	> 5	> 10				> 1.75	> 1.75
< 0.5	< 0.5	< 0.5	< 5	< 10	< 3.3	< 1.7	< 5.0	< 1.75	< 1.75

Short-term vs long-term measurements WtE

Short-term

Sampling: 0,1 % of a year

- 12 hours measurement period (2 x 6 hours)
- Only under steady state conditions
- Pre-announced
- Only PCDD/F

EU Regulatory

Long-term

Sampling: 95 % of a year

Should be EU Regulatory:

Continuous measurements in chimney WtE

Including Other Than Normal Conditions (OTNOC)

Analyses of other UPOPs (PFAS, PAH, PXDD/F)

TOXICO WATCH

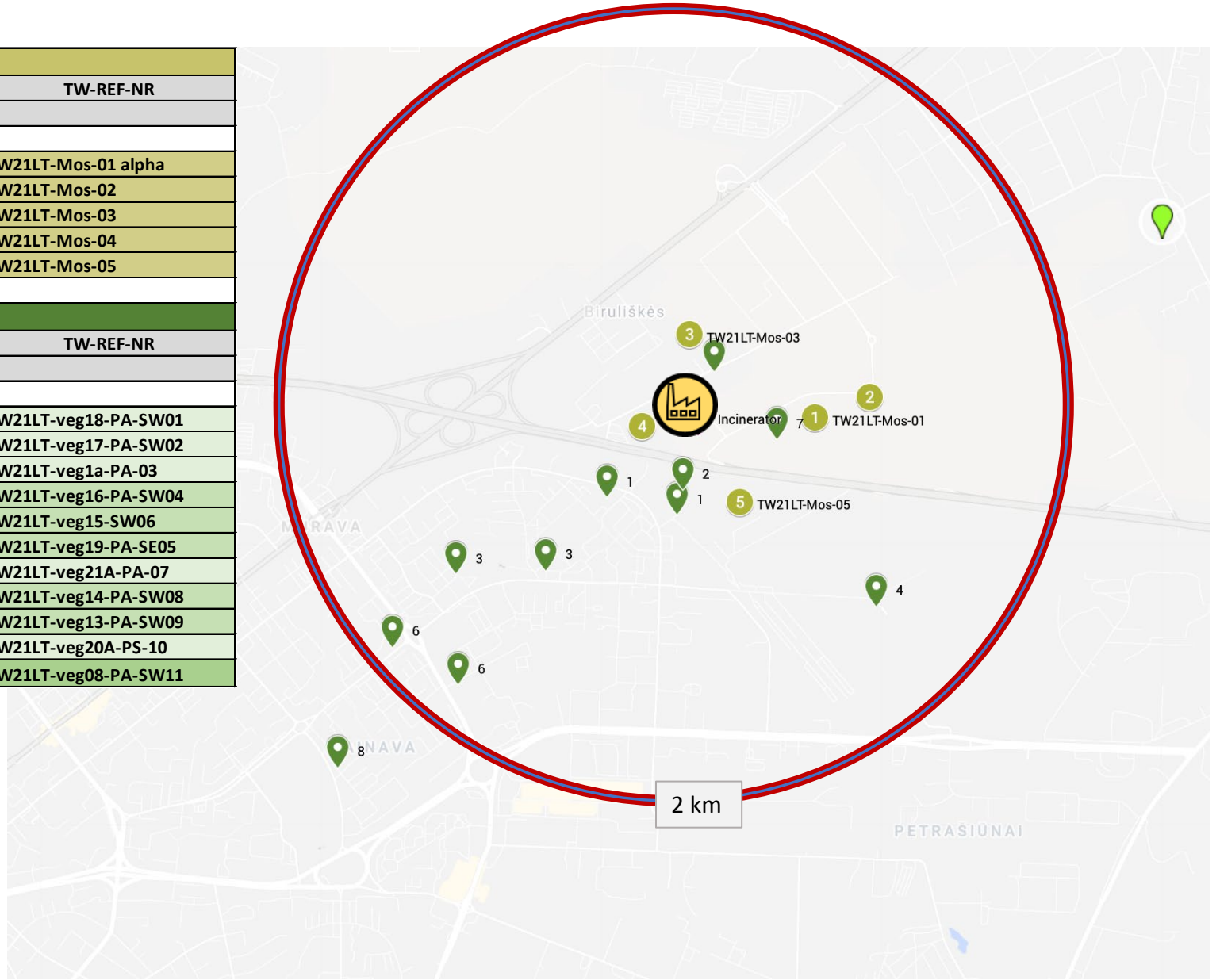
Annex III

Vegetation locations, Kaunas, Lithuania - 2021

Vegetation Sample locations Kaunas, Lithuania - 2021

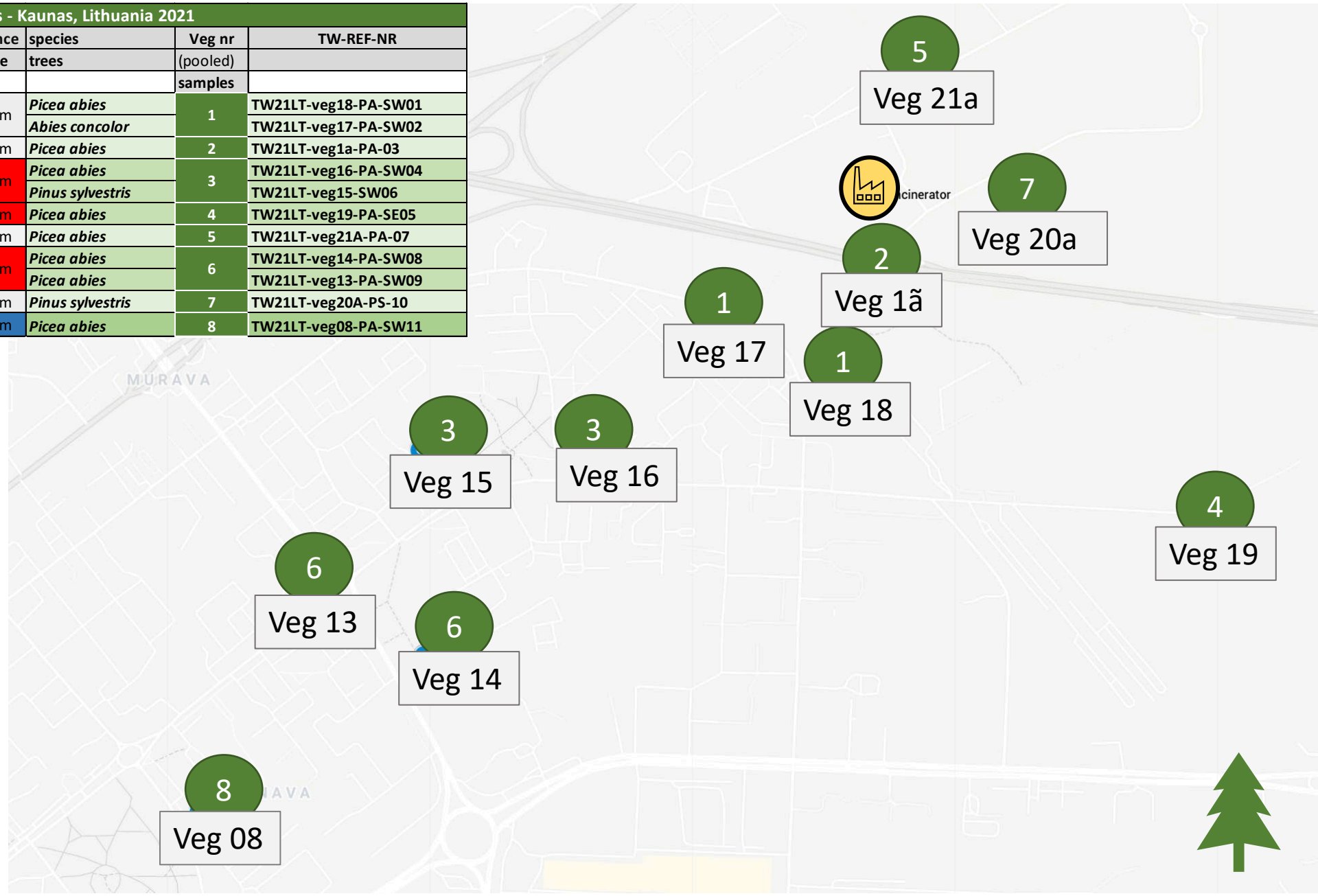
Location Mosses - Kaunas, Lithuania 2021								
Sample	**Moss**	**K Team**	**Wind**	**Distance**	**Distance**	**Species**	**Moss**	**TW-REF-NR**
Date	**location**	**Number**	**direction**	**(m)**	**Circle**		**samples**	
		Incinerator		0			**D:**	
12-6-2021	**1.**	Moss 1 Alpha	E	569	< 1 km		**M3**	**TW21LT-Mos-01 alpha**
13-6-2021	**2.**	Moss 2	NE	1260	< 2 km		**M2**	**TW21LT-Mos-02**
13-6-2021	**3.**	Moss 3	N	465	< 1 km		**M5**	**TW21LT-Mos-03**
13-6-2021	**4.**	Moss 4	W	283	< 1 km		**M4**	**TW21LT-Mos-04**
13-6-2021	**5.**	Moss 5	S	428	< 1 km		**M1**	**TW21LT-Mos-05**

Location pine needles - Kaunas, Lithuania 2021								
Sample	**Pine**	**K Team**	**Wind**	**Distance**	**Distance**	**species**	**Veg nr**	**TW-REF-NR**
Date	**Location**	**Number**	**direction**	**(m)**	**Circle**	**trees**	(pooled)	
		Incinerator		0			**samples**	
12-6-2021	1.	Veg. 18	SW	462	< 1 km	***Picea abies***	**1**	**TW21LT-veg18-PA-SW01**
12-6-2021	2.	Veg. 17	SW	555		***Abies concolor***		**TW21LT-veg17-PA-SW02**
12-6-2021	3.	Veg. 1 Alpha	S	322	< 1 km	***Picea abies***	**2**	**TW21LT-veg1a-PA-03**
12-6-2021	4.	Veg. 16	SW	1100	< 2 km	***Picea abies***	**3**	**TW21LT-veg16-PA-SW04**
12-6-2021	6.	Veg. 15	SW	1390		***Pinus sylvestris***		**TW21LT-veg15-SW06**
12-6-2021	5.	Veg. 19	SE	1270	< 2 km	***Picea abies***	**4**	**TW21LT-veg19-PA-SE05**
13-6-2021	7.	Veg. 21 A	N	334	< 1 km	***Picea abies***	**5**	**TW21LT-veg21A-PA-07**
12-6-2021	8.	Veg. 14	SW	1820	< 2 km	***Picea abies***	**6**	**TW21LT-veg14-PA-SW08**
12-6-2021	9.	Veg. 13	SW	1900		***Picea abies***		**TW21LT-veg13-PA-SW09**
13-6-2021	10.	Veg. 20 A	W	400	< 1 km	***Pinus sylvestris***	**7**	**TW21LT-veg20A-PS-10**
13-6-2021	11.	Veg. 08	SW	2540	< 3 km	***Picea abies***	**8**	**TW21LT-veg08-PA-SW11**



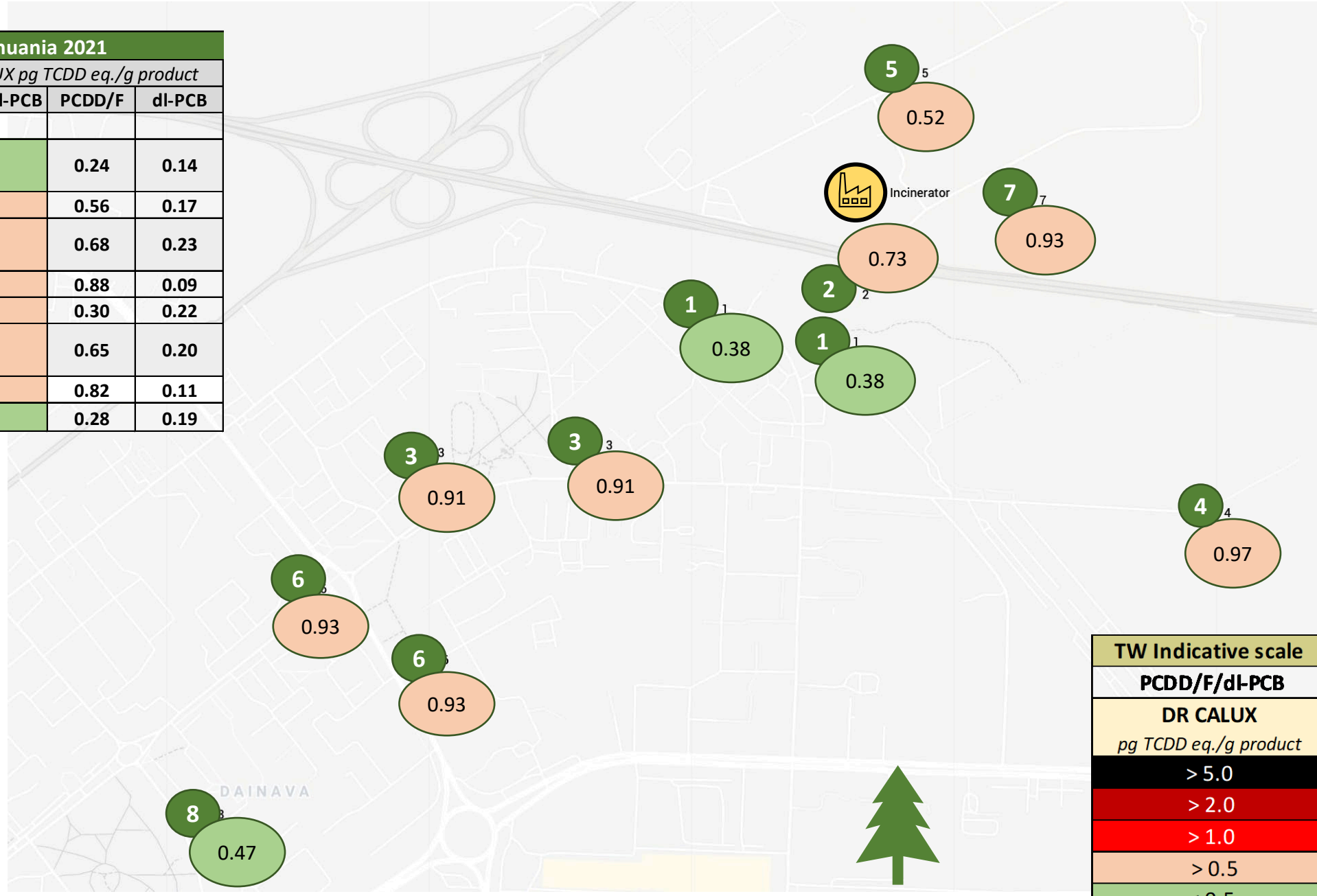
Sampling Pine needles - Kaunas 2021

Location pine needles - Kaunas, Lithuania 2021								
Sample Date	Pine Location	K Team Number	Wind direction	Distance (m)	Distance Circle	species trees	Veg nr (pooled) samples	TW-REF-NR
		Incinerator		0				
12-6-2021	1.	Veg. 18	SW	462	< 1 km	*Picea abies*	1	TW21LT-veg18-PA-SW01
12-6-2021	2.	Veg. 17	SW	555		*Abies concolor*		TW21LT-veg17-PA-SW02
12-6-2021	3.	Veg. 1 Alpha	S	322	< 1 km	*Picea abies*	2	TW21LT-veg1a-PA-03
12-6-2021	4.	Veg. 16	SW	1100	< 2 km	*Picea abies*	3	TW21LT-veg16-PA-SW04
12-6-2021	6.	Veg. 15	SW	1390		*Pinus sylvestris*		TW21LT-veg15-SW06
12-6-2021	5.	Veg. 19	SE	1270	< 2 km	*Picea abies*	4	TW21LT-veg19-PA-SE05
13-6-2021	7.	Veg. 21 A	N	334	< 1 km	*Picea abies*	5	TW21LT-veg21A-PA-07
12-6-2021	8.	Veg. 14	SW	1820	< 2 km	*Picea abies*	6	TW21LT-veg14-PA-SW08
12-6-2021	9.	Veg. 13	SW	1900		*Picea abies*		TW21LT-veg13-PA-SW09
13-6-2021	10.	Veg. 20 A	W	400	< 1 km	*Pinus sylvestris*	7	TW21LT-veg20A-PS-10
13-6-2021	11.	Veg. 08	SW	2540	< 3 km	*Picea abies*	8	TW21LT-veg08-PA-SW11



Results sum of dioxins (PCDD/F/dl-PCB) - Kaunas 2021

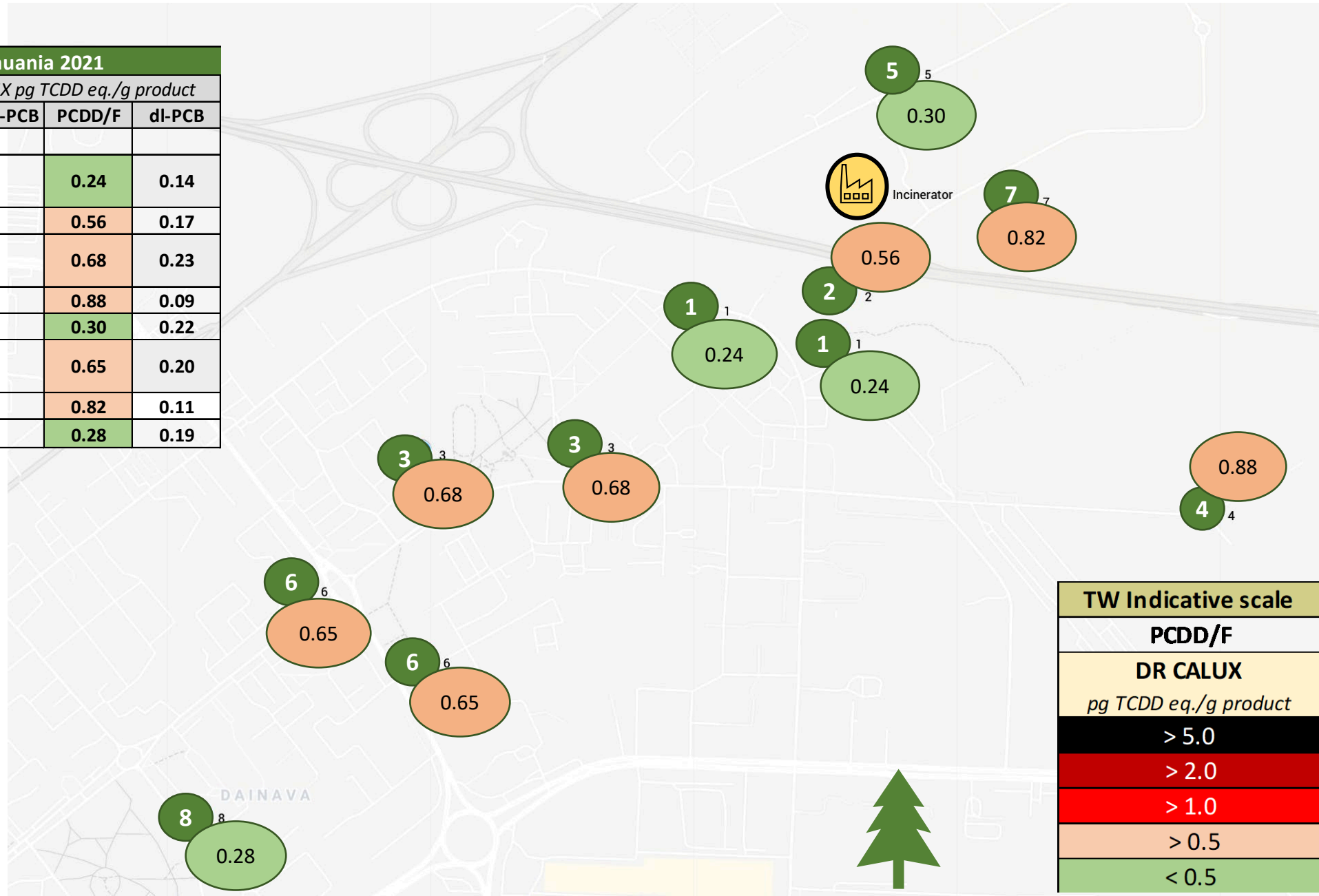
Results pine needles - Kaunas, Lithuania 2021				
Veg nr	TW-REF-NR	*DR CALUX pg TCDD eq./g product*		
(pooled)		PCDD/F/dl-PCB	PCDD/F	dl-PCB
samples				
1	TW21LT-veg18-PA-SW01	0.38	0.24	0.14
	TW21LT-veg17-PA-SW02			
2	TW21LT-veg1a-PA-03	0.73	0.56	0.17
3	TW21LT-veg16-PA-SW04	0.91	0.68	0.23
	TW21LT-veg15-SW06			
4	TW21LT-veg19-PA-SE05	0.97	0.88	0.09
5	TW21LT-veg21A-PA-07	0.52	0.30	0.22
6	TW21LT-veg14-PA-SW08	0.85	0.65	0.20
	TW21LT-veg13-PA-SW09			
7	TW21LT-veg20A-PS-10	0.93	0.82	0.11
8	TW21LT-veg08-PA-SW11	0.47	0.28	0.19



TW Indicative scale
PCDD/F/dl-PCB
DR CALUX
pg TCDD eq./g product
> 5.0
> 2.0
> 1.0
> 0.5
< 0.5

Results dioxins (PCDD/F) - Kaunas 2021

Results pine needles - Kaunas, Lithuania 2021				
Veg nr	TW-REF-NR	*DR CALUX pg TCDD eq./g product*		
(pooled)		PCDD/F/dl-PCB	PCDD/F	dl-PCB
samples				
1	TW21LT-veg18-PA-SW01	0.38	0.24	0.14
	TW21LT-veg17-PA-SW02			
2	TW21LT-veg1a-PA-03	0.73	0.56	0.17
3	TW21LT-veg16-PA-SW04	0.91	0.68	0.23
	TW21LT-veg15-SW06			
4	TW21LT-veg19-PA-SE05	0.97	0.88	0.09
5	TW21LT-veg21A-PA-07	0.52	0.30	0.22
6	TW21LT-veg14-PA-SW08	0.85	0.65	0.20
	TW21LT-veg13-PA-SW09			
7	TW21LT-veg20A-PS-10	0.93	0.82	0.11
8	TW21LT-veg08-PA-SW11	0.47	0.28	0.19

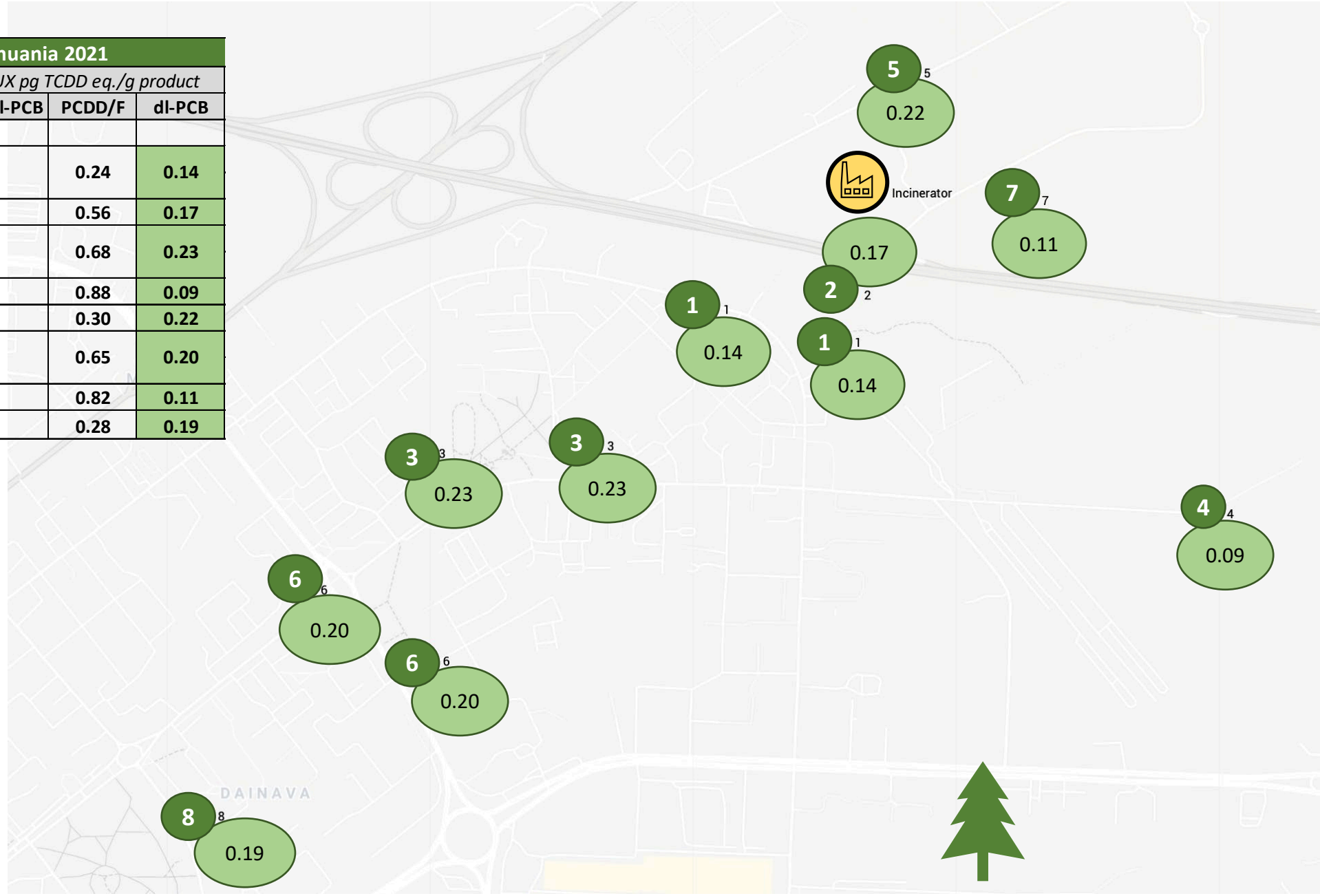


TW Indicative scale
PCDD/F
DR CALUX
pg TCDD eq./g product
> 5.0
> 2.0
> 1.0
> 0.5
< 0.5

