



Site investigation report of the Pelenica-Rupa HCH dumpsite in Macedonia

December 20, 2022

Our reference R001-1288451RRS-V01

Responsibility

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1 Introduction

The Ministry of Environment has contracted Dekons-Ema to conceptually design a remediation plan for the dumpsite at Pelenica-Rupa location, near the road Dracevo – village Kolicani. The location was originally used for clay extraction, which had resulted in a large pit. Preliminary information about the Pelenica – Rupa location indicated that the OHIS company deposited a certain amount of HCH-waste (delta HCH paste) at this location in 1976. According to the information in the Terms of Reference the HCH-waste was packed in metal drums and deposited in two pits on the site. According to available technical drawings, the pits were lined with concrete walls and covered with earth.

In order to successfully design the containment and/or remediation for the site, a detailed site investigation was performed at the Pelenica-Rupa location to determine the location of the dumped wastes and the presence, nature, and extent of potential contamination of the environmental media with the contaminants in concern.

The following phases are part of the assignment.

1. Preparatory phase (Appendix 1);
2. Excavation of trenches and collection and analyses of the waste/soil samples (Section 3, Appendix 2, and Appendix 4-6);
3. Drilling of boreholes and collection and analyses of the waste/soil samples (Section 3, Appendix 2, Appendix 4-6);
4. Installation of groundwater monitoring wells and collection and analyses of the groundwater samples (Section 3);
5. Laboratory analyses (Section 3.3, Section 4, Section 5, and Appendix 4, 7-10) ;
6. Surveying (Section 3.1, Appendix 1 and 3);
7. Assessment of results of investigation (Section 2-6);
8. Update the ICSM based on these findings and develop site containment or remediation strategy (Section 5);
9. Reporting (This document)

The current report describes the site investigation of the dumpsite at Pelenica-Rupa. The remediation assessment and plan are reported in a separated document.

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2 Preliminary information

2.1 Site Setting

The site is known as the Pelenica Rupa delta HCH waste dumpsite and is located in the Municipality of Kisela Voda, settlement Dracevo, 20 m southeast of the road Dracevo – village Kolicani. The site is 1.5 km east of the settlement Batinci, around 10 km South-east of the centre of Skopje, and five (5) km South-east of the OHIS. 200 m south-west of the site, the Monastery Pelenica is located. Around 15 m northeast of the site is a cemetery, directly east is a valley that drains towards the north. The road along the site is a watershed division.

The waste allegedly was dumped in two bunkers on the Cadastre parcels KP 7276 and KP 7239, KO Dracevo (see Figure 2.1). The site is flat and has a (littered) steep slope on the south east. The height difference between the foot slope with a (littered) drainage and the top of the site is estimated to be around 6 to 8 meters.

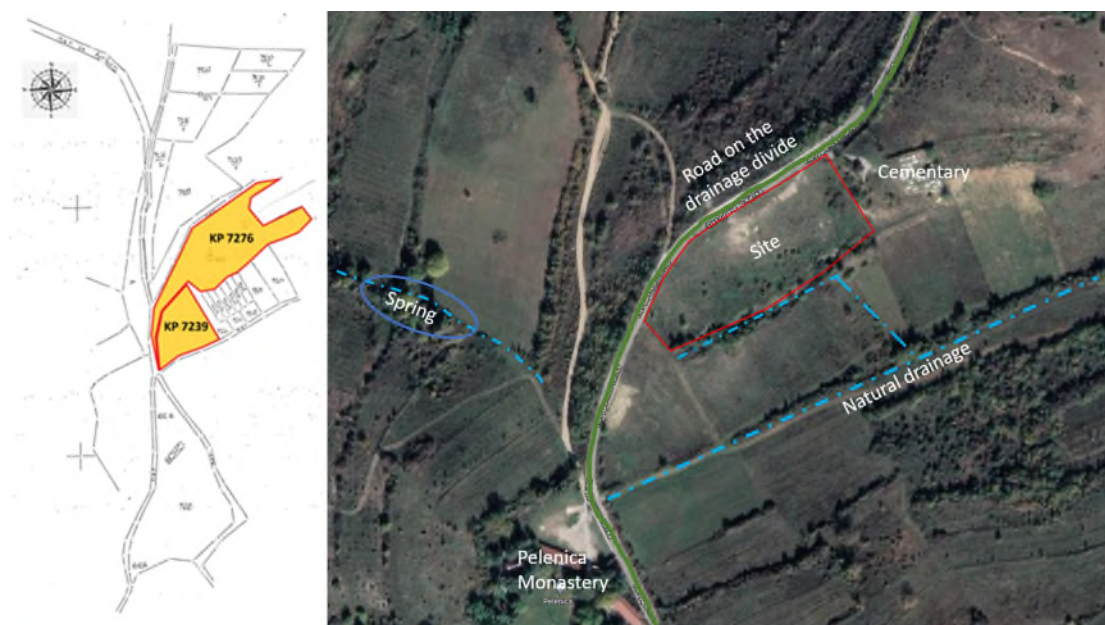


Figure 2.1 Cadastre parcels KP 7276 and KP 7239, KO Dracevo and recent Google image with the site and its surrounding

2.2 Site History

The following information was available on the site history:

- Prior to disposal of hazardous waste at Pelenica – Rupa location, the site was as a clay pit for pottery until around 1961. No information was received on the excavation dimensions of the clay pit; however, these pits are commonly excavated with steep walls.

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- A concrete sarcophagus with 2 chambers was designed to be built at the open clay pit for the purpose of dumping HCH waste (delta HCH paste). According to the design drawings, the concrete pits had a size of 32x15.4x3.2 meter (L*W*H).
- Preliminary information about the Pelenica – Rupa location indicated that the OHIS company deposited about 8.000 m³ of HCH-waste (delta HCH paste) at this location in 1976. The HCH waste was dumped in 200 litre metal drums
- Waste from a glass factory and construction and demolition waste from after the earthquake in Skopje were also supposedly dumped during the same period at the site.

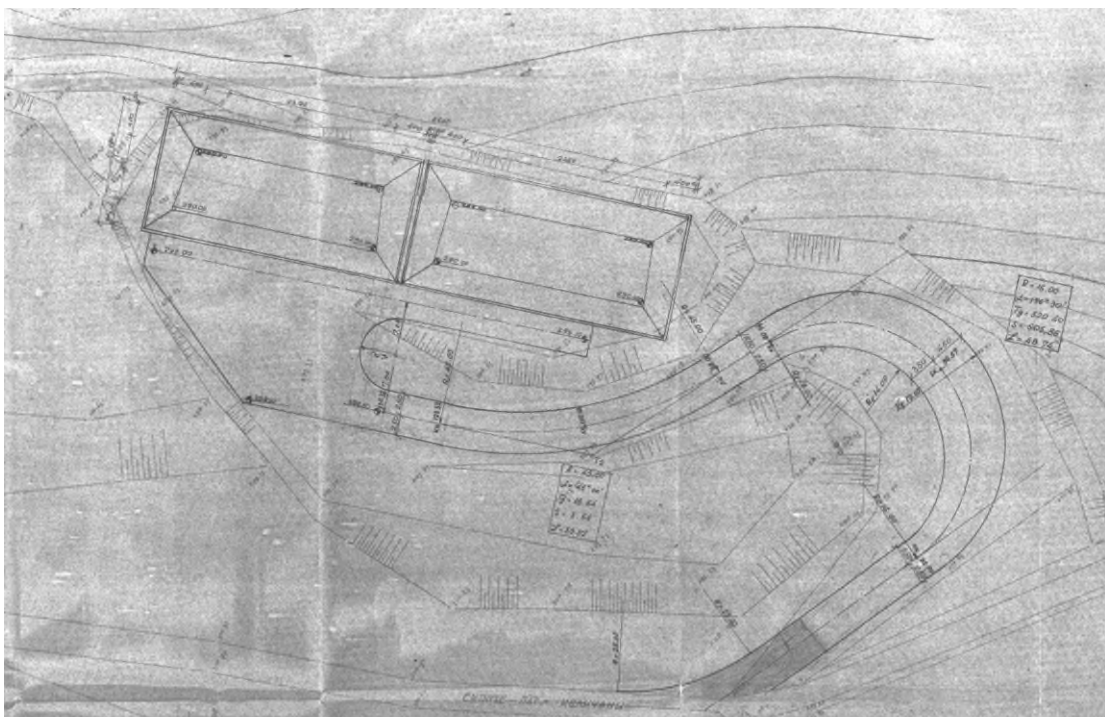


Figure 2.4 Technical drawing of layout of the planned sarcophagus; drawing is oriented north (bottom figure) to south (top figure)

2.3 Geology and geohydrology

The site is situated on a drainage divide between two watersheds. The elevation of the site is xxx m above mean sea level (MAMSL). The surface of the site is raised and flattened with construction and glass factory waste. The southeast boarder of the site consist of a steep slope with an elevation difference of xxx m between the top of the dumpsite and the agricultural plots east of it.

The site is situated on a complex of chromic luvisol on saprolite vertisol soil both from alluvial origin. Based on this classification and the site history, the dominant soil texture class is clay. The underlying geology consists of sedimentary rock with no to minor metamorphic characteristics. As such, groundwater flow is expected to be predominantly lateral on the deposited aquitards, i.e., no irregular groundwater levels due to present metamorphosed and vertical oriented strata.

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In the vicinity of the site, the water stream Kolichanski potok, the river Mala Rada and Markova River are situated (see Figure 2.2). River Mala Rada is located about 680 m southeast from the site and it is a tributary of River Vardar (about 6.3 km east from the project location). Water stream Kolichanski Potok is located about 450 m west from the site. This water stream is a tributary of Markova River (about 1km north from the location). Markova River is a tributary of River Vardar.



Figure 2.2 Topographical map with the site (red dot), the Kolichanski potok and the Mala Rada Rive

2.4 Initial Conceptual Site Model (ICSM) and knowledge gaps

Based on previous site visits completed at the site and historical information, an Initial Conceptual Site Model has been prepared, i.e. a system diagram identifying contaminant sources, receptor pathways and receptors potentially affected by the contaminants migrating through those pathways (see Figure 2.3).

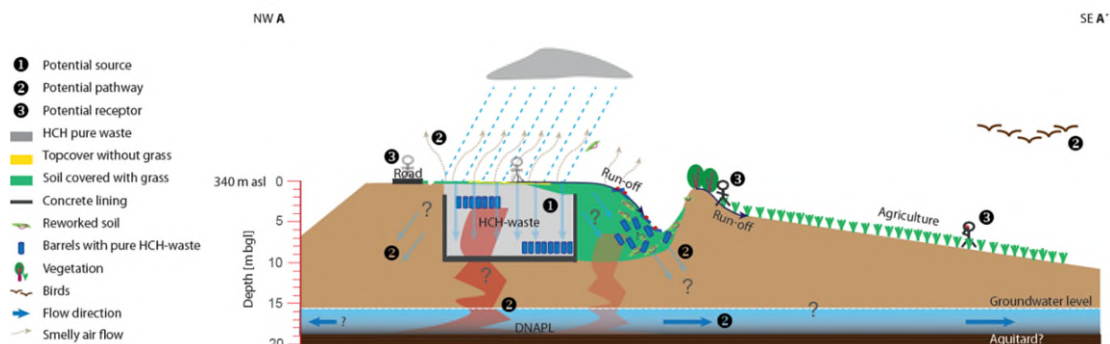


Figure 2.3 Initial Site Conceptual Model

The following knowledge gaps were identified:

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- The presence, location and dimensions of the concrete sarcophagus.
- The dimensions, volume, and weight of the different types of waste, including dumped pure HCH waste, contaminated construction and demolition waste, waste from the glass factory, and potential other wastes.
- The presence and design of a drainage system at the basins.
- The thickness, soil texture, admixtures and environmental quality of the cover layer on top of the wastes.
- The dimension of the clay pit and soil properties and environmental quality of the undisturbed soil.
- Geohydrological situation, including the depth and groundwater flow direction, at the site
- The presence, extent and severity of a groundwater contamination. The presence and position of a dense non-aqueous phase liquid (DNAPL) are unknown.

3 Field investigation

3.1 Site visit

On Saturday 5th of November 2022, Trajce Mitev, Boudewijn Fokke, Aleksandar Mickovski completed a site visit to set-up the sampling locations and to identify potential risks for the project. During the site visit, the project team interviewed a previous worker of OHIS who was partially present during the dumping of the wastes. He provided the following information on the site:

- No concrete basin was installed at the site
- HCH waste was also dumped without a metal drum into the pit.
- Site was uncontrolled and people could freely access the site; people living in the direct vicinity of the site emptied metal drums to use them for private use.
- Industrial wastes from the glass producing plant were also dumped in the pit

Based on this interview, the site layout, and history, the on-site situation seems to be different from the technical drawings and previous information shared with the project team.

3.2 Sampling strategy and executed works

The sampling plan consisted of 15 trenches up to depth 4 m bgl to identify the potential location of the concrete basin with dumped waste materials. The sampling strategy consisted of the installation of groundwater monitoring wells to determine the groundwater quality downstream of the dumped wastes. Deep borehole were originally planned around the concrete basins to determine the extent of severely contaminated soil. The original sampling and analyses plan, including Health and Safety Plan is given Appendix 1. After no identifications of a concrete basin were observed, the sampling and analyses plan has been adapted. The following four changes were made:

1. An additional seven trenches were excavated to identify the walls and later to get an indication of the lateral extent of the industrial wastes.
2. The location of borehole were changed to obtain an idea of the depth of the HCH waste in the dumpsite; a total of 32.5 m was drilled to identify the bottom of the dumpsite in three boreholes.

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3. One extra groundwater monitoring well was installed as downstream (GMW-03) clear evidences were observed of a groundwater contamination with technical HCH and lindane. A total of 45 m groundwater monitoring well has been installed.
4. The deep boreholes has been drilled to identify the vertical extent of the waste and to exclude the presence of a concrete basin at the site, instead of the original objective to determine the extent of contaminated soil.

The fieldwork was executed by Geohidro and Trajce Mitev under the supervision of Boudewijn Fokke from Saturday 5th November till Friday 10th of November 2022. The project team was supported by the hazardous waste specialist of the ministry Aleksandar Mickovski. An overview of the executed sampling and field testing is given in Table 3.1. A map with the sampling locations is given in Appendix 2. In addition, on 12 December 2022, the site was overflown with a drone with the objective to create a Digital Terrain Model. A map with the digital elevation model is presented in Appendix 3.

Table 3.1 overview of executed works

Fieldwork	Amount	Samples
Trenches up to 4 m bgl	22	4-22, 26, 27, 28
Individual drilling up to 15.5 m bgl	3	23, 24, 25
Groundwater monitoring well until 16.5 m bgl	2	1, 2
Groundwater monitoring well until 12 m bgl	1	3
Soil samples	23	-
Waste samples	4	-
Groundwater samples	4	-

The soil sampling and description of borehole logs have been completed in conformity of Dutch Standard SIKB 2001. Dutch standard SIKB 2001 describes the installation of mechanical drills and monitoring wells, drawing up drilling descriptions, taking soil samples and levelling. For every distinct soil stratigraphy or waste layer, the coordinates, colour, smell, soil texture, anthropogenic substances or horizons has been registered (see Appendix 4). In addition, an estimation (+/- 10 cm) has been made of the groundwater level. Materials that will be excavated from the trenches has been placed on plastic sheets to avoid cross-contamination with the surrounding topsoil. Trenches was backfilled with the excavated material, avoiding the cross contamination of the soil with the HCH waste.

The installation of the groundwater monitoring wells has been completed based on Dutch Standard SIKB 2001. The collection of (ground)water samples was completed based on protocol 2002. Dutch standard SIKB 2002 describes the methodology for collecting groundwater samples. During pre-pumping and sampling, groundwater level in the well should not drop more than 50 cm. Approximately, three times the volume of water in the groundwater monitoring well was removed, prior to collection of a groundwater sample to reduce the amount of soil particles in the groundwater samples, and the risk of sampling still standing groundwater from the bottom of the well.

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3.3 Field observations

At the Pelenica-Rupa location, a variety of industrial (hazardous) wastes were observed below the surface up to a depth of approximately 14 m bgl (see Appendix 4 for the borehole logs and Appendix 5 for a photo report). The encountered types of waste in the different trenches and boreholes are summarized in Figure 2.4.

These wastes seem to consist of among others lindane and technical HCH, as such, it is evident that OHIS brought Lindane production waste to the site. As mentioned in the introduction, HCH-waste should have been packed in metal drums. However, with exception of trench 10, no drums were encountered in the first four to five meters of the dump during the fieldwork; even though, local people indicated several places where drums should have been dumped. It cannot be excluded that more metal drums are present at greater depth than 4 m bgl (the maximum depth reached with the excavator).



Figure 2.4 Field observations of different types of waste encountered.

However, not only OHIS used this dumpsite, also the glass factory located opposite OHIS in Skopje, dumped waste. This is confirmed by the presence of a lot of glass wool, small and big pieces of glass and quartz sand in nearly every trench. The previous OHIS worker explained that rubble was also dumped in the pit after the earthquake in 1963. This may explain the presence large and small concrete blocks and bricks. Besides this, many plastic bags, with an unknown content, were observed in a lot of the excavated trenches. The text on a plastic and paper bag

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indicated that this bag was used for phosphate, which came from a chemical company from Kosovo. The remains of paper bags had a HCH smell.

The underlying undisturbed soil consists of yellow to brown clay. As mentioned in the introduction, clay was excavated at the Pelenica-Rupa location to be used for pottery. The floor of the excavated pit seems to be at the deepest, on the middle of the site, where it is at approximately 14 m deep in relation to the current road surface. The clay pit had probably steep slopes. To reach the bottom of the former clay pit the access road should have had at least two hairpin bends. Remains of a dirt road were seen in various of the trenches at various depths.

