



Key findings Biomonitoring Madrid region, 2021-2022:

Eggs of backyard chicken

- Dioxin (PCDD/F/dl-PCB) results in 2022 show increased values in comparison to analysis in 2021 for both methods:
Bioassay DR CALUX - 2022: 18.0 pg BEQ/g fat, versus in 2021: 13.0 pg BEQ/g fat
Chemical GC-MS - 2022: 7.69 pg TEQ/g fat, versus in 2021: 6.7 pg TEQ/g fat.
- Dioxin results in 2022 exceeding the EU limit for consumption of commercial chicken eggs for both analysis methods. EU limit for PCDD/F/dl-PCB by bioassay DR CALUX is 3.3 pg BEQ/g fat and for chemical GC-MS this is 5.0 pg TEQ/g fat.
- Dioxin-like (dl-PCB) content is substantial increased in 2022 for both analysis: Bioassay DR CALUX - 2022: 11.3 pg BEQ/g fat, versus in 2021: 7.0 pg BEQ/g fat
Chemical GC-MS - 2022: 3.82 pg TEQ/g fat, versus in 2021: 2.5 pg TEQ/g fat.
- PFAS results reveal a significant discrepancy between chemical analysis LC-MS/MS of 7.84 ng/g product and assay FITC-T4 of 4200 ng PFOA eq./g ww.

Mosses (*bryophytes*)

- Dioxins (PCDD/F/dl-PCB) results ranging from 0.88 till 8.05 pg TCDD eq./g dry weight (dw).
- Dioxins at the moss locations in the surrounding area of the incinerator exceeding with a factor of 20 compared to the analysis results at the reference location 20 km away in 2022.

Evergreen tree foliage/leaves of Arizona cypress tree - *Cupressus arizonica* (*Hesperocyparis arizonica*)

- Dioxins (PCDD/F/dl-PCB) in evergreen tree foliage leaf samples of *Cupressus arizonica* by bioassay DR CALUX show in 2022 increasing results of 1.80 - 4.69 pg TCDD eq./g dw, compared to 0.79 - 1.7 pg TCDD eq./g dw in 2021.
- Dioxin-like (dl-PCBs) at all 3 locations of *Cuperssus aizonica* foliage samples show serious increasing results of 0.76 – 1.77 in 2022 compared with 0.07 – 0.27 pg TCDD eq/g dw in 2021.

- PAH analysis by bioassay PAH CALUX show a PAH concentration, expressed in Benzo[a]pyrene (B[a]P) , of 12 times elevation compare to the reference location.

Pine needles – Aleppo pine - *Pinus halepensis*

- Dioxins (PCDD/F/dl-PCBs) results 2022 ranging from 0.6 – 4.9 pg TCDD eq./g dw.
- Dioxin-like PCB (dl-PCB) results in 2022 (0.7 – 1.6 pg TCDD eq./g dw) present a serious increase at all 6 locations compared to 2021 (0.1 – 1.3 pg TCDD eq./g dw)
- Dioxin results in 2022 show 75 times higher values at location nearby the waste incinerator, compared to measurements at the reference location.
- PAH results in 2022 at four location nearby the waste incinerator, by PAH CALUX ranging from 93 - 134 ng B(a)P/g dw. 10 times higher than the results at the reference location at 4 km distance from the waste incinerator.
- Remarkable is the high result of PFAS by assay FITC-T4 method in the Aleppo pine needles at sample location close to the waste incinerator.



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Report 2021



Report 2022



Presentation 2021



Presentation 2022