Results dioxin-like PCB (dl-PCB) - Kaunas 2021

Results pine needles - Kaunas, Lithuania 2021				
Veg nr	TW-REF-NR	*DR CALUX pg TCDD eq./g product*		
(pooled)		PCDD/F/dl-PCB	PCDD/F	dl-PCB
samples				
1	TW21LT-veg18-PA-SW01	0.38	0.24	0.14
	TW21LT-veg17-PA-SW02			
2	TW21LT-veg1a-PA-03	0.73	0.56	0.17
3	TW21LT-veg16-PA-SW04	0.91	0.68	0.23
	TW21LT-veg15-SW06			
4	TW21LT-veg19-PA-SE05	0.97	0.88	0.09
5	TW21LT-veg21A-PA-07	0.52	0.30	0.22
6	TW21LT-veg14-PA-SW08	0.85	0.65	0.20
	TW21LT-veg13-PA-SW09			
7	TW21LT-veg20A-PS-10	0.93	0.82	0.11
8	TW21LT-veg08-PA-SW11	0.47	0.28	0.19

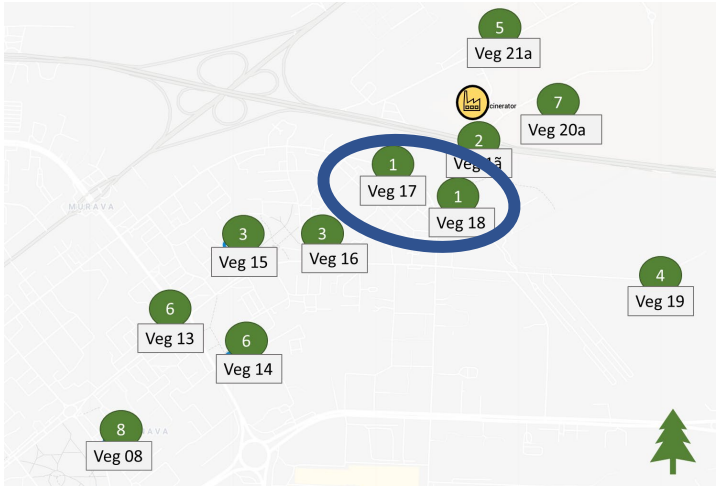
TW Indicative scale
dL-PCB
DR CALUX
pg TCDD eq./g product
> 5.0
> 2.0
> 1.0
> 0.5
< 0.5



Location 1: Veg 18 + Veg 17 *Picea abies*

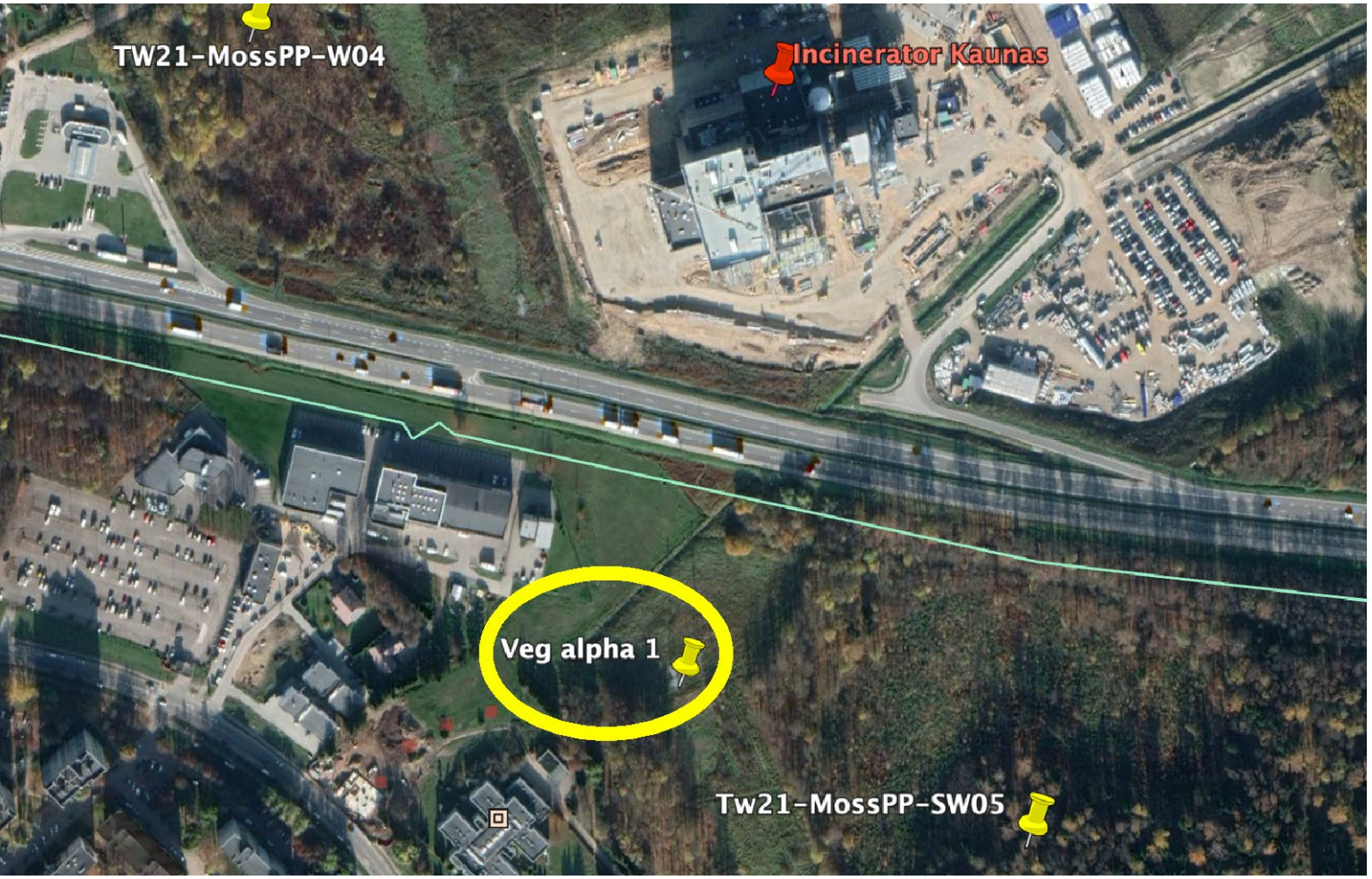
veg 18: *Picea abies*

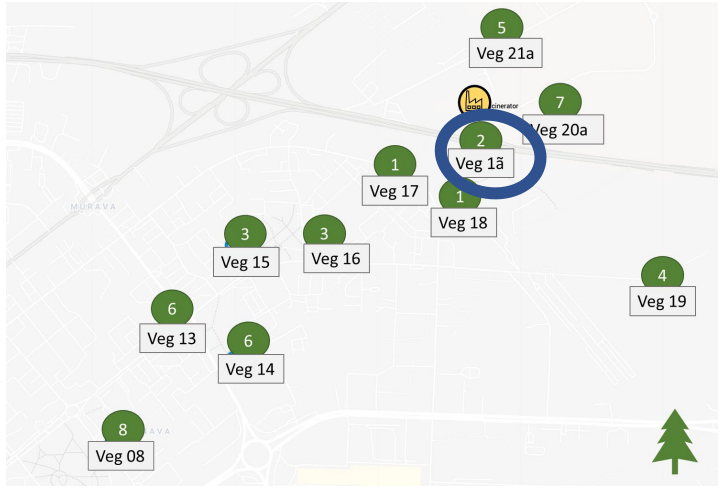
Veg 17: *Abies concolor*



Location pine needles - Kaunas, Lithuania 2021								
Sample	**Pine**	**K Team**	**Wind**	**Distance**	**Distance**		**Veg nr**	**TW-REF-NR**
Date	**Location**	**Number**	**direction**	**(m)**	**Circle**		(pooled)	
		Incinerator		0			**samples**	
12-6-2021	1.	Veg. 18	SW	462	< 1 km	***Picea abies***	**1**	**TW21LT-veg18-PA-SW01**
12-6-2021	2.	Veg. 17	SW	555		***Abies concolor***		**TW21LT-veg17-PA-SW02**

Location 2: Veg 1 alpha *Picea abies*



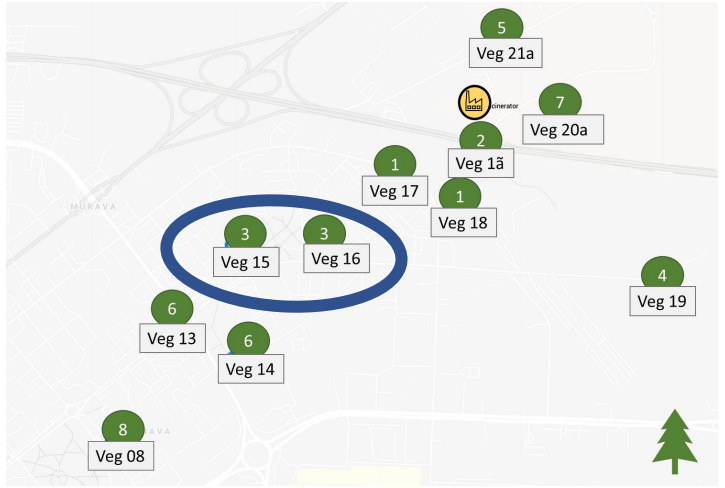


Location pine needles - Kaunas, Lithuania 2021								
Sample	Pine	K Team	Wind	Distance	Distance		Veg nr	TW-REF-NR
Date	Location	Number	direction	(m)	Circle		(pooled)	
12-6-2021	3.	Veg. 1 Alpha	S	322	< 1 km	*Picea abies*	2	TW21LT-veg1a-PA-03

Location 3: Veg 16 + 15 *Picea abies + Pinus sylvestris*

veg 16: *Picea abies*

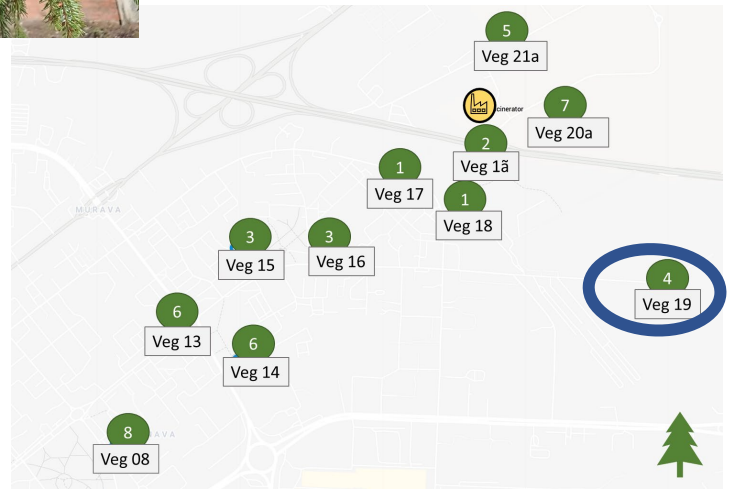
veg 15: *Pinus sylvestris*



Location pine needles - Kaunas, Lithuania 2021								
Sample	**Pine**	**K Team**	**Wind**	**Distance**	**Distance**		**Veg nr**	**TW-REF-NR**
Date	**Location**	**Number**	**direction**	**(m)**	**Circle**		(pooled)	
12-6-2021	4.	Veg. 16	SW	1100	< 2 km	***Picea abies***	**3**	**TW21LT-veg16-PA-SW04**
12-6-2021	6.	Veg. 15	SW	1390		***Pinus sylvestris***		**TW21LT-veg15-SW06**

Location 4: Veg 19 *Picea abies*

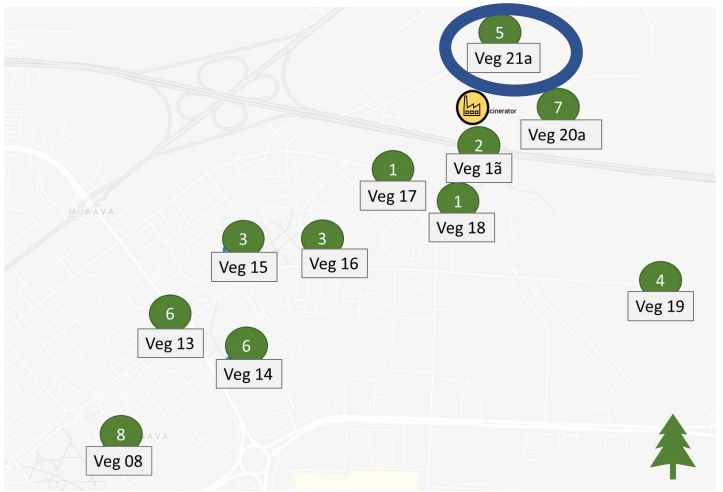
veg 19: *Picea abies*



Location pine needles - Kaunas, Lithuania 2021								
Sample	Pine	K Team	Wind	Distance	Distance		Veg nr	TW-REF-NR
Date	Location	Number	direction	(m)	Circle		(pooled)	
12-6-2021	5.	Veg. 19	SE	1270	< 2 km	*Picea abies*	4	TW21LT-veg19-PA-SE05

Location 5: Veg 21 a *Picea abies*

Location pine needles - Kaunas, Lithuania 2021								
Sample Date	Pine Location	K Team Number	Wind direction	Distance (m)	Distance Circle		Veg nr (pooled)	TW-REF-NR
13-6-2021	7.	Veg. 21 A	N	334	< 1 km	*Picea abies*	5	TW21LT-veg21A-PA-07



Location 6: Veg 13 (+ veg 14) *Picea abies*

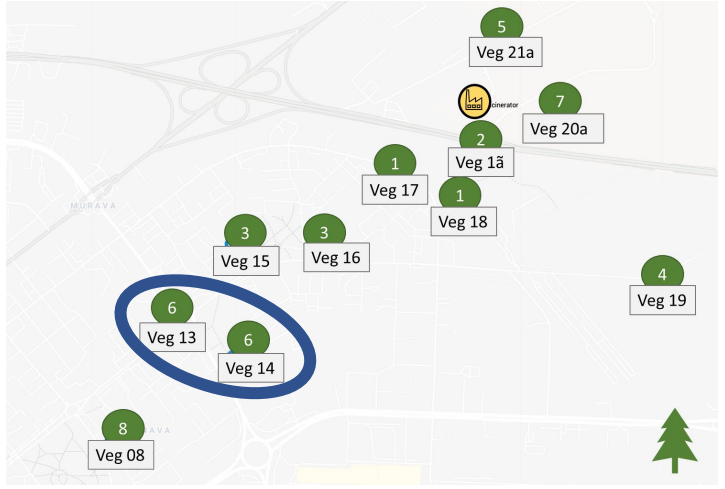




veg 13: *Picea abies*

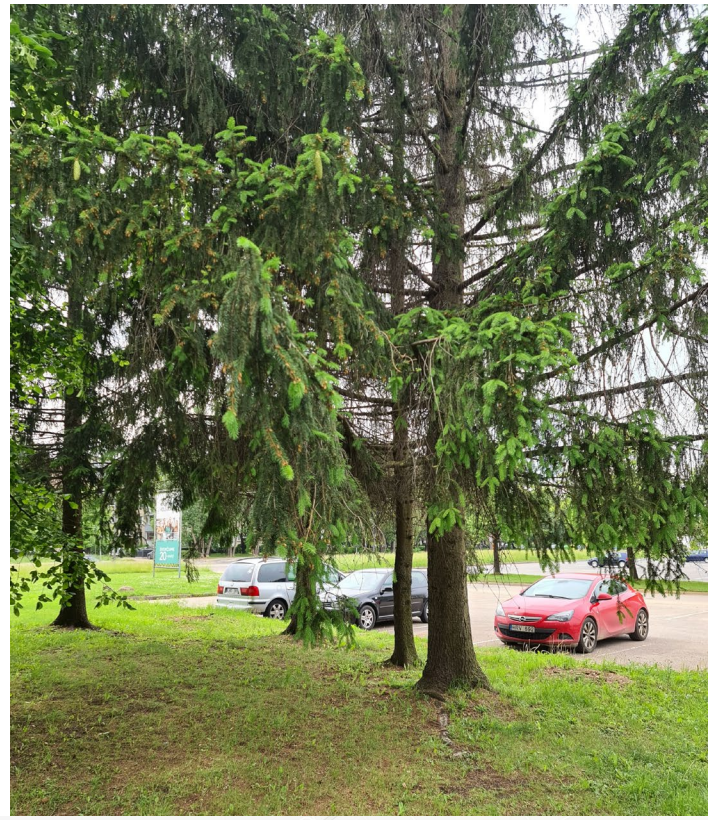
Veg 13: Coordinates: 54.922518, 23.977769

Veg 14: Coordinates: 54.920647, 23.982878

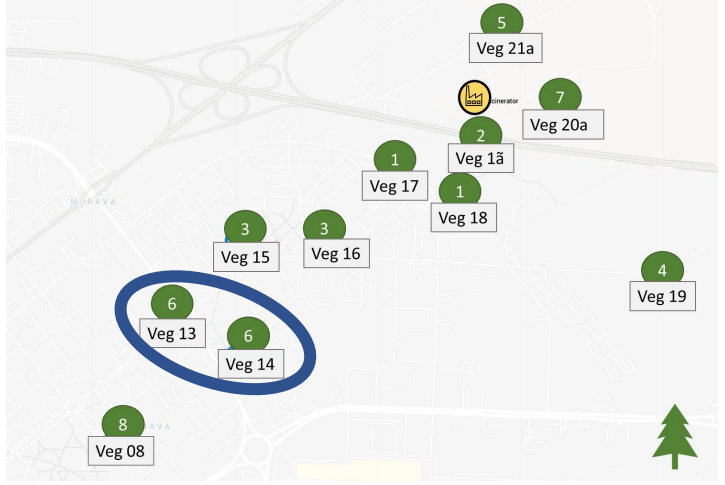


Location pine needles - Kaunas, Lithuania 2021								
Sample Date	Pine Location	K Team Number	Wind direction	Distance (m)	Distance Circle		Veg nr (pooled)	TW-REF-NR
12-6-2021	8.	Veg. 14	SW	1820	< 2 km	*Picea abies*	6	TW21LT-veg14-PA-SW08
12-6-2021	9.	Veg. 13	SW	1900		*Picea abies*		TW21LT-veg13-PA-SW09

Location 6: Veg 14 (+ veg 13) *Picea abies*

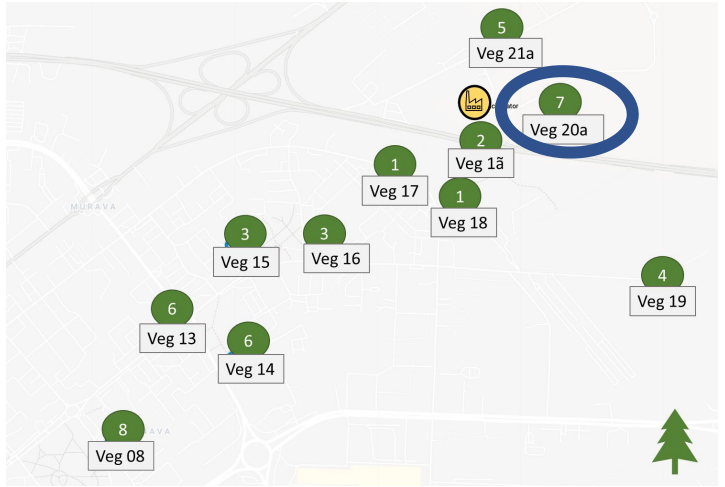


veg 14: *Picea abies*



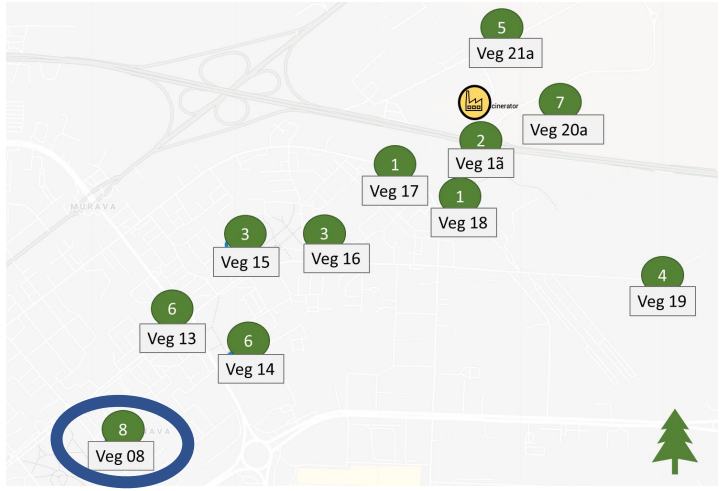
Location pine needles - Kaunas, Lithuania 2021								
Sample Date	Pine Location	K Team Number	Wind direction	Distance (m)	Distance Circle		Veg nr (pooled)	TW-REF-NR
12-6-2021	8.	Veg. 14	SW	1820	< 2 km	*Picea abies*	6	TW21LT-veg14-PA-SW08
12-6-2021	9.	Veg. 13	SW	1900		*Picea abies*		TW21LT-veg13-PA-SW09

Location 7: Veg 20 a *Picea abies*



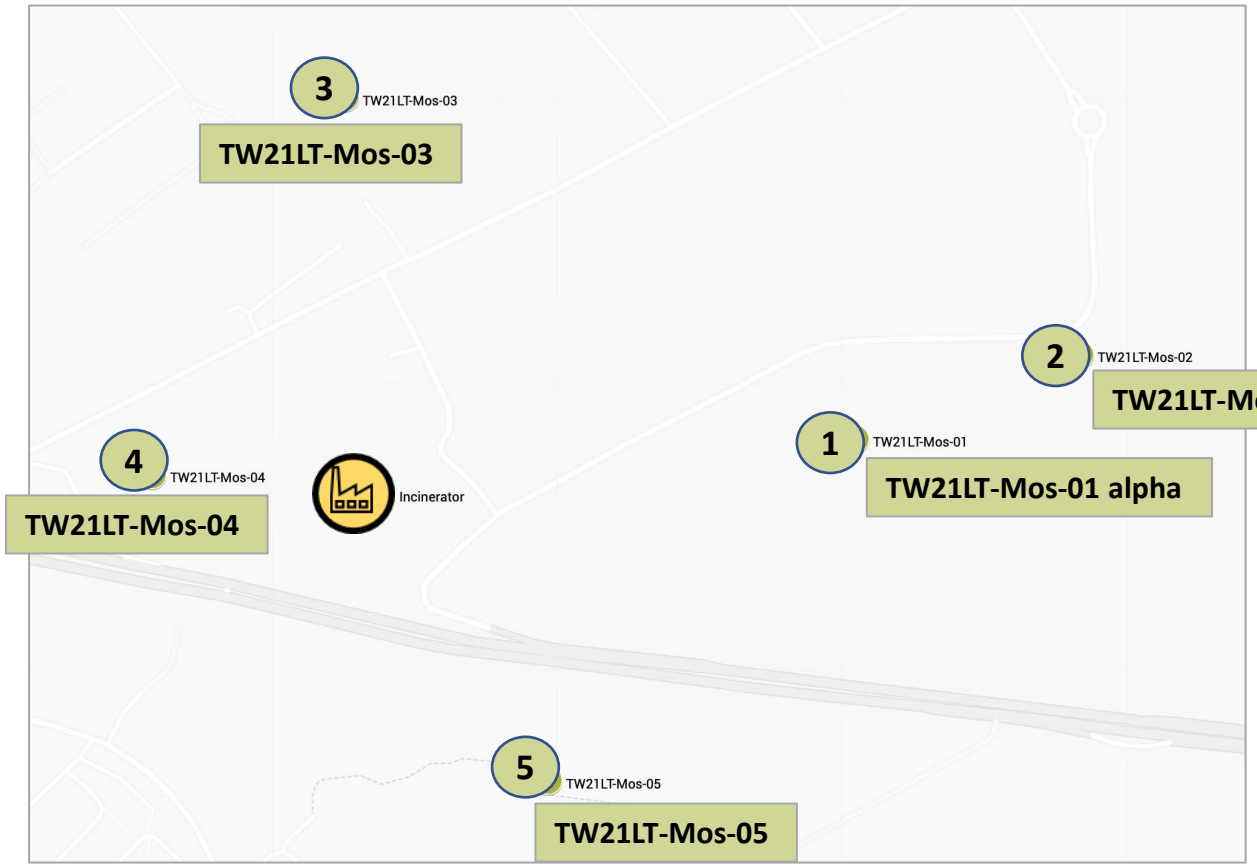
Location pine needles - Kaunas, Lithuania 2021								
Sample	Pine	K Team	Wind	Distance	Distance		Veg nr	TW-REF-NR
Date	Location	Number	direction	(m)	Circle		(pooled)	
13-6-2021	10.	Veg. 20 A	W	400	< 1 km	***Pinus sylvestris***	**7**	**TW21LT-veg20A-PS-10**