The top of the concrete bases is supposed to be around 4 to 5 meters below the current surface. No concrete walls, neither any other indications of a concrete basin, were observed in any of the trenches or boreholes. Various local people also informed the project team that these concrete basins were not constructed on this site. An embankment with soil (brown sandy clay) containing some pieces of concrete and asphalt was constructed to contain the waste at the east side (the valley) of the dumpsite. The dumped wastes are covered with a thin layer of soil containing gravel and rubble at most places.

Selected samples were tested using a hand-held XRF. Results are included in appendix 6.

Outside the premises of the dumpsite, a HCH smell was also observed in the clay layers, above the groundwater table, at the two downstream wells (GWM-02 and GWM-03). The groundwater at the dumpsite (GWM-01) and downstream (to the northeast, GWM-02) are most likely contaminated with lindane production based on the organophilic characteristics.

4 Analytical results

4.1 Assessment criteria soil and groundwater Dutch policy

The analytical results were evaluated against the Dutch Environmental Policy as this is one of the widest internationally accepted standards for soil and groundwater quality. The target level for soil and groundwater are given in Appendix 8. The Dutch Environmental Policy subdivides groundwater quality along:

- The 'Streefwaarden' and/or 'Interventiewaarden' Dutch Circular on Soil Remediation Circulaire bodemsanering 2013^[1]
- The 'Achtergrondwaarden' (for soil) from Appendix B of the Decree on Soil Quality (Besluit bodemkwaliteit)^[2]

This 'STI evaluation frame' distinguishes between;

- Background values (Achtergrondwaarden, AW) for soil

^[1] (amended) Circular Soil remediation since July 1 2013 (*Circulaire Bodemsanering per 1 juli 2013*) (published in the Staatscourant BWR0033592, dated 27 juni 2013)

^[2] (amended) Regulation soil quality (Regeling bodemkwaliteit) that became effective on December 13, 2007 (most recent amendments were published in the Staatscourant 68042, dated November 30, 2018)

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- Reference values (**Streefwaarden**) for groundwater
- Intervention values (**Interventiewaarden**) for both soil and groundwater
- The testing values (**Tussenwaarden**) are defined as $T = \frac{1}{2} (AW + I)$ for soil and $T = \frac{1}{2} (S + I)$ for soil and groundwater

The 'Tussenwaarde' is not part of the above legislative framework but is mentioned in the Dutch guideline NEN 5740.

The used indications for the soil and groundwater assessment in the following sections are:

Table 4.1 Contamination levels of Dutch STI evaluation frame

Concentration level	Indication	Meaning
$\leq AW / S$ value (or < detection limit)	-	Not contaminated
$> AW / S$ value $\leq T$ value	+	Slightly contaminated
$> T$ value $\leq I$ value	++	Moderately contaminated
$> I$ value	+++	Strongly contaminated

4.2 Overview of executed analyses

In Table 4.2 an overview of the executed soil and waste samples are presented, for groundwater samples this is shown in Table 4.3. No samples were analysed from the three (3) deep boreholes (nr. 23, 24 and 25 in Appendix 2), as these boreholes were installed to determine the vertical extent of the wastes. As underlying soil is strongly contaminated with HCH until great depth (i.e., deeper than 15 m bgl), the vertical delineation of contaminated soil could not be completed within the current project scope.

Table 4.2 Overview of soil and waste samples and analyses

Sample description	Sample depth (m bgl)	Classification	Analyses
S1-1	7-7.5	HCH waste	1, 2, 3, 4, 5
S1-2	8-8.1	Soil	1, 2, 3, 4, 5
S2-1	0-0.3	Soil	1, 2, 3, 4, 5
S2-2	8-8.5	Soil	1, 2, 3, 4, 5
S2-3	11-11.1	Soil	1, 2, 3, 4, 5, 8, 9
S2-4	12.4-12.7	Soil	1, 2, 3, 4, 5, 10
S3-1	0.0-0.15	Soil	1, 2, 3, 4, 5
S3-2	4.0-4.5	Soil	1, 2, 3, 4, 5
S3-3	6.5-6.7	Soil	1, 2, 3, 4, 5
S3-4	9.3-9.5	Soil	1, 2, 3, 4, 5
S6-1	0-2.6	Soil	1, 2, 3, 4, 5
S7-1	0-2.8	Soil/Waste	1, 2, 3, 4, 5, 8, 9, 10
S7-2	0-3.4	Soil	1, 2, 3, 4, 5
S8-1	0-3.6	Soil/Waste	1, 2, 3, 4, 5
S9-1	1.2-1.7	HCH waste	1, 2, 3, 4, 5
S10-1	2.0-2.3	HCH waste	1, 2, 3, 4, 5
S11-1	0-0.5	Soil	1, 2, 3, 4, 5

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Sample description	Sample depth (m blg)	Classification	Analyses
S12-1	0-3.0	Soil/Waste	1, 2, 3, 4, 5
S12-2	0.2-1.0	Soil	1, 2, 3, 4, 5
S15-1	0-0.5	Soil	1, 2, 3, 4, 5, 7, 8, 9, 10
S16-1	0-1.5	Soil	1, 2, 3, 4, 5
S16-2	1.5-2.2	HCH waste	1, 2, 3, 4, 5, 6, 7, 8, 9, 10
S19-1	1.5-3.0	Soil	1, 2, 3, 4, 5
S21-1	0-3.0	Soil	1, 2, 3, 4, 5

- 1 Metals (Chromium, Tin, Nickel, Zinc, Cadmium, Arsenic, Copper, Mercury, Lead, Vanadium)
- 2 Chlorinated Pesticides
- 3 Total Petroleum Hydrocarbons (TPH)
- 4 Polycyclic aromatic hydrocarbons (PAH)
- 5 Polychlorinated biphenyls (PCB-7)
- 6 EPA Semivolatile organic compounds (SVOC)
- 7 Polychlorinated dibenzodioxins and furans (17 PCDD/F)
- 8 Total Sulphur
- 9 EOX
- 10 Fraction analyses and pH

Table 4.3 Overview of groundwater samples

Sample description	Filter Screen (m blg)	Groundwater level	pH	Analyses
GWM1-1	13.5-16.5	8.10	6.48	1, 2, 3, 4
GWM2-1	9.7-12.7	13.30	7.48	1, 2, 3, 4
GWM3-1	8.50-9.00	9.30	-	2, 5
100-1	-	-	-	2, 5

- 1 Metals (Chromium, Tin, Nickel, Zinc, Cadmium, Arsenic, Copper, Mercury, Lead, Vanadium)
- 2 Chlorinated Pesticides
- 3 Total Petroleum Hydrocarbons (TPH)
- 4 VOC (chlorinated hydrocarbons and aromatic hydrocarbons)
- 5 Chlorobenzenes

4.3 Chemical-analytical results of waste samples

An overview of the chemical-analytical results of the parameters above detection limit of the wastes are present in Table 4.4. The analytical certificates are presented in Appendix 10; note that the concentrations given on the certificate need to be multiplied by a factor 10, as samples were diluted before analysing.

Table 4.4 Overview of chemical-analytical results of the parameters above detection limit of the waste samples

Parameter	Unit	S1-1	S9-1	S10-1	S16-1
Arsenic	mg/kg d.w.	53	55	47	61
Mercury	mg/kg d.w.	15	11	3.8	3.0
Nickel	mg/kg d.w.	85	110	94	99

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Parameter	Unit	S1-1	S9-1	S10-1	S16-1
Lead	mg/kg d.w.	360	150	290	410
Sulphur	g/kg d.w.	-	-	-	4.1
HCH (sum)	mg/kg d.w.	330.000	220.000	260.000	230.000
PCB (sum 7)	mg/kg d.w.	0.79	0.49	0.89	<140
Tri-chlorobenzenes	mg/kg d.w.	-	-	-	300
Tetra-chlorobenzenes	mg/kg d.w.	-	-	-	630
Penta-chlorobenzenes	mg/kg d.w.	-	-	-	41
2,4,6-Trichlorophenol	mg/kg d.w.	-	-	-	49
PAH (sum 10)	mg/kg d.w.	54	35	35	<1,000
TPH C10-C40	mg/kg d.w.	61,000	49,000	58,000	-
WHO PCDD/F TEQ excl. LOQ	ng/kg d.w.	-	-	-	91,200

- Parameters are not tested

The waste samples analysed show that:

- The sum of oxyanions (Se, Sb, Mo, Ti, As), sum of heavy metals (Cd, Zn, Ba, Pb, Cr, Co, Ni, Sn, Mn, Cu), and mercury seems to be below the acceptance levels based on the current results, which are 1,000 ppm, 5 %, and 20 ppm respectively.
- Levels of HCH ranges between 220,000 and 330,000 mg/kg d.w. The Alfa-isomer of HCH is dominant in all waste samples
- Concentration of tri-chlorobenzenes, tetra-chlorobenzenes, and penta-benzenes are 300 mg/kg d.w., 630 mg/kg d.w., and 41 mg/kg d.w.
- Levels of total petroleum hydrocarbons ranges between 4,900 and 6,100 mg/kg dw.
- WHO PCDD/F TEQ is 91,200 ng/kg d.w. in the wastes.

4.4 Chemical-analytical results of soil samples

A summary of the chemical-analytical results of the soil are presented in Table 4.5. A complete overview of the tested results is given in Appendix 9a.

Table 4.5 Summary of chemical-analytical results of the soil samples

sample	Depth (m bgl)	> AW	> T	> I
S1-2	8-8,1	Co, Hg, Ni, PCB	-	alpha-HCH, beta-HCH, y-HCH, Petroleum hydrocarbon
S2-1	0-0,3	Cr, Co, Cu, PCB,	-	Ni, alpha-HCH, beta-HCH, y- HCH
S2-2	8-8,5	Co, Ni, y-HCH	-	alpha-HCH, beta-HCH
S2-3	11-11	Co, Cu, V, Zn, alpha-HCH, beta- HCH, y-HCH	-	Ni
S2-4	12-13	As, Co, Hg, Petroleum hydrocarbon	Ni	alpha-HCH, beta-HCH, y-HCH

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sample	Depth (m bgl)	> AW	> T	> I
S3-1	0,05-0,15	Cr, Co, alpha-HCH, beta-HCH, y-HCH	-	Ni
S3-2	4-4,5	Co, Ni, alpha-HCH, y-HCH, Petroleum hydrocarbon	beta-HCH	As
S3-3	6,5-6,7	Co, Cu, alpha-HCH, beta-HCH, y-HCH	-	Ni
S3-4	9,3-9,5	Co, alpha-HCH, beta-HCH, y-HCH, Petroleum hydrocarbon	Ni	-
S6-1	0-2,6	Cd, Cu, Hg, Sn, V, Zn, PCB	y-HCH	As, Pb, Ni, alpha-HCH, beta-HCH
S7-1	0-2,6	As, Cd, Cr, Cu, Hg, PCB, Petroleum hydrocarbon	Ni	Pb, alpha-HCH, beta-HCH, y-HCH
S7-2	2,6-3,4	Cd, Pb, Petroleum hydrocarbon	Ni, y-HCH	alpha-HCH, beta-HCH
S8-1	0-3,6	As, Cd, Cr, Cu, Mo, Sn, Zn, PCB, alpha-HCH, y-HCH, Petroleum hydrocarbon	-	Pb, Ni, beta-HCH
S11-1	0-0,5	Pb, PCB, Petroleum hydrocarbon	-	alpha-HCH, beta-HCH, y-HCH, HCE
S12-1	0-0,2	alpha-HCH, beta-HCH, y-HCH, Petroleum hydrocarbon	Pb	-
S12-2	0,2-1	y-HCH	Pb, alpha-HCH	beta-HCH
S15-1	0-0,5	Co	Ni	alpha-HCH, beta-HCH, y-HCH
S16-1	0-1,5	As, Co, Pb, PCB, alpha-Endosulfan, Petroleum hydrocarbon	Ni	HCH, beta-HCH, y-HCH
S19-1	1,5-3	Cr, Co, Cu, Pb, PCB, Petroleum hydrocarbon,	-	Ni, alpha-HCH, beta-HCH, y-HCH
S21-1	0-3	As, Cd, Cr, Co, Cu, Sn, Zn, PCB, Petroleum hydrocarbon	-	Pb, Ni, beta-HCH

- No parameters exceed threshold level

AW: Background values (Achtergrondwaarden, AW) of Dutch Legal Framework

T: Testing values (Tussenwaarden) of Dutch Guidelines

I: Intervention values (Interventiewaarden) of Dutch Legal Framework

A large number of analysed soil samples contain a concentration of HCH exceeding the Dutch Intervention value, even outside the extent of the dumpsite, exceptions are sample S2-3, S3-1, S3-2, S3-3, S3-4, and S12-1. The detected relatively low concentration of HCH (< 1 mg/kg d.w.) might be partly the result of cross-contamination. The fieldwork team has tried to minimise cross-contamination; however, working from clean to contaminated was not an option due to the site situation (e.g., need to identify first the presence and location of the concrete sacrophagi).

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Nonetheless, a strong contamination with HCH in both the coverlayer, as well as the underlying soil, is evident, based on the following results:

- The soil cover layer contains up to 190 mg/kg d.w. HCH, which is anticipated to exceed human health risk levels and at such poses a direct risk to human health and the environment. A map of the HCH concentration measured in the soil cover layer is presented in Figure 4.1.
- Soil sample S1-2 contains the highest HCH content (i.e., 7.300 mg/kg d.w. HCH), which was collected from the undisturbed subsoil underneath HCH pure product.
- Samples consisting of glass production and construction waste contain between 0.9 and 1,500 mg/kg d.w. of HCH.
- Downstream of the limits of the dumpsite, a sandy clay layer (S2-4) contained 1,300 mg/kg HCH indicating the migration of most likely a DNAPL.
- No vertical and/or horizontal delineation of the contaminated soil was achieved in the current study.



Figure 4.1 Concentration of HCH in the soil cover layer

4.5 Chemical-analytical results of groundwater samples

An overview of the chemical analytical results is presented in Table 4.6. The analytical groundwater results tested against the Dutch STI-framework are shown in Appendix 9b. A selection of the relevant elevated levels of contaminants is presented in table 4.7. The analytical results of groundwater show that:

- Levels of heavy metals are mostly slightly elevated and below Dutch intervention values. arsenic and barium are elevated above the Dutch I-value in monitoring well GWM-1

Our reference R001-1288451RRS-V01

- At the dumpsite and downstream of the dumpsite (i.e., GWM-1, GWM-2, and GWM-3), groundwater is strongly contaminated with chlordane, trichlorobenzenes, and HCH. This results show that groundwater is still strongly contaminated 60 meters from the dumpsite.
- Levels of HCH are highest downstream of the dumpsite in GWM-2, contrary to the waste samples, the delta-HCH isomer is dominant in the groundwater samples.
- Levels of volatile compounds, such as benzene and chlorobenzenes, are highest in GWM-1
- Groundwater is strongly contaminated with TPH in sample GWM-1 and GWM-2
- Groundwater is also slightly contaminated with HCH at the Palencia Monastery.

Table 4.6 Summary of groundwater results

Sample Name	Screen (m bgl)	> S	> T	> I
GWM1-1	13.5-16.5	Pb, Toluene, xylenes, Naphthalene, Dichloromethane, 1,1-Dichloroethylene, Per, trichlorobenzenes, tetrachlorobenzenes alpha-HCH, beta-HCH, y-HCH	Cr, 1,2-Dichloroethenes, pentachlorobenzene	As, Ba, Ni, Benzene, Vinyl Chloride, Chlordane, Dichlorobenzenes, HCH, TPH
GWM2-1	9.7-12.7	Mo, Monochlorobenzenes, Dichlorobenzenes, alpha-HCH, beta-HCH, y-HCH	-	Benzene, Chlordane, trichlorobenzenes, HCH, TPH
GWM3-1	9,0-12,0	alpha-HCH, beta-HCH, y-HCH	-	Chlordane, Trichlorobenzenes, HCH
GWM100-1	19,0-20,0	alpha-HCH, beta-HCH, HCH	-	-

- No parameters exceed threshold level

AW: Background values (**A**chtergrond**w**aarden, AW) of Dutch Legal Framework

T: Testing values (**T**ussen**w**aarden) of Dutch Guidelines

I: Intervention values (**I**nterventiewaarden) of Dutch Legal Framework

The alpha- and beta-HCH concentrations of sample GMW2-1 exceed the maximum solubility for these isomers. Due to the exceedance of the solubility, the insoluble fraction of HCH sink as it is heavier than water resulting in a DNAPL. DNAPL do not necessary adhere to the groundwater flow direct and can also form above the average groundwater level on impermeable layers.

Our reference R001-1288451RRS-V01

Table 4.7 Levels of HCH in groundwater compared to the maximum water solubility (the concentration exceeding the maximum solubility are given in bold).

	Maximum water solubility in µg/l	GWM1-1 (µg/l)	GWM2-1 (µg/l)
Alfa-HCH	1.600	780	2.100
Beta-HCH	200	110	250
Delta-HCH	7.800	390	6.300
Gamma-HCH	31.400	190	3.100

4.6 Evaluation of soil and waste physical properties

The soil and waste physical properties were determined for four (4) samples. Table 4.8 shows the analytical results of the samples and their interpretation.

Table 4.8 Soil fraction analyses and soil physical properties

Parameter	S1-2 (8-8.1)	S7-1 (0-2.8)	S15-1 (0-0.5)	S21-1 (0-3.0)
Type of sample	Undisturbed soil underlying pure HCH waste	Embankment	Soil with construction waste	Soil with glass factory waste
Soil texture class	Loamy sand	Sandy loam	Silty clay loam	Loamy sand
Dry matter %	87.2	90.6	76.1	91.5
Organic matter %	0.7	1.5	1.9	3.3
CaCO ₃ %	<0.5	13	18	15
pH	7.7	8.3	7.6	7.9
<2.000 µm %	100	100	100	100
<1.000 µm %	88.3	99.2	100	88.9
<500 µm %	61.3	82.5	99.9	73.0
<250 µm %	43.9	68.3	94.8	57.0
<125 µm %	36.7	55.6	89.1	42.3
<63 µm %	32.0	45.7	83.4	30.3
<50 µm %	30.3	42.9	80.9	26.8
<32 µm %	26.3	36.7	74.0	20.9
<16 µm %	18.6	26.2	56.4	13.7
<8 µm %	10.6	15.8	34.4	8.2
<2 µm %	2.4	10.7	21.8	5.6

The bulk density of four (4) different waste samples were determined. Both wet and dry bulk densities were determined and are presented in Table 4.7. All samples were mixed waste with soil of different types. The bulk density of pure technical HCH was not determined as the density of HCH is a known property (1.87 g/cm³).

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Table 4.9 Soil and waste bulk density of soil and waste samples

Sample Id	Location	Characteristics	Bulk density, wet (tons/m ³)	Bulk density, dry (tons/m ³)
B1	17 (0-0.10)	Soil with mis-manufactured bricks	1.79	1.46
B2	25 (4.00-5.00 m bgl)	Soil with construction waste	1.81	1.51
B3	25 (7.00-7.20 m bgl)	Mixture of clay, technical HCH and chlorobenzenes paste	1.89	1.50
B4	21 (0.20-0.40 m bgl)	Soil with glass factory waste	1.48	1.38

4.7 Volumes of contaminated soil and waste

Based on the field observation and analytical results, the waste has been classified into three categories, Technical HCH waste, Glass Factory Waste with HCH, and Glass Factory Waste (without observed pure HCH product) (see Figure 4.2 for a map with the extent of the different waste classes). The following assumptions are made for the classification of the wastes:

- No vertical distinction is made between different wastes in the determination of the waste classes and calculation of the volumes of wastes. The class “Technical HCH Waste” contains often layers of glass factory or other wastes at other depths; for example, borehole 1 contains a layer of glass factory waste from 0.75 m bgl to 3.20 m bgl. These layers might be excavated separately in case of complete site remediation; however, due to the irregular vertical and horizontal position of the wastes, it is assumed as one (1) layer of wastes in the current study, i.e., only horizontal distinction is made between types of wastes.
- The class “Glass Factory Waste” might contain HCH at greater depth. As the trenches had only a maximum depth of 4 m bgl, it cannot be excluded that HCH waste is present below the glass factory waste. The classification is done based on the available information during the current study.

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Figure 4.2 Horizontal extent of different waste classes



Figure 4.3 Map with the observed maximum depth of the wastes

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The maximum depth of the waste was determined at 5 borehole logs (1, 11, 16, 24, and 25), see also Figure 4.3 for a map with the depths. These depths have been used to estimate the depth of the undisturbed soil surface at the trenches; a relative smooth surface is assumed with depths ranging between 4 m bgl to 14 m bgl. The deepest point of the pit might differ from the depth observed at borehole 23. Furthermore, the dimensions of the pit might differ from this initial estimate.

The volumes of the wastes are estimated based on the interpolated depth of the wastes and the observations of the start depths of the waste. A graphical depiction of the waste thickness is shown in Figure 4.4. For the cover layer an average thickness of 25 cm bgl is assumed based on the assumptions. An overview of all the estimated volumes of soil and waste are presented in Table 4.10.

The variability of wastes present in the dumpsite causes a large uncertainty in waste quantities. Figure 4.4 and Table 4.10 should be seen as a best estimate, based on the current, limited dataset and should be approached with caution.

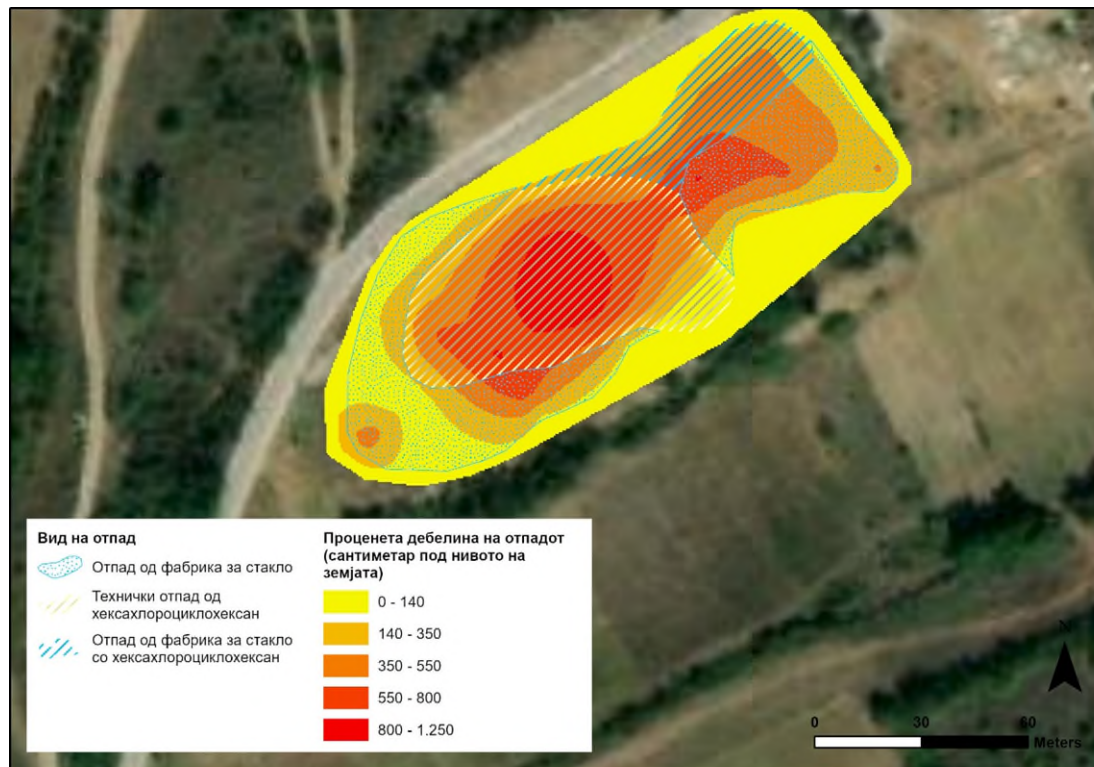


Figure 4.4 Estimated thickness of the wastes and horizontal waste categorization.

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Table 4.10 Estimate of amount of waste present in the dumpsite.

Parameter	Soil cover	Pure HCH waste	Glassfactory Waste with HCH	Glass Factory Waste
Area Raster (m2)	10.690	3.733	1.257	3.910
Average thickness (cm)	25*	569	344	289
Total volume (m3)	2.673	21.241	4.321	11.315
Bulkdensity, wet (tons/m3)	1.81	1.87	1.48	1.48
Total weight (ton)	5.000	40.000	6.500	16.700

* Estimated based on field observations.

5 Updated Conceptual Site Model (CSM)

Based on previous site visits completed at the site and historical information, an Updated Conceptual Site Model has been prepared, i.e. a system diagram identifying contaminant sources, receptor pathways and receptors potentially affected by the contaminants migrating through those pathways (see Figure 5.1 for the location of the cross-sections and Figure 5.2 for the CSM).



Figure 5.1 Location of cross-sections

The most important remaining knowledge gaps from the current study are:

- Glass factory and/or construction waste was observed at almost all the excavated trenches; however, excavation depth was in most cases insufficient to prove that no technical HCH

Our reference R001-1288451RRS-V01

waste present below the glass factory and/or construction waste. As such, the waste quantities and waste depth might strongly differ from the presented overviews.

- Based on the excavation or mining of clay at other pits, almost 90 degrees walls can be expected before the original clay pit was filled waste; however, the dimensions of the clay pit, and there for the depth of underlying undisturbed soil, remains unknown.
- An embankment was observed between the waste and the valley east of the site. The volume and dimensions of applied materials is uncertain. The bottom part of the embankment might consist of the original wall of clay pit or the clay pit might be excavated until the original soil surface of the agricultural plots east of the site. The construction and composition of the embankment highly influences the preferential pathways of perched water in the dumpsite. As no water was observed in the trench east of the site, it is expected that the embankment partly consists of the wall of the original clay pit.
- A layer of gravel (and stony) sand and sand lenses were observed in groundwater monitoring well 1, 2 and 3. The interconnectivity between these sand layer and/or lenses has not been proven in the current study; however, chemical-analytical result showed a strong contamination with HCH in the layer with sand, which might prove that this strata acts as a preferential pathway for a DNAPL.
- Groundwater is strongly contaminated with HCH, benzenes, and chlorobenzenes. The concentration HCH exceeds the solubility of the HCH; therefore, a DNAPL might (also) have formed on an aquitard at greater depth. The location and existence of this DNAPL is unknown.
- The site is situated on a watershed divide, the direction of flow is most likely southeast; however, no geohydrological model has been established within the current study. As such, the exact groundwater flow direction (and speed) remains unknown. A partial flow of groundwater in other directions cannot be fully excluded.

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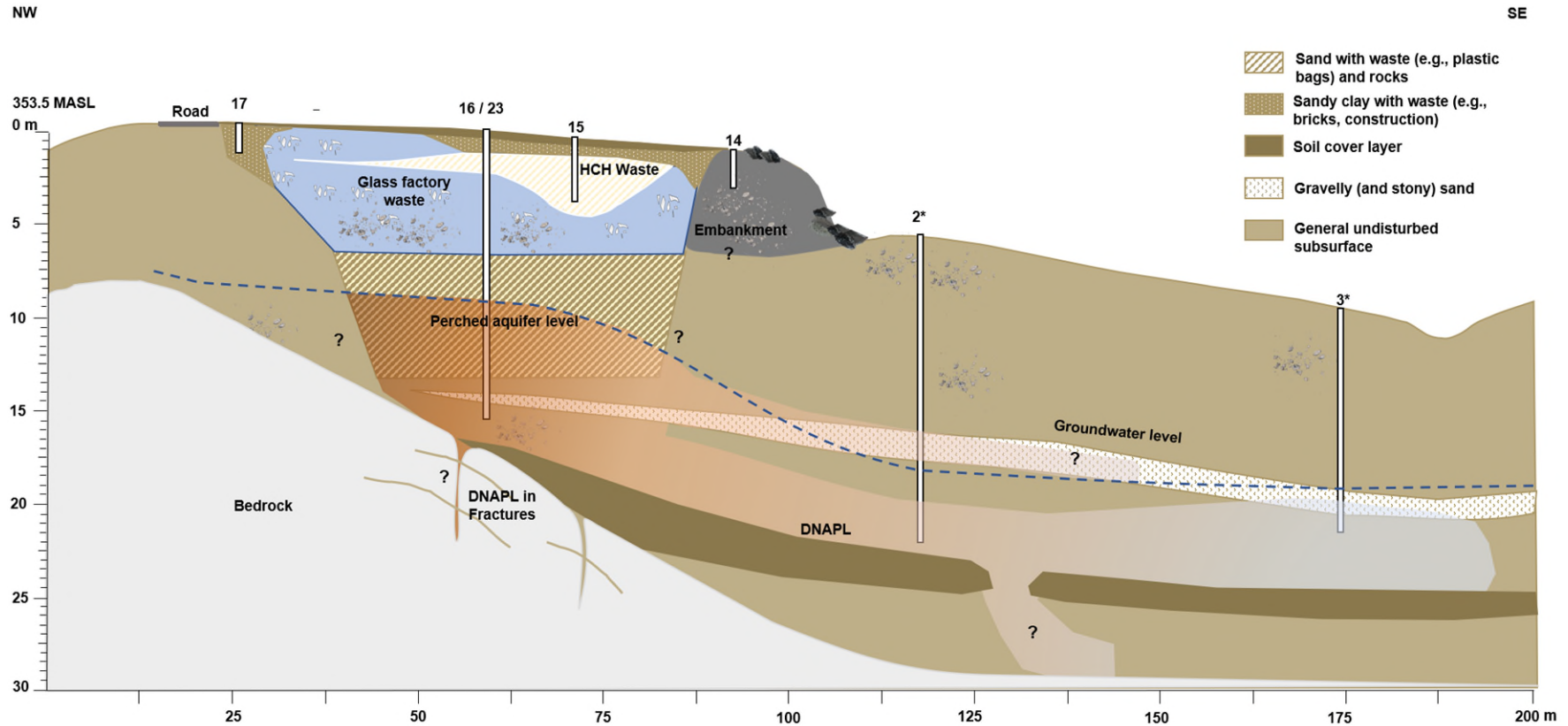


Figure 5.2 Cross-section NW-SE with conceptual site model of the site.

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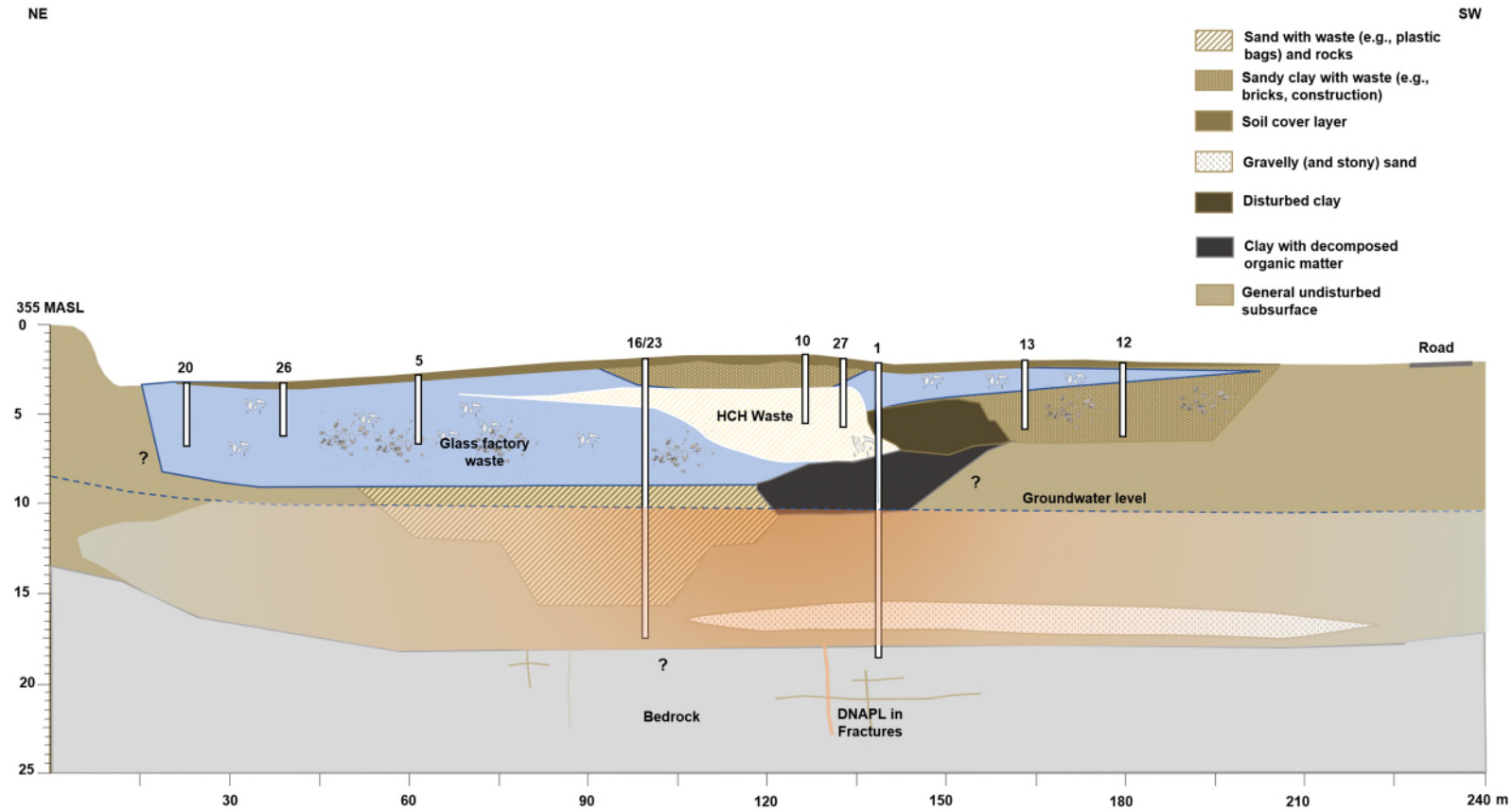


Figure 5.3 Cross-section NE-SW with conceptual site model of the site

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6 Conclusions and recommendations