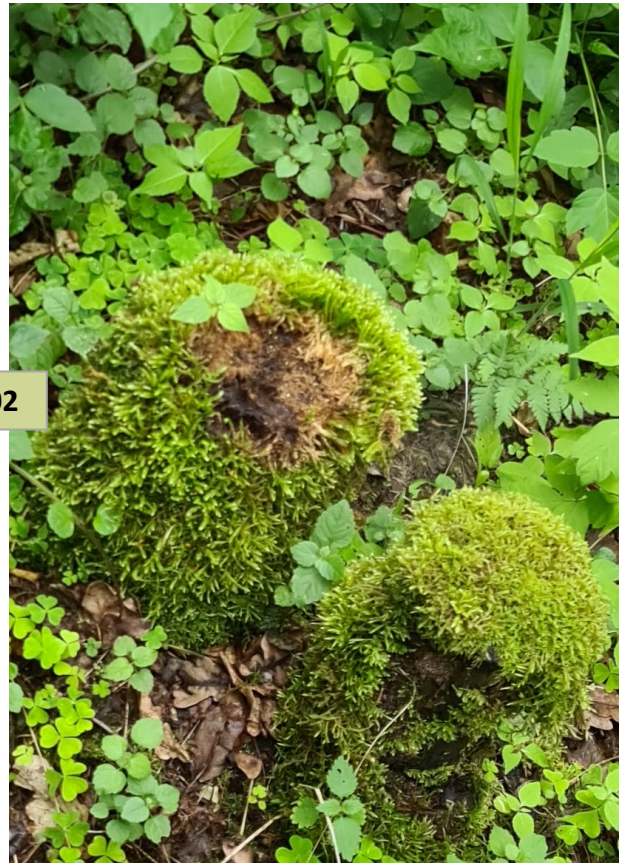
Location 8: Veg 8 *Picea abies*



Location pine needles - Kaunas, Lithuania 2021								
Sample	Pine	K Team	Wind	Distance	Distance		Veg nr	TW-REF-NR
Date	Location	Number	direction	(m)	Circle		(pooled)	
13-6-2021	11.	Veg. 08	SW	2540	< 3 km	*Picea abies*	8	TW21LT-veg08-PA-SW11

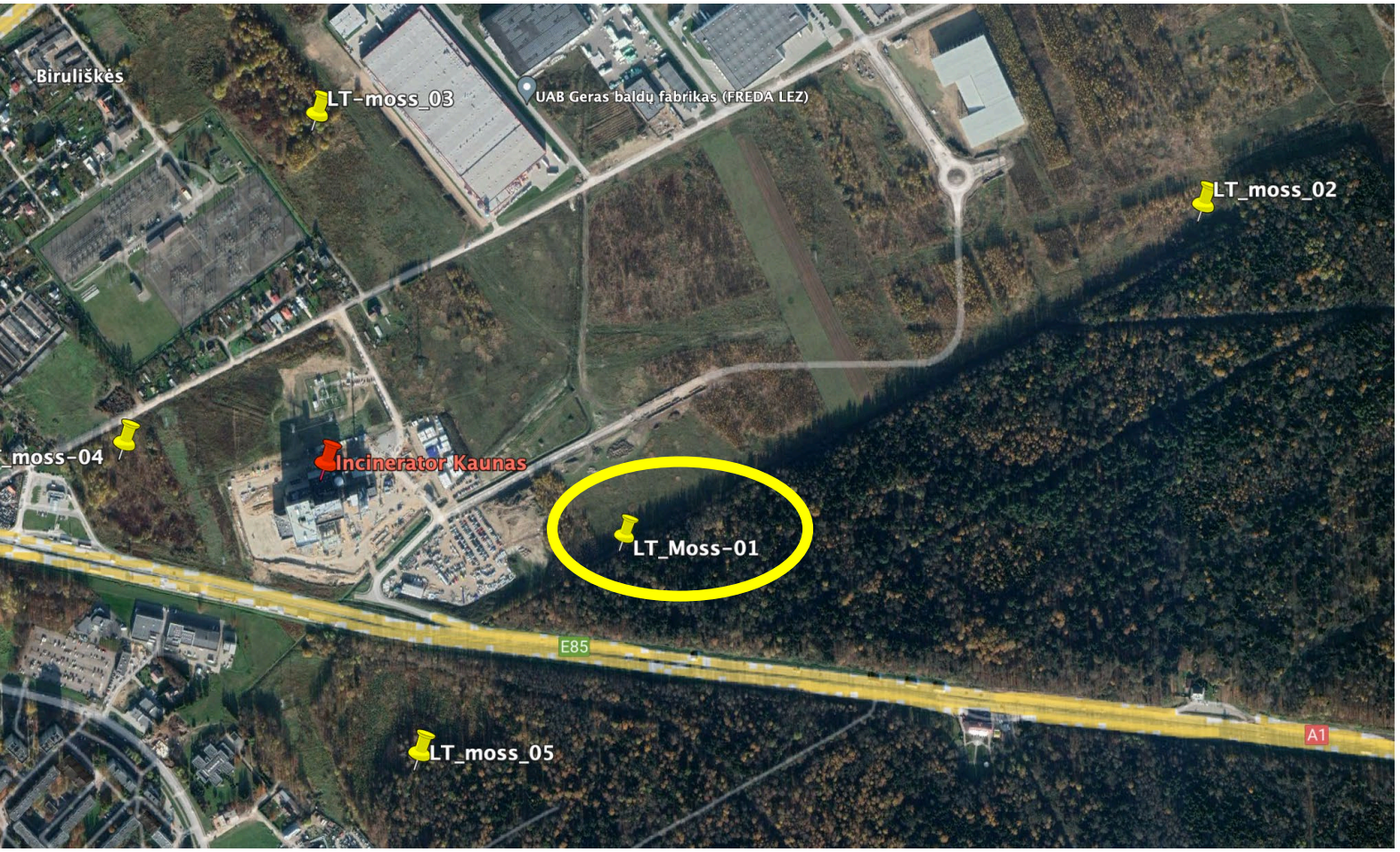
Sampling locations mosses - Kaunas 2021

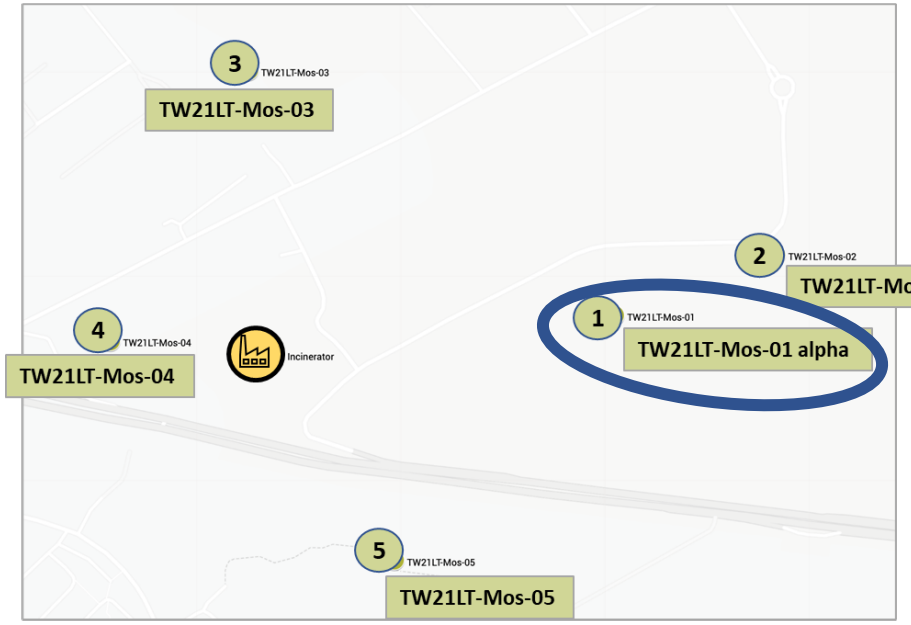




Location Mosses - Kaunas, Lithuania 2021								
Sample Date	Moss location	K Team Number	Wind direction	Distance (m)	Distance Circle	Species	Moss samples	TW-REF-NR
		Incinerator		0			D:	
12-6-2021	1.	Moss 1 Alpha	E	569	< 1 km		M3	TW21LT-Mos-01 alpha
13-6-2021	2.	Moss 2	NE	1260	< 2 km		M2	TW21LT-Mos-02
13-6-2021	3.	Moss 3	N	465	< 1 km		M5	TW21LT-Mos-03
13-6-2021	4.	Moss 4	W	283	< 1 km		M4	TW21LT-Mos-04
13-6-2021	5.	Moss 5	S	428	< 1 km		M1	TW21LT-Mos-05

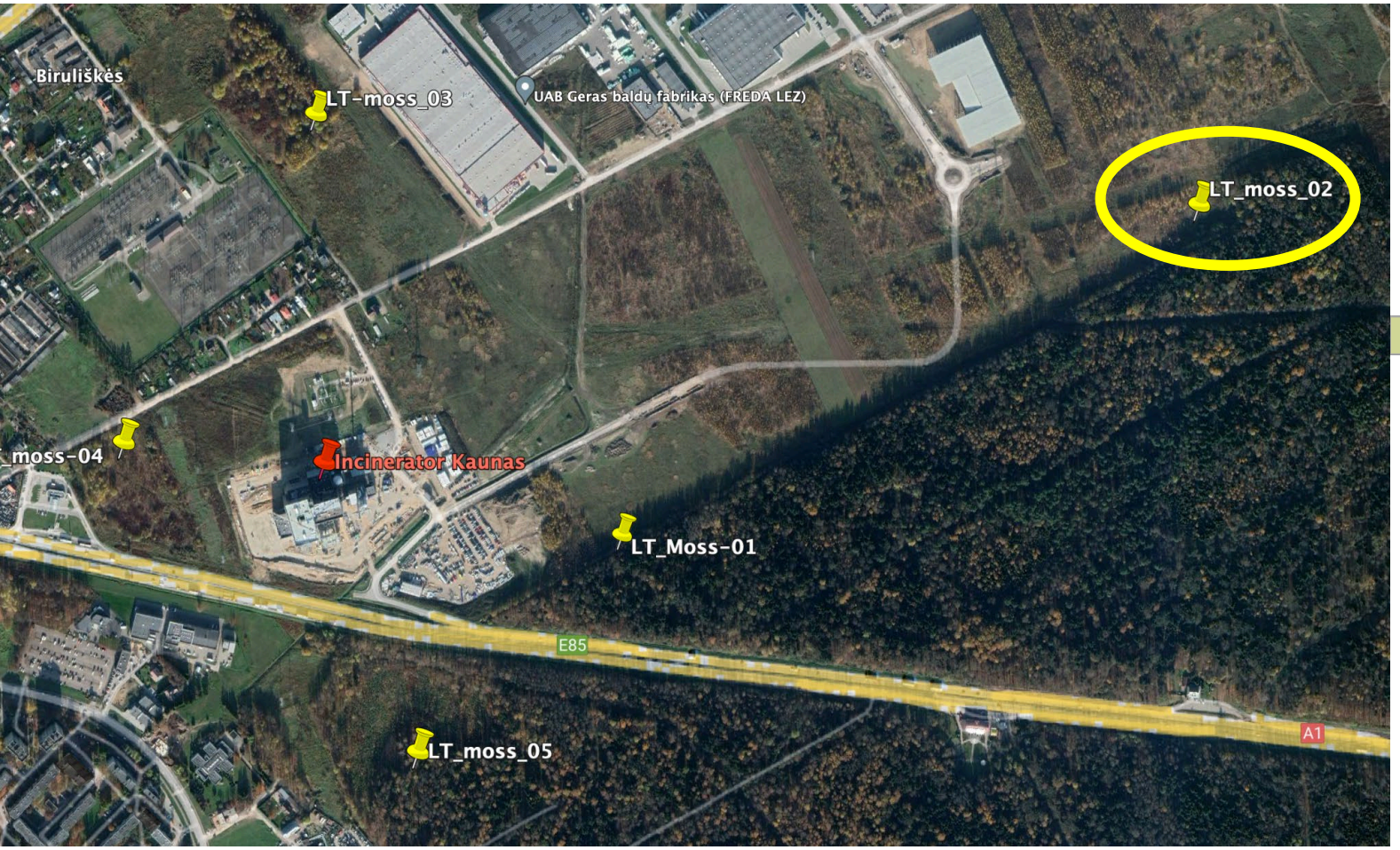
Location 1 – Mos TW21LT-Mos-01 alpha

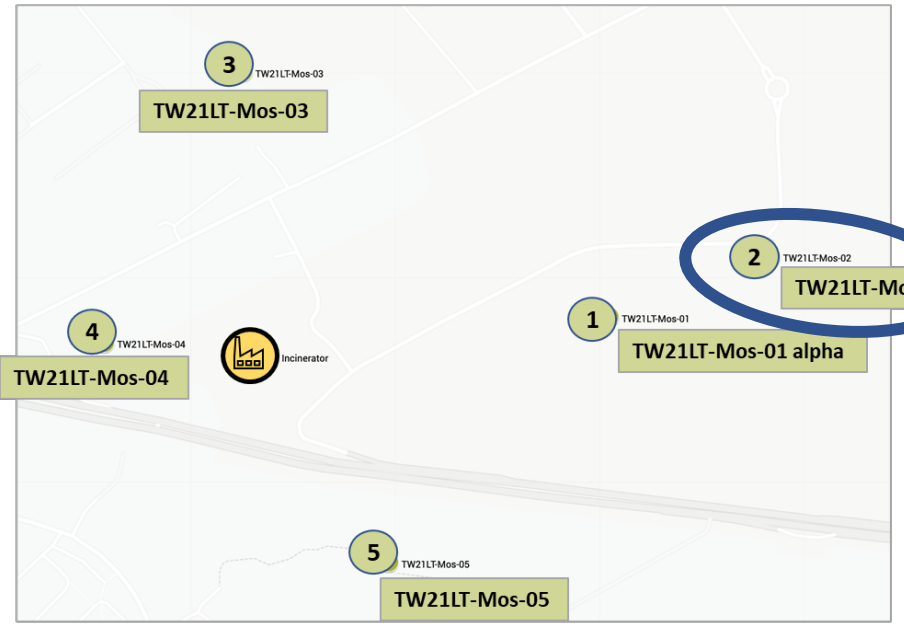




Location Mosses - Kaunas, Lithuania 2021								
Sample Date	Moss location	K Team Number	Wind direction	Distance (m)	Distance Circle	Species	Moss samples	TW-REF-NR
		Incinerator		0			D:	
12-6-2021	1.	Moss 1 Alpha	E	569	< 1 km		M3	TW21LT-Mos-01 alpha
13-6-2021	2.	Moss 2	NE	1260	< 2 km		M2	TW21LT-Mos-02
13-6-2021	3.	Moss 3	N	465	< 1 km		M5	TW21LT-Mos-03
13-6-2021	4.	Moss 4	W	283	< 1 km		M4	TW21LT-Mos-04
13-6-2021	5.	Moss 5	S	428	< 1 km		M1	TW21LT-Mos-05

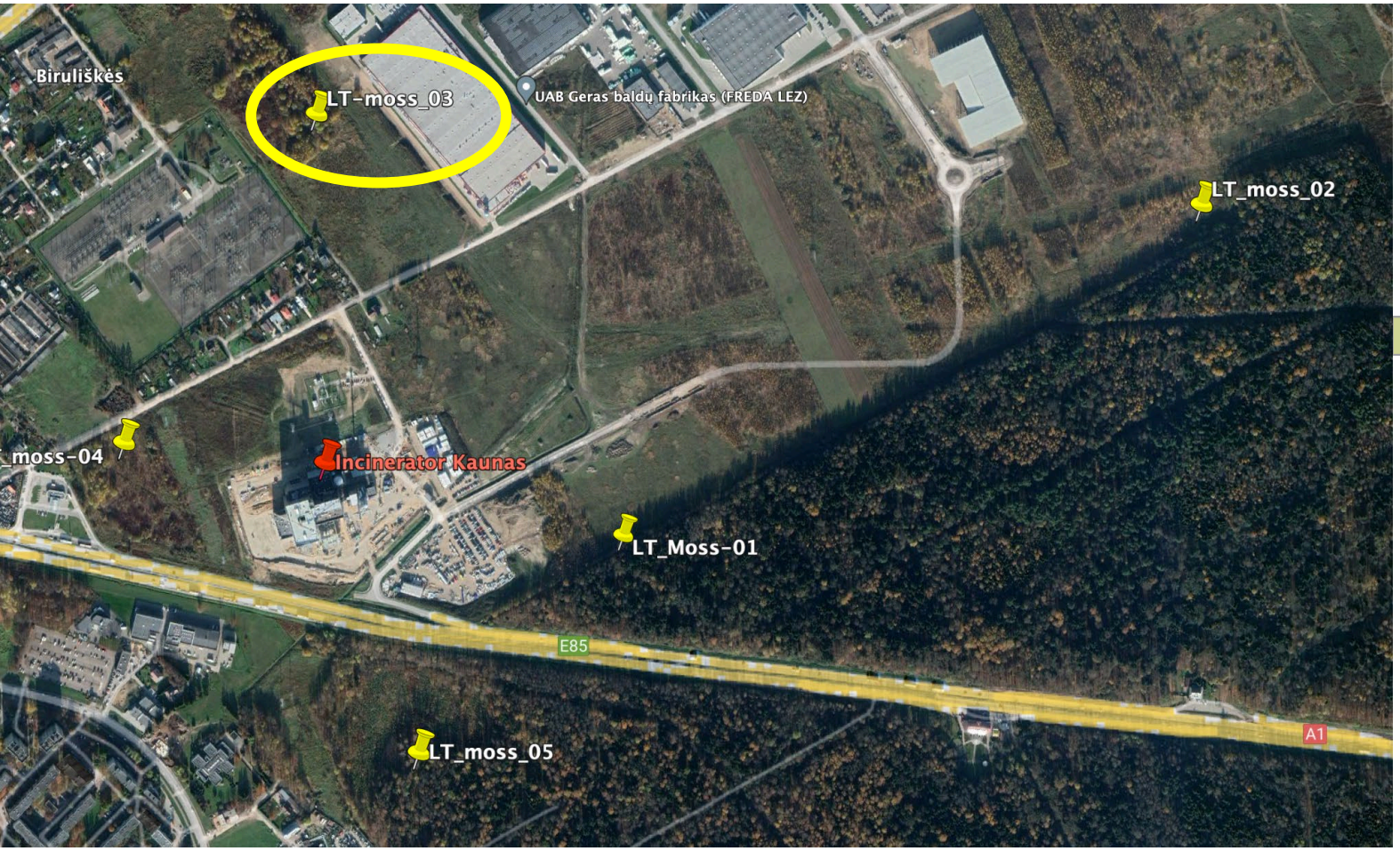
Location 2 – Mos TW21LT-Mos-02

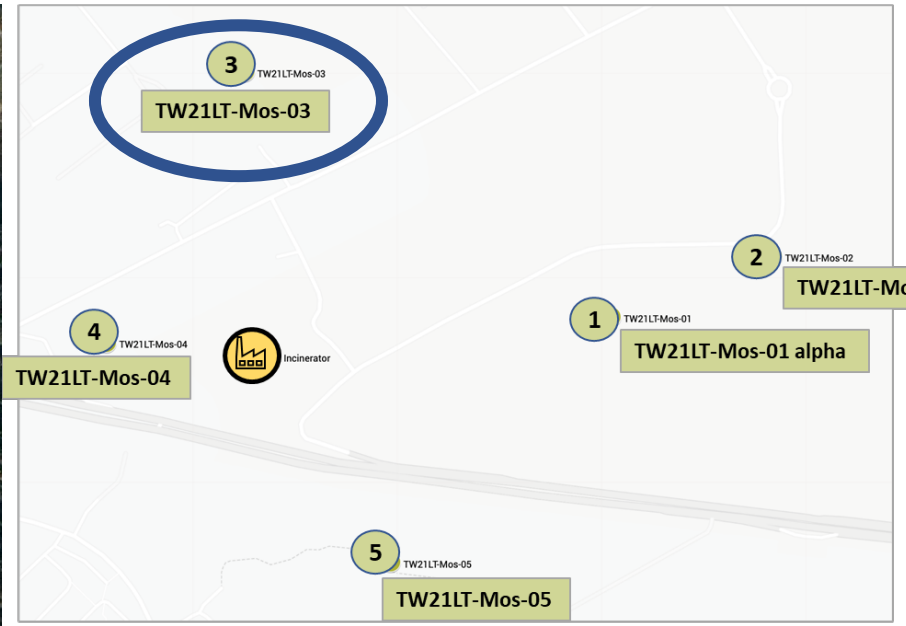




Location Mosses - Kaunas, Lithuania 2021								
Sample Date	Moss location	K Team Number	Wind direction	Distance (m)	Distance Circle	Species	Moss samples	TW-REF-NR
		Incinerator		0			D:	
12-6-2021	1.	Moss 1 Alpha	E	569	< 1 km		M3	TW21LT-Mos-01 alpha
13-6-2021	2.	Moss 2	NE	1260	< 2 km		M2	TW21LT-Mos-02
13-6-2021	3.	Moss 3	N	465	< 1 km		M5	TW21LT-Mos-03
13-6-2021	4.	Moss 4	W	283	< 1 km		M4	TW21LT-Mos-04
13-6-2021	5.	Moss 5	S	428	< 1 km		M1	TW21LT-Mos-05

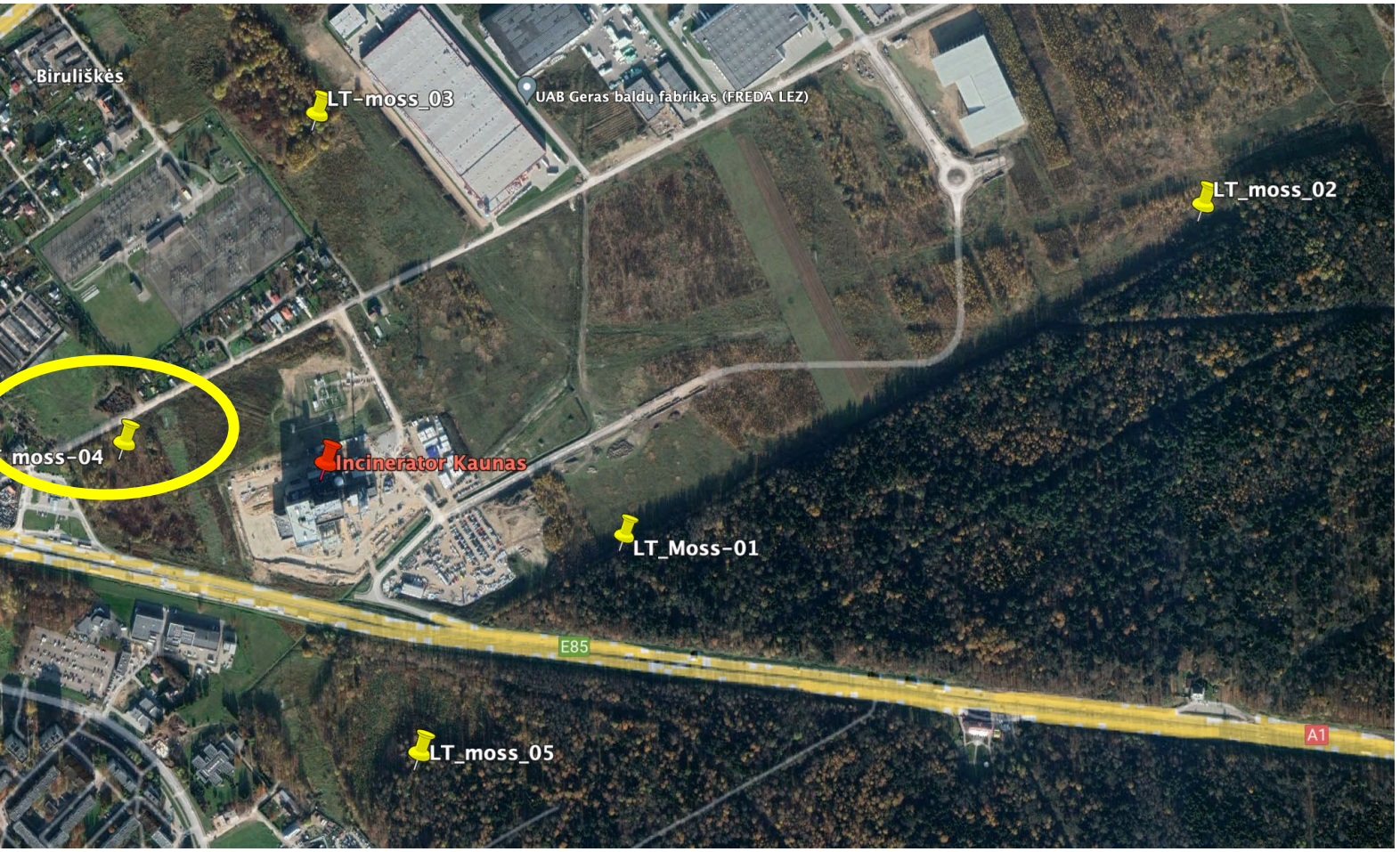
Location 3 – Mos TW21LT-Mos-03

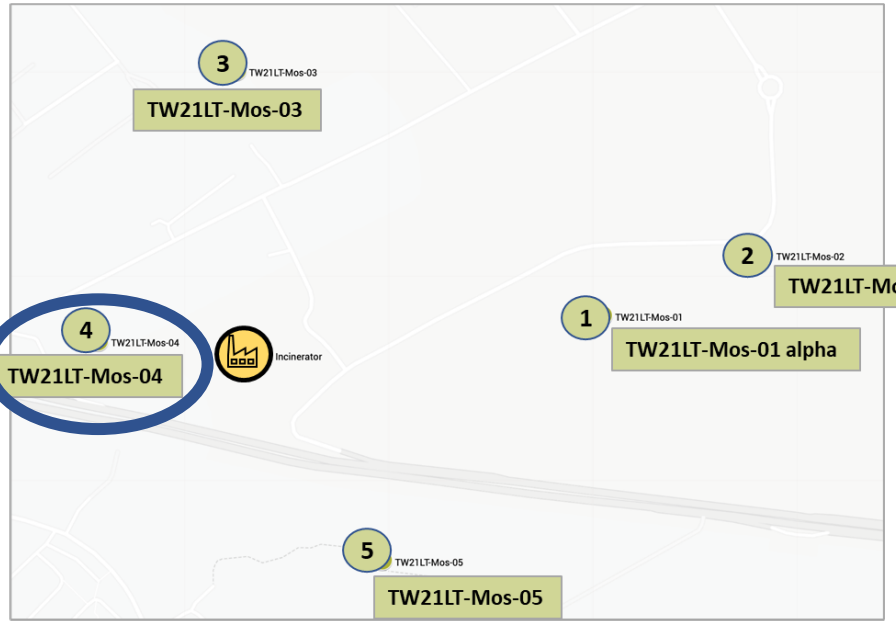




Location Mosses - Kaunas, Lithuania 2021								
Sample Date	Moss location	K Team Number	Wind direction	Distance (m)	Distance Circle	Species	Moss samples	TW-REF-NR
		Incinerator		0			D:	
12-6-2021	1.	Moss 1 Alpha	E	569	< 1 km		M3	TW21LT-Mos-01 alpha
13-6-2021	2.	Moss 2	NE	1260	< 2 km		M2	TW21LT-Mos-02
13-6-2021	3.	Moss 3	N	465	< 1 km		M5	TW21LT-Mos-03
13-6-2021	4.	Moss 4	W	283	< 1 km		M4	TW21LT-Mos-04
13-6-2021	5.	Moss 5	S	428	< 1 km		M1	TW21LT-Mos-05