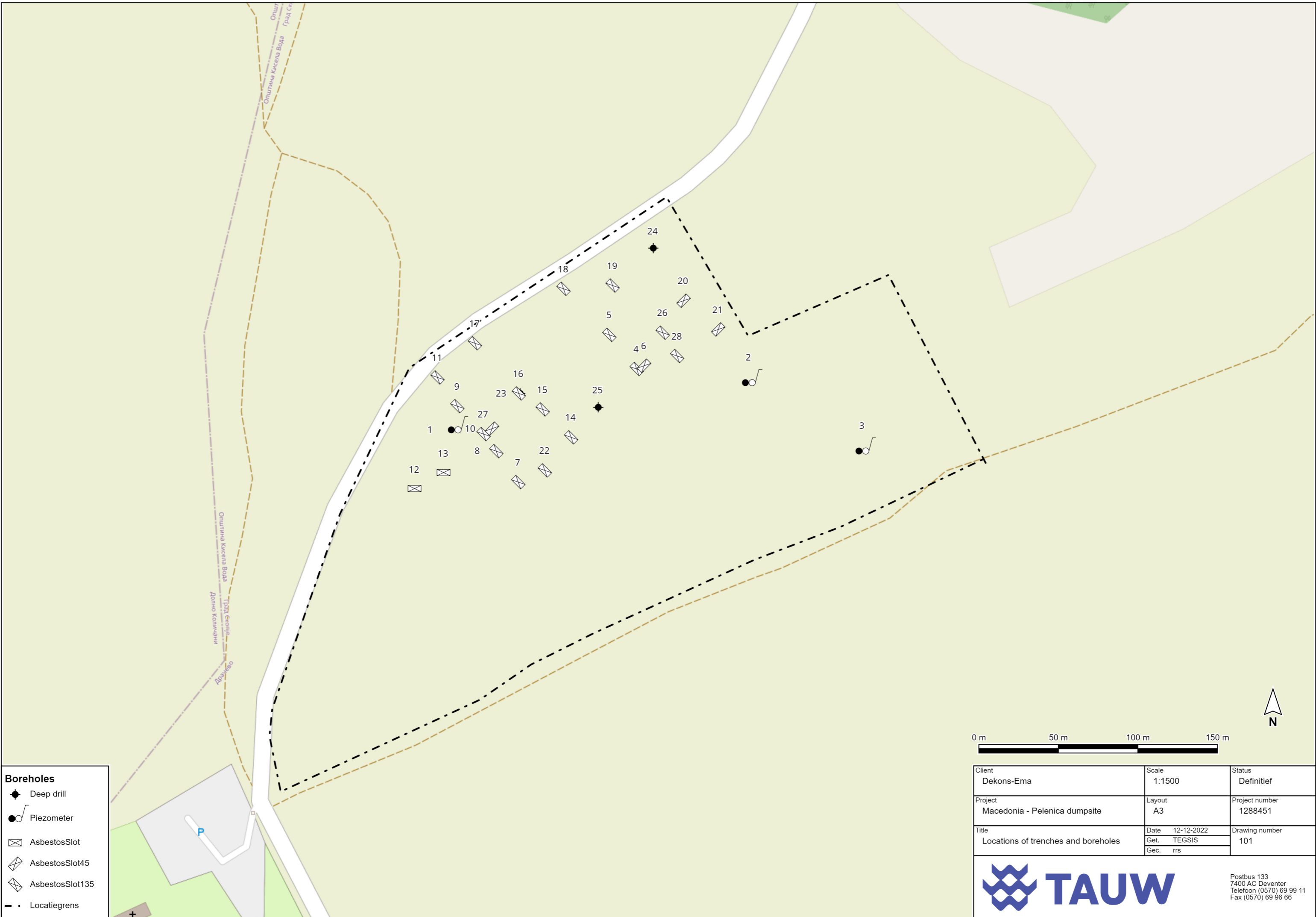
Based on the results of the current investigation, the following conclusions are drawn:

- At several locations, the concentration HCH exceeded 10 times the Dutch intervention value in the covering layer. Aside the severe contamination of the cover, the cover layer is of limited thickness with a minimum depth to construction and glass factory waste of less than 20 cm and to pure HCH waste of 50 cm. In addition, the cover layer is strongly contaminated with arsenic and lead, which is most likely related to other dumped materials. No horizontal delineation was achieved for the contaminated topsoil; the extent of the dumpsite below the surface is assumed to be similar to the extent of the strongly contaminated topsoil.
- The strong contamination in the topsoil causes unacceptable ecological and human health risks because contamination is present in the contact zone
- The assumption that the HCH-waste was dumped inside concrete basins (sarcophagus) turned out to be false, no basins or other form of containment for the HCH-waste was found during the current investigation
- The dump contains the following types of (hazardous) waste:
 - Pure HCH waste was observed in several trenches, an estimated 40.000 tons of HCH waste is present with another 6.500 tons of mixed HCH and glass factory waste. HCH-levels in samples of the waste ranges between 220.000 to 330.000 mg/kg dm. Furthermore, the samples contain high concentration of chlorobenzenes and PCDD/F. Measured metalloid concentrations are expected to be below the acceptance levels of incinerators.
 - A lot of packing materials (e.g., plastic and paper bags) were encountered, mostly empty.
 - Only one metal drums with waste was encountered, other drums may have been removed in the past without the contents. There is no indication that significant dumping of drums took place at the dumpsite
 - A lot of glass and glass wool waste was encountered coming from a glass factory
 - Construction and demolition waste was observed in multiple boreholes and trenches.
 - (Miss-manufactured) bricks were observed in some of the boreholes and trenches.
- The undisturbed soil, below the dumpsite, is strongly contaminated with among others HCH. The depth of the strongly contaminated soil remains unknown, i.e., no vertical delineation was obtained with the current analytical-results.
- A DNAPL of HCH could be present and contamination seems to migrate horizontally through sandy alluvial deposits; these deposits were situated just above groundwater level during the current site investigation. A second deeper DNAPL cannot be excluded.
- Groundwater results show that migration risks are presents, contaminated groundwater is spreading from the site towards the valley to the southeast of the site and pose risks to surface water further downstream of the site.

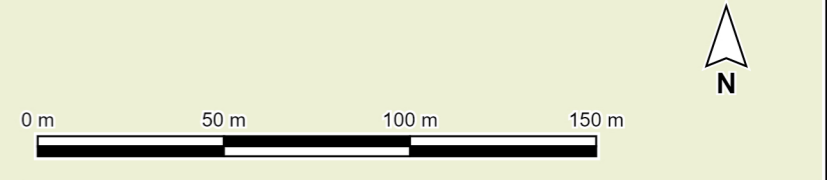
Overall, the site poses a direct and unacceptable risk to human health and the environment; as such, immediately measures should be taken to minimise further exposure of the surrounding community and migration of the groundwater contamination.

Our reference R001-1288451RRS-V01

Appendix 1 Sampling and analyses plan, including Health and Safety Plan



- Boreholes**
- ◆ Deep drill
 - Piezometer
 - ▧ AsbestosSlot
 - ◊ AsbestosSlot45
 - ◊ AsbestosSlot135
 - · - Locatiegrens



Client Dekons-Ema	Scale 1:1500	Status Definitief
Project Macedonia - Pelenica dumpsite	Layout A3	Project number 1288451
Title Locations of trenches and boreholes	Date 12-12-2022	Drawing number 101
	Get. TEGSIS	
	Gec. rrs	



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Appendix 2 Map with the actual locations of borehole logs and groundwater monitoring wells

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Appendix 3 Digital elevation model of the site



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Appendix 4 Borehole logs

Pelenica Rupa HCH waste dumpsite

Described by		Boudewijn Fokke			Installed by		Sub drilling comp		Date		07 November 2022		
Project name		Detailed site investigation HCH waste dumpsite			Location name		Pelenica Rupa		Village/Town		Pelencia		
Profile no.		GWM-01			Surface		grass		Project number				
Location profile		Southwest part of the site			Land use		Fallow		Coordinates				
Observation type		Rotary core drilling till 4.80 m ø 141 mm tube 750 mm long Deeper ø 131 mm tube 750 mm long			Groundwater table		No 8.10 m phreatic		Latitude				
Longitude					Height								
Soil horizon description				Sampling			Contaminants			Well completion details		Status profile description	
End depth in m		Texture	Colour	Trajectory sampled m	Type	No.	Smell	Colour	Sort			Completed	
												Remarks	
0.75		Sandy clay	Brown				No			Concrete platform (0.5 x 0.5) with riser of 0,5 m above surface with cap		Disturbed	
2.00		Soil and rubble	Light brown				No					Disturbed, waste dump with fibres (glass wool), rubble, stones, plastic and glass	
3.20		Waste	Gray				No					Disturbed waste with remains of bags	
4.50		Clay	Brown				No					Disturbed	
5.20		Clay	Brown				No					Disturbed, stones gravel and pieces of paper bags	
5.30		Clay	Gray				Strong - HCH					Disturbed , HCH waste?	
5.70		Clay	Brown				Strong - HCH					Disturbed, stones gravel and pieces of paper bags and pieces of glass	
8.00		Sandy clay	Yellow with black organic material	7.00 - 7.50	Disturbed	GWM-01-1	H ₂ S and strong HCH	Gray				Disturbed, wet, traces of decomposed organic material	
8.10		Clay	Black	8.00 - 8.10	Disturbed	GWM-01-2	H ₂ S and strong HCH	Black				Disturbed, wet, decomposed organic material	
8.50		Sandy clay	Yellow-brown				No					Undisturbed??	
9.00		Clay	Gray				No					Undisturbed, dry and firm	
11.00		Clay	Yellow				No					Undisturbed, dry and firm	
12.80		Sandy and gravelly clay	Brown				No					Moist loose, non coherent	
13.00		Lime stone??	White				No			Top gravel 13.00			
13.60		Stones and gravel					No			Top filter 13.50		Loose	
14.00		Clay	Yellow				No					Stiff and moist	
16.00		Clay	Brown				No					Stones and gravel	
16.50		Stone quartz?					No			Bottom filter 16.50			

Pelenica Rupa HCH waste dumpsite

Described by		Boudewijn Fokke		Installed by		Sub drilling comp		Date		08 November 2022	
Project name		Detailed site investigation HCH waste dumpsite		Location name		Pelenica Rupa		Village/Town		Pelencia	
Profile no.		GWM-02		Surface		grass		Project number			
Location profile		Northeast foot slope near graveyard downslope		Land use		Fallow		Coordinates			
Observation type		Rotary core drilling till 4.80 m Ø 141 mm tube 750 mm long Deeper Ø 131 mm tube 750 mm long		Groundwater table		13.30		Latitude			
Longitude				Height				Status profile description			
Soil horizon description			Sampling			Contaminants			Well completion details		
Depth in m	Texture	Colour	Trajectory sampled	Type	No.	Smell	Colour	Sort	Remarks		
0.30	Sandy clay	Brown	0.00-0.30	Disturbed	GWM-02-1	No			Concrete platform (0.5 x 0.5) with riser of 0,5 m above surface with cap		
0.50	Clay	Brown				No			Wet loose, clay is sticky topsoil		
1.50	Gravelly clay	Brown				No			Dry, very firm		
2.40	Gravelly with Stoney clay	Yellow brown				No			Dry loose		
2.50	Clay	Yellow brown				No			Dry loose		
5.90	Gravelly with Stoney clay	Yellow brown				No			Very firm		
6.00	Clay	Yellow brown				No			Dry loose		
6.40	Clay stony	Yellow brown				No			Firm with white small concretions(Ca)		
7.00	Gravelly and Stoney sand	Light brown				No			Dry loose		
7.40	Gravelly sand	Brown				No			Dry loose		
7.50	Sandy clay	Brown				No			Moist loose		
8.50	Sandy clay	Yellow brown	8.00-8.50	Disturbed	GWM-02-2	No			Dry, firm		
9.50	Sandy clay	Gray brown				No			Dry, very firm		
10.00	Clay	Yellow red				No			Dry, extremely firm		
11.00	Stoney clay	Gray green				No		Light HCH	Dry, extremely firm		
11.10	Sand	Light, Gray brown	11.00-11.10	Disturbed	GWM-02-3	Yes		Light HCH	Extremely firm. Attempt to take undisturbed sample. Core sample tube tip bended		
12.40	Clay	Greyish green				Yes		Light HCH	Sand lens		
12.70	Sandy clay	Yellow red	12.40-12.70	Disturbed	GWM-02-4	Yes		Light HCH	Moist firm		
12.80	Clay	Yellow brown				Yes		Light HCH	Top gravel 12.70		
13.20	Gravelly clay	Yellow Brown				Yes		Light HCH	Wet, loose		
13.60	Clay	Brown				Yes		Light HCH	No filter sock is used		
16.50	Clay	Brown				Yes		Light HCH	Dry, extremely firm		
								Light HCH	top filter 13.50		
								Light HCH	Bottom filter 16.50		
								Light HCH	Dry, extremely firm with large white Ca concretions disintegrated		

Pelenica Rupa HCH waste dumpsite

Described by		Boudewijn Fokke		Installed by		Sub drilling comp		Date		08 November 2022	
Project name		Detailed site investigation HCH waste dumpsite		Location name		Pelenica Rupa		Village/Town		Pelenica	
Profile no.		GWM-02		Surface		grass		Project number			
Location profile		Northeast foot slope near graveyard downslope		Land use		Fallow		Coordinates			
Observation type		Rotary core drilling till 4.80 m Ø 141 mm tube 750 mm long		Groundwater table		9.30		Latitude			
								Longitude			
								Height			
Soil horizon description			Sampling			Contaminants			Status profile description		
									Completed		
									Remarks		
Depth in m	Texture	Colour	Trajectory sampled cm	Type	No.	Smell	Colour	Sort	Well completion details		
0.30	Clay	Brown	0.05 - 0.15	Disturbed	GWM-03-1	No			Concrete platform (0.5 x 0.5) with riser of 0,5 m above surface with cap		Wet loose, moist, clay is sticky topsoil
0.50	Clay	Brown				No					Moist firm
4.00	Clay	Dark brown				No					Dry very firm
4.80	Clay, sandy	Light brown	4.00 - 4.50	Disturbed	GWM-03-2	No					Loose
5.00	Clay, sandy	Brown				No					Firm
5.80	Gravelly, Stoney sand	Light brown				No					Loose
6.00	Clay	Light brown				No					With Gray sand lenses
8.20	Clay	Light brown	6.50 - 6.70	Disturbed	GWM-03-3	Very light HCH					With Gray sand lenses
8.90	Clay	Light brown				Very light HCH			Top gravel 8.50		With white mottles (Ca concretions)
9.00	Clay	Dark brown				Very light HCH			Top filter 9.00		Red layer of Fe (hardpan) an illuviation of Fe
9.10	Stoney clay	Brown				Very light HCH					Very firm
11.50	Gravelly and Stoney clay	Brown	9.30 - 9.50	Disturbed	GMW-03-4	Very light HCH					Very firm
12.00	Stoney clay	Brown				Very light HCH			Bottom filter 12.00		

Pelenica Rupa HCH waste dumpsite

Described by	Boudewijn Fokke	Installed by	Sub backhoe	Date	07 November 2022					
Project name	Detailed site investigation HCH waste dumpsite	Location name	Pelenica Rupa	Village/Town	Pelenica					
Profile no.	Trench 26 (before Trench-01)	Surface	grass	Project number						
Location profile	North west from fence pole entrance graveyard 22.70 m parallel 33.00 perpendicular on road	Land use	Fallow	Coordinates Latitude Longitude Height	22,70 m corner fence pole northwest along the road and entrance graveyard and around 33 m from main road					
Observation type	Excavation trench on the possible location of the northwest corner of the underground bunker	Groundwater table	Not reached							
Soil horizon description		Sampling			Contaminants		Status profile description			
Depth in m	Texture	Colour	Trajectory sampled c	Type	No.	Smell	Colour	Sort	Well completion details	Remarks
2.80	Waste					No				Glass wool, large pieces of glass, plastic bags, stones and plastic. No signs of concrete construction

Pelenica Rupa HCH waste dumpsite

Described by	Boudewijn Fokke	Installed by	Sub backhoe	Date	07 November 2022					
Project name	Detailed site investigation HCH waste dumpsite	Location name	Pelenica Rupa	Village/Town	Pelenica					
Profile no.	Trench 27 (before trench-002)	Surface	grass	Project number						
Location profile	Near GWM-001	Land use	Fallow	Coordinates Latitude Longitude Height						
Observation type	Excavation of trench to 2.20 to see if GWM can be installed. From 2.20 - 3.20 Edelman Auger to see the end of the HCH	Groundwater table	Not reached							
Soil horizon description			Sampling			Contaminants			Well completion details	Status profile description
Depth in m	Texture	Colour	Trajectory sampled m	Type	No.	Smell	Colour	Sort		Remarks
150	Waste	Gray brown								Rubble
220	Clay	Brown				HCH				HCH waste, remains of bags, stones, glass wool and plastic
300	HCH waste	White				HCH				HCH waste with clay
320	Clay	Brown				HCH				Clay with HCH waste

Pelenica Rupa HCH waste dumpsite

Described by	Boudewijn Fokke		Installed by	Sub backhoe		Date	07 November 2022			
Project name	Detailed site investigation HCH waste dumpsite		Location name	Pelenica Rupa		Village/Town	Pelencia			
Profile no.	Trench 28 (before Trench-03)		Surface	grass		Project number				
Location profile	In line with Trench 01 eastward NE corner near graveyard		Land use	Fallow		Coordinates Latitude Longitude Height				
Observation type	Excavation trench to identify wall of bunker on northeast corner		Groundwater table	Not reached						
Soil horizon description			Sampling			Contaminants			Status profile description	
Depth in m	Texture	Colour	Trajectory sampled m	Type	No.	Smell	Colour	Sort	Well completion details	Remarks
350	sandy clay and waste					No				Plastic bags, glass wool, stones, glass and rubble. Lots of flies around this location. No sign of construction of bunker

Pelenica Rupa HCH waste dumpsite

Described by	Boudewijn Fokke	Installed by	Sub backhoe	Date	07 November 2022					
Project name	Detailed site investigation HCH waste dumpsite	Location name	Pelenica Rupa	Village/Town	Pelenica					
Profile no.	Trench 04	Surface	grass	Project number						
Location profile	16 meter parallel to trench 03 eastward Supposed to be middle of the north bunker. This seems to be the embankment of the dumpsite	Land use	Fallow	Coordinates Latitude Longitude Height						
Observation type	Excavation trench to identify wall of bunker on northeast side	Groundwater table	Not reached							
Soil horizon description		Sampling			Contaminants		Status profile description			
Depth in m	Texture	Colour	Trajectory sampled m	Type	No.	Smell		Colour	Sort	Well completion details
220	Clay, with few stones and stones	brown				No				No waste, but disturbed. At 2.00 block of concrete seen as the wall of the bunker, but is an large block of concrete. This was found out when decide to further excavate the trench and dig Trench 06.

Pelenica Rupa HCH waste dumpsite

Described by	Boudewijn Fokke		Installed by	Sub backhoe		Date	07 November 2022			
Project name	Detailed site investigation HCH waste dumpsite		Location name	Pelenica Rupa		Village/Town	Pelencia			
Profile no.	Trench 05		Surface	grass		Project number				
Location profile	Around 16 m parallel to trench 01 eastward and 15 meters from middle if trench 4.		Land use	Fallow		Coordinates Latitude Longitude Height				
Observation type	Excavation trench to identify wall of bunker on west side. Supposed to be middle of the north bunker wall on east side.		Groundwater table	Not reached						
Soil horizon description			Sampling			Contaminants			Status profile description	
Depth in m	Texture	Colour	Trajectory sampled m	Type	No.	Smell	Colour	Sort	Well completion details	Remarks
4.00	Waste					No				Waste plastic, glass wool and rubble. Plastic bag from Chemistry Kosovo Super Phosphate. No signs of any construction

Pelenica Rupa HCH waste dumpsite

Described by	Boudewijn Fokke		Installed by	Sub backhoe	Date	07 November 2022				
Project name	Detailed site investigation HCH waste dumpsite		Location name	Pelenica Rupa	Village/Town	Pelencia				
Profile no.	Trench 06		Surface	grass	Project number					
Location profile	At edge of dumpsite in the embankment in line with the concrete find at 4 meter in trench 4		Land use	Fallow	Coordinates Latitude Longitude Height					
Observation type	Excavation trench to expose the east wall of the bunker		Groundwater table	Not reached						
Soil horizon description			Sampling			Contaminants			Status profile description	
Depth in m	Texture	Colour	Trajectory sampled m	Type	No.	Smell	Colour	Sort	Well completion details	Remarks
4.50	Sandy clay with stones		0.00-2.60			No				Concrete block at 4 m is not a wall. Information was shared that drums with HCH were dumped here. No signs were seen at 4.50 and no HCH smell.

Pelenica Rupa HCH waste dumpsite

Described by	Boudewijn Fokke		Installed by	Sub backhoe		Date	08 November 2022			
Project name	Detailed site investigation HCH waste dumpsite		Location name	Pelenica Rupa		Village/Town	Pelencia			
Profile no.	Trench 07		Surface	grass		Project number				
Location profile	At edge of dumpsite in the embankment parallel with to Trench 04		Land use	Fallow		Coordinates Latitude Longitude Height				
Observation type	Excavation of trench to search for wall of bunker		Groundwater table	Not reached						
Soil horizon description			Sampling			Contaminants			Status profile description	
Depth in m	Texture	Colour	Trajectory sampled m	Type	No.	Smell	Colour	Sort	Well completion details	Remarks
4.50	Sandy clay with stones		0.00-2.60	Disturbed	TR-07-01	HCH				Pieces of asphalt, stones and gravel. No wall of bunker identified At the west end side waste and plastic appear

Pelenica Rupa HCH waste dumpsite

Described by	Boudewijn Fokke		Installed by	Sub backhoe	Date	08 November 2022			
Project name	Detailed site investigation HCH waste dumpsite		Location name	Pelenica Rupa	Village/Town	Pelencia			
Profile no.	Trench 08		Surface	grass	Project number				
Location profile	Between Trench 02 and 07		Land use	Fallow	Coordinates Latitude Longitude Height				
Observation type	Excavation trench to map HCH and waste		Groundwater table	Not reached					
Soil horizon description			Sampling			Contaminants			Status profile description
Depth in m	Texture	Colour	Trajectory sampled m	Type	No.	Smell	Colour	Sort	
									Remarks
3.60	Waste		0.00 - 3.60	disturbed	TR-08-01	no			Plastic bags, stones, glass wool, rubble, pieces of glass and bottles

Pelenica Rupa HCH waste dumpsite

Described by	Boudewijn Fokke		Installed by	Sub backhoe	Date	08 November 2022			
Project name	Detailed site investigation HCH waste dumpsite		Location name	Pelenica Rupa	Village/Town	Pelencia			
Profile no.	Trench 09		Surface	grass	Project number				
Location profile	West of trench 02		Land use	Fallow	Coordinates Latitude Longitude Height				
Observation type	Excavation trench to map HCH and waste		Groundwater table	Not reached					
Soil horizon description			Sampling			Contaminants			Status profile description
Depth in m	Texture	Colour	Trajectory sampled m	Type	No.	Smell	Colour	Sort	
									Remarks
1.20	Clay, sandy	brown							Plastic bags, stones, glass wool, rubble, pieces of glass and bottles
3.70	HCH wate	White	1.20 - 1.70	disturbed	Light HCH		White		Local said that this is carbide and that OHIS never dumped any HCH waste at this side. Carbide was used to make acetylene

Pelenica Rupa HCH waste dumpsite

Described by	Boudewijn Fokke		Installed by	Sub backhoe		Date	08 November 2022			
Project name	Detailed site investigation HCH waste dumpsite		Location name	Pelenica Rupa		Village/Town	Pelencia			
Profile no.	Trench 10		Surface	grass		Project number				
Location profile	Parallel on trench 02		Land use	Fallow		Coordinates Latitude Longitude Height				
Observation type	Excavation trench to map HCH and waste		Groundwater table	Not reached						
Soil horizon description			Sampling			Contaminants			Well completion details	Status profile description
Depth in m	Texture	Colour	Trajectory sampled m	Type	No.	Smell	Colour	Sort		3.20 deep, 0.90 wide and 2.50 m long
										Remarks
0.50	Sandy clay					HCH				
2.00	Waste					HCH			Pieces of glass, white material, logs of wood and remains of iron drum	
3.20	White waste		2.00 - 3.20	disturbed	Tr-10-01	HCH	White		HCH	

Pelenica Rupa HCH waste dumpsite

Described by	Boudewijn Fokke		Installed by	Sub backhoe	Date	08 November 2022					
Project name	Detailed site investigation HCH waste dumpsite			Location name	Pelenica Rupa	Village/Town	Pelencia				
Profile no.	Trench 11 near fence, close to the road			Surface	grass	Project number					
Location profile	West of trench 02			Land use	Fallow	Coordinates Latitude Longitude Height					
Observation type	Excavation trench to map HCH and waste			Groundwater table	Not reached						
Soil horizon description			Sampling			Contaminants			Well completion details	Status profile description	
Depth in m	Texture	Colour	Trajectory sampled m	Type	No.	Smell	Colour	Sort		2.20 deep, 0.70 wide and 4.10 m long	
										Remarks	
0.50	Sandy clay	dark brown		Topsoil	TR-11-01	no					
1.00	Waste					no				Glass wool, bags and stones, glass	
2.20	Sandy clay. Stoney					no					

Pelenica Rupa HCH waste dumpsite

Described by	Boudewijn Fokke		Installed by	Sub backhoe	Date	08 November 2022				
Project name	Detailed site investigation HCH waste dumpsite		Location name	Pelenica Rupa	Village/Town	Pelencia				
Profile no.	Trench 12		Surface	grass	Project number					
Location profile	Near fence on the south side		Land use	Fallow	Coordinates Latitude Longitude Height					
Observation type	Excavation trench to map HCH and waste		Groundwater table	Not reached						
Soil horizon description			Sampling			Contaminants			Status profile description	
Depth in m	Texture	Colour	Trajectory sampled m	Type	No.	Smell	Colour	Sort	Well completion details	Remarks
0.20	Sandy clay	dark brown	0.00 - 3.00		TR-12-01	Light HCH				Pieces of asphalt, stones, gravel, pieces of concrete and plastic bags
1.00	Sandy clay	Light Gray brown	0.20 - 1.00		TR-12-02	Light HCH				Sand pocket most likely quarts from glass factory
4.00	Sandy clay	dark brown	0.00 - 3.00		TR-12-01	Light HCH				Pieces of asphalt, stones, gravel, pieces of concrete and plastic bags

Pelenica Rupa HCH waste dumpsite

Described by	Boudewijn Fokke		Installed by	Sub backhoe		Date	08 November 2022			
Project name	Detailed site investigation HCH waste dumpsite		Location name	Pelenica Rupa		Village/Town	Pelencia			
Profile no.	Trench 13		Surface	grass		Project number				
Location profile	between well GWM-01 and Trench 12		Land use	Fallow		Coordinates Latitude Longitude Height				
Observation type	Excavation trench to map HCH and waste		Groundwater table	Not reached						
Soil horizon description			Sampling			Contaminants			Well completion details	Status profile description
Depth in m	Texture	Colour	Trajectory sampled m	Type	No.	Smell	Colour	Sort		Remarks
3.00	Sandy clay and waste	Brown	0.00 - 3.00							Glass wool, pieces of asphalt, stones. gravel, pieces of concrete and pieces of glass

Pelenica Rupa HCH waste dumpsite

Described by	Boudewijn Fokke		Installed by	Sub backhoe		Date	08 November 2022			
Project name	Detailed site investigation HCH waste dumpsite		Location name	Pelenica Rupa		Village/Town	Pelencia			
Profile no.	Trench 14		Surface	grass		Project number				
Location profile	Near fence on embankment in east		Land use	Fallow		Coordinates Latitude Longitude Height				
Observation type	Excavation trench to map HCH and waste		Groundwater table	Not reached						
Soil horizon description			Sampling			Contaminants			Status profile description	
Depth in m	Texture	Colour	Trajectory sampled m	Type	No.	Smell	Colour	Sort	Well completion details	Remarks
2.00	Sandy clay	Brown								Pieces of asphalt, stones and gravel

Pelenica Rupa HCH waste dumpsite

Described by	Boudewijn Fokke		Installed by	Sub backhoe	Date	08 November 2022				
Project name	Detailed site investigation HCH waste dumpsite		Location name	Pelenica Rupa	Village/Town	Pelencia				
Profile no.	Trench 15		Surface	grass	Project number					
Location profile	Between trench 14 and 16. Trench could not be excavated in the west part as many large concrete poles/blocks are present		Land use	Fallow	Coordinates Latitude Longitude Height					
Observation type	Excavation trench to map HCH and waste		Groundwater table	Not reached						
Soil horizon description			Sampling			Contaminants			Status profile description	
Depth in m	Texture	Colour	Trajectory sampled m	Type	No.	Smell	Colour	Sort	Well completion details	Remarks
0.50	Sandy clay with waste	Brown	0.00 - 0.50	disturbed	TR-15-01					Plastic bags, concrete, stones, gravel

Pelenica Rupa HCH waste dumpsite

Described by	Boudewijn Fokke		Installed by	Sub backhoe	Date	08 November 2022				
Project name	Detailed site investigation HCH waste dumpsite		Location name	Pelenica Rupa	Village/Town	Pelencia				
Profile no.	Trench 16		Surface	grass	Project number					
Location profile	Between trench 15 and 17.		Land use	Fallow	Coordinates Latitude Longitude Height					
Observation type	Excavation trench to map HCH and waste		Groundwater table	Not reached						
Soil horizon description			Sampling			Contaminants			Status profile description 3.50 deep, 0.80 wide and 4.00 m long	
Depth in m	Texture	Colour	Trajectory sampled m	Type	No.	Smell	Colour	Sort		Well completion details
1.50	Sandy clay with waste	Brown	0.00 - 1.50	disturbed	TR-16-01	HCH				Topsoil with Plastic bags, concrete, stones, gravel including
2.20			1.50 - 2.20	disturbed	TR-16-02	HCH				White waste

Pelenica Rupa HCH waste dumpsite

Described by	Boudewijn Fokke		Installed by	Sub backhoe	Date	08 November 2022			
Project name	Detailed site investigation HCH waste dumpsite		Location name	Pelenica Rupa	Village/Town	Pelencia			
Profile no.	Trench 17		Surface	grass	Project number				
Location profile	West of trench 16 near entrance gate		Land use	Fallow	Coordinates Latitude Longitude Height				
Observation type	Excavation trench to map HCH and waste		Groundwater table	Not reached					
Soil horizon description			Sampling			Contaminants			Status profile description
Depth in m	Texture	Colour	Trajectory sampled m	Type	No.	Smell	Colour	Sort	
									Well completion details
									Remarks
0.10	red broken bricks								
1.70	Soil mixed with waste					No			
									Glass wool, pieces of glass, stones

Pelenica Rupa HCH waste dumpsite

Described by	Boudewijn Fokke		Installed by	Sub backhoe	Date	08 November 2022				
Project name	Detailed site investigation HCH waste dumpsite		Location name	Pelenica Rupa	Village/Town	Pelencia				
Profile no.	Trench 18		Surface	grass	Project number					
Location profile	West of trench 05 near entrance gate		Land use	Fallow	Coordinates Latitude Longitude Height					
Observation type	Excavation trench to map HCH and waste		Groundwater table	Not reached						
Soil horizon description			Sampling			Contaminants			Well completion details	Status profile description
Depth in m	Texture	Colour	Trajectory sampled m	Type	No.	Smell	Colour	Sort		Remarks
1.00	Sand	yellow				no				
1.50	Sandy clay	brown/black				no				Rubble, plastic bags, glass
3.00	sand	dark brown	1.50 - 3.00	disturbed	TR-18-01	no				Stones and gravel and pieces of glass

Pelenica Rupa HCH waste dumpsite

Described by	Boudewijn Fokke		Installed by	Sub backhoe		Date	08 November 2022			
Project name	Detailed site investigation HCH waste dumpsite		Location name	Pelenica Rupa		Village/Town	Pelencia			
Profile no.	Trench 19		Surface	grass		Project number				
Location profile	West of trench 01		Land use	Fallow		Coordinates Latitude Longitude Height				
Observation type	Excavation trench to map HCH and waste		Groundwater table	Not reached						
Soil horizon description			Sampling			Contaminants			Status profile description	
Depth in m	Texture	Colour	Trajectory sampled m	Type	No.	Smell	Colour	Sort	Well completion details	Remarks
2.35	Waste					no				Stones and gravel and pieces of glass, rubble, plastic bags, and quartz sand

Pelenica Rupa HCH waste dumpsite

Described by	Boudewijn Fokke		Installed by	Sub backhoe	Date	08 November 2022			
Project name	Detailed site investigation HCH waste dumpsite		Location name	Pelenica Rupa	Village/Town	Pelencia			
Profile no.	Trench 20		Surface	grass	Project number				
Location profile	North of trench 01 in the middle of the dump near the border with the graveyard		Land use	Fallow	Coordinates Latitude Longitude Height				
Observation type	Excavation trench to map HCH		Groundwater table	Not reached					
Soil horizon description			Sampling			Contaminants			Status profile description
Depth in m	Texture	Colour	Trajectory sampled m	Type	No.	Smell	Colour	Sort	
									Remarks
0,40	Waste								Stones and gravel and pieces of glass, rubble, plastic bags, and quartz sand
0,50	Clay	brown							Could be remain of an on-site road
3.00	Waste								Stones and gravel and pieces of glass, rubble, plastic bags, and quartz sand

Pelenica Rupa HCH waste dumpsite

Described by	Boudewijn Fokke		Installed by	Sub backhoe		Date	08 November 2022			
Project name	Detailed site investigation HCH waste dumpsite		Location name	Pelenica Rupa		Village/Town	Pelencia			
Profile no.	Trench 21		Surface	grass		Project number				
Location profile	Near the northeast corner of the dumpsite near the border with the graveyard		Land use	Fallow		Coordinates Latitude Longitude Height				
Observation type	Excavation trench to map HCH and waste		Groundwater table	Not reached						
Soil horizon description			Sampling			Contaminants			Status profile description	
Depth in m	Texture	Colour	Trajectory sampled m	Type	No.	Smell	Colour	Sort	Well completion details	Remarks
3.00	sand with waste		0.00 - 3.00	disturber	TR-20-01 (lost)	no				Stones and gravel and pieces of glass, rubble, plastic bags, and quartz sand

Pelenica Rupa HCH waste dumpsite

Described by	Boudewijn Fokke		Installed by	Sub backhoe		Date	08 November 2022			
Project name	Detailed site investigation HCH waste dumpsite		Location name	Pelenica Rupa		Village/Town	Pelencia			
Profile no.	Trench 21		Surface	grass		Project number				
Location profile	In embankment near fence east		Land use	Fallow		Coordinates Latitude Longitude Height				
Observation type	Excavation trench to map HCH and waste. It was also told that drums were dumped here		Groundwater table	Not reached						
Soil horizon description			Sampling			Contaminants			Well completion details	Status profile description
Depth in m	Texture	Colour	Trajectory sampled m	Type	No.	Smell	Colour	Sort		3.50 deep, 0.80 wide and 3.00 m long
										Remarks
3.00	Sandy clay	brown				no				Stones and gravel. No signs of drums

Our reference R001-1288451RRS-V01

Appendix 5 Photo report

Photo report



Photo 1: Domestic well at Pelenica Manastir



Photo 2: Excavated materials consisting of glass wool and concrete



Photo 3: Groundwater monitoring well 1 - drilled materials



Photo 4: Groundwater monitoring well 2 - drilled materials



Photo 5: Site overview



Photo 6: South-east edge of dumpsite (1)

Photo report



Photo 7: South-east edge of dumpsite (2)



Photo 8: South-east edge of dumpsite (3)



Photo 9: Trench 5 - excavated materials



Photo 10: Trench 5



Photo 11: Trench 7 - plastic bag



Photo 12: Trench 7

Photo report



Photo 13: Soil bulk density sample B1



Photo 14: Soil bulk density sample B2



Photo 15: Soil bulk density sample B3



Photo 16: Soil bulk density sample B4

Our reference R001-1288451RRS-V01

Appendix 6 Measurements handheld XRF analyser

Overview of Quality Performance *Niton XL5-2020*

Element	Minimum Reporting Value	Accuracy	Reproducibility
Lead	2.3 mg/kg	1,6 %	2,2 %
Zinc	2.7 mg/kg	0,8 %	1,7 %
Copper	7.8 mg/kg	2,3 %	-
Arsenic	2,3 mg/kg	4,8 %	3,8 %
Chromium	7,7 mg/kg	0,2 %	5,0 %
Mercury	7,2 mg/kg	4,8 %	5,6 %
Cadmium	4,8 mg/kg	0,4 %	8,8 %
Barium	35 mg/kg	4,0 %	5,6 %
Rubidium	2,6 mg/kg	1,9 %	2,7 %
Molybdenum	1,5 mg/kg*	-	-

*Conform Dutch Standard NEN 7777 based on real soil samples

Our reference R001-1288451RRS-V01

Table Overview analytical results measured with the Handheld XRF analyser

Borehole	Depth (m bgl)	Measurement duration (Seconds)	As (ppm)	Cr (ppm)	Cu (ppm)	Hg (ppm)	Mo (ppm)	Ni (ppm)	Pb (ppm)	Cl (ppm)	Estimated HCH content (ppm)
23	14.3	35.72	10.5	152.8	44.9	< 7.8	< 1.5	55.5	18.9	-	-
		120.97	7.4	60.3	39.4	< 7.8	< 1.5	47.9	19.1	-	-
		120.4	< 2.3	50.3	17.4	< 7.8	3.5	16.5	11.0	-	-
		82.87	< 2.3	-	17.0	< 7.8	< 1.5	32.0	14.0	48.0	< 65.6
24	5.9	120.07	14.0	121.0	20.0	< 7.8	< 1.5	80.0	83.0	790.0	1080.1
		120.58	16.0	91.0	17.0	< 7.8	< 1.5	57.0	80.0	389.0	531.8
25	10.4	120.46	46.0	116.0	34.0	< 7.8	< 1.5	63.0	25.0	873.0	1193.6
		121.02	50.0	112.0	50.0	< 7.8	< 1.5	63.0	46.0	4018.0	5493.4

Our reference R001-1288451RRS-V01

Our reference R001-1288451RRS-V01

Appendix 7 Laboratory accreditations and protocols



The Dutch Accreditation Council RvA, by law appointed as the national accreditation body for The Netherlands, hereby declares that accreditation has been granted to:

Eurofins Analytico B.V.