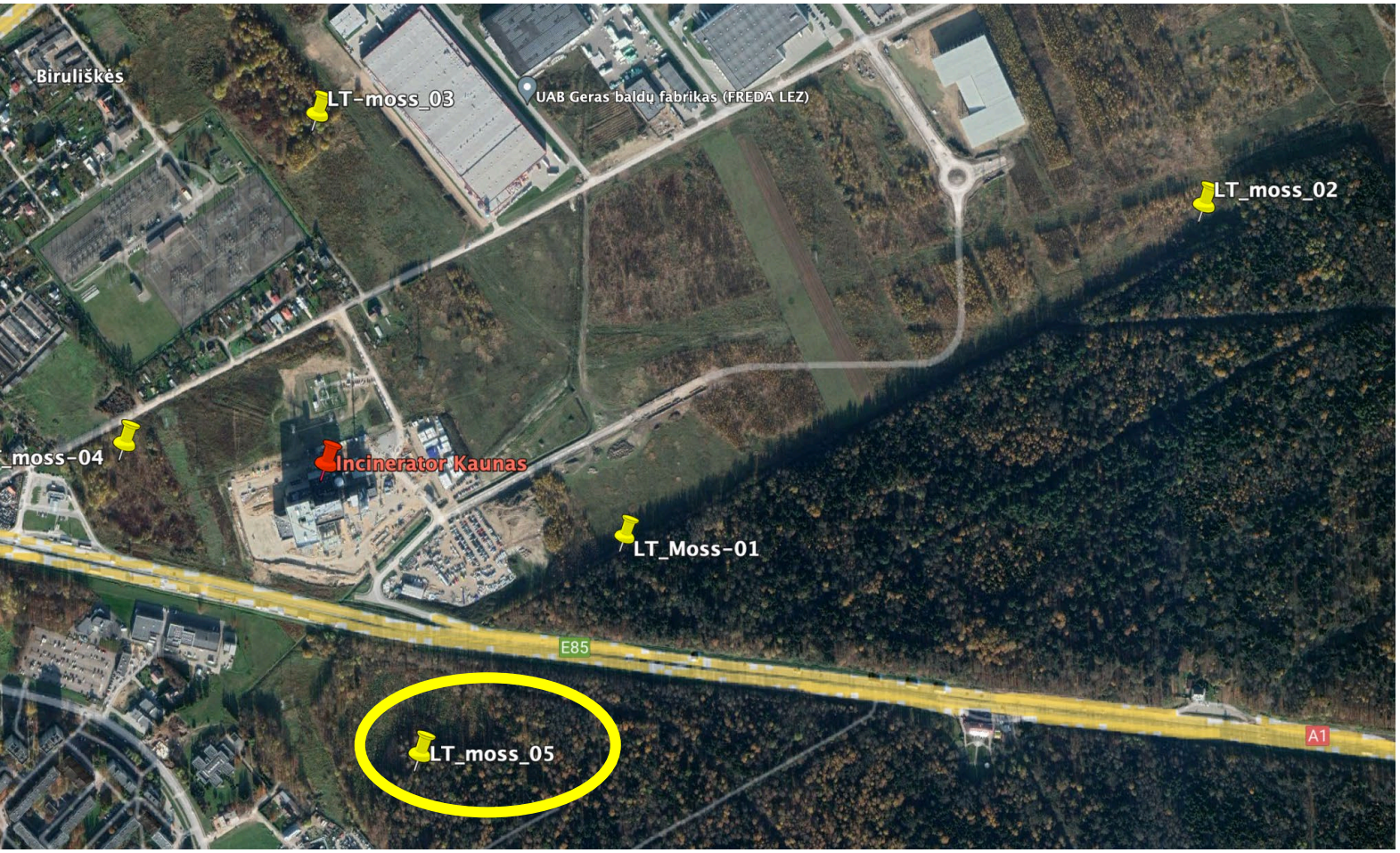
Location 4 – Mos TW21LT-Mos-04

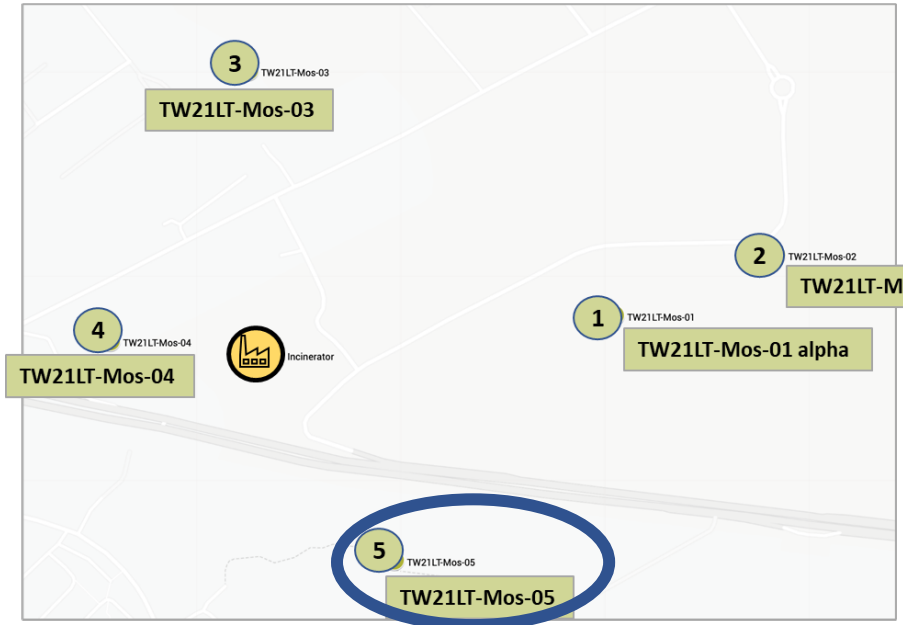




Location Mosses - Kaunas, Lithuania 2021								
Sample Date	Moss location	K Team Number	Wind direction	Distance (m)	Distance Circle	Species	Moss samples	TW-REF-NR
		Incinerator		0			D:	
12-6-2021	1.	Moss 1 Alpha	E	569	< 1 km		M3	TW21LT-Mos-01 alpha
13-6-2021	2.	Moss 2	NE	1260	< 2 km		M2	TW21LT-Mos-02
13-6-2021	3.	Moss 3	N	465	< 1 km		M5	TW21LT-Mos-03
13-6-2021	4.	Moss 4	W	283	< 1 km		M4	TW21LT-Mos-04
13-6-2021	5.	Moss 5	S	428	< 1 km		M1	TW21LT-Mos-05

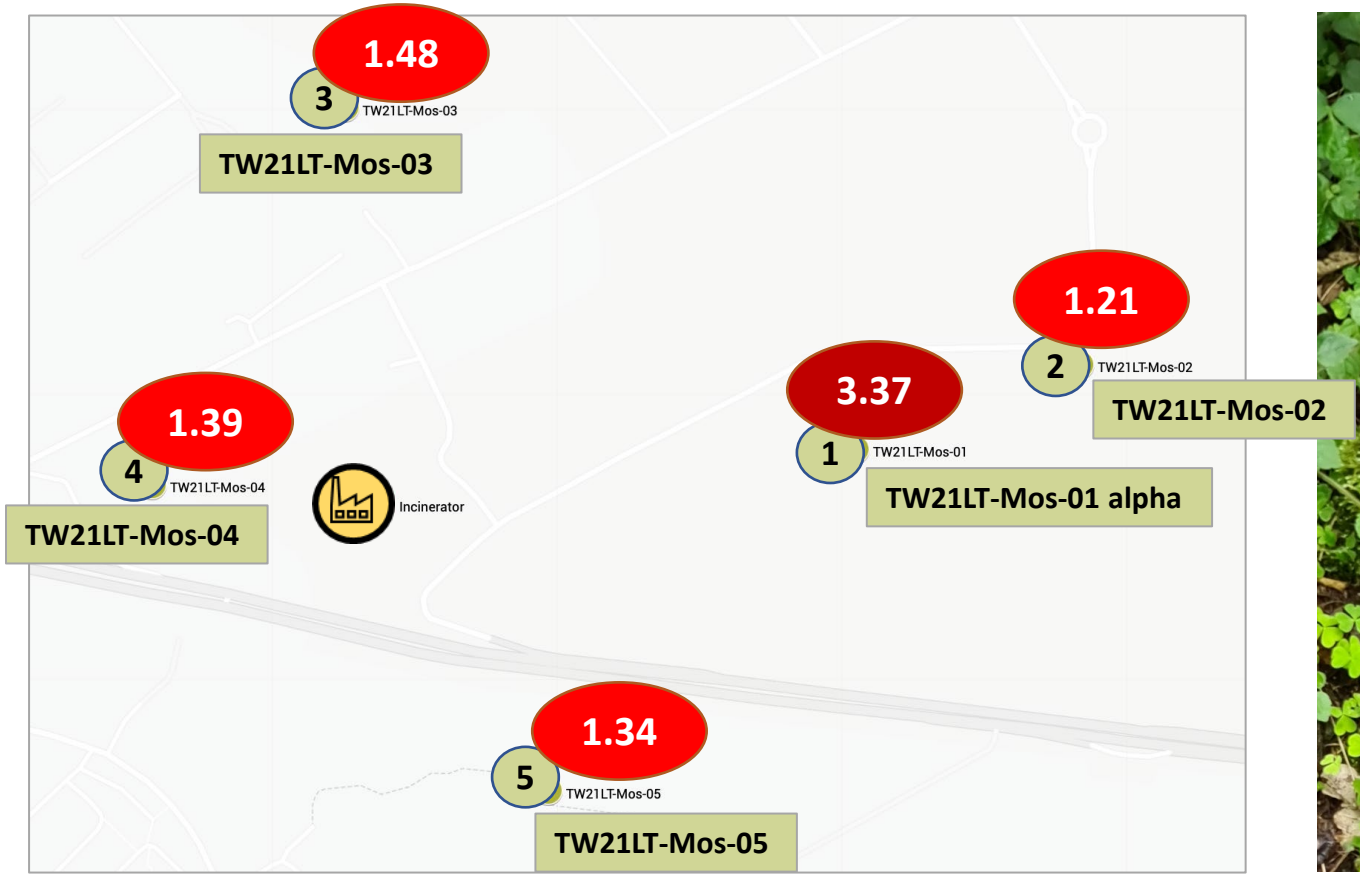
Location 5 – Mos TW21LT-Mos-05

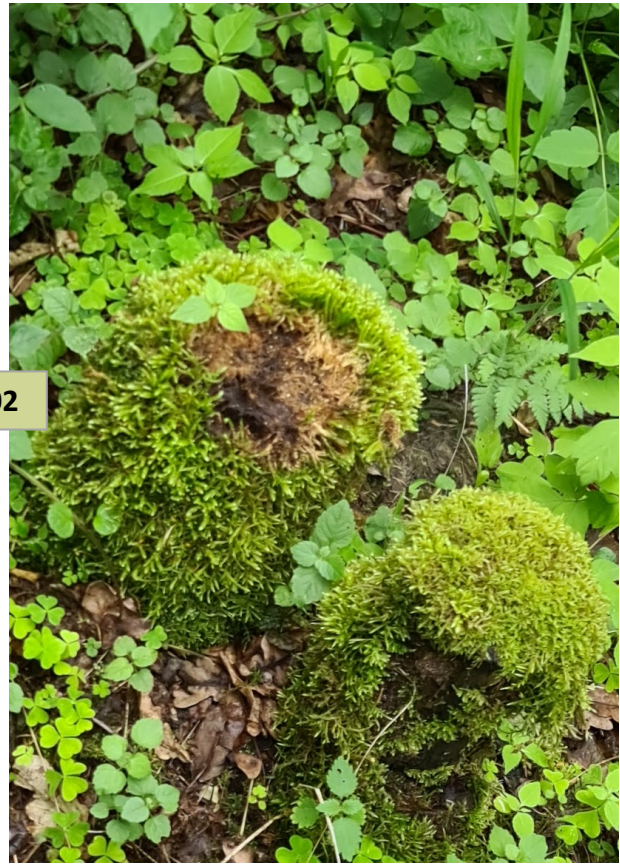




Location Mosses - Kaunas, Lithuania 2021								
Sample Date	Moss location	K Team Number	Wind direction	Distance (m)	Distance Circle	Species	Moss samples	TW-REF-NR
		Incinerator		0			D:	
12-6-2021	1.	Moss 1 Alpha	E	569	< 1 km		M3	TW21LT-Mos-01 alpha
13-6-2021	2.	Moss 2	NE	1260	< 2 km		M2	TW21LT-Mos-02
13-6-2021	3.	Moss 3	N	465	< 1 km		M5	TW21LT-Mos-03
13-6-2021	4.	Moss 4	W	283	< 1 km		M4	TW21LT-Mos-04
13-6-2021	5.	Moss 5	S	428	< 1 km		M1	TW21LT-Mos-05

Results sum of dioxins (PCDD/F/dl-PCB) in mosses - Kaunas 2021

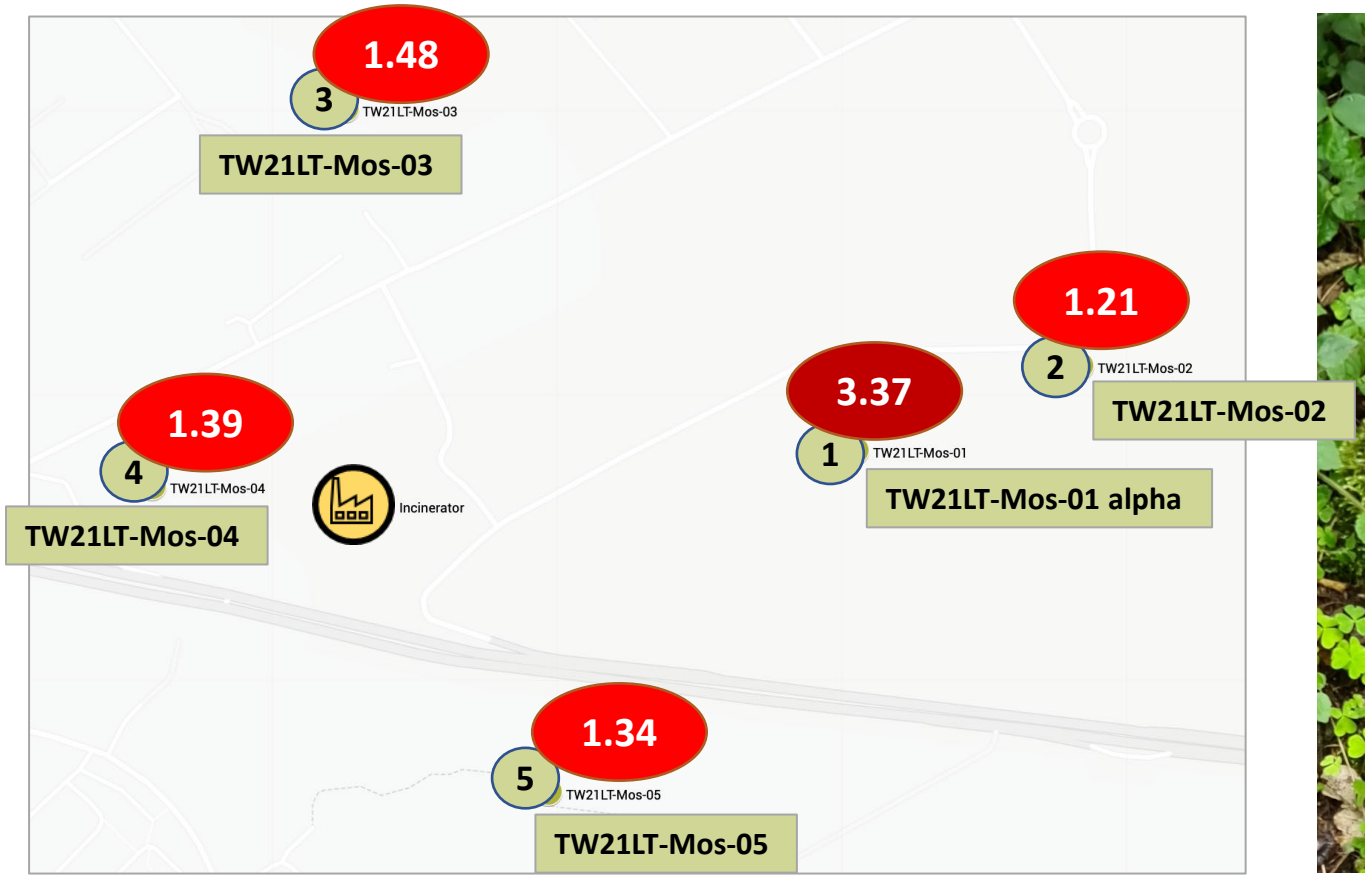


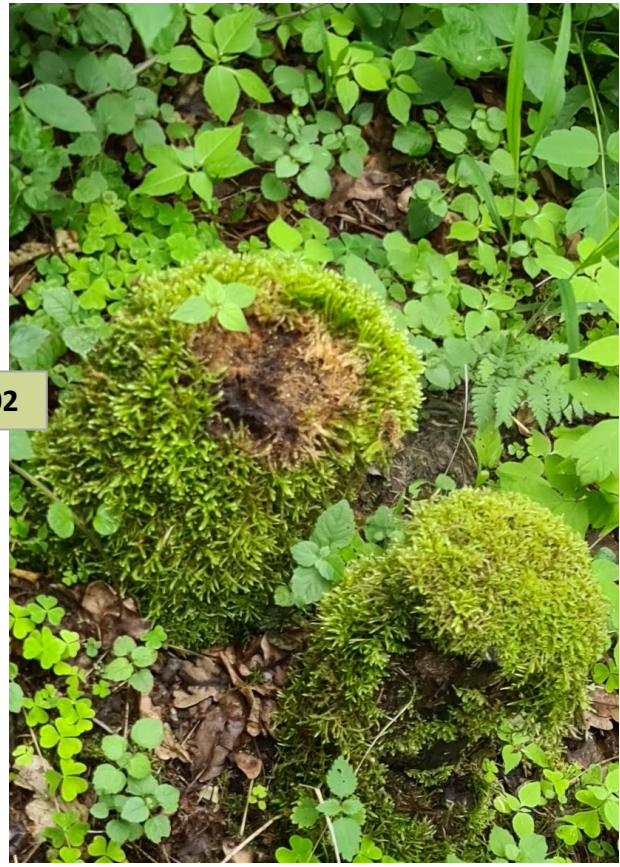


Results Mosses - Kaunas, Lithuania 2021						
TW-REF-NR	PCDD/F/dl-PCB	PCDD/F	dl-PCB	PAH	FITC-4 (PFAS)	FITC-4 (PFAS)
	DR CALUX pg TCDD eq./g product			***ng** BaP eq./g product*	***ug** PFOA eq./g product*	***ng** PFOA eq./g product*
TW21LT-Mos-01 alpha	3.37	2.80	0.57	230	8.4	8400
TW21LT-Mos-02	1.21	1.10	0.11			
TW21LT-Mos-03	1.48	1.30	0.18	220	13	13.000
TW21LT-Mos-04	1.39	1.30	0.09			
TW21LT-Mos-05	1.34	1.10	0.24			

TW Indicative scale
PCDD/F/dl-PCB
DR CALUX *pg TCDD eq./g product*
> 5.0
> 2.0
> 1.0
> 0.5
< 0.5

Results sum of dioxins (PCDD/F/dl-PCB) in mosses - Kaunas 2021

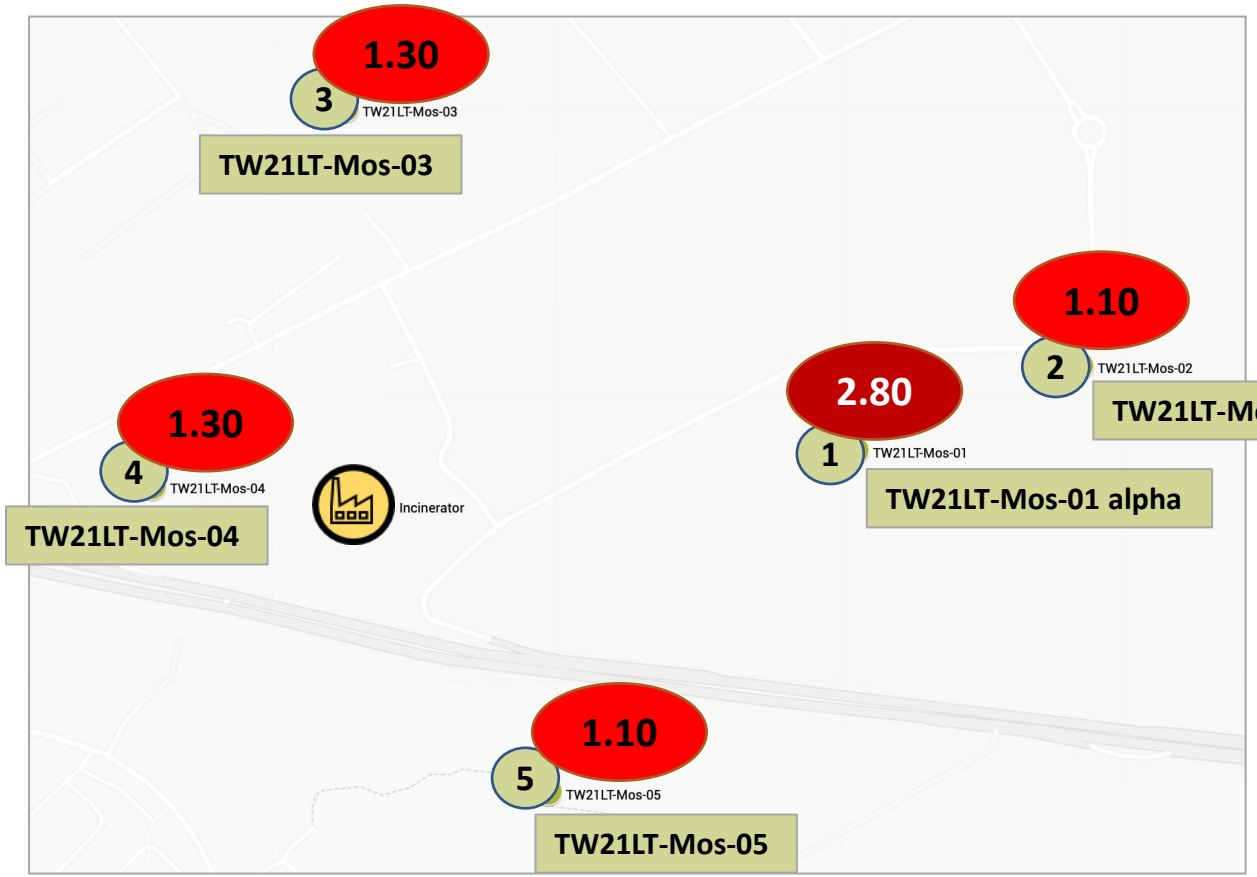


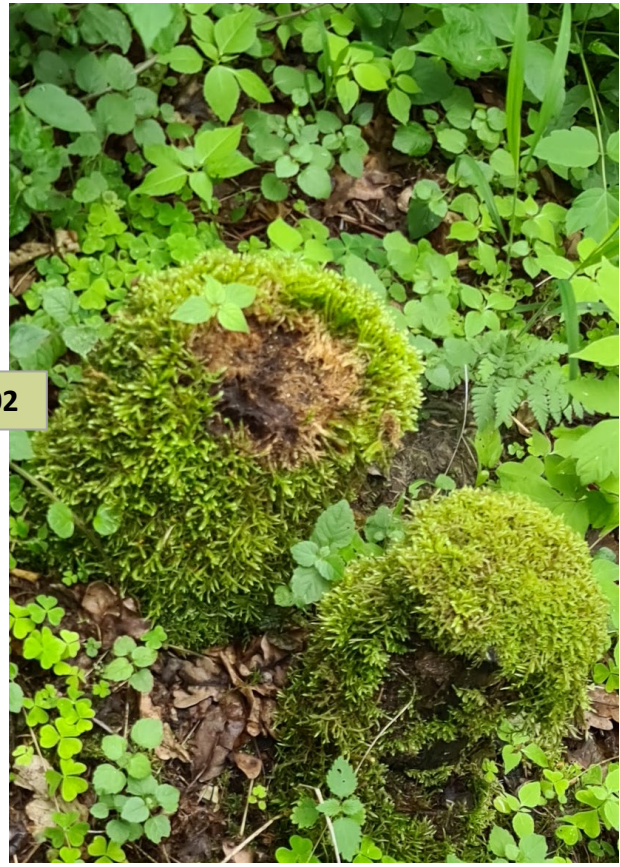


Results Mosses - Kaunas, Lithuania 2021			
TW-REF-NR	PCDD/F/dl-PCB	PCDD/F	dl-PCB
	DR CALUX pg TCDD eq./g product		
TW21LT-Mos-01 alpha	3.37	2.80	0.57
TW21LT-Mos-02	1.21	1.10	0.11
TW21LT-Mos-03	1.48	1.30	0.18
TW21LT-Mos-04	1.39	1.30	0.09
TW21LT-Mos-05	1.34	1.10	0.24