Barneveld

The organisation has demonstrated to be able to generate technical valid results in a competent way and work according to a management system.

This accreditation is based on an assessment against the requirements as laid down in ISO/IEC 17025:2005.

The accreditation covers the activities as specified in the authorized annex bearing the registration number.

The accreditation is valid provided that the organisation continues to meet the requirements.

The accreditation with registration number:

L 010

is granted on 23 February 2017

This declaration is valid until

1 April 2021

The accreditation has been granted for the first time on

15 March 1989

The Chief Executive

Ir. J.C. van der Poel

Eurofins Analytico B.V.

Barneveld

has demonstrated an environmental management system which complies with the requirements of the standard:

NEN-EN ISO 14001:2015

The environmental management system has been evaluated according to TÜV Nederland certification procedure for the following scope:

Reception, preparation, chemical/physical analysis and reporting of environmental samples according to national and international standards.

This certification is subjected to an annual evaluation by TÜV Nederland.

Certificate registration
number: 22368/3.2
Date of issue : 08-11-2017
Valid till : 08-11-2020
Date of first certificate : 23-11-2013

Managing Director
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Annex to declaration of accreditation (scope of accreditation)
Normative document: EN ISO/IEC 17025:2005
Registration number: **L 010**

of **Eurofins Analytico B.V.**

This annex is valid from: **18-03-2020** to **30-11-2020**

Replaces annex dated: **27-11-2019**

Location(s) where activities are performed under accreditation

Head Office

Gildeweg 44-46
3771 NB
Barneveld
The Netherlands

Location	Abbreviation/ location code
Gildeweg 44-46 3771 NB Barneveld The Netherlands	B
Zandbergsestraat 1 4569 TC Graauw The Netherlands	G

No.	Material or product	Type of activity ¹	Internal reference number	Location
Sampling				
a.	Wastewater	Wastewater sampling	W0602 NEN 6600-1	G
b.	Surface water	Surface water sampling	W0603 NEN 6600-2	G

This annex has been approved by the Board of the
Dutch Accreditation Council, on its behalf,

J.A.W.M. de Haas

¹ If there is a referral to a code starting with NAW, NAP, EA or IAF, this concerns a scheme mentioned on the [RvA-BR010-lijst](#).
If no date or version number is mentioned for a normative document, the accreditation concerns the most current version of the document or scheme.

Annex to declaration of accreditation (scope of accreditation)

Normative document: EN ISO/IEC 17025:2005

Registration number: **L 010**

of **Eurofins Analytico B.V.**

This annex is valid from: **18-03-2020 to 30-11-2020**

Replaces annex dated: **27-11-2019**

No.	Material or product	Type of activity ¹	Internal reference number	Location
Monsterneming voor partijkeuringen grond en baggerspecie AS SIKB 1000 (versie 04-03-2010) (NAW-0134); betrekking hebbende op protocol 1001 (NAW-0134-1) (heeft betrekking op de heren T.U. Heijens en D.L.C. de Poorter)				
c.	Soil	Sampling of soil from static batches	W0651 NVN 7302	G
Veldwerk bij milieuhygiënisch bodem en waterbodemonderzoek AS SIKB 2000 (versie 07-02-2014) (NAW-0135); betrekking hebbend op protocol 2001 (NAW-0135-1) (heeft betrekking op de heren T.U. Heijens en D.L.C. de Poorter)				
d.	Soil and groundwater	Manual drilling and installation of groundwater monitoring pipes for taking soil and groundwater samples for inorganic and organic analysis	W0652, W0661, W0662 and W0621 NEN 5706, NPR 5741, NEN 5742, NEN 5743 and NEN 5766	G
Veldwerk bij milieuhygiënisch bodem en waterbodemonderzoek AS SIKB 2000 (versie 07-02-2014) (NAW-0135); betrekking hebbend op protocol 2002 (NAW-0135-2) (heeft betrekking op de heren M.P.T. van Damme, T.U. Heijens en D.L.C. de Poorter)				
e.	Groundwater	Sampling of groundwater samples for inorganic and organic analyses	W0604, W0622, W0623 and W0624 NEN 5744	G
Veldwerk bij milieuhygiënisch bodem en waterbodemonderzoek AS SIKB 2000 (versie 07-02-2014) (NAW-0135); betrekking hebbend op protocol 2003 (NAW-0135-2) (heeft betrekking op de heren T.U. Heijens en D.L.C. de Poorter)				
f.	Sediment	Sampling of sediment for inorganic and organic analysis	W0652, W0653, W0661 and W0662 NEN 5706, NPR 5741, NEN 5742 and NEN 5743	G
Field measurements				
1.	Water and sludge	Temperature determination; thermometry	W0612 NEN 6414	G
2.	Water	Determination of the dissolved oxygen content; electrochemistry	W0614 NEN-EN-ISO 5814	G
3.	Water	Determination of pH; potentiometry	W0611 NEN-EN-ISO 10523	G
4.	Water	Determination of the electrical conductivity (EC); conductometry	W0613 NEN-ISO 7888	G
5.	Water	Determination of the water transparency; Secchi disk	W0615 NEN 6606	G

of **Eurofins Analytico B.V.**

This annex is valid from: **18-03-2020 to 30-11-2020**

Replaces annex dated: **27-11-2019**

No.	Material or product	Type of activity ¹	Internal reference number	Location
Inorganic analysis (physical-chemical)				
6.	Soil and sediment	Determination of dry matter content; gravimetry	W0104 NEN-EN 15934	B
7.	Sludge	Determination of dry matter content; gravimetry	W0104 NEN-EN 12880	B
8.	Wastewater and eluates	Determination of the total residue on evaporation after drying; gravimetry	W0113 NEN 6499, NEN-EN 15216 and NEN-EN 15934	B
9.	Soil and sediment	Determination of clay content and the particle size distribution; sieve and pipette	W0105 and W0173 NEN 5753	B
10.	Soil and sediment	Determination of the particle size distribution; laser diffraction	W0174 NEN-ISO 13320 (pre-treatment ISO 11277)	B
11.	Soil and sediment	Determination of organic matter content; loss-on-ignition method	W0109 NEN 5754	B
12.	Wastewater	Determination of residue on ignition; loss-on-ignition method	W0113 NEN 6499 and NEN-EN 15169	B
13.	Soil, sludge and sediment	Determination of residue on ignition; loss-on-ignition method	W0109 NEN-EN 15935 and NEN 6499	B
14.	Soil	Determination of the content of carbonates, expressed as calcium carbonate (calcite); volumetry	W0177 NEN-EN-ISO 10693	B
15.	Soil	Determination of clay content; sieve and pipette	W0171 NEN 5753	B
16.	Drinking water and surface water	Determination of the content of suspended solids and the residue on ignition; gravimetry	W0552 NEN 6499 and NEN 6484	B
17.	Wastewater and (filterable) sludge	Determination of the content of suspended solids and the residue on ignition; gravimetry	W0552 NEN 6499 and NEN 6621:1988	B

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18.	Wastewater, drinking water, groundwater and surface water	Determination of the content of suspended solids; gravimetry	W0552 NEN 6499 and NEN-EN 872	B
19.	Wastewater	Determination of the fat content; gravimetry	W0555 in house method	B
20.	Wastewater and mixtures of sludge/water	Determination of the amount of settleable solids	W0558 NEN 6623	B

Inorganic analysis (classical chemical)

21.	Wastewater, drinking water, groundwater, water from boiler plants, surface water and seawater	Determination of electrical conductivity; conductometry	W0506 NEN-ISO 7888	B
22.	Soil and sediment	Determination of electrical conductivity; conductometry	W0506 NEN 5749	B
23.	Wastewater, drinking water, groundwater, water from boiler plants, surface water and seawater	Determination of pH; potentiometry	W0524 NEN-EN-ISO 10523	B
24.	(Sewage) sludge	Determination of pH; potentiometry	W0524 NEN-EN 12176:1998	B
25.	Soil and sediment	Determination of pH-CaCl ₂ , pH-KCl and pH-H ₂ O; potentiometry	W0524 NEN-ISO 10390	B
26.	Wastewater, drinking water and groundwater	Determination of the content of fluoride; potentiometry	W0546 NEN 6578	B
27.	Wastewater, groundwater and surface water	Determination of biochemical oxygen demand	W0556 NEN-EN 1899-1 and NEN-ISO 17289	B

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28.	Wastewater, groundwater and surface water	Determination of the content of total nitrogen; chemiluminescence detection	W0592 NEN-EN 12260 and NEN-ISO 20236	B
29.	Wastewater, eluates, groundwater and surface water	Determination of the content of dissolved organic carbon (DOC), total organic carbon (TOC) and non-purgeable organic carbon (NPOC); infrared detection	W0590 NEN-EN 16192 (NEN-EN 1484)	B
30.	Soil and sediment	Determination of the content of total organic carbon (TOC) total carbon (TC) and total inorganic carbon (TIC); infrared detection	W0594 NEN-EN 15936	B
31.	Wastewater, drinking water, groundwater, water from boiler plants, surface water, seawater and (sewage) sludge	Determination of chemical oxygen demand; titrimetry	W0553 NEN 6633:2006	B
32.	Water from boiler plants	Determination of the alkalinity (the P- and M-number); titrimetry	W0545 NEN-EN-ISO 9963-1	B
33.	Wastewater and groundwater	Determination of the total alkalinity (M-number); titrimetry	W0545 NEN-EN-ISO 9963-1	B
34.	Wastewater, drinking water and surface water	Determination of Kjeldahl nitrogen; spectrophotometry	W0554 in house method (mineralization NEN-ISO 5663 and analysis NEN-ISO 15923-1)	B
35.	Soil and sediment	Determination of Kjeldahl nitrogen; continuous flow analysis and spectrometry	W0525 in house method	B
36.	Soil and sediment	Determination of total phosphate; continuous flow analysis and spectrometry	W0526 in house method	B
37.	Groundwater and wastewater	Determination of chemical oxygen demand; small-scale sealed-tube method, spectrophotometry	W0562 NEN-ISO 15705	B

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38.	Wastewater, groundwater and surface water	Determination of Kjeldahl nitrogen; continuous flow analysis and spectrophotometry	W0520 NEN 6646 (mineralization NEN-ISO 5663)	B
39.	Wastewater, drinking water and groundwater	Determination of the content of anionic surfactants; spectrometry	W0578 WAC/III/D and ISO 7875-1	B
40.	Wastewater, drinking water, groundwater and surface water	Determination of the content of total cyanide and free cyanide; continuous flow analysis and spectrometry	W0517 NEN-EN-ISO 14403-2	B
41.	Soil	Determination of the content of total cyanide and free cyanide; continuous flow analysis and spectrometry	W0117 and W0517 NEN-EN-ISO 17380	B
42.	Wastewater, drinking water, groundwater and surface water	Determination of the content of anions; continuous flow analysis and spectrometry nitrate, nitrite, ortho-phosphate and sulphate	W0521 nitrate and nitrite NEN-EN-ISO 13395, ortho-phosphate NEN-EN-ISO 15681-2 and sulphate NEN-ISO 22743	B
43.	Wastewater, groundwater and surface water	Determination of phenol index; continuous flow analysis and spectrometry	W0544 NEN-EN-ISO 14402	B
44.	Eluates	Determination of phenol index; continuous flow analysis and spectrometry	W0544 NEN-EN 16192 and NEN-EN-ISO 14402	B
45.	Wastewater, drinking water, groundwater, water from boiler plants and surface water	Determination of the content of ions; discrete analysis and spectrometry ammonium, chloride, nitrate, nitrite and ortho-phosphate	W0566 NEN-ISO 15923-1	B
46.	Groundwater	Determination of the content of dissolved anions; liquid chromatography of ions chloride, bromide, sulphate, nitrite, nitrate and fluoride	W0504 NEN-EN-ISO 10304-1	B
47.	Eluates	Determination of the content of dissolved anions; liquid chromatography of ions chloride, bromide, sulphate and fluoride	W0504 NEN-EN-ISO 10304-1	B
48.	Groundwater and eluates	Determination of the content of chromium VI; liquid chromatography of ions	W0588 in house method (analysis NEN-EN 15192)	B

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49.	Soil	Determination of the content of chromium VI; liquid chromatography of ions	W0588 NEN-EN 15192	B
Inorganic analysis (element determinations)				
50.	Soil and waste materials	Determination of the content of elements; inductively coupled plasma with mass spectrometry (ICP-MS) arsenic, cadmium, chromium, copper, lead, nickel and zinc	W2107 and W2423 CMA/2//B.5 (digestion CMA/2//A.3)	B
51.	Soil, sediment and destruates of soil- and stone-like building materials and (bio)waste materials	Determination of the content of elements; inductively coupled plasma with mass spectrometry (ICP-MS) aluminium, antimony, arsenic, barium, cadmium, calcium, chromium, phosphor, potassium, cobalt, copper, mercury, lead, magnesium, manganese, molybdenum, sodium, nickel, selenium, tin, titanium, vanadium, iron, zinc and sulphur	W0107, W0423 and W0426 NEN-EN-ISO 17294-2 (digestion NEN 6961 and NEN-EN 16174)	B
52.	Soil	Determination of the content of chromium VI; inductively coupled plasma with mass spectrometry (ICP-MS)	W0588 and W0425 NEN-EN 15192	B
53.	Wastewater and surface water	Determination of the content of elements; inductively coupled plasma with mass spectrometry (ICP-MS) aluminium, antimony, arsenic, barium, beryllium, boron, cadmium, calcium, cerium, chromium, phosphor, potassium, cobalt, copper, mercury, lead, magnesium, manganese, molybdenum, sodium, nickel, selenium, strontium, tellurium, thallium, tin, titanium, vanadium, iron, silver, zinc and sulphur	W0108, W0425 and W0426 NEN-EN-ISO 17294-2 digestion NEN 6961 and NEN-EN-ISO 15587-1)	B
54.	Groundwater, eluates and drinking water	Determination of the content of elements; inductively coupled plasma with mass spectrometry (ICP-MS) aluminium, antimony, arsenic, beryllium, barium, cadmium, calcium, chromium, potassium, cobalt, copper, mercury, lead, magnesium, manganese, molybdenum, sodium, nickel, selenium, tin, titanium, vanadium, iron and zinc	W0421 and W0426 NEN-EN-ISO 17294-2 (groundwater, eluates and drinking water) CMA/2//B.5 (groundwater) and WAC/III/B/011 (groundwater)	B
55.	Food	Determination of the content of elements; inductively coupled plasma with mass spectrometry (ICP-MS) aluminium, antimony, arsenic, barium, beryllium, boron, cadmium, calcium, chromium, phosphor, potassium, cobalt, copper, mercury, lead, magnesium, manganese, molybdenum, sodium, nickel, rubidium, selenium, strontium, thallium, tin, titanium, vanadium, iron, zinc and sulphur	W0191, W0192 and W0491 in house methode (digestion NEN-EN 13805 and measurement arsenic, cadmium, mercury and lead NEN-EN 15763)	B

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No.	Material or product	Type of activity ¹	Internal reference number	Location
56.	Feed and oleochemicals	Determination of the content of elements; inductively coupled plasma with mass spectrometry (ICP-MS) aluminium, antimony, arsenic, barium, beryllium, boron, cadmium, calcium, chromium, phosphorus, potassium, cobalt, copper, mercury, lead, magnesium, manganese, molybdenum, sodium, nickel, rubidium, selenium, strontium, thallium, tin, titanium, vanadium, iron, zinc and sulphur	W0191, W0192 en W0491 in house method	B
57.	Wastewater, drinking water, groundwater, water from boiler plants, surface water and seawater	Determination of the total hardness; inductively coupled plasma with mass spectrometry (ICP-MS)	W0108, W0421, W0425 and W0426 in house method	B

Organic analysis

58.	Soil and sediment	Determination of the halogen content originated from non-volatile with acetone and petroleum ether extractable organohalogen compounds (EOX); microcoulometry	W0120 and W0351 in house method	B
59.	Wastewater, drinking water, groundwater and surface water	Determination of the halogen content derived from non-volatile, with petroleum ether extractable organohalogen compounds (EOX); microcoulometry	W0130 and W0351 NEN 6402	B
60.	Wastewater, drinking water, groundwater and surface water	Determination of the halogen content derived from adsorbable organohalogen compounds (AOX); microcoulometry	W0355 NEN-EN-ISO 9562	B
61.	Wastewater and groundwater	Determination of the halogen content derived from volatile organohalogen compounds (VOX); microcoulometry	W0354 in house method (sample preservation in house method, analysis NEN 6401:1991)	B
62.	Soil and sediment	Determination of the hydrocarbon oil index (fraction C ₁₀ -C ₄₀); gas chromatography with flame-ionisation detection	W0120 and W0202 NEN-EN-ISO 16703	B
63.	Soil and sediment	Determination of the hydrocarbon oil index (fraction C ₁₀ -C ₄₀); gas chromatography with flame-ionisation detection	W2134 and W0202 CWEA S-III-5	B

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No.	Material or product	Type of activity ¹	Internal reference number	Location
64.	Wastewater, drinking water, groundwater and surface water	Determination of the hydrocarbon oil index (fraction C ₁₀ -C ₄₀); gas chromatography with flame-ionisation detection	W0123 and W0215 NEN-EN-ISO 9377-2	B
65.	Soil	Determination of the content of volatile hydrocarbons (fraction C ₅ -C ₁₀); static headspace – gas chromatography with mass spectrometry	W0136 and W0254 draft NEN-EN-ISO 16558-1	B
66.	Wastewater, drinking water, groundwater and surface water	Determination of the content of volatile hydrocarbons (fraction C ₅ -C ₁₀); static headspace – gas chromatography with mass spectrometry	W0122 and W0254 draft NEN-EN-ISO 16558-1	B
67.	Soil	Determination of the aromatic fraction, the aliphatic fraction and the content of total petroleum hydrocarbons (TPH); gas chromatography with flame-ionisation detection	W6161 and W6261 in house method	B
68.	Groundwater	Determination of the aromatic fraction, the aliphatic fraction and the content of total petroleum hydrocarbons (TPH); gas chromatography with flame-ionisation detection	W6162 and W6261 in house method	B
69.	Soil	Determination of the content of acetone; static headspace – gas chromatography with flame-ionisation detection	W0136 and W0217 in house method	B
70.	Wastewater, drinking water, groundwater and surface water	Determination of the content of volatile components; static headspace – gas chromatography with mass spectrometry dichloromethane, trichloromethane, tetrachloromethane, bromochloromethane, bromodichloromethane, dibromochloromethane, dibromomethane, tribromomethane (bromoform), 1,1-dichloroethane, 1,2-dichloroethane, 1,1,1-trichloroethane, 1,1,2-trichloroethane, 1,2-dibromoethane, 1,1-dichloroethylene, cis-1,2-dichloroethylene, trans-1,2-dichloroethylene, trichloroethylene, tetrachloroethylene, 1,2-dichloropropane, 1,3-dichloropropane, cis-1,3-dichloropropene, trans-1,3-dichloropropene, monochlorobenzene, 1,2-dichlorobenzene, 1,3-dichlorobenzene and 1,4-dichlorobenzene	W0122 and W0254 NEN-EN-ISO 10301 (preservation NEN-EN-ISO 5667-3)	B

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No.	Material or product	Type of activity ¹	Internal reference number	Location
71.	Wastewater, drinking water, groundwater and surface water	Determination of the content of volatile components; static headspace – gas chromatography with mass spectrometry benzene, toluene, ethylbenzene, o-xylene, m/p-xylene, xylenes (sum), naphthalene and styrene	W0122 and W0254 ISO 11423-1 (preservation NEN-EN-ISO 5667-3)	B
72.	Wastewater, drinking water, groundwater and surface water	Determination of the content of volatile components; static headspace – gas chromatography with mass spectrometry propylbenzene, 1,2,3-trimethylbenzene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, isopropylbenzene (cumene), n-butylbenzene, sec-butylbenzene, tert-butylbenzene, 2-ethyltoluene, 3-ethyltoluene, 4-ethyltoluene, 4-isopropyltoluene (p-cymene), chloromethane, trichlorofluoromethane, bromomethane, chloroethane, 1,1,1,2-tetrachloroethane, 1,1,2,2-tetrachloroethane, hexachloroethane, vinyl chloride, 1,1-dichloropropane, 2,2-dichloropropane, 1,2,3-trichloropropane, 1,2-dibromo-3-chloropropane, 3-chloropropene, 1,1-dichloro-1-propene, 1-chlorobutane, hexachlorobutadiene, 1,2,3-trichlorobenzene, 1,2,4-trichlorobenzene, bromobenzene, 2-chlorotoluene, 4-chlorotoluene, pentane, hexane, heptane, octane, cyclohexane, carbon disulfide (CS ₂), tetrahydrofurane, methylisobutylketone (MIBK), methyltertiarybutylether (MTBE), ethyltertiarybutylether (ETBE) and tertiaryamylmethylether (TAME)	W0122 and W0254 in house method	B
73.	Soil and sediment	Determination of the content of volatile components; static headspace – gas chromatography with mass spectrometry benzene, toluene, ethylbenzene, o-xylene, m/p-xylene, xylenes (sum), naphthalene, styrene, dichloromethane, trichloromethane, tetrachloromethane, 1,1-dichloroethane, 1,2-dichloroethane, 1,1,1-trichloroethane, 1,1,2-trichloroethane, cis-1,2-dichloroethylene, trans-1,2-dichloroethylene, trichloroethylene, tetrachloroethylene, 1,2-dichloropropane, 1,2,3-trichloropropane, 3-chloropropene, cis-1,3-dichloropropene, trans-1,3-dichloropropene, monochlorobenzene, 1,2-dichlorobenzene, methyltertiarybutylether (MTBE) and tertiaryamylmethylether (TAME)	W0136, W0254 NEN-EN-ISO 22155	B

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No.	Material or product	Type of activity ¹	Internal reference number	Location
74.	Soil and sediment	Determination of the content of volatile components; static headspace – gas chromatography with mass spectrometry 1,2,3-trimethylbenzene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, propylbenzene, isopropylbenzene (cumene), n-butylbenzene, sec-butylbenzene, tert-butylbenzene, 2-ethyltoluene, 3-ethyltoluene, 4-ethyltoluene, 4-isopropyltoluene (p-cymene), chloromethane, bromochloromethane, bromodichloromethane, dibromochloromethane, trichlorofluoromethane, bromomethane, dibromomethane, tribromomethane (bromoform), chloroethane, 1,1,1,2-tetrachloroethane, 1,1,2,2-tetrachloroethane, hexachloroethane, 1,2-dibromoethane, vinylchloride, 1,1-dichloroethylene, 1,1-dichloropropane, 1,3-dichloropropane, 2,2-dichloropropane, 1,2-dibromo-3-chloropropane, 1,1-dichloro-1-propene, 1-chlorobutane, hexachlorobutadiene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, 1,2,3-trichlorobenzene, 1,2,4-trichlorobenzene, bromobenzene, 2-chlorotoluene, 4-chlorotoluene, pentane, hexane, heptane, octane, cyclohexane, carbon disulfide (CS ₂), tetrahydrofurane, methylisobutylketone (MIBK), ethyltertiarbutylether (ETBE)	W0136, W0254 in house method	B
75.	Soil and sediment	Determination of the content of semi-volatile chlorobenzenes, organochloropesticides and polychlorinated biphenyls; gas chromatography – mass spectrometry alpha-HCH, beta-HCH, gamma-HCH, delta-HCH, epsilon-HCH, 1,2,3-trichlorobenzene, 1,2,4-trichlorobenzene, 1,3,5-trichlorobenzene, 1,2,3,4-tetrachlorobenzene, 1,2,3,5/1,2,4,5-tetrachlorobenzene, pentachlorobenzene, HCB, heptachlor, aldrin, telodrin, isodrin, heptachloroepoxide, hexachlorobutadiene, alpha-endosulphan, beta-endosulphan, alpha-chlordane, gamma-chlordane, o,p'-DDE, p,p'-DDE, o,p'-DDD, p,p'-DDD, dieldrin, endrin, o,p'-DDT, p,p'-DDT, endosulphansulphate, PCB 28, PCB 52, PCB 101, PCB 118, PCB 138, PCB 153 and PCB 180	W0120 and W0262 NEN 6980 (extraction NEN 6972, cleanup NEN 6974)	B

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76.	Wastewater, drinking water, groundwater and surface water	Determination of the content of semi-volatile chlorobenzenes, organochloropesticides and polychlorinated biphenyls; large volume injection – gas chromatography – mass spectrometry alpha-HCH, beta-HCH, gamma-HCH, delta-HCH, epsilon-HCH, 1,2,3-trichlorobenzene, 1,2,4-trichlorobenzene, 1,3,5-trichlorobenzene, 1,2,3,4-tetrachlorobenzene, 1,2,3,5/1,2,4,5-tetrachlorobenzene, pentachlorobenzene, HCB, heptachlor, aldrin, telodrin, isodrin, heptachloroepoxide, hexachlorobutadiene, alpha-endosulphan, beta-endosulphan, alpha-chlordane, gamma-chlordane, biphenyl, biphenylether, o,p'-DDE, p,p'-DDE, o,p'-DDD, p,p'-DDD, dieldrin, endrin, o,p'-DDT, p,p'-DDT, endosulphansulphate, PCB 28, PCB 52, PCB 101, PCB118, PCB 138, PCB 153 and PCB 180	W0137 and W0260 in house method	B
77.	Wastewater, groundwater and surface water	Determination of the content of polycyclic aromatic hydrocarbons; gas chromatography – mass spectrometry naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, dibenzo(a,h)anthracene, benzo(g,h,i)perylene and indeno(1,2,3-c,d)pyrene	W0137 and W0260 in house method	B
78.	Soil and sediment	Determination of the content of polycyclic aromatic hydrocarbons; gas chromatography – mass spectrometry naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, dibenzo(a,h)anthracene, benzo(g,h,i)perylene and indeno(1,2,3-c,d)pyrene	W0120 and W0271 NEN-ISO 18287	B
79.	Wastewater, drinking water, groundwater and surface water	Determination of the content of organotin compounds; gas chromatography – mass spectrometry monobutyltin (MBT), dibutyltin (DBT), tributyltin (TBT), tetrabutyltin (TTBT), monoocetyl tin (MOT), dioctyltin (DOT), triphenyltin (TPhT) and tricyclohexyltin (TCyT)	W0143 and W0274 NEN-EN-ISO17353 groundwater in house method	B
80.	Wastewater, drinking water, groundwater and surface water	Determination of the content of organotin compounds; gas chromatography – mass spectrometry monophenyltin (MPhT), diphenyltin (DPhT) and dicyclohexyltin (DCyT)	W0143 and W0274 in house method	B

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Leaching test				
g.	Soil and waste materials	Determination of the leachable fraction by means of a one or two stage batch test (L/S 10 and L/S 2-8) for materials with particle size < 4 mm	W0155 NEN-EN 16192 and NEN-EN 12457-1 to 3	B
h.	Granular waste materials	Determination of the leachable fraction by means of a one stage batch test (L/S 10) for materials with particle size <10 mm	W0155 NEN-EN 12457-4	B
Tests forming part of TerrAttesT® Soil				
81.	Soil	Determination of dry matter content; gravimetry	W0104 in house method	B
82.	Soil	Determination of clay content; pipette method	W0171 NEN 5753	B
83.	Soil	Determination of loss on evaporation after ignition and the total residue on evaporation after ignition; gravimetry	W0109 NEN 5754	B
84.	Soil	Determination of organic matter content as loss-on-ignition; gravimetry	W0109 NEN 5754	B
85.	Soil	Determination of the content of elements; inductively coupled plasma with mass spectrometry (ICP-MS) aluminium, antimony, arsenic, barium, beryllium, cadmium, calcium, chromium, phosphor, cobalt, copper, mercury, lead, magnesium, manganese, molybdenum, nickel, selenium, tin, titanium, vanadium, iron, silver, zinc and sulphur	W0107, W0423 and W0426 NEN-EN-ISO 17294-2 (digestion NEN 6961)	B
86.	Soil	Determination of the hydrocarbon oil index; gas chromatography with flame-ionisation detection	W0120 and W0202 in house method	B

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87.	Soil	<p>Determination of organic contaminations; gas chromatography with mass spectrometry</p> <p>Aromatic compounds Monoaromatic hydrocarbons: benzene, ethylbenzene, toluene, o-xylene, m,p-xylene, xylenes (sum), styrene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, n-propylbenzene, isopropylbenzene (cumene), n-butylbenzene, sec-butylbenzene, tert-butylbenzene and p-isopropyltoluene Phenols: phenol, o-cresol, m-cresol, p-cresol, cresols (sum), 2,4-dimethylphenol, 2,5-dimethylphenol, 2,6-dimethylphenol, 3,4-dimethylphenol, o-ethylphenol, m-ethylphenol, thymol, 4-ethyl/2,3- and 3,5-dimethylphenol Polycyclic aromatic hydrocarbons: naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, dibenzo(a,h)anthracene, benzo(g,h,i)perylene, indeno(1,2,3-c,d)pyrene, PAH 10 VROM (sum) and PAH 16 EPA (sum)</p> <p>Halogenated compounds Volatile halogenated components: tetrachloromethane, 1,2-dichloroethane, 1,1,1-trichloroethane, 1,1,2-trichloroethane, trichloroethanes (sum), 1,1,1,2-tetrachloroethane, 1,1,2,2-tetrachloroethane, tetrachloroethanes (sum), trichloroethylene, tetrachloroethylene, 1,2-dichloropropane, 1,3-dichloropropane, 1,2,3-trichloropropane, 1,1-dichloropropene, cis-1,3-dichloropropene, trans-1,3-dichloropropene, 1,3-dichloropropenes (sum), dibromomethane, 1,2-dibromoethane, tribromomethane (bromoform), bromodichloromethane, dibromochloromethane, 1,2-dibromo-3-chloropropane and bromobenzene Chlorobenzenes: monochlorobenzene, 1,2-dichlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, dichlorobenzenes (sum), 1,2,3-trichlorobenzene, 1,2,4-trichlorobenzene, 1,3,5-trichlorobenzene, trichlorobenzenes (sum), 1,2,3,4-tetrachlorobenzene, 1,2,3,5/1,2,4,5-tetrachlorobenzene, tetrachlorobenzene (sum), pentachlorobenzene and hexachlorobenzene</p>	W6128, W6330 and W6331 in house method	B

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		<p>Chlorophenols: 2-chlorophenol, 3-chlorophenol, 4-chlorophenol, monochlorophenols (sum), 2,3-dichlorophenol, 2,4/2,5-dichlorophenol, 2,6-dichlorophenol, 3,4-dichlorophenol, 3,5-dichlorophenol, dichlorophenols (sum), 2,3,4-trichlorophenol, 2,3,5-trichlorophenol, 2,3,6-trichlorophenol, 2,4,5-trichlorophenol, 2,4,6-trichlorophenol, 3,4,5-trichlorophenol, trichlorophenols (sum), 2,3,4,5-tetrachlorophenol, 2,3,4,6/2,3,5,6-tetrachlorophenol, tetrachlorophenols (sum), pentachlorophenol and 4-chloro-3-methylphenol</p> <p>Polychlorinated biphenyls: PCB 28, PCB 52, PCB 101, PCB 118, PCB 138, PCB 153, PCB 180 and the sum of those 6 PCB, PCB 118 and the sum of those 7 PCB</p> <p>Chloronitrobenzenes: 2/4-chloronitrobenzene, 3-chloronitrobenzene, monochloronitrobenzenes (sum), 2,3-dichloronitrobenzene + 3,4-dichloronitrobenzene, 2,4-dichloronitrobenzene, 2,5-dichloronitrobenzene and 3,5-dichloronitrobenzene and dichloronitrobenzenes (sum)</p> <p>Miscellaneous chlorinated hydrocarbons: 2-chlorotoluene, 4-chlorotoluene, sum of those two chlorotoluenes and 1-chloronaphthalene</p> <p>Pesticides</p> <p>Organic chlorinated pesticides: p,p'-DDE, o,p'-DDE, p,p'-DDT, p,p'-DDD/o,p'-DDT, o,p'-DDD, DDT/DEE/DDD (sum), aldrin, dieldrin, endrin, drins (sum), alpha-HCH, beta-HCH, gamma-HCH, HCH (sum), alpha-endosulphansulphate, alpha-chlordane, gamma-chlordane and the sum of those two chlordanes, heptachlor, heptachloroepoxide, hexachlorobutadiene, isodrin, telodrin and tedion</p> <p>Organic phosphor pesticides: azinphos-ethyl, azinphos-methyl, bromophos-ethyl, bromophos-methyl, chloropyrophos-ethyl, chloropyrophos-methyl, cumaphos, demeton-S/demeton-O, diazinone, disulphotone, fenitrothion, fenthion, malathion, parathion-ethyl, parathion-methyl, pyrazophos and triazophos</p> <p>Organic nitrogen pesticides: ametryn, atrazine, cyanazin, desmetryn, prometryn, propazine, simazine, terbutylazine and terbutryn</p> <p>Miscellaneous pesticides: bifenthrine, cypermethrin A+B+C+D, deltamethrin, permethrin A + permethrin B, propachlor and trifluralin</p> <p>Miscellaneous organic contaminants</p> <p>biphenyl, biphenylether, nitrobenzene and dibenzofurane</p> <p>Phthalates: dimethylphthalate, diethylphthalate, di-isobutylphthalate, dibutylphthalate, butylbenzylphthalate, bis(2-ethylhexyl)phthalate and di-n-octylphthalate</p>		