TW Indicative scale
PCDD/F/dl-PCB
DR CALUX
pg TCDD eq./g product
> 5.0
> 2.0
> 1.0
> 0.5
< 0.5

Results dioxins (PCDD/F) in mosses - Kaunas 2021

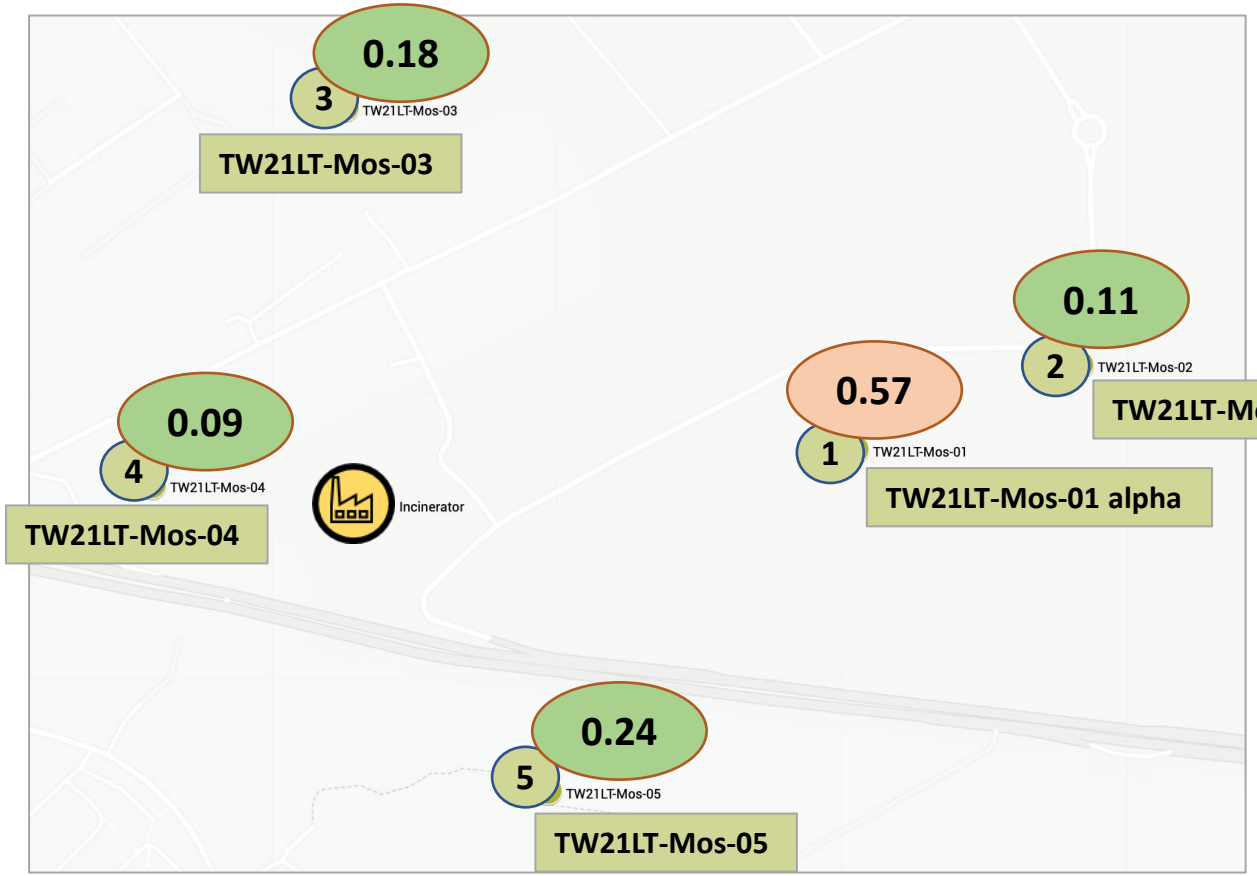


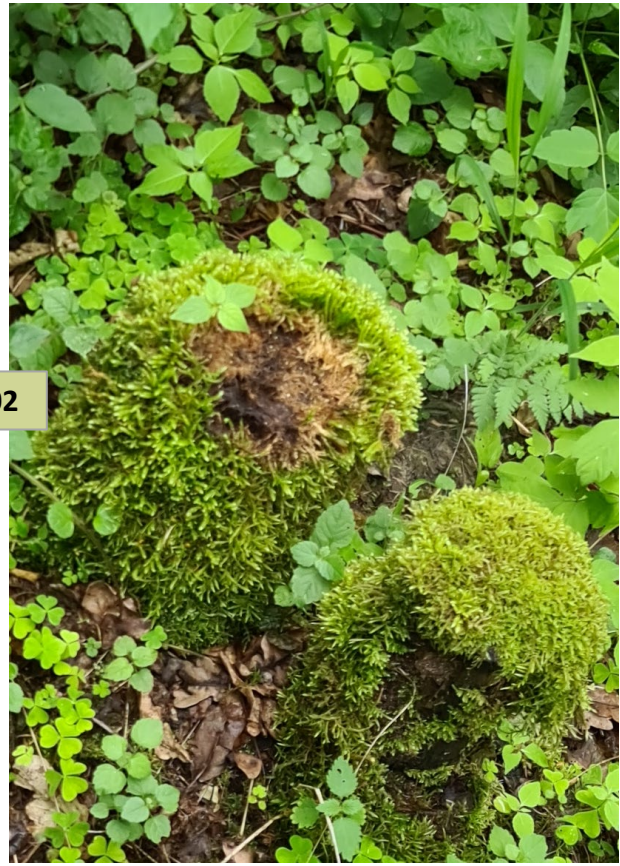


Results Mosses - Kaunas, Lithuania 2021			
TW-REF-NR	PCDD/F/dl-PCB	PCDD/F	dl-PCB
	DR CALUX pg TCDD eq./g product		
TW21LT-Mos-01 alpha	3.37	2.80	0.57
TW21LT-Mos-02	1.21	1.10	0.11
TW21LT-Mos-03	1.48	1.30	0.18
TW21LT-Mos-04	1.39	1.30	0.09
TW21LT-Mos-05	1.34	1.10	0.24

TW Indicative scale
PCDD/F
DR CALUX
pg TCDD eq./g product
> 5.0
> 2.0
> 1.0
> 0.5
< 0.5

Results dioxin-like PCB (dl-PCB) in mosses - Kaunas 2021

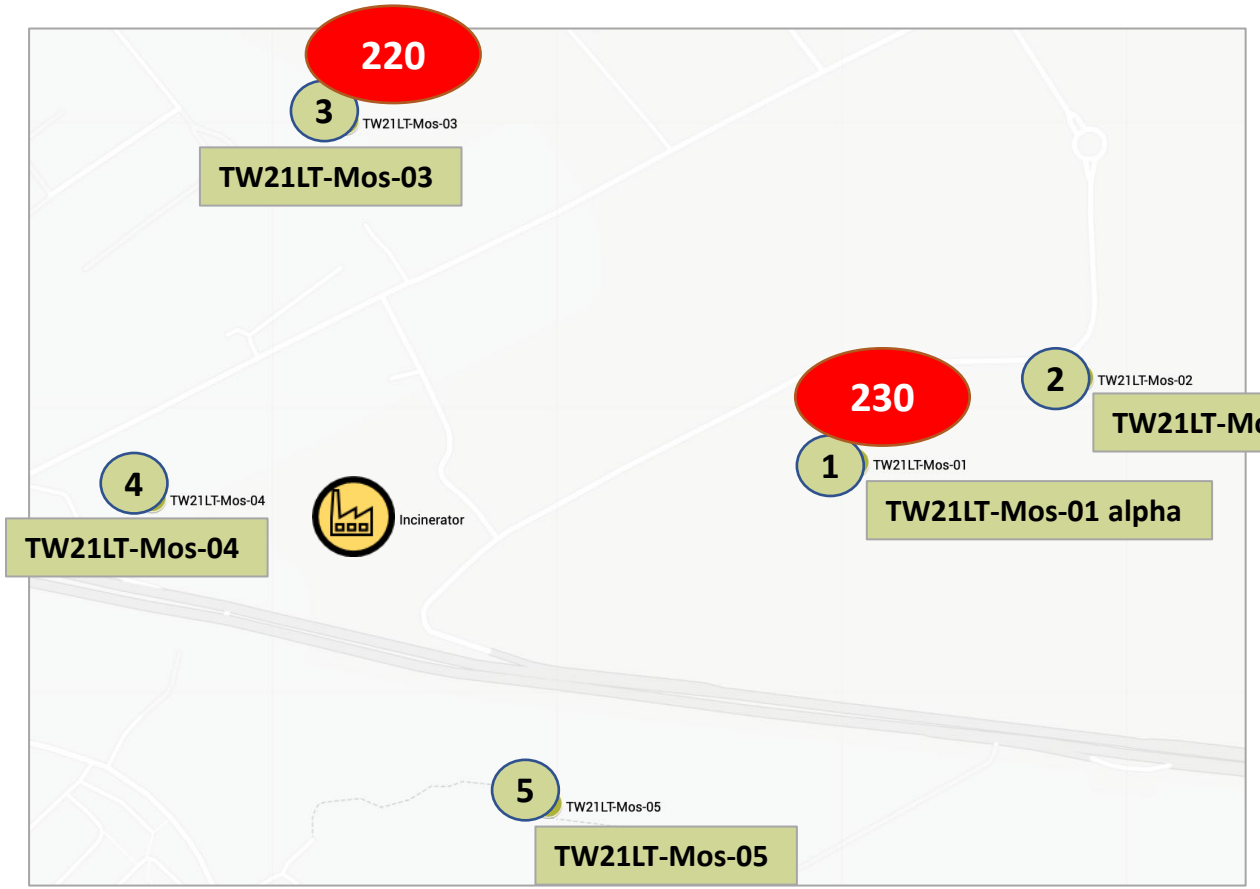


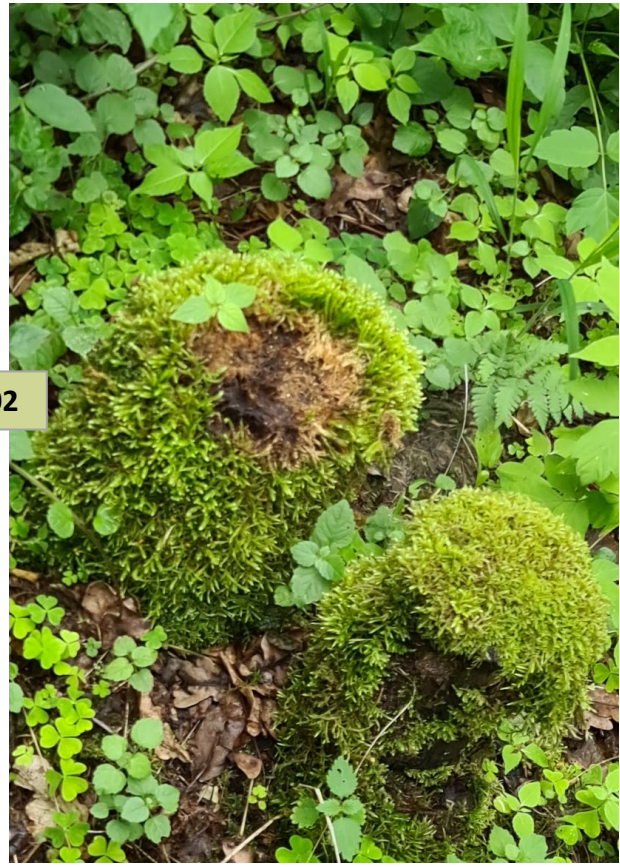


Results Mosses - Kaunas, Lithuania 2021						
TW-REF-NR	PCDD/F/dl-PCB	PCDD/F	dl-PCB	PAH	FITC-4 (PFAS)	FITC-4 (PFAS)
	DR CALUX pg TCDD eq./g product			***ng** BaP eq./g product*	***ug** PFOA eq./g product*	***ng** PFOA eq./g product*
TW21LT-Mos-01 alpha	3.37	2.80	0.57	230	8.4	8400
TW21LT-Mos-02	1.21	1.10	0.11			
TW21LT-Mos-03	1.48	1.30	0.18	220	13	13.000
TW21LT-Mos-04	1.39	1.30	0.09			
TW21LT-Mos-05	1.34	1.10	0.24			

TW Indicative scale
dL-PCB
DR CALUX
pg TCDD eq./g product
> 5.0
> 2.0
> 1.0
> 0.5
< 0.5

Results Polycyclic Aromatic Hydrocarbons (PAH) in mosses – Kaunas 2021

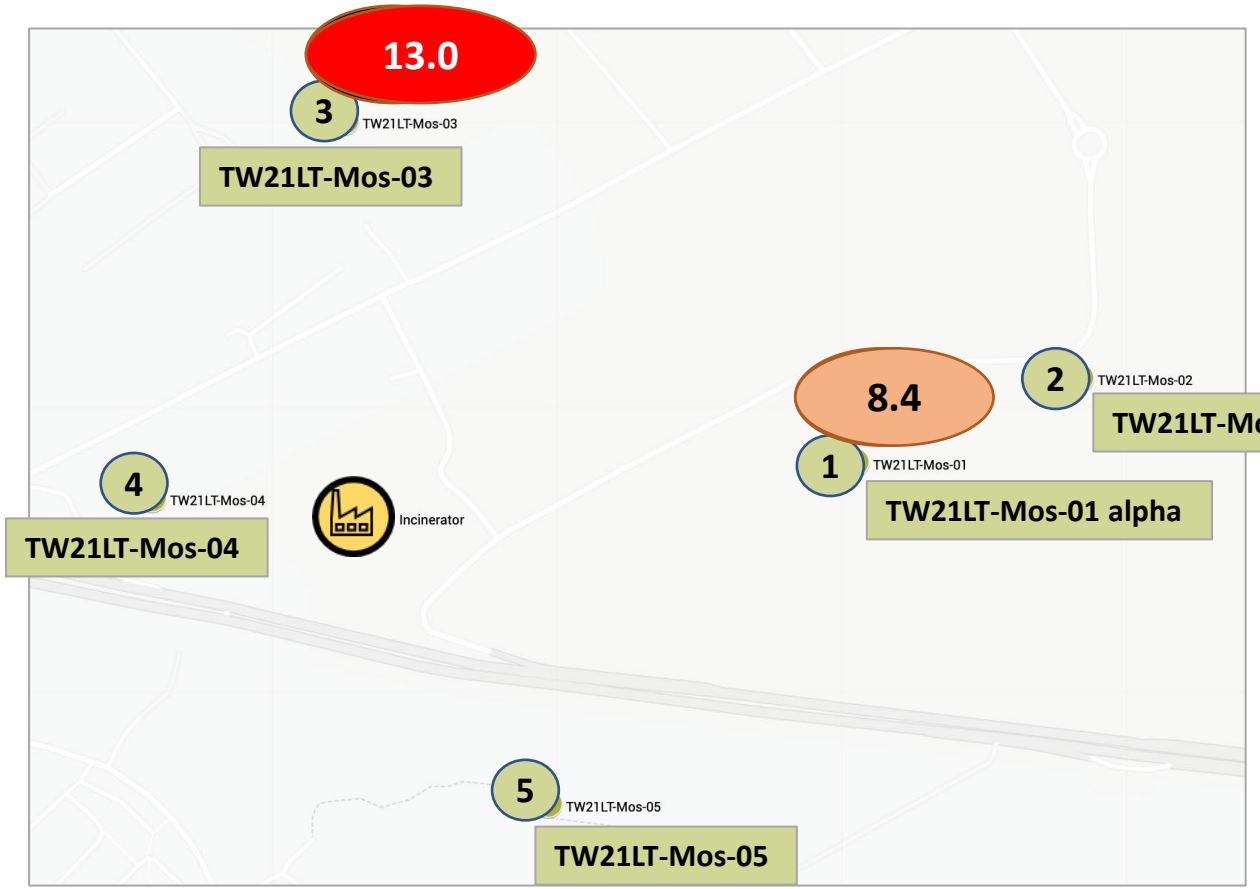


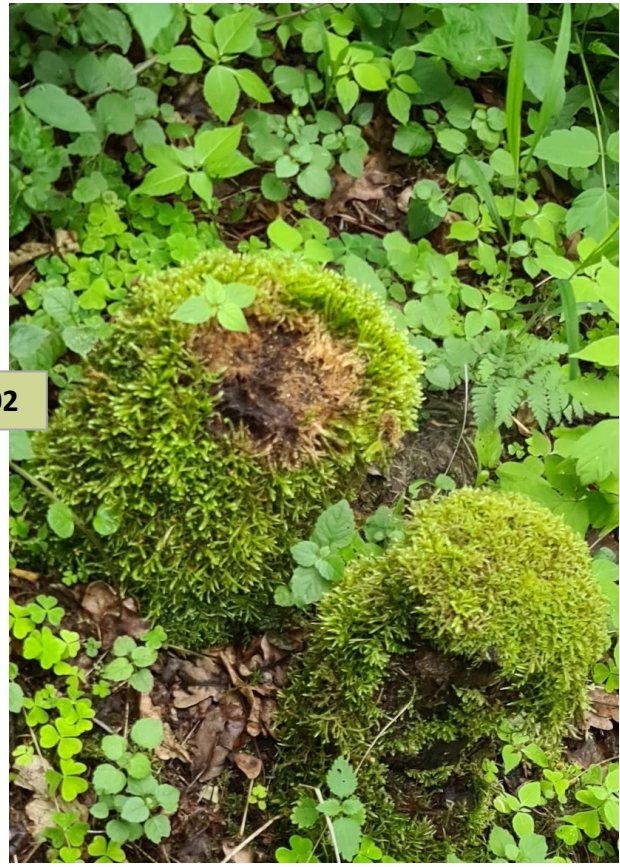


Results Mosses - Kaunas, Lithuania 2021						
TW-REF-NR	PCDD/F/dl-PCB	PCDD/F	dl-PCB	PAH	FITC-4 (PFAS)	FITC-4 (PFAS)
	DR CALUX pg TCDD eq./g product			***ng** BaP eq./g product*	***µg** PFOA eq./g product*	***ng** PFOA eq./g product*
TW21LT-Mos-01 alpha	3.37	2.80	0.57	230	8.4	8400
TW21LT-Mos-02	1.21	1.10	0.11			
TW21LT-Mos-03	1.48	1.30	0.18	220	13.0	13.000
TW21LT-Mos-04	1.39	1.30	0.09			
TW21LT-Mos-05	1.34	1.10	0.24			

TW Indicative scale
PAH
PAH CALUX
ng Benzo[a]pyrene (B[a]P) eq./g product
> 500
> 250
> 100
> 10
< 10

Results PFAS *(µg PFOA eq./g product)* in mosses, Kaunas - 2021

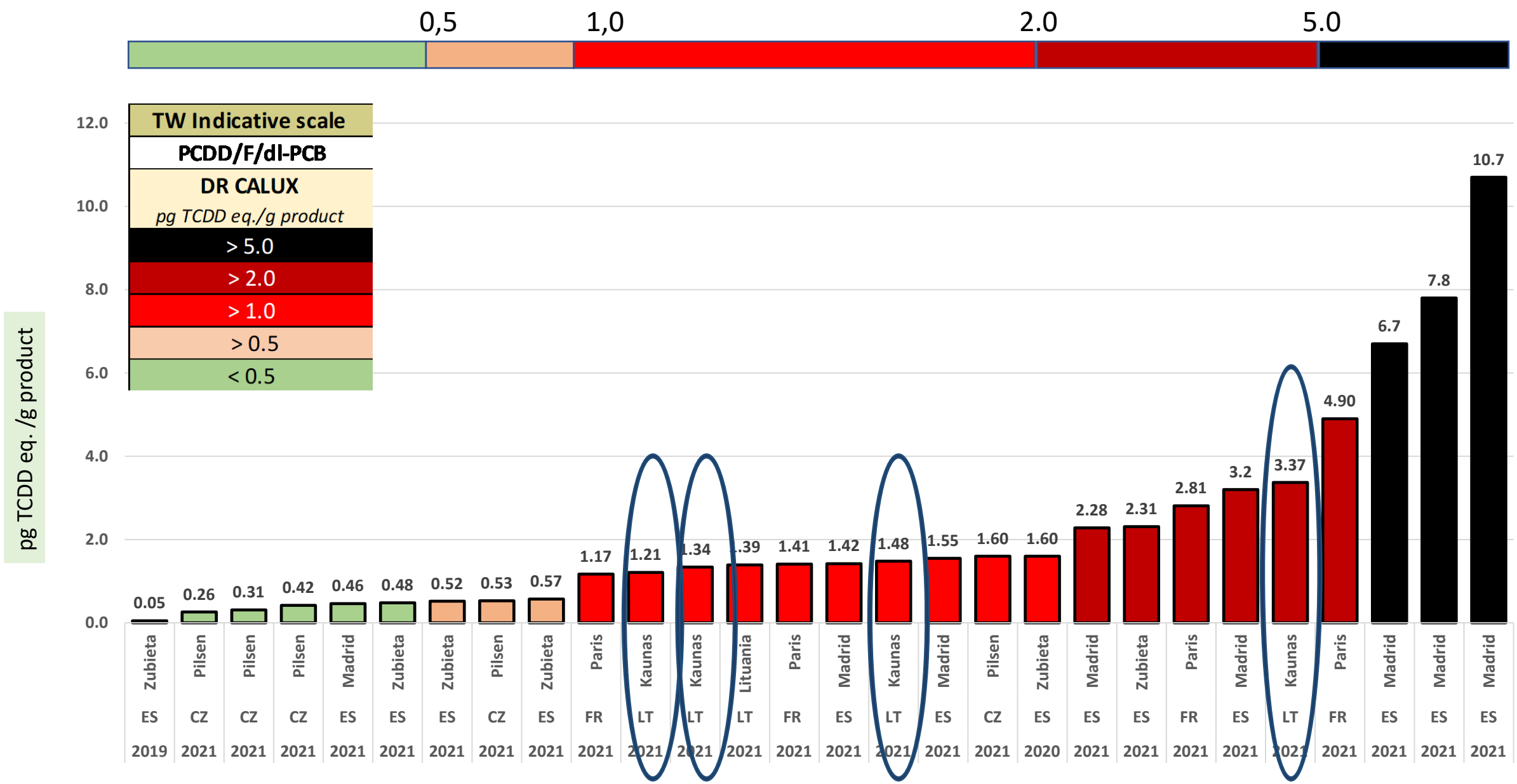




Results Mosses - Kaunas, Lithuania 2021						
TW-REF-NR	PCDD/F/dl-PCB	PCDD/F	dl-PCB	PAH	FITC-4 (PFAS)	FITC-4 (PFAS)
	DR CALUX pg TCDD eq./g product			*ng BaP eq./g product*	*µg PFOA eq./g product*	*ng PFOA eq./g product*
TW21LT-Mos-01 alpha	3.37	2.80	0.57	230	8.4	8400
TW21LT-Mos-02	1.21	1.10	0.11			
TW21LT-Mos-03	1.48	1.30	0.18	220	13.0	13.000
TW21LT-Mos-04	1.39	1.30	0.09			
TW21LT-Mos-05	1.34	1.10	0.24			

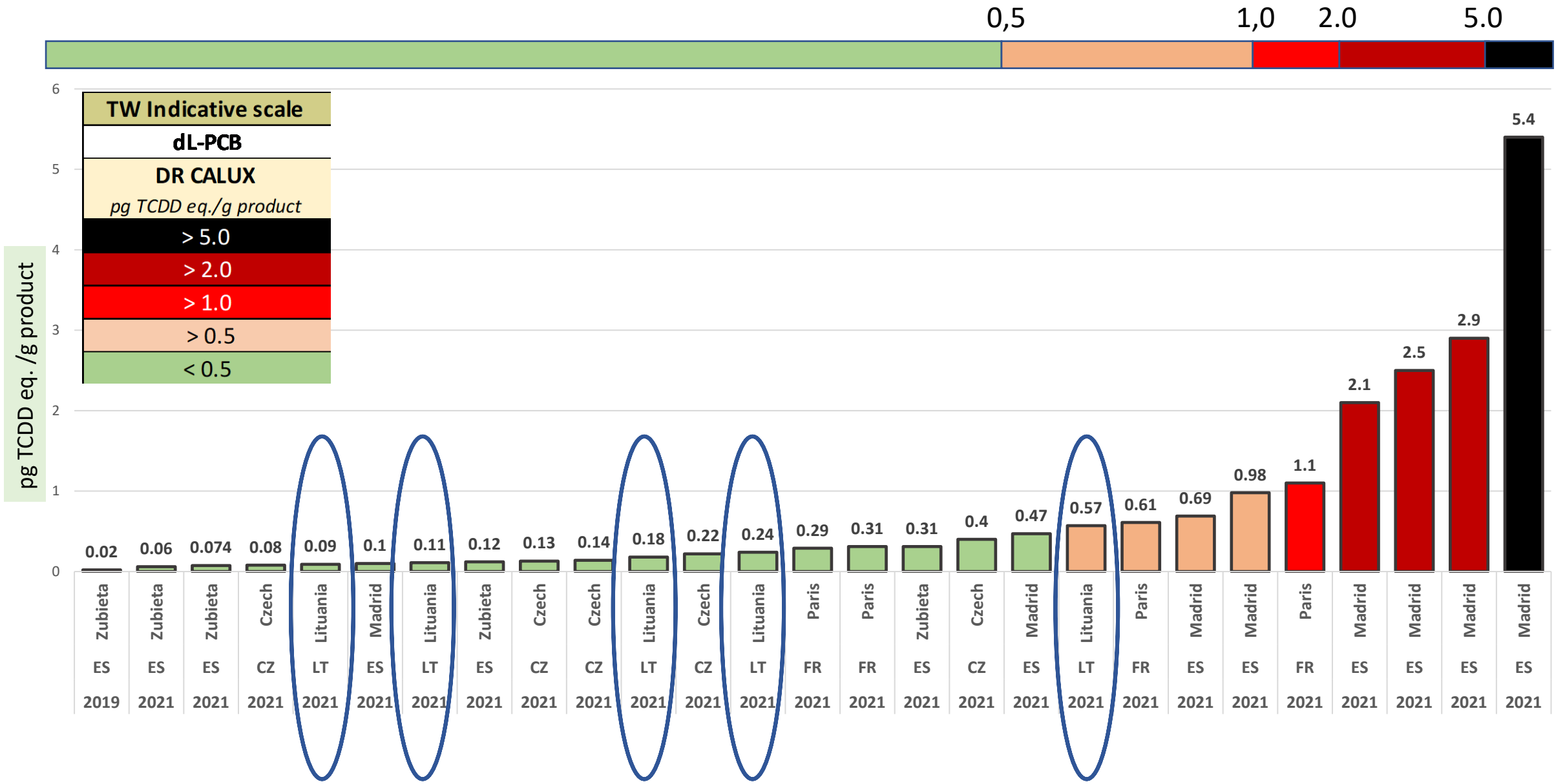
TW Indicative scale
PFAS
FITC-T4/PFAS CALUX
µg PFOA eq./g product
> 20
> 10
> 5
> 0.001
< 0.001

Indicative scale PCDD/F/dl-PCB in mosses Kaunas, Lithuania - 2021



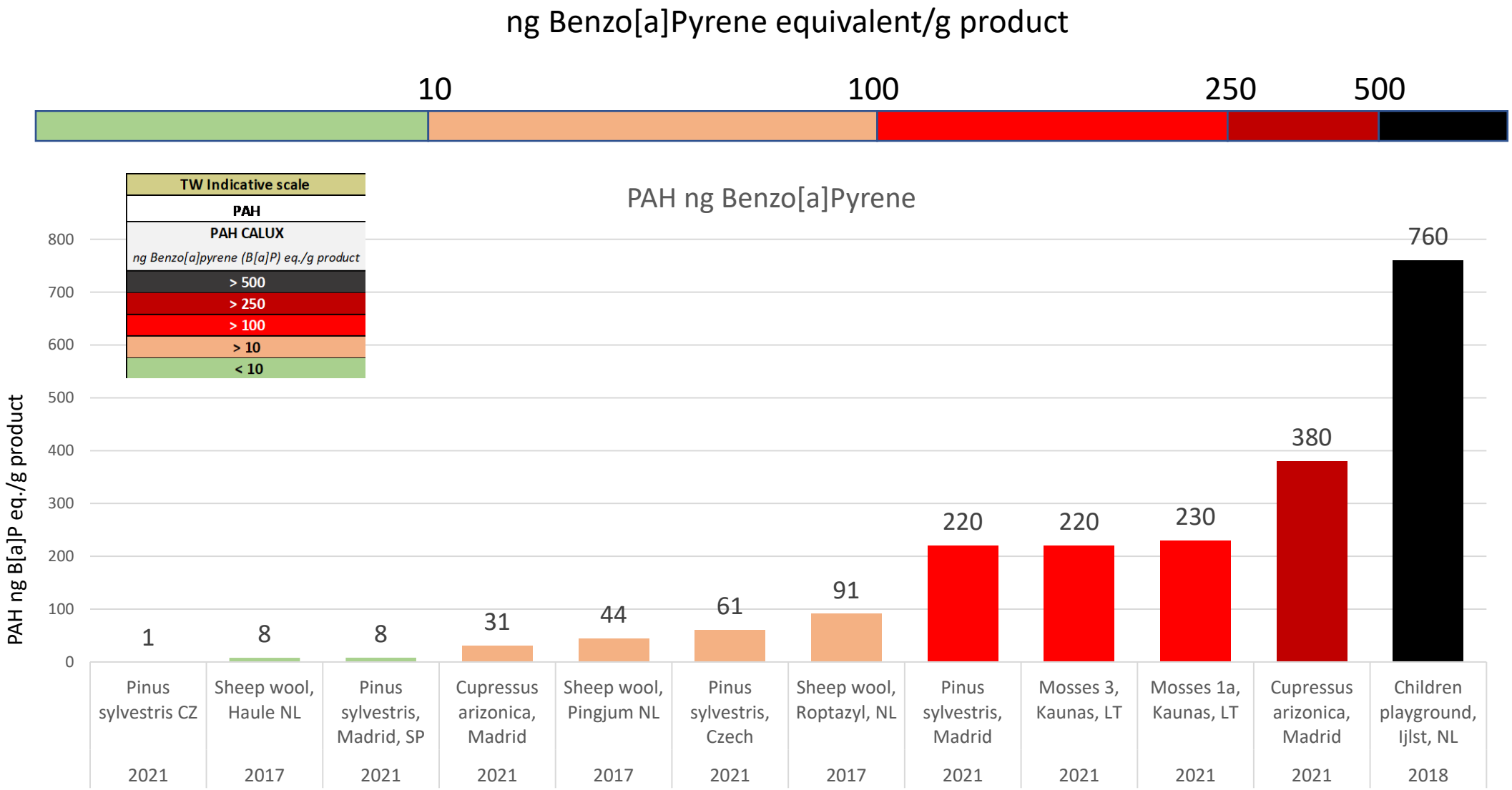
Data ToxicoWatch Biomonitoring research in Europe 2019 - 2021

TW-indicative scale dl-PCB in mosses Kaunas, Lithuania - 2021

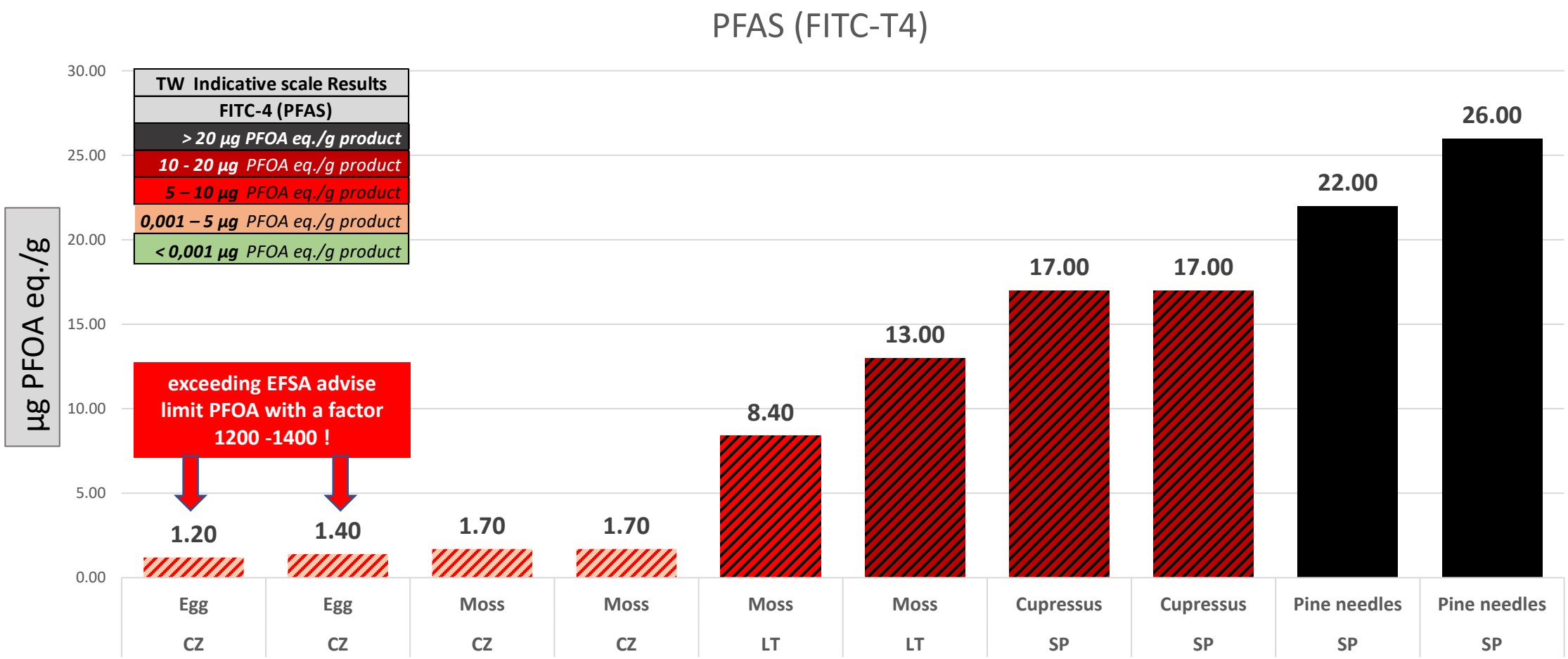


Data ToxicoWatch Biomonitoring research in Europe 2019 - 2021

Indicative PAH CALUX scale in biomatrices (TW research)



TW Indicative scale PFAS (µq PFOA eq./g product) in divers biomatrices, Europe - 2021



Data ToxicoWatch Biomonitoring research in Europe 2021

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Analysis report

Client:
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8861 CP
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Nederland

Authorized by:
Emiel Felzel
Head of Testing Laboratory

Date report (dd-mm-yyyy):
20-08-2021

Responsible person BDS:
Emiel Felzel
Head of Testing Laboratory

Information about report
The results of examination refer exclusively to the checked samples.
Results are given in table 1.
Sample characteristics are given in table 2.
The measurement uncertainty for CALUX method is typically below 30%. For the calculation a coverage factor of 1 is used.
If an analysis is accredited by ISO17025 (RvA L401) is indicated by a yes or a no
Date of the performance of the test: 20-08-2021

Table 1 sample analysis results

No.	Client code	Method	Parameter	Result	Conclusion	Cut off	Unit
1	TW-LT21-EGG-01	DR CALUX	PCDD/PCDF (BEQ; semi)	4.4	suspected	1.7	pg BEQ / gram fat
2	TW-LT21-EGG-01	DR CALUX	PCDD/PCDF and dl-PCBs (BEQ; semi)	5.9	suspected	3.3	pg BEQ / gram fat

For the suspected sample(s) to be non-compliant, the concentration has to be determined by a confirmatory method

Table 2 sample characteristics

No.	Client code	BDS code	Matrix	ISO17025 (RvAL401)	Date arrival	Sealed
1	TW-LT21-EGG-01	40795	Food, egg(product)	yes	24-06-2021	
2	TW-LT21-EGG-01	40795	Food, egg(product)	yes	24-06-2021	

For the method DR CALUX and the sum parameter PCDD/PCDF (BEQ; semi) the used method is shake extraction with organic solvents (hexane); the extracts are cleaned on an acid silica column. The cleaned extracts are dissolved in DMSO. The DR CALUX activity is determined (24h exposure). The response of the sample is corrected for the background and subsequently corrected for the apparent bioassay recovery with a reference sample at the level of interest. The evaluation was done on the maximum level for PCDD/F, from which a cut off value has been established (2/3 of maximum level) to determine if a sample is compliant or suspected. As a maximum level the level of the matrix as described in the table above is used. After the evaluation an estimation is given of the sample in the form of a BEQ outcome. The DR CALUX analysis is done according to p-bds-051.

For the method DR CALUX and the sum parameter PCDD/PCDF and dl-PCBs (BEQ; semi) the used method is shake extraction with organic solvents (hexane); the extracts are cleaned on an acid silica column. The cleaned extracts are dissolved in DMSO. The DR CALUX activity is determined (24h exposure). The response of the sample is corrected for the background and subsequently corrected for the apparent bioassay recovery with a reference sample at the level of interest. The evaluation was done on the maximum level for PCDD/F and dl-PCBs, from which a cut off value has been established (2/3 of maximum level) to determine if a sample is compliant or suspected. As a maximum level the level of the matrix as described in the table above is used. After the evaluation an estimation is given of the sample in the form of a BEQ outcome. The DR CALUX analysis is done according to p-bds-051.

For the method DR CALUX and the sum parameter dl-PCBs (BEQ; semi) the used method is

All DR CALUX analysis results comply with EU requirements as indicated in Commission Regulation (EU) 2017/644 of 5 April 2017 laying down methods of sampling and analysis for the control of levels of dioxins, dioxin-like PCBs and non-dioxin-like PCBs in certain foodstuffs. Maximal levels according to COMMISSION REGULATION (EU) 2015/704 of 30 April 2015.

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Analysis report

Client:
Toxicowatch
Abel Arkenbout
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grote ossenmarkt 18
8861 CP
Harlingen
Nederland

Authorized by:
Emiel Felzel
Head of Testing Laboratory

Date report (dd-mm-yyyy):
20-08-2021

Responsible person BDS:
Emiel Felzel
Head of Testing Laboratory

Information about report
The results of examination refer exclusively to the checked samples.
Results are given in table 1.
Sample characteristics are given in table 2.
The measurement uncertainty for CALUX method is typically below 30%. For the calculation a coverage factor of 1 is used.
If an analysis is accredited by ISO17025 (RvA L401) is indicated by a yes or a no
Date of the performance of the test: 20-08-2021

Table 1 sample analysis results

No.	Client code	Method	Parameter	Result	Conclusion	Cut off	Unit
1	TW-LT21-EGG-02	DR CALUX	PCDD/PCDF (BEQ; semi)	5.0	suspected	1.7	pg BEQ / gram fat
2	TW-LT21-EGG-02	DR CALUX	PCDD/PCDF and dl-PCBs (BEQ; semi)	6.7	suspected	3.3	pg BEQ / gram fat

For the suspected sample(s) to be non-compliant, the concentration has to be determined by a confirmatory method

Table 2 sample characteristics

No.	Client code	BDS code	Matrix	ISO17025 (RvAL401)	Date arrival	Sealed
1	TW-LT21-EGG-02	40793	Food, egg(product)	yes	24-06-2021	
2	TW-LT21-EGG-02	40793	Food, egg(product)	yes	24-06-2021	

For the method DR CALUX and the sum parameter PCDD/PCDF (BEQ; semi) the used method is shake extraction with organic solvents (hexane); the extracts are cleaned on an acid silica column. The cleaned extracts are dissolved in DMSO. The DR CALUX activity is determined (24h exposure). The response of the sample is corrected for the background and subsequently corrected for the apparent bioassay recovery with a reference sample at the level of interest. The evaluation was done on the maximum level for PCDD/F, from which a cut off value has been established (2/3 of maximum level) to determine if a sample is compliant or suspected. As a maximum level the level of the matrix as described in the table above is used. After the evaluation an estimation is given of the sample in the form of a BEQ outcome. The DR CALUX analysis is done according to p-bds-051.

For the method DR CALUX and the sum parameter PCDD/PCDF and dl-PCBs (BEQ; semi) the used method is shake extraction with organic solvents (hexane); the extracts are cleaned on an acid silica column. The cleaned extracts are dissolved in DMSO. The DR CALUX activity is determined (24h exposure). The response of the sample is corrected for the background and subsequently corrected for the apparent bioassay recovery with a reference sample at the level of interest. The evaluation was done on the maximum level for PCDD/F and dl-PCBs, from which a cut off value has been established (2/3 of maximum level) to determine if a sample is compliant or suspected. As a maximum level the level of the matrix as described in the table above is used. After the evaluation an estimation is given of the sample in the form of a BEQ outcome. The DR CALUX analysis is done according to p-bds-051.

For the method DR CALUX and the sum parameter dl-PCBs (BEQ; semi) the used method is

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Analysis report

Client:
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Authorized by:
Snezana Zeljkovic
Principle analyst

Date report (dd-mm-yyyy):
09-07-2021

Responsible person BDS:
Emiel Felzel
Head of Testing Laboratory

Information about report
The results of examination refer exclusively to the checked samples.
Results are given in table 1.
Sample characteristics are given in table 2.
The measurement uncertainty for CALUX method is typically below 30%. For the calculation a coverage factor of 1 is used.
If an analysis is accredited by ISO17025 (RvA L401) is indicated by a yes or a no
Date of the performance of the test: 09-07-2021

Table 1 sample analysis results

No.	Client code	Method	Parameter	Result	Conclusion	Cut off	Unit
1	TW-LT21-EGG-03	DR CALUX	PCDD/PCDF (BEQ; semi)	1.2	compliant	1.7	pg BEQ / gram fat
2	TW-LT21-EGG-03	DR CALUX	PCDD/PCDF and dl-PCBs (BEQ; semi)	2.1	compliant	3.3	pg BEQ / gram fat

Table 2 sample characteristics

No.	Client code	BDS code	Matrix	ISO17025 (RvAL401)	Date arrival	Sealed
1	TW-LT21-EGG-03	40794	Food, egg(product)	yes	24-06-2021	
2	TW-LT21-EGG-03	40794	Food, egg(product)	yes	24-06-2021	

For the method DR CALUX and the sum parameter PCDD/PCDF (BEQ; semi) the used method is shake extraction with organic solvents (hexane); the extracts are cleaned on an acid silica column. The cleaned extracts are dissolved in DMSO. The DR CALUX activity is determined (24h exposure). The response of the sample is corrected for the background and subsequently corrected for the apparent bioassay recovery with a reference sample at the level of interest. The evaluation was done on the maximum level for PCDD/F, from which a cut off value has been established (2/3 of maximum level) to determine if a sample is compliant or suspected. As a maximum level the level of the matrix as described in the table above is used. After the evaluation an estimation is given of the sample in the form of a BEQ outcome. The DR CALUX analysis is done according to p-bds-051.

For the method DR CALUX and the sum parameter PCDD/PCDF and dl-PCBs (BEQ; semi) the used method is shake extraction with organic solvents (hexane); the extracts are cleaned on an acid silica column. The cleaned extracts are dissolved in DMSO. The DR CALUX activity is determined (24h exposure). The response of the sample is corrected for the background and subsequently corrected for the apparent bioassay recovery with a reference sample at the level of interest. The evaluation was done on the maximum level for PCDD/F and dl-PCBs, from which a cut off value has been established (2/3 of maximum level) to determine if a sample is compliant or suspected. As a maximum level the level of the matrix as described in the table above is used. After the evaluation an estimation is given of the sample in the form of a BEQ outcome. The DR CALUX analysis is done according to p-bds-051.

For the method DR CALUX and the sum parameter dl-PCBs (BEQ; semi) the used method is

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Analysis report

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Authorized by:
Emiel Felzel
Head of Testing Laboratory

Date report (dd-mm-yyyy):
20-08-2021

Responsible person BDS:
Emiel Felzel
Head of Testing Laboratory

Information about report
The results of examination refer exclusively to the checked samples.
Results are given in table 1.
Sample characteristics are given in table 2.
The measurement uncertainty for CALUX method is typically below 30%. For the calculation a coverage factor of 1 is used.
If an analysis is accredited by ISO17025 (RvA L401) is indicated by a yes or a no
Date of the performance of the test: 20-08-2021

Table 1 sample analysis results

No.	Client code	Method	Parameter	Result	Conclusion	Cut off	Unit
1	TW-LT21-EGG-04	DR CALUX	PCDD/PCDF (BEQ; semi)	2.1	suspected	1.7	pg BEQ / gram fat
2	TW-LT21-EGG-04	DR CALUX	PCDD/PCDF and dl-PCBs (BEQ; semi)	2.9	compliant	3.3	pg BEQ / gram fat

For the suspected sample(s) to be non-compliant, the concentration has to be determined by a confirmatory method

Table 2 sample characteristics

No.	Client code	BDS code	Matrix	ISO17025 (RvAL401)	Date arrival	Sealed
1	TW-LT21-EGG-04	40796	Food, egg(product)	yes	24-06-2021	
2	TW-LT21-EGG-04	40796	Food, egg(product)	yes	24-06-2021	

For the method DR CALUX and the sum parameter PCDD/PCDF (BEQ; semi) the used method is shake extraction with organic solvents (hexane); the extracts are cleaned on an acid silica column. The cleaned extracts are dissolved in DMSO. The DR CALUX activity is determined (24h exposure). The response of the sample is corrected for the background and subsequently corrected for the apparent bioassay recovery with a reference sample at the level of interest. The evaluation was done on the maximum level for PCDD/F, from which a cut off value has been established (2/3 of maximum level) to determine if a sample is compliant or suspected. As a maximum level the level of the matrix as described in the table above is used. After the evaluation an estimation is given of the sample in the form of a BEQ outcome. The DR CALUX analysis is done according to p-bds-051.

For the method DR CALUX and the sum parameter PCDD/PCDF and dl-PCBs (BEQ; semi) the used method is shake extraction with organic solvents (hexane); the extracts are cleaned on an acid silica column. The cleaned extracts are dissolved in DMSO. The DR CALUX activity is determined (24h exposure). The response of the sample is corrected for the background and subsequently corrected for the apparent bioassay recovery with a reference sample at the level of interest. The evaluation was done on the maximum level for PCDD/F and dl-PCBs, from which a cut off value has been established (2/3 of maximum level) to determine if a sample is compliant or suspected. As a maximum level the level of the matrix as described in the table above is used. After the evaluation an estimation is given of the sample in the form of a BEQ outcome. The DR CALUX analysis is done according to p-bds-051.

For the method DR CALUX and the sum parameter dl-PCBs (BEQ; semi) the used method is

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Authorized by:
Emiel Felzel
Head of Testing Laboratory

Date report (dd-mm-yyyy):
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Date of the performance of the test: 20-08-2021

Table 1 sample analysis results

No.	Client code	Method	Parameter	Result	Conclusion	Cut off	Unit
1	TW-LT21-EGG-05	DR CALUX	PCDD/PCDF (BEQ; semi)	5.0	suspected	1.7	pg BEQ / gram fat
2	TW-LT21-EGG-05	DR CALUX	PCDD/PCDF and dl-PCBs (BEQ; semi)	7.0	suspected	3.3	pg BEQ / gram fat

For the suspected sample(s) to be non-compliant, the concentration has to be determined by a confirmatory method

Table 2 sample characteristics

No.	Client code	BDS code	Matrix	ISO17025 (RvAL401)	Date arrival	Sealed
1	TW-LT21-EGG-05	40797	Food, egg(product)	yes	24-06-2021	
2	TW-LT21-EGG-05	40797	Food, egg(product)	yes	24-06-2021	

For the method DR CALUX and the sum parameter PCDD/PCDF (BEQ; semi) the used method is shake extraction with organic solvents (hexane); the extracts are cleaned on an acid silica column. The cleaned extracts are dissolved in DMSO. The DR CALUX activity is determined (24h exposure). The response of the sample is corrected for the background and subsequently corrected for the apparent bioassay recovery with a reference sample at the level of interest. The evaluation was done on the maximum level for PCDD/F, from which a cut off value has been established (2/3 of maximum level) to determine if a sample is compliant or suspected. As a maximum level the level of the matrix as described in the table above is used. After the evaluation an estimation is given of the sample in the form of a BEQ outcome. The DR CALUX analysis is done according to p-bds-051.

For the method DR CALUX and the sum parameter PCDD/PCDF and dl-PCBs (BEQ; semi) the used method is shake extraction with organic solvents (hexane); the extracts are cleaned on an acid silica column. The cleaned extracts are dissolved in DMSO. The DR CALUX activity is determined (24h exposure). The response of the sample is corrected for the background and subsequently corrected for the apparent bioassay recovery with a reference sample at the level of interest. The evaluation was done on the maximum level for PCDD/F and dl-PCBs, from which a cut off value has been established (2/3 of maximum level) to determine if a sample is compliant or suspected. As a maximum level the level of the matrix as described in the table above is used. After the evaluation an estimation is given of the sample in the form of a BEQ outcome. The DR CALUX analysis is done according to p-bds-051.

For the method DR CALUX and the sum parameter dl-PCBs (BEQ; semi) the used method is

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Date of the performance of the test: 20-08-2021

Table 1 sample analysis results

No.	Client code	Method	Parameter	Result	Conclusion	Cut off	Unit
1	TW-LT21-EGG-06	DR CALUX	PCDD/PCDF (BEQ; semi)	2.8	suspected	1.7	pg BEQ / gram fat
2	TW-LT21-EGG-06	DR CALUX	PCDD/PCDF and dl-PCBs (BEQ; semi)	9.3	suspected	3.3	pg BEQ / gram fat

For the suspected sample(s) to be non-compliant, the concentration has to be determined by a confirmatory method

Table 2 sample characteristics

No.	Client code	BDS code	Matrix	ISO17025 (RvAL401)	Date arrival	Sealed
1	TW-LT21-EGG-06	40798	Food, egg(product)	yes	24-06-2021	
2	TW-LT21-EGG-06	40798	Food, egg(product)	yes	24-06-2021	

For the method DR CALUX and the sum parameter PCDD/PCDF (BEQ; semi) the used method is shake extraction with organic solvents (hexane); the extracts are cleaned on an acid silica column. The cleaned extracts are dissolved in DMSO. The DR CALUX activity is determined (24h exposure). The response of the sample is corrected for the background and subsequently corrected for the apparent bioassay recovery with a reference sample at the level of interest. The evaluation was done on the maximum level for PCDD/F, from which a cut off value has been established (2/3 of maximum level) to determine if a sample is compliant or suspected. As a maximum level the level of the matrix as described in the table above is used. After the evaluation an estimation is given of the sample in the form of a BEQ outcome. The DR CALUX analysis is done according to p-bds-051.