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No.	Material or product	Type of activity ¹	Internal reference number	Location
Tests forming part of TerrAttesT® Water				
88.	Drinking water and groundwater	Determination of the hydrocarbon oil index; – gas chromatography with flame-ionisation detection	W6139 and W0215 in house method	B
89.	Drinking water and groundwater	Determination of the content of elements; inductively coupled plasma with mass spectrometry (ICP-MS) antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, mercury, lead, molybdenum, nickel, selenium, tin, vanadium and zinc	W0421 and W0426 NEN-EN-ISO 17294-2	B
90.	Drinking water and groundwater	Determination of electrical conductivity; conductometry	W0506 NEN-ISO 7888	B
91.	Drinking water and groundwater	Determination of pH; potentiometry	W0524 NEN-EN-ISO 10523	B
92.	Drinking water and groundwater	Determination of the content of volatile components; static headspace - gas chromatography with mass spectrometry Monoaromatic hydrocarbons benzene, ethylbenzene, toluene, o-xylene, m-xylene, p-xylene, xylenes (sum) and styrene	W0122 and W0254 ISO 11423-1	B
93.	Drinking water and groundwater	Determination of the content of volatile components; static headspace - gas chromatography with mass spectrometry Halogenated hydrocarbons dichloromethane, trichloromethane (chloroform), tetrachloromethane, bromochloromethane, bromodichloromethane, dibromochloromethane, dibromomethane, tribromomethane (bromoform), 1,1-dichloroethane, 1,2-dichloroethane, 1,1,1-trichloroethane, 1,1,2-trichloroethane, trichloroethanes (sum), 1,2-dibromoethane, 1,1-dichloroethylene, cis-1,2-dichloroethylene, trans-1,2-dichloroethylene, trichloroethylene, tetrachloroethylene, 1,2-dichloropropane, 1,3-dichloropropane, cis-1,3-dichloropropene, trans-1,3-dichloropropene and 1,3-dichloropropenes (sum)	W0122 and W0254 NEN-EN-ISO 10301	B

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No.	Material or product	Type of activity ¹	Internal reference number	Location
94.	Drinking water and groundwater	<p>Determination of the content of volatile components; static headspace - gas chromatography with mass spectrometry</p> <p>Monoaromatic hydrocarbons 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene (mesitylene), n-propylbenzene, isopropylbenzene (cumene), n-butylbenzene, sec-butylbenzene, tert-butylbenzene and p-isopropyltoluene (p-cymene)</p> <p>Halogenated hydrocarbons chloromethane, trichlorofluoromethane, bromomethane, chloroethane, 1,1,1,2-tetrachloroethane, 1,1,2,2-tetrachloroethane, tetrachloroethanes (sum), vinyl chloride (chloroethene), 2,2-dichloropropane, 1,2,3-trichloropropane, 1,2-dibromo-3-chloropropane, 1,1-dichloropropene, hexachlorobutadiene, bromobenzene, 2-chlorotoluene, 4-chlorotoluene and sum of those two chlorotoluenes</p> <p>Chlorobenzenes chlorobenzene, 1,2-dichlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, dichlorobenzenes (sum), 1,2,3-trichlorobenzene and 1,2,4-trichlorobenzene</p>	W0122 and W0254 in house method	B
95.	Groundwater	<p>Determination of organic contaminations; gas chromatography with mass spectrometry</p> <p>Aromatic compounds</p> <p>Phenols: phenol, o-cresol, m-cresol, p-cresol, cresols (sum), 2,4-dimethylphenol, 2,5-dimethylphenol, 3,4-dimethylphenol, 2-ethylphenol, 3-ethylphenol, 4-ethylphenol/2,3-dimethylphenol, 3,5-dimethylphenol, l 2,6-dimethylphenol and thymol</p> <p>Polycyclic aromatic hydrocarbons: naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benzo(a)anthracene, chrysene, benzo(b+k)fluoranthene, benzo(a)pyrene, dibenzo(a,h)anthracene, indeno(1,2,3-c,d)pyrene, benzo(g,h,i)perylene, PAH 10 VROM (sum) and PAH 16 EPA (sum)</p> <p>Halogenated compounds Chlorobenzenes: 1,2,3-trichlorobenzene, 1,2,4-trichlorobenzene, 1,3,5-trichlorobenzene, trichlorobenzenes (sum), 1,2,3,4-tetrachlorobenzene, 1,2,3,5/1,2,4,5-tetrachlorobenzene, tetrachlorobenzenes (sum), pentachlorobenzene and hexachlorobenzene Chlorophenols: 2-chlorophenol, 3-chlorophenol,</p>	W6136, W6330 and W6336 in house method	B

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No.	Material or product	Type of activity ¹	Internal reference number	Location
		<p>4-chlorophenol, monochlorophenols (sum), 2,3-dichlorophenol, 2,4/2,5-dichlorophenol, 2,6-dichlorophenol, 3,4-dichlorophenol, 3,5-dichlorophenol, dichlorophenols (sum), 2,3,4-trichlorophenol, 2,3,5-trichlorophenol, 2,3,6-trichlorophenol, 2,4,5-trichlorophenol, 2,4,6-trichlorophenol, 3,4,5-trichlorophenol, trichlorophenols (sum), 2,3,4,5-tetrachlorophenol, 2,3,4,6/2,3,5,6-tetrachlorophenol, tetrachlorophenols (sum), pentachlorophenol and 4-chloro-3-methylphenol Polychlorinated biphenyls: PCB 28, PCB 52, PCB 101, PCB 118, PCB 138, PCB 153, PCB 180 and the sum of those 6 PCB, PCB 118 and the sum of those 7 PCB Chloronitrobenzenes: 2/4-chloronitrobenzene, 3-chloronitrobenzene, monochloronitrobenzenes (sum), 2,3-dichloronitrobenzene, 2,4-dichloronitrobenzene, 2,5-dichloronitrobenzene, 3,4-dichloronitrobenzene and 3,5-dichloronitrobenzene and dichloronitrobenzenes (sum) Miscellaneous halogenated hydrocarbons: 1-chloronaphthalene</p> <p>Pesticides Organic chlorinated pesticides: p,p'-DDE, o,p'-DDE, p,p'-DDT, p,p'-DDD/o,p'-DDT, o,p'-DDD, DDT/DDE/DDD (sum), aldrin, dieldrin, endrin, drins (sum), alpha-HCH, beta-HCH, gamma-HCH, delta-HCH, HCH (sum), alpha-endosulphan, alpha-endosulphansulphate, alpha-chlorodane, gamma-chlorodane and the sum of those two chlorodans, heptachlor, heptachloroepoxide, hexachlorobutadiene, isodrin, telodrin and tedion Organic phosphor pesticides: azinphos-ethyl, azinphos-methyl, bromophos-ethyl, bromophos-methyl, chloropyriphos-ethyl, chloropyriphos-methyl, cumaphos, demeton-S/demeton-O, diazinone, dichlorophos, disulphotone, fenitrothion, fenthion, malathion, parathion-ethyl, parathion-methyl, pyrazophos and triazophos Organic nitrogen pesticides: ametryn, atrazine, cyanazin, desmetryn, prometryn, propazine, simazine, terbutylazine and terbutryn Miscellaneous pesticides: bifenthrin, carbaryl, cypermethrin A+B+C+D, deltamethrin, linuron, permethrin A+B, propachlor and trifluralin</p> <p>Miscellaneous organic contaminants biphenyl, biphenylether, nitrobenzene and dibenzofurane</p>		

AP04-verrichtingen (versie 23-06-2016) (NAW-0132), **pakket SG1 (samenstelling grond)** (versie 23-06-2016) (NAW-0132-3)
volledig pakket

--	Soil	Sample pre-treatment for AP04-SG1	W7101 AP04-V	B
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No.	Material or product	Type of activity ¹	Internal reference number	Location
96.	Soil	Determination of pH-CaCl ₂ ; potentiometry	W0524 AP04-SG-I	
97.	Soil	Determination of dry matter content; gravimetry	W7104 AP04-SG-II and NEN-EN 15934	B
98.	Soil	Determination of clay content; sieve and pipette	W7173 AP04-SG-III and NEN 5753	B
99.	Soil	Determination of organic matter content as loss-on-ignition; gravimetry	W7109 AP04-SG-IV and NEN 5754	B
100.	Soil	Determination of the content of metals; inductively coupled plasma with mass spectrometry (ICP-MS) antimony, arsenic, barium, cadmium, chromium, cobalt, copper, mercury (non volatile), lead, molybdenum, nickel, tin, vanadium and zinc	W0107, W0423 and W0426 AP04-SG-V and NEN-EN-ISO 17294-2	B
101.	Soil	Determination of the content of polycyclic aromatic hydrocarbons (PAH); gas chromatography with mass spectrometry naphthalene, phenanthrene, anthracene, fluoranthene, benzo(a)anthracene, chrysene, benzo(k)fluoranthene, benzo(a)pyrene, benzo(g,h,i)perylene, indeno(1,2,3-c,d)pyrene and the sum of these 10 PAH	W7124 and W0271 AP04-SG-IX and NEN-ISO 18287)	B
102.	Soil	Determination of the content of polychlorinated biphenyls (PCB); gas chromatography with mass spectrometry PCB 28 (2,4,4' trichlorobiphenyl), PCB 52 (2,5 2,5' tetrachlorobiphenyl), PCB 101 (2,4,5 2',5' pentachlorobiphenyl), PCB 118 (2,4,5 3',4' pentachlorobiphenyl), PCB 138 (2,3,4 2',4',5' hexachlorobiphenyl), PCB 153 (2,4,5 2',4',5' hexachlorobiphenyl), PCB 180 (2,3,4,5 2',4',5' heptachlorobiphenyl) and the sum of these 7 PCB	W7124 and W0262 AP04-SG-X	B
103.	Soil	Determination of the content of polychlorinated biphenyls (PCB); gas chromatography with mass spectrometry PCB 28 (2,4,4' trichlorobiphenyl), PCB 52 (2,5 2,5' tetrachlorobiphenyl), PCB 101 (2,4,5 2',5' pentachlorobiphenyl), PCB 118 (2,4,5 3',4' pentachlorobiphenyl), PCB 138 (2,3,4 2',4',5' hexachlorobiphenyl), PCB 153 (2,4,5 2',4',5' hexachlorobiphenyl), PCB 180 (2,3,4,5 2',4',5' heptachlorobiphenyl) and the sum of these 7 PCB	W7124 and W0271 AP04-SG-X	B

Annex to declaration of accreditation (scope of accreditation)
 Normative document: EN ISO/IEC 17025:2005
 Registration number: **L 010**

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No.	Material or product	Type of activity ¹	Internal reference number	Location
104.	Soil	Determination of the hydrocarbon oil index; gas chromatography with flame-ionisation detection	W7124 and W0202 AP04-SG-XI and NEN-EN-ISO 16703	B
AP04-verrichtingen (versie 23-06-2016) (NAW-0132)), pakket SG2 (samenstelling grond) (versie 23-06-2016) (NAW-0132-3) volledig pakket				
--	Soil	Sample pre-treatment for AP04-SG2	W7101 AP04-V	B
105.	Soil	Determination of the content of organochloropesticides (OCP); gas chromatography with mass spectrometry hexachlorobenzene (HCB), α -hexachlorocyclohexane (α -HCH), β -hexachlorocyclohexane (β -HCH), γ -hexachlorocyclohexane (γ -HCH), δ -hexachlorocyclohexane (δ -HCH), aldrin, dieldrin, endrin, sum of these three "drin's", o,p'-DDD, p,p'-DDD, sum of these two DDD's o,p'-DDE, p,p'-DDE, sum of these two DDE's, o,p'-DDT, p,p'-DDT, sum of these two DDT's, isodrin, telodrin, hexachlorobutadiene, heptachlor, α -endosulfan, cis-heptachlor epoxide, trans-heptachlor epoxide, sum of these two heptachlor epoxide, cis-chlorodane, trans-chlorodane and the sum of these two chlorodanes, endosulphansulphate and the sum of organochloropesticides	W7124 and W0262 AP04-SG-XIV	B
106.	Soil	Determination of the content of less volatile chlorobenzenes; gas chromatography with mass spectrometry 1,2,3-trichlorobenzene, 1,2,4-trichlorobenzene, 1,3,5-trichlorobenzene, sum of these three trichlorobenzenes, 1,2,3,4-tetrachlorobenzene, 1,2,3,5-tetrachlorobenzene, 1,2,4,5-tetrachlorobenzene, sum of these three tetrachlorobenzenes, pentachlorobenzene and hexachlorobenzene, sum of chlorobenzenes (see also package AP04-SG3)	W7124 and W0262 AP04-SG-XV	B
AP04-verrichtingen (versie 23-06-2016) (NAW-0132)), pakket SG3 (samenstelling grond) (versie 23-06-2016) (NAW-0132-3) volledig pakket				
--	Soil	Sample pre-treatment for AP04-SG3	W7101 AP04-V	B

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No.	Material or product	Type of activity ¹	Internal reference number	Location
107.	Soil	Determination of the content of volatile aromatic and volatile halogenated hydrocarbons MTBE and ETBE; static headspace – gas chromatography with mass spectrometry volatile aromatic hydrocarbons: benzene, toluene, ethylbenzene, o-xylene, m-xylene, p-xylene, sum of these three xylenes, styrene and the sum of aromatic hydrocarbons volatile halogenated hydrocarbons: chloroethylene (vinyl chloride), dichloromethane, trichloromethane, tetrachloromethane, trichloroethylene, tetrachloroethylene, 1,1-dichloroethane, 1,2-dichloroethane, sum of these two dichloroethanes, 1,1-dichloroethylene, cis-1,2-dichloroethylene, trans-1,2-dichloroethylene, sum of these three dichloroethylenes, 1,1,1-trichloroethane, 1,1,2-trichloroethane, 1,1-dichloropropane, 1,2-dichloropropane, 1,3-dichloropropane and the sum of these three dichloropropanes other volatile compounds: methyltertiarybutylether (MTBE), ethyltertiarybutylether (ETBE)	W0136, W0254 AP04-SG-VIII and NEN-EN-ISO 22155	B
108.	Soil	Determination of the content of volatile chlorobenzenes; static headspace – gas chromatography with mass spectrometry monochlorobenzene, 1,2-dichlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene and sum of these three dichlorobenzenes	W0136, W0254 AP04-SG-XV	B
AP04-verrichtingen (versie 23-06-2016) (NAW-0132), pakket SG4 (samenstelling grond) (versie 23-06-2016) (NAW-0132-3) volledig pakket				
--	Soil	Sample pre-treatment for AP04-SG4	W7101 AP04-V	B
109.	Soil	Determination of the content of cyanides (total-free and total-complex); continuous flow analysis and spectrometry	W0517 AP04-SG-VII and NEN-EN-ISO 17380	B
110.	Soil	Determination of the content of chloride; ion chromatography	W0504 AP04-SG-XII	B
AP04-verrichtingen (versie 23-06-2016) (NAW-0132), pakket SG8 (samenstelling grond) (versie 23-06-2016) (NAW-0132-3) volledig pakket				
111.	Soil	Determination of the content of metals; inductively coupled plasma with mass spectrometry (ICP-MS) beryllium, selenium, tellurium and thallium	W0107, W0423 and W0426 AP04-SG-V and NEN-EN-ISO 17294-2	B

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No.	Material or product	Type of activity ¹	Internal reference number	Location
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AP04-verrichtingen (versie 23-06-2016) (NAW-0132), **pakket SB1 (samenstelling bouwstoffen, niet zijnde grond)** (versie 23-06-2016) (NAW-0132-2)

volledig pakket

--	Building material	Sample pre-treatment for AP04-SB1	W7101 AP04-V	B
112.	Field-moist and air-dried building material	Determination of the dry matter content; gravimetry	W7104 AP04-SB-I	B
113.	Building material (except bitumen)	Determination of the content of polycyclic aromatic hydrocarbons (PAH); gas chromatography with mass spectrometry naphthalene, phenanthrene, anthracene, fluoranthene, benzo(a)anthracene, chrysene, benzo(k)fluoranthene, benzo(a)pyrene, benzo(g,h,i)perylene, indeno(1,2,3-c,d)pyrene and the sum of these 10 PAH	W7124 and W0271 AP04-SB-III and NEN-ISO 18287)	B
114.	Building material	Determination of the content of polychlorinated biphenyls (PCB); gas chromatography with mass spectrometry PCB 28 (2,4,4' trichlorobiphenyl), PCB 52 (2,5 2,5' tetrachlorobiphenyl), PCB 101 (2,4,5 2',5' pentachlorobiphenyl), PCB 118 (2,4,5 3',4' pentachlorobiphenyl), PCB 138 (2,3,4 2',4',5' hexachlorobiphenyl), PCB 153 (2,4,5 2',4',5' hexachlorobiphenyl), PCB 180 (2,3,4,5 2',4',5' heptachlorobiphenyl) and the sum of these 7 PCB	W7124 and W0271 AP04-SB-IV	B
115.	Building material	Determination of the hydrocarbon oil index; gas chromatography with flame-ionisation detection	W7124 and W0202 AP04-SB-V and NEN-EN-ISO 16703	B

AP04-verrichtingen (versie 23-06-2016) (NAW-0132), **pakket SB3 (samenstelling bouwstoffen, niet zijnde grond)** (versie 23-06-2016) (NAW-0132-2)

volledig pakket

--	Building material	Sample pre-treatment for AP04-SB3	W7101 AP04-V	B
116.	Building material	Determination of the content of volatile aromatic hydrocarbons (BTEX); static headspace – gas chromatography with mass spectrometry benzene, toluene, ethylbenzene, o-xylene, m-xylene, p-xylene, sum of these three xylenes and styrene	W0136, W0254 AP04-SB-II	B

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No.	Material or product	Type of activity ¹	Internal reference number	Location
AP04-verrichtingen (versie 23-06-2016) (NAW-0132), pakket SB6 (samenstelling bouwstoffen, niet zijnde grond) (versie 23-06-2016) (NAW-0132-2) volledig pakket				
--	Building material	Sample pre-treatment for AP04-SB6	W7101 AP04-V	B
117.	Building material	Determination of the content of phenol; gas chromatography with mass spectrometry	W0139 and W0267 AP04-SB-XIII	B
AP04-verrichtingen (versie 23-06-2016) (NAW-0132), pakket U1 (uitloogonderzoek; grond, niet-vormgegeven en vormgegeven bouwstoffen; niet diffusiebepaalde uitloging) (versie 23-06-2016) (NAW-0132-4) volledig pakket				
--	Soil and building materials	Sample pre-treatment for AP04-U1 (and AP04-E)	W7101 AP04-V	B
i.	Soil