For the method DR CALUX and the sum parameter PCDD/PCDF and dl-PCBs (BEQ; semi) the used method is shake extraction with organic solvents (hexane); the extracts are cleaned on an acid silica column. The cleaned extracts are dissolved in DMSO. The DR CALUX activity is determined (24h exposure). The response of the sample is corrected for the background and subsequently corrected for the apparent bioassay recovery with a reference sample at the level of interest. The evaluation was done on the maximum level for PCDD/F and dl-PCBs, from which a cut off value has been established (2/3 of maximum level) to determine if a sample is compliant or suspected. As a maximum level the level of the matrix as described in the table above is used. After the evaluation an estimation is given of the sample in the form of a BEQ outcome. The DR CALUX analysis is done according to p-bds-051.

For the method DR CALUX and the sum parameter dl-PCBs (BEQ; semi) the used method is

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Analysis report

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Authorized by:
Emiel Felzel

Date report (dd-mm-yyyy):
27-07-2021

Responsible person BDS:
Emiel Felzel
Head of Testing Laboratory

Information about report

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For the analyses on dioxins/furans/dl-PCBs/ndl-PCB the sample is extracted with organic solvents (hexane); the extracts are cleaned on an acid silica column/alumina/florisil/carbon. For recovery calculation all 13C labeled congeners are added. The concentrations are determined by GC-MS/MS.

Information about sample

BDS sample number	40918
Client identification	TW-LT21-EGG-01
Sample recieved on	13-07-2021
Start of test	13-07-2021
End of test	20-07-2021
Matrix	Food, egg(product)

Test results:

WHO sum parameters (accredited under RvA L401)

WHO PCDD/F TEQ excl. LOQ 2005	2.4	pg TEQ / gram fat	U+/-	24%
WHO PCDD/F TEQ incl. LOQ 2005	2.4	pg TEQ / gram fat	U+/-	24%
WHO dl-PCBs TEQ excl. LOQ 2005	1.4	pg TEQ / gram fat	U+/-	24%
WHO dl-PCBs TEQ incl. LOQ 2005	1.4	pg TEQ / gram fat	U+/-	24%
WHO PCDD/F + dl-PCBs TEQ excl. LOQ 2005	3.8	pg TEQ / gram fat	U+/-	23%
WHO PCDD/F + dl-PCBs TEQ incl. LOQ 2005	3.8	pg TEQ / gram fat	U+/-	23%

Dioxins/furans (accredited under RvA L401)

2,3,7,8-Tetrachlorodibenzo-p-dioxin	0.22	pg / gram fat	U+/-	44%
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	0.69	pg / gram fat	U+/-	31%
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	0.33	pg / gram fat	U+/-	44%
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	0.93	pg / gram fat	U+/-	46%
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	0.34	pg / gram fat	U+/-	41%
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	1.0	pg / gram fat	U+/-	34%
Octachlorodibenzo-p-dioxin	LOQ (<2)	pg / gram fat	U+/-	49%
2,3,7,8-Tetrachlorodibenzofuran	2.0	pg / gram fat	U+/-	27%
1,2,3,7,8-Pentachlorodibenzofuran	2.3	pg / gram fat	U+/-	31%
2,3,4,7,8-Pentachlorodibenzofuran	2.1	pg / gram fat	U+/-	29%
1,2,3,4,7,8-Hexachlorodibenzofuran	1.4	pg / gram fat	U+/-	37%
1,2,3,6,7,8-Hexachlorodibenzofuran	1.9	pg / gram fat	U+/-	25%
1,2,3,7,8,9-Hexachlorodibenzofuran	LOQ (<0.2)	pg / gram fat	U+/-	41%
2,3,4,6,7,8-Hexachlorodibenzofuran	0.87	pg / gram fat	U+/-	32%
1,2,3,4,6,7,8-Heptachlorodibenzofuran	1.3	pg / gram fat	U+/-	25%
1,2,3,4,7,8,9-Heptachlorodibenzofuran	0.25	pg / gram fat	U+/-	28%
Octachlorodibenzofuran	LOQ (<0.2)	pg / gram fat	U+/-	37%

dl-PCBs (accredited under RvA L401)

3,3',4,4'-Tetrachlorobiphenyl (#77)	49	pg / gram fat	U+/-	39%
3,4,4',5-Tetrachlorobiphenyl (#81)	3.8	pg / gram fat	U+/-	32%
3,3',4,4',5-Pentachlorobiphenyl (#126)	13	pg / gram fat	U+/-	26%
3,3',4,4',5,5'-Hexachlorobiphenyl (#169)	2.5	pg / gram fat	U+/-	53%
2,3,3',4,4'-Pentachlorobiphenyl (#105)	520	pg / gram fat	U+/-	51%
2,3,4,4',5-Pentachlorobiphenyl (#114)	23	pg / gram fat	U+/-	32%
2,3',4,4',5-Pentachlorobiphenyl (#118)	920	pg / gram fat	U+/-	44%
2,3',4,4',5'-Pentachlorobiphenyl (#123)	24	pg / gram fat	U+/-	36%
2,3,3',4,4',5-Hexachlorobiphenyl (#156)	130	pg / gram fat	U+/-	36%
2,3,3',4,4',5'-Hexachlorobiphenyl (#157)	45	pg / gram fat	U+/-	37%
2,3',4,4',5,5'-Hexachlorobiphenyl (#167)	74	pg / gram fat	U+/-	35%
2,3,3',4,4',5,5'-Heptachlorobiphenyl (#189)	15	pg / gram fat	U+/-	37%

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Authorized by:
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Date report (dd-mm-yyyy):
27-07-2021

Responsible person BDS:
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Head of Testing Laboratory

Information about report

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For the analyses on dioxins/furans/dl-PCBs/ndl-PCB the sample is extracted with organic solvents (hexane); the extracts are cleaned on an acid silica column/alumina/florisil/carbon. For recovery calculation all 13C labeled congeners are added. The concentrations are determined by GC-MS/MS.

Information about sample

BDS sample number	40916
Client identification	TW-LT21-EGG-02
Sample recieved on	13-07-2021
Start of test	13-07-2021
End of test	20-07-2021
Matrix	Food, egg(product)

Test results:

WHO sum parameters (accredited under RvA L401)

WHO PCDD/F TEQ excl. LOQ 2005	2.3	pg TEQ / gram fat	U+/-	24%
WHO PCDD/F TEQ incl. LOQ 2005	2.3	pg TEQ / gram fat	U+/-	24%
WHO dl-PCBs TEQ excl. LOQ 2005	0.93	pg TEQ / gram fat	U+/-	24%
WHO dl-PCBs TEQ incl. LOQ 2005	0.93	pg TEQ / gram fat	U+/-	24%
WHO PCDD/F + dl-PCBs TEQ excl. LOQ 2005	3.2	pg TEQ / gram fat	U+/-	23%
WHO PCDD/F + dl-PCBs TEQ incl. LOQ 2005	3.2	pg TEQ / gram fat	U+/-	23%

Dioxins/furans (accredited under RvA L401)

2,3,7,8-Tetrachlorodibenzo-p-dioxin	0.44	pg / gram fat	U+/-	44%
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	0.44	pg / gram fat	U+/-	31%
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	0.36	pg / gram fat	U+/-	44%
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	1.5	pg / gram fat	U+/-	46%
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	0.45	pg / gram fat	U+/-	41%
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	8.8	pg / gram fat	U+/-	34%
Octachlorodibenzo-p-dioxin	21	pg / gram fat	U+/-	49%
2,3,7,8-Tetrachlorodibenzofuran	1.6	pg / gram fat	U+/-	27%
1,2,3,7,8-Pentachlorodibenzofuran	1.4	pg / gram fat	U+/-	31%
2,3,4,7,8-Pentachlorodibenzofuran	1.1	pg / gram fat	U+/-	29%
1,2,3,4,7,8-Hexachlorodibenzofuran	1.2	pg / gram fat	U+/-	37%
1,2,3,6,7,8-Hexachlorodibenzofuran	1.6	pg / gram fat	U+/-	25%
1,2,3,7,8,9-Hexachlorodibenzofuran	LOQ (<0.1)	pg / gram fat	U+/-	41%
2,3,4,6,7,8-Hexachlorodibenzofuran	0.71	pg / gram fat	U+/-	32%
1,2,3,4,6,7,8-Heptachlorodibenzofuran	17	pg / gram fat	U+/-	25%
1,2,3,4,7,8,9-Heptachlorodibenzofuran	0.31	pg / gram fat	U+/-	28%
Octachlorodibenzofuran	0.97	pg / gram fat	U+/-	37%

dl-PCBs (accredited under RvA L401)

3,3',4,4'-Tetrachlorobiphenyl (#77)	39	pg / gram fat	U+/-	39%
3,4,4',5-Tetrachlorobiphenyl (#81)	LOQ (<1)	pg / gram fat	U+/-	32%
3,3',4,4',5-Pentachlorobiphenyl (#126)	8.1	pg / gram fat	U+/-	26%
3,3',4,4',5,5'-Hexachlorobiphenyl (#169)	0.97	pg / gram fat	U+/-	53%
2,3,3',4,4'-Pentachlorobiphenyl (#105)	920	pg / gram fat	U+/-	51%
2,3,4,4',5-Pentachlorobiphenyl (#114)	49	pg / gram fat	U+/-	32%
2,3',4,4',5-Pentachlorobiphenyl (#118)	1900	pg / gram fat	U+/-	44%
2,3',4,4',5'-Pentachlorobiphenyl (#123)	26	pg / gram fat	U+/-	36%
2,3,3',4,4',5-Hexachlorobiphenyl (#156)	110	pg / gram fat	U+/-	36%
2,3,3',4,4',5'-Hexachlorobiphenyl (#157)	34	pg / gram fat	U+/-	37%
2,3',4,4',5,5'-Hexachlorobiphenyl (#167)	63	pg / gram fat	U+/-	35%
2,3,3',4,4',5,5'-Heptachlorobiphenyl (#189)	7.5	pg / gram fat	U+/-	37%

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Information about report

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All analysis results comply with EU requirements as indicated in Commission Regulation (EU) 2017/644 of 5 April 2017 laying down methods of sampling and analysis for the control of levels of dioxins, dioxin-like PCBs and non-dioxin-like PCBs in certain foodstuffs. Maximal levels according to COMMISSION REGULATION (EU) 2015/704 of 30 April 2015.
For the analyses on dioxins/furans/dl-PCBs/ndl-PCB the sample is extracted with organic solvents (hexane); the extracts are cleaned on an acid silica column/alumina/florisil/carbon. For recovery calculation all 13C labeled congeners are added. The concentrations are determined by GC-MS/MS.

Information about sample

BDS sample number	40917
Client identification	TW-LT21-EGG-03
Sample recieved on	13-07-2021
Start of test	13-07-2021
End of test	20-07-2021
Matrix	Food, egg(product)

Test results:

WHO sum parameters (accredited under RvA L401)

WHO PCDD/F TEQ excl. LOQ 2005	0.78	pg TEQ / gram fat	U+/-	24%
WHO PCDD/F TEQ incl. LOQ 2005	0.9	pg TEQ / gram fat	U+/-	24%
WHO dl-PCBs TEQ excl. LOQ 2005	0.76	pg TEQ / gram fat	U+/-	24%
WHO dl-PCBs TEQ incl. LOQ 2005	0.76	pg TEQ / gram fat	U+/-	24%
WHO PCDD/F + dl-PCBs TEQ excl. LOQ 2005	1.5	pg TEQ / gram fat	U+/-	23%
WHO PCDD/F + dl-PCBs TEQ incl. LOQ 2005	1.7	pg TEQ / gram fat	U+/-	23%

Dioxins/furans (accredited under RvA L401)

2,3,7,8-Tetrachlorodibenzo-p-dioxin	LOQ (<0.1)	pg / gram fat	U+/-	44%
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	0.31	pg / gram fat	U+/-	31%
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	LOQ (<0.1)	pg / gram fat	U+/-	44%
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	0.34	pg / gram fat	U+/-	46%
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	0.22	pg / gram fat	U+/-	41%
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	0.92	pg / gram fat	U+/-	34%
Octachlorodibenzo-p-dioxin	1.6	pg / gram fat	U+/-	49%
2,3,7,8-Tetrachlorodibenzofuran	0.80	pg / gram fat	U+/-	27%
1,2,3,7,8-Pentachlorodibenzofuran	0.67	pg / gram fat	U+/-	31%
2,3,4,7,8-Pentachlorodibenzofuran	0.59	pg / gram fat	U+/-	29%
1,2,3,4,7,8-Hexachlorodibenzofuran	0.34	pg / gram fat	U+/-	37%
1,2,3,6,7,8-Hexachlorodibenzofuran	0.51	pg / gram fat	U+/-	25%
1,2,3,7,8,9-Hexachlorodibenzofuran	LOQ (<0.1)	pg / gram fat	U+/-	41%
2,3,4,6,7,8-Hexachlorodibenzofuran	0.29	pg / gram fat	U+/-	32%
1,2,3,4,6,7,8-Heptachlorodibenzofuran	0.56	pg / gram fat	U+/-	25%
1,2,3,4,7,8,9-Heptachlorodibenzofuran	LOQ (<0.1)	pg / gram fat	U+/-	28%
Octachlorodibenzofuran	0.17	pg / gram fat	U+/-	37%

dl-PCBs (accredited under RvA L401)

3,3',4,4'-Tetrachlorobiphenyl (#77)	18	pg / gram fat	U+/-	39%
3,4,4',5-Tetrachlorobiphenyl (#81)	2.0	pg / gram fat	U+/-	32%
3,3',4,4',5-Pentachlorobiphenyl (#126)	6.7	pg / gram fat	U+/-	26%
3,3',4,4',5,5'-Hexachlorobiphenyl (#169)	1.2	pg / gram fat	U+/-	53%
2,3,3',4,4'-Pentachlorobiphenyl (#105)	410	pg / gram fat	U+/-	51%
2,3,4,4',5-Pentachlorobiphenyl (#114)	16	pg / gram fat	U+/-	32%
2,3',4,4',5-Pentachlorobiphenyl (#118)	940	pg / gram fat	U+/-	44%
2,3',4,4',5'-Pentachlorobiphenyl (#123)	19	pg / gram fat	U+/-	36%
2,3,3',4,4',5-Hexachlorobiphenyl (#156)	79	pg / gram fat	U+/-	36%
2,3,3',4,4',5'-Hexachlorobiphenyl (#157)	31	pg / gram fat	U+/-	37%
2,3',4,4',5,5'-Hexachlorobiphenyl (#167)	55	pg / gram fat	U+/-	35%
2,3,3',4,4',5,5'-Heptachlorobiphenyl (#189)	6.7	pg / gram fat	U+/-	37%

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Analysis report

Client:
Toxicowatch
Abel Arkenbout
info@toxicowatch.org

8861 CP
Harlingen
Nederland

Authorized by:
Emiel Felzel

Date report (dd-mm-yyyy):
27-07-2021

Responsible person BDS:
Emiel Felzel
Head of Testing Laboratory

Information about report

The results of examination refer exclusively to the checked samples.
All analysis results comply with EU requirements as indicated in Commission Regulation (EU) 2017/644 of 5 April 2017 laying down methods of sampling and analysis for the control of levels of dioxins, dioxin-like PCBs and non-dioxin-like PCBs in certain foodstuffs. Maximal levels according to COMMISSION REGULATION (EU) 2015/704 of 30 April 2015.
For the analyses on dioxins/furans/dl-PCBs/ndl-PCB the sample is extracted with organic solvents (hexane); the extracts are cleaned on an acid silica column/alumina/florisil/carbon. For recovery calculation all 13C labeled congeners are added. The concentrations are determined by GC-MS/MS.

Information about sample

BDS sample number	40919
Client identification	TW-LT21-EGG-04
Sample recieved on	13-07-2021
Start of test	13-07-2021
End of test	20-07-2021
Matrix	Food, egg(product)

Test results:

WHO sum parameters (accredited under RvA L401)

WHO PCDD/F TEQ excl. LOQ 2005	1.9	pg TEQ / gram fat	U+/-	24%
WHO PCDD/F TEQ incl. LOQ 2005	1.9	pg TEQ / gram fat	U+/-	24%
WHO dl-PCBs TEQ excl. LOQ 2005	1	pg TEQ / gram fat	U+/-	24%
WHO dl-PCBs TEQ incl. LOQ 2005	1	pg TEQ / gram fat	U+/-	24%
WHO PCDD/F + dl-PCBs TEQ excl. LOQ 2005	3	pg TEQ / gram fat	U+/-	23%
WHO PCDD/F + dl-PCBs TEQ incl. LOQ 2005	3	pg TEQ / gram fat	U+/-	23%

Dioxins/furans (accredited under RvA L401)

2,3,7,8-Tetrachlorodibenzo-p-dioxin	0.20	pg / gram fat	U+/-	44%
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	0.56	pg / gram fat	U+/-	31%
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	0.35	pg / gram fat	U+/-	44%
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	0.58	pg / gram fat	U+/-	46%
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	0.20	pg / gram fat	U+/-	41%
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	0.78	pg / gram fat	U+/-	34%
Octachlorodibenzo-p-dioxin	LOQ (<1)	pg / gram fat	U+/-	49%
2,3,7,8-Tetrachlorodibenzofuran	2.1	pg / gram fat	U+/-	27%
1,2,3,7,8-Pentachlorodibenzofuran	1.6	pg / gram fat	U+/-	31%
2,3,4,7,8-Pentachlorodibenzofuran	1.6	pg / gram fat	U+/-	29%
1,2,3,4,7,8-Hexachlorodibenzofuran	0.99	pg / gram fat	U+/-	37%
1,2,3,6,7,8-Hexachlorodibenzofuran	1.1	pg / gram fat	U+/-	25%
1,2,3,7,8,9-Hexachlorodibenzofuran	0.27	pg / gram fat	U+/-	41%
2,3,4,6,7,8-Hexachlorodibenzofuran	0.57	pg / gram fat	U+/-	32%
1,2,3,4,6,7,8-Heptachlorodibenzofuran	1.0	pg / gram fat	U+/-	25%
1,2,3,4,7,8,9-Heptachlorodibenzofuran	LOQ (<0.1)	pg / gram fat	U+/-	28%
Octachlorodibenzofuran	0.16	pg / gram fat	U+/-	37%

dl-PCBs (accredited under RvA L401)

3,3',4,4'-Tetrachlorobiphenyl (#77)	23	pg / gram fat	U+/-	39%
3,4,4',5-Tetrachlorobiphenyl (#81)	3.0	pg / gram fat	U+/-	32%
3,3',4,4',5-Pentachlorobiphenyl (#126)	9.2	pg / gram fat	U+/-	26%
3,3',4,4',5,5'-Hexachlorobiphenyl (#169)	2.0	pg / gram fat	U+/-	53%
2,3,3',4,4'-Pentachlorobiphenyl (#105)	560	pg / gram fat	U+/-	51%
2,3,4,4',5-Pentachlorobiphenyl (#114)	28	pg / gram fat	U+/-	32%
2,3',4,4',5-Pentachlorobiphenyl (#118)	1200	pg / gram fat	U+/-	44%
2,3',4,4',5'-Pentachlorobiphenyl (#123)	23	pg / gram fat	U+/-	36%
2,3,3',4,4',5-Hexachlorobiphenyl (#156)	96	pg / gram fat	U+/-	36%
2,3,3',4,4',5'-Hexachlorobiphenyl (#157)	33	pg / gram fat	U+/-	37%
2,3',4,4',5,5'-Hexachlorobiphenyl (#167)	72	pg / gram fat	U+/-	35%
2,3,3',4,4',5,5'-Heptachlorobiphenyl (#189)	10	pg / gram fat	U+/-	37%

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Analysis report

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For the analyses on dioxins/furans/dl-PCBs/ndl-PCB the sample is extracted with organic solvents (hexane); the extracts are cleaned on an acid silica column/alumina/florisil/carbon. For recovery calculation all 13C labeled congeners are added. The concentrations are determined by GC-MS/MS.

Information about sample

BDS sample number	40920
Client identification	TW-LT21-EGG-05
Sample recieved on	13-07-2021
Start of test	13-07-2021
End of test	20-07-2021
Matrix	Food, egg(product)

Test results:

WHO sum parameters (accredited under RvA L401)

WHO PCDD/F TEQ excl. LOQ 2005	2.2	pg TEQ / gram fat	U+/-	24%
WHO PCDD/F TEQ incl. LOQ 2005	2.2	pg TEQ / gram fat	U+/-	24%
WHO dl-PCBs TEQ excl. LOQ 2005	2.1	pg TEQ / gram fat	U+/-	24%
WHO dl-PCBs TEQ incl. LOQ 2005	2.1	pg TEQ / gram fat	U+/-	24%
WHO PCDD/F + dl-PCBs TEQ excl. LOQ 2005	4.3	pg TEQ / gram fat	U+/-	23%
WHO PCDD/F + dl-PCBs TEQ incl. LOQ 2005	4.3	pg TEQ / gram fat	U+/-	23%

Dioxins/furans (accredited under RvA L401)

2,3,7,8-Tetrachlorodibenzo-p-dioxin	0.31	pg / gram fat	U+/-	44%
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	0.57	pg / gram fat	U+/-	31%
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	0.47	pg / gram fat	U+/-	44%
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	0.55	pg / gram fat	U+/-	46%
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	0.17	pg / gram fat	U+/-	41%
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	0.75	pg / gram fat	U+/-	34%
Octachlorodibenzo-p-dioxin	1.8	pg / gram fat	U+/-	49%
2,3,7,8-Tetrachlorodibenzofuran	2.4	pg / gram fat	U+/-	27%
1,2,3,7,8-Pentachlorodibenzofuran	1.9	pg / gram fat	U+/-	31%
2,3,4,7,8-Pentachlorodibenzofuran	1.7	pg / gram fat	U+/-	29%
1,2,3,4,7,8-Hexachlorodibenzofuran	1.2	pg / gram fat	U+/-	37%
1,2,3,6,7,8-Hexachlorodibenzofuran	1.9	pg / gram fat	U+/-	25%
1,2,3,7,8,9-Hexachlorodibenzofuran	LOQ (<0.2)	pg / gram fat	U+/-	41%
2,3,4,6,7,8-Hexachlorodibenzofuran	0.73	pg / gram fat	U+/-	32%
1,2,3,4,6,7,8-Heptachlorodibenzofuran	1.1	pg / gram fat	U+/-	25%
1,2,3,4,7,8,9-Heptachlorodibenzofuran	LOQ (<0.2)	pg / gram fat	U+/-	28%
Octachlorodibenzofuran	0.20	pg / gram fat	U+/-	37%

dl-PCBs (accredited under RvA L401)

3,3',4,4'-Tetrachlorobiphenyl (#77)	47	pg / gram fat	U+/-	39%
3,4,4',5-Tetrachlorobiphenyl (#81)	3.5	pg / gram fat	U+/-	32%
3,3',4,4',5-Pentachlorobiphenyl (#126)	18	pg / gram fat	U+/-	26%
3,3',4,4',5,5'-Hexachlorobiphenyl (#169)	2.1	pg / gram fat	U+/-	53%
2,3,3',4,4'-Pentachlorobiphenyl (#105)	2600	pg / gram fat	U+/-	51%
2,3,4,4',5-Pentachlorobiphenyl (#114)	110	pg / gram fat	U+/-	32%
2,3',4,4',5-Pentachlorobiphenyl (#118)	4800	pg / gram fat	U+/-	44%
2,3',4,4',5'-Pentachlorobiphenyl (#123)	53	pg / gram fat	U+/-	36%
2,3,3',4,4',5-Hexachlorobiphenyl (#156)	470	pg / gram fat	U+/-	36%
2,3,3',4,4',5'-Hexachlorobiphenyl (#157)	120	pg / gram fat	U+/-	37%
2,3',4,4',5,5'-Hexachlorobiphenyl (#167)	220	pg / gram fat	U+/-	35%
2,3,3',4,4',5,5'-Heptachlorobiphenyl (#189)	48	pg / gram fat	U+/-	37%

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Analysis report

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Authorized by:
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For the analyses on dioxins/furans/dl-PCBs/ndl-PCB the sample is extracted with organic solvents (hexane); the extracts are cleaned on an acid silica column/alumina/florisil/carbon. For recovery calculation all 13C labeled congeners are added. The concentrations are determined by GC-MS/MS.

Information about sample

BDS sample number	40921
Client identification	TW-LT21-EGG-06
Sample recieved on	13-07-2021
Start of test	13-07-2021
End of test	20-07-2021
Matrix	Food, egg(product)

Judgement

Non-compliant for maximal level limit (expressed as WHO PCDD/F + dl-PCBs TEQ) taking into account expanded measurement uncertainity.
Sample TW-LT21-EGG-06 is above the maximal level of 5 pg TEQ / gram fat.

Test results:

WHO sum parameters (accredited under RvA L401)

WHO PCDD/F TEQ excl. LOQ 2005	1.7	pg TEQ / gram fat	U+/-	24%
WHO PCDD/F TEQ incl. LOQ 2005	1.9	pg TEQ / gram fat	U+/-	24%
WHO dl-PCBs TEQ excl. LOQ 2005	18	pg TEQ / gram fat	U+/-	24%
WHO dl-PCBs TEQ incl. LOQ 2005	18	pg TEQ / gram fat	U+/-	24%
WHO PCDD/F + dl-PCBs TEQ excl. LOQ 2005	20	pg TEQ / gram fat	U+/-	23%
WHO PCDD/F + dl-PCBs TEQ incl. LOQ 2005	20	pg TEQ / gram fat	U+/-	23%

Dioxins/furans (accredited under RvA L401)

2,3,7,8-Tetrachlorodibenzo-p-dioxin	LOQ (<0.2)	pg / gram fat	U+/-	44%
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	0.37	pg / gram fat	U+/-	31%
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	0.16	pg / gram fat	U+/-	44%
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	0.62	pg / gram fat	U+/-	46%
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	0.20	pg / gram fat	U+/-	41%
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	0.43	pg / gram fat	U+/-	34%
Octachlorodibenzo-p-dioxin	LOQ (<2)	pg / gram fat	U+/-	49%
2,3,7,8-Tetrachlorodibenzofuran	1.6	pg / gram fat	U+/-	27%
1,2,3,7,8-Pentachlorodibenzofuran	2.1	pg / gram fat	U+/-	31%
2,3,4,7,8-Pentachlorodibenzofuran	2.0	pg / gram fat	U+/-	29%
1,2,3,4,7,8-Hexachlorodibenzofuran	1.6	pg / gram fat	U+/-	37%
1,2,3,6,7,8-Hexachlorodibenzofuran	1.1	pg / gram fat	U+/-	25%
1,2,3,7,8,9-Hexachlorodibenzofuran	0.22	pg / gram fat	U+/-	41%
2,3,4,6,7,8-Hexachlorodibenzofuran	0.62	pg / gram fat	U+/-	32%

1,2,3,4,6,7,8-Heptachlorodibenzofuran	0.49	pg / gram fat	U+/-	25%
1,2,3,4,7,8,9-Heptachlorodibenzofuran	LOQ (<0.2)	pg / gram fat	U+/-	28%
Octachlorodibenzofuran	0.21	pg / gram fat	U+/-	37%

dl-PCBs (accredited under RvA L401)

3,3',4,4'-Tetrachlorobiphenyl (#77)	130	pg / gram fat	U+/-	39%
3,4,4',5-Tetrachlorobiphenyl (#81)	22	pg / gram fat	U+/-	32%
3,3',4,4',5-Pentachlorobiphenyl (#126)	140	pg / gram fat	U+/-	26%
3,3',4,4',5,5'-Hexachlorobiphenyl (#169)	1.9	pg / gram fat	U+/-	53%
2,3,3',4,4'-Pentachlorobiphenyl (#105)	50000	pg / gram fat	U+/-	51%
2,3,4,4',5-Pentachlorobiphenyl (#114)	1800	pg / gram fat	U+/-	32%
2,3',4,4',5-Pentachlorobiphenyl (#118)	83000	pg / gram fat	U+/-	44%
2,3',4,4',5'-Pentachlorobiphenyl (#123)	650	pg / gram fat	U+/-	36%
2,3,3',4,4',5-Hexachlorobiphenyl (#156)	6000	pg / gram fat	U+/-	36%
2,3,3',4,4',5'-Hexachlorobiphenyl (#157)	2000	pg / gram fat	U+/-	37%
2,3',4,4',5,5'-Hexachlorobiphenyl (#167)	2400	pg / gram fat	U+/-	35%
2,3,3',4,4',5,5'-Heptachlorobiphenyl (#189)	150	pg / gram fat	U+/-	37%

Recovery Dioxins/furans

2,3,7,8-Tetrachlorodibenzo-p-dioxin	58.9%
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	82.1%
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	52.4%
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57.4%
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	69.3%
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	61.2%
Octachlorodibenzo-p-dioxin	21.1%
2,3,7,8-Tetrachlorodibenzofuran	67.7%
1,2,3,7,8-Pentachlorodibenzofuran	72.4%
2,3,4,7,8-Pentachlorodibenzofuran	72.1%
1,2,3,4,7,8-Hexachlorodibenzofuran	69.9%
1,2,3,6,7,8-Hexachlorodibenzofuran	46.4%
1,2,3,7,8,9-Hexachlorodibenzofuran	60.2%
2,3,4,6,7,8-Hexachlorodibenzofuran	56.3%
1,2,3,4,6,7,8-Heptachlorodibenzofuran	54.2%
1,2,3,4,7,8,9-Heptachlorodibenzofuran	47.5%
Octachlorodibenzofuran	31.2%

Recovery dl-PCBs

3,3',4,4'-Tetrachlorobiphenyl (#77)	68.9%
3,4,4',5-Tetrachlorobiphenyl (#81)	87%
3,3',4,4',5-Pentachlorobiphenyl (#126)	71.4%
3,3',4,4',5,5'-Hexachlorobiphenyl (#169)	85.8%
2,3,3',4,4'-Pentachlorobiphenyl (#105)	77.6%
2,3,4,4',5-Pentachlorobiphenyl (#114)	79.7%
2,3',4,4',5-Pentachlorobiphenyl (#118)	71.3%
2,3',4,4',5'-Pentachlorobiphenyl (#123)	67.3%
2,3,3',4,4',5-Hexachlorobiphenyl (#156)	77.4%
2,3,3',4,4',5'-Hexachlorobiphenyl (#157)	88.2%
2,3',4,4',5,5'-Hexachlorobiphenyl (#167)	73.5%
2,3,3',4,4',5,5'-Heptachlorobiphenyl (#189)	83.9%

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Analysis report

Client:
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Authorized by:
Snezana Zeljkovic
Principle analyst

Date report (dd-mm-yyyy):
18-08-2021

Responsible person BDS:
Emiel Felzel
Head of Testing Laboratory

Information about report
The results of examination refer exclusively to the checked samples.
Results are given in table 1.
Sample characteristics are given in table 2.
The measurement uncertainty for CALUX method is typically below 30%. For the calculation a coverage factor of 1 is used.
Accredation ISO 17025 (RvA L401) is not applicable for activities described in this report
Date of the performance of the test: 18-08-2021

Table 1 sample analysis results

No.	Client code	Method	Parameter	Result	Conclusion	Cut off	Unit
1	A1/TW21LT-veg18-PA-SW01/TW21LT-veg17-PA-SW02	DR CALUX	dl-PCBs (separated TEQ)	0.14	---	n.a.	pg TEQ / gram product
2	A1/TW21LT-veg18-PA-SW01/TW21LT-veg17-PA-SW02	DR CALUX	PCDD/PCDF (separated TEQ)	0.24	---	n.a.	pg TEQ / gram product
3	A2/TW21LT-veg1a-PA-03	DR CALUX	dl-PCBs (separated TEQ)	0.17	---	n.a.	pg TEQ / gram product
4	A2/TW21LT-veg1a-PA-03	DR CALUX	PCDD/PCDF (separated TEQ)	0.56	---	n.a.	pg TEQ / gram product
5	A3/TW21LT-veg16-PA-SW04/TW21LT-veg15-SW06	DR CALUX	dl-PCBs (separated TEQ)	0.23	---	n.a.	pg TEQ / gram product
6	A3/TW21LT-veg16-PA-SW04/TW21LT-veg15-SW06	DR CALUX	PCDD/PCDF (separated TEQ)	0.68	---	n.a.	pg TEQ / gram product
7	A4/TW21LT-veg19-PA-SE05	DR CALUX	dl-PCBs (separated TEQ)	0.092	---	n.a.	pg TEQ / gram product
8	A4/TW21LT-veg19-PA-SE05	DR CALUX	PCDD/PCDF (separated TEQ)	0.88	---	n.a.	pg TEQ / gram product
9	A5/TW21LT-veg21-PA-07	DR CALUX	dl-PCBs (separated TEQ)	0.22	---	n.a.	pg TEQ / gram product
10	A5/TW21LT-veg21-PA-07	DR CALUX	PCDD/PCDF (separated TEQ)	0.30	---	n.a.	pg TEQ / gram product
11	A6/TW21LT-veg14-PA-SW08/TW21LT-veg13-PA-SW09	DR CALUX	dl-PCBs (separated TEQ)	0.20	---	n.a.	pg TEQ / gram product
12	A6/TW21LT-veg14-PA-SW08/TW21LT-veg13-PA-SW09	DR CALUX	PCDD/PCDF (separated TEQ)	0.65	---	n.a.	pg TEQ / gram product
13	V7/TW21LT-veg20a-PA-10	DR CALUX	dl-PCBs (separated TEQ)	0.11	---	n.a.	pg TEQ / gram product
14	V7/TW21LT-veg20a-PA-10	DR CALUX	PCDD/PCDF (separated TEQ)	0.82	---	n.a.	pg TEQ / gram product
15	V8/TW21LT-veg08-PA-SW11	DR CALUX	dl-PCBs (separated TEQ)	0.19	---	n.a.	pg TEQ / gram product
16	V8/TW21LT-veg08-PA-SW11	DR CALUX	PCDD/PCDF (separated TEQ)	0.28	---	n.a.	pg TEQ / gram product
17	M1; TW21LT-Mos-01	DR CALUX	dl-PCBs (separated TEQ)	0.57	---	n.a.	pg TEQ / gram product
18	M1; TW21LT-Mos-01	DR CALUX	PCDD/PCDF (separated TEQ)	2.8	---	n.a.	pg TEQ / gram product
19	M2; TW21LT-Mos-02	DR CALUX	dl-PCBs (separated TEQ)	0.11	---	n.a.	pg TEQ / gram product
20	M2; TW21LT-Mos-02	DR CALUX	PCDD/PCDF (separated TEQ)	1.1	---	n.a.	pg TEQ / gram product
21	M3; TW21LT-Mos-03	DR CALUX	dl-PCBs (separated TEQ)	0.18	---	n.a.	pg TEQ / gram product
22	M3; TW21LT-Mos-03	DR CALUX	PCDD/PCDF (separated TEQ)	1.3	---	n.a.	pg TEQ / gram product
23	M4; TW21LT-Mos-04	DR CALUX	dl-PCBs (separated TEQ)	0.088	---	n.a.	pg TEQ / gram product
24	M4; TW21LT-Mos-04	DR CALUX	PCDD/PCDF (separated TEQ)	1.3	---	n.a.	pg TEQ / gram product
25	M5; TW21LT-Mos-05	DR CALUX	dl-PCBs (separated TEQ)	0.24	---	n.a.	pg TEQ / gram product
26	M5; TW21LT-Mos-05	DR CALUX	PCDD/PCDF (separated TEQ)	1.1	---	n.a.	pg TEQ / gram product

n.a.= no cut off according to EU guideline in BEQ established, maximal levels applicable if available

Table 2 sample characteristics

No.	Client code	BDS code	Matrix	ISO17025 (RvAL401)	Date arrival	Sealed
1	A1/TW21LT-veg18-PA-SW01/TW21LT-veg17-PA-SW02	41052	Not defined	no	03-08-2021	
2	A1/TW21LT-veg18-PA-SW01/TW21LT-veg17-PA-SW02	41052	Not defined	no	03-08-2021	
3	A2/TW21LT-veg1a-PA-03	41053	Not defined	no	03-08-2021	
4	A2/TW21LT-veg1a-PA-03	41053	Not defined	no	03-08-2021	
5	A3/TW21LT-veg16-PA-SW04/TW21LT-veg15-SW06	41054	Not defined	no	03-08-2021	
6	A3/TW21LT-veg16-PA-SW04/TW21LT-veg15-SW06	41054	Not defined	no	03-08-2021	

7	A4/TW21LT-veg19-PA-SE05	41055	Not defined	no	03-08-2021
8	A4/TW21LT-veg19-PA-SE05	41055	Not defined	no	03-08-2021
9	A5/TW21LT-veg21-PA-07	41056	Not defined	no	03-08-2021
10	A5/TW21LT-veg21-PA-07	41056	Not defined	no	03-08-2021
11	A6/TW21LT-veg14-PA-SW08/TW21LT-veg13-PA-SW09	41057	Not defined	no	03-08-2021
12	A6/TW21LT-veg14-PA-SW08/TW21LT-veg13-PA-SW09	41057	Not defined	no	03-08-2021
13	V7/TW21LT-veg20a-PA-10	41058	Not defined	no	03-08-2021
14	V7/TW21LT-veg20a-PA-10	41058	Not defined	no	03-08-2021
15	V8/TW21LT-veg08-PA-SW11	41059	Not defined	no	03-08-2021
16	V8/TW21LT-veg08-PA-SW11	41059	Not defined	no	03-08-2021
17	M1; TW21LT-Mos-01	41060	Not defined	no	03-08-2021
18	M1; TW21LT-Mos-01	41060	Not defined	no	03-08-2021
19	M2; TW21LT-Mos-02	41061	Not defined	no	03-08-2021
20	M2; TW21LT-Mos-02	41061	Not defined	no	03-08-2021
21	M3; TW21LT-Mos-03	41062	Not defined	no	03-08-2021
22	M3; TW21LT-Mos-03	41062	Not defined	no	03-08-2021
23	M4; TW21LT-Mos-04	41063	Not defined	no	03-08-2021
24	M4; TW21LT-Mos-04	41063	Not defined	no	03-08-2021
25	M5; TW21LT-Mos-05	41064	Not defined	no	03-08-2021
26	M5; TW21LT-Mos-05	41064	Not defined	no	03-08-2021

For the method DR CALUX and the sum parameter PCDD/PCDF (separated TEQ) the used method is extraction with organic solvents; the extracts are cleaned on an acid silica column and separation is done with a florisil column. The cleaned extracts are dissolved in DMSO. The DR CALUX activity is determined (24h exposure) and benchmarked against 2,3,7,8-TCDD. The DR CALUX analysis is done according to p-bds-051

For the method DR CALUX and the sum parameter dl-PCBs (separated TEQ) the used method is extraction with organic solvents; the extracts are cleaned on an acid silica column futher clean-up is done with a florisil column; The cleaned extracts are dissolved in DMSO; Seperation is done with alumina; ; the DR CALUX Analysis is done according to p-bds-051extraction with organic solvents; the extracts are cleaned on an acid silica column and separation is done with a alumina column. The cleaned extracts are dissolved in DMSO. The DR CALUX activity is determined (24h exposure) and benchmar

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Analysis report

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Emiel Felzel
Head of Testing Laboratory

Date report (dd-mm-yyyy):
02-11-2021

Responsible person BDS:
Emiel Felzel
Head of Testing Laboratory

Information about report
The results of examination refer exclusively to the checked samples.
Results are given in table 1.
Sample characteristics are given in table 2.
The measurement uncertainty for CALUX method is typically below 30%. For the calculation a coverage factor of 1 is used.
Accredation ISO 17025 (RvA L401) is not applicable for activities described in this report
Date of the performance of the test: 02-11-2021

Table 1 sample analysis results

No.	Client code	Method	Parameter	Result	Unit
1	TW21LT-MOS-01	FITC-T4	Thyroid disruption	8.4	ug PFOA eq./g
2	TW21LT-MOS-01	PAH CALUX	Polycyclic aromatic hydrocarbons	230	ng Benzo[a]pyrene eq./g
3	TW21LT-MOS-03	FITC-T4	Thyroid disruption	13	ug PFOA eq./g
4	TW21LT-MOS-03	PAH CALUX	Polycyclic aromatic hydrocarbons	220	ng Benzo[a]pyrene eq./g
5	TW-MD21-VEG-01 / -02	FITC-T4	Thyroid disruption	26	ug PFOA eq./g
6	TW-MD21-VEG-01 / -02	PAH CALUX	Polycyclic aromatic hydrocarbons	220	ng Benzo[a]pyrene eq./g
7	TW-MD21-VEG-20 / 22 / 23	FITC-T4	Thyroid disruption	22	ug PFOA eq./g
8	TW-MD21-VEG-20 / 22 / 23	PAH CALUX	Polycyclic aromatic hydrocarbons	8.1	ng Benzo[a]pyrene eq./g
9	TW-MD21-VEG-13 / 14 / 15 / 16	FITC-T4	Thyroid disruption	17	ug PFOA eq./g
10	TW-MD21-VEG-13 / 14 / 15 / 16	PAH CALUX	Polycyclic aromatic hydrocarbons	380	ng Benzo[a]pyrene eq./g
11	TW-MD21-VEG-23	FITC-T4	Thyroid disruption	17	ug PFOA eq./g
12	TW-MD21-VEG-23	PAH CALUX	Polycyclic aromatic hydrocarbons	31	ng Benzo[a]pyrene eq./g
13	TW-CZ21-EGG-02	FITC-T4	Thyroid disruption	1.2	ug PFOA eq./g
14	TW-CZ21-EGG-02	PFAS CALUX	Thyroid disruption	0.25	ug PFOA eq./g
15	TW-CZ21-EGG-04	FITC-T4	Thyroid disruption	1.4	ug PFOA eq./g
16	TW-CZ21-EGG-04	PFAS CALUX	Thyroid disruption	0.13	ug PFOA eq./g
17	TW-CZ21-PS-VEG-01	PAH CALUX	Polycyclic aromatic hydrocarbons	61	ng Benzo[a]pyrene eq./g
18	TW-CZ21-PS-VEG-05	PAH CALUX	Polycyclic aromatic hydrocarbons	0.70	ng Benzo[a]pyrene eq./g
19	TW-CZ21-MOS-01	FITC-T4	Thyroid disruption	1.6	ug PFOA eq./g
20	TW-CZ21-MOS-03 / 3.1 / 3.2	FITC-T4	Thyroid disruption	1.7	ug PFOA eq./g

Table 2 sample characteristics

No.	Client code	BDS code	Matrix	ISO17025 (RvAL401)	Date arrival	Sealed
1	TW21LT-MOS-01	41319	Not defined	no	21-09-2021	
2	TW21LT-MOS-01	41319	Not defined	no	21-09-2021	
3	TW21LT-MOS-03	41320	Not defined	no	21-09-2021	
4	TW21LT-MOS-03	41320	Not defined	no	21-09-2021	
5	TW-MD21-VEG-01 / -02	41323	Not defined	no	21-09-2021	
6	TW-MD21-VEG-01 / -02	41323	Not defined	no	21-09-2021	
7	TW-MD21-VEG-20 / 22 / 23	41324	Not defined	no	21-09-2021	
8	TW-MD21-VEG-20 / 22 / 23	41324	Not defined	no	21-09-2021	
9	TW-MD21-VEG-13 / 14 / 15 / 16	41325	Not defined	no	21-09-2021	
10	TW-MD21-VEG-13 / 14 / 15 / 16	41325	Not defined	no	21-09-2021	
11	TW-MD21-VEG-23	41326	Not defined	no	21-09-2021	
12	TW-MD21-VEG-23	41326	Not defined	no	21-09-2021	
13	TW-CZ21-EGG-02	41327	Food, egg(product)	no	21-09-2021	

14	TW-CZ21-EGG-02	41327	Food, egg(product)	no	21-09-2021
15	TW-CZ21-EGG-04	41328	Food, egg(product)	no	21-09-2021
16	TW-CZ21-EGG-04	41328	Food, egg(product)	no	21-09-2021
17	TW-CZ21-PS-VEG-01	41329	Not defined	no	21-09-2021
18	TW-CZ21-PS-VEG-05	41330	Not defined	no	21-09-2021
19	TW-CZ21-MOS-01	41331	Not defined	no	21-09-2021
20	TW-CZ21-MOS-03 / 3.1 / 3.2	41332	Not defined	no	21-09-2021

For the method PAH CALUX and the sum parameter Polycyclic aromatic hydrocarbons the used method is Extracts are dissolved in DMSO. The PAH CALUX activity is determined (4h exposure) and benchmarked against Benzo[a]pyrene.

For the method PFAS CALUX and the sum parameter Thyroid disruption the used method is

For the method FITC-T4 and the parameter Thyroid disruption the used method is

Annex V: Divers

Results EERC

GC-MS results of the Estonian Environmental Research Centre EERC[1] of active air sampling at 16:35 on 17.08.2020 up to 16:35 on 18.08.2020. Digiteľ s DHA-80 sampler operation was set to 30,74 m^3 of ambient air per hour. The total amount of air was 24 hours x 30,74 m^3= 737,76 m^3 air.

Issue Date	: 04-Sep-2020
Page	: 2 of 2
Work Order	: PR2083326
Customer	: Estonian Environmental Research Centre

Analytical Results

Sub-Matrix: **IMMISSION**

				Client sample ID		150 mm filter + PUF, samples with No 1 Ramuciai Kaunas		150 mm filter + PUF, samples with No 2 Partizanu Kaunas		-----	
				Laboratory sample ID		PR2083326-001		PR2083326-002		-----	
				Client sampling date / time		[28-Aug-2020]		[28-Aug-2020]		-----	
Parameter	*Method*	*LOR*	*Unit*	**Result**	**MU**	**Result**	**MU**	**Result**	**MU**
Polycyclic Aromatics Hydrocarbons (PAHs)									
Benzo(a)pyrene	A-PAHHMS02	-	ng/sample	<20	---	<20	---	-----	---
PCDDs and PCDFs (Dioxins and Furans)									
2378-TCDD	A-DFHMS01	-	ng/sample	<0.0022	---	<0.0024	---	-----	---
12378-PeCDD	A-DFHMS01	-	ng/sample	<0.0035	---	<0.0036	---	-----	---
123478-HxCDD	A-DFHMS01	-	ng/sample	<0.0065	---	<0.006	---	-----	---
123678-HxCDD	A-DFHMS01	-	ng/sample	<0.0065	---	<0.006	---	-----	---
123789-HxCDD	A-DFHMS01	-	ng/sample	<0.0065	---	<0.006	---	-----	---
1234678-HpCDD	A-DFHMS01	-	ng/sample	<0.0095	---	<0.0086	---	-----	---
OCDD	A-DFHMS01	-	ng/sample	<0.017	---	<0.011	---	-----	---
2378-TCDF	A-DFHMS01	-	ng/sample	<0.0024	---	<0.0025	---	-----	---
12378-PeCDF	A-DFHMS01	-	ng/sample	<0.0031	---	<0.0033	---	-----	---
23478-PeCDF	A-DFHMS01	-	ng/sample	<0.0031	---	<0.0033	---	-----	---
123478-HxCDF	A-DFHMS01	-	ng/sample	<0.0064	---	<0.0068	---	-----	---
123678-HxCDF	A-DFHMS01	-	ng/sample	<0.0064	---	<0.0068	---	-----	---
123789-HxCDF	A-DFHMS01	-	ng/sample	<0.0064	---	<0.0068	---	-----	---
234678-HxCDF	A-DFHMS01	-	ng/sample	<0.0064	---	<0.0068	---	-----	---
1234678-HpCDF	A-DFHMS01	-	ng/sample	<0.008	---	<0.007	---	-----	---
1234789-HpCDF	A-DFHMS01	-	ng/sample	<0.008	---	<0.007	---	-----	---
OCDF	A-DFHMS01	-	ng/sample	<0.015	---	<0.013	---	-----	---
TEQ-Lowerbound	A-DFHMS01	-	ng/sample	**0**	---	**0**	---	-----	---
TEQ-Upperbound	A-DFHMS01	-	ng/sample	**0.011**	---	**0.011**	---	-----	---

[1] *Aser Sikk, Keio Vainumäe 2020. Ambient Air Quality Monitoring in Ramučiai Township, Kaunas., Eesti Keskkonnauuringute Keskus OÜ / Estonian Environmental Research Centre*

Relative Potency Factors PAH

Table 1. Overview of the Relative Potencies[a]

PAH	accession number	MW	REP (M/M)	list	IARC classification	TEF
naphthalene	91−20−3	128	<0.0001	EPA	2B	0.001
acenaphtylene	208−96−8	152	<0.0001	EPA		0.001
acenaphpthene	83−32−9	154	<0.0001	EPA	3	0.001
fluorene	86−73−7	166	<0.0001	EPA	3	0.001
phenanthrene	85−01−8	178	<0.0001	EPA	3	0.001
anthracene	120−12−7	178	<0.0001	EPA	3	0.01
fluoranthene	206−44−0	202	<0.0001	EPA	3	0.001
pyrene	129−00−0	202	<0.0001	EPA	3	0.001
benzo[*c*]fluorene	205−12−9	216	<0.0001	EU	3	
benzo[*ghi*]perylene	191−24−2	276	<0.0001	EPA, EU	3	0.01
cyclopenta[*cd*]pyrene	27208−37−3	226	0.0003	EU	2A	
dibenzo[*a,l*]pyrene	191−30−0	302	0.002	EU	2A	
dibenzo[*a,h*]pyrene	189−64−0	302	0.2	EU	2B	
dibenzo[*a,i*]pyrene	189−55−9	302	0.2	EU	2B	
dibenzo[*a,e*]pyrene	192−65−4	302	0.3	EU	2B	
benz[*a*]anthracene	56−55−3	228	0.3	EPA, EU	2B	0.1
chrysene	218−01−9	228	0.8	EPA, EU	2B	0.01
benzo[*a*]pyrene	50−32−8	252	1	EPA, EU	1	1
benzo[*j*]fluoranthene	205−82−3	252	1.3	EU	2B	
dibenz[*a,h*]anthracene	53−70−3	278	1.3	EPA, EU	2A	5
indeno[1,2,3-*cd*]pyrene	193−39−5	276	1.3	EPA, EU	2B	0.1
5-methylchrysene	3697−24−3	242	1.4	EU	2B	
benzo[*k*]fluoranthene	207−08−9	252	3.7	EPA, EU	2B	0.1
benzo[*b*]fluoranthene	205−99−2	252	5.0	EPA, EU	2B	0.1
2,3,7,8-TCDD	1746−01−6	322	5.0		1	

[a]REP; in relation to benzo(a)pyrene of 16 EPA-PAHs in the PAH CALUX, along with an indication whether they are recommended for screening by the European Union (EU) or the U.S. Environmental Protection Agency (EPA), their IARC classification (1=carcinogenic to human; 2*A* = probably carcinogenic to humans; 2*B* = possibly carcinogenic to humans; 3 = not classifiable as carcinogenic to humans) and TEF-values (relative to BaP) according to Nisbet and LaGoy.[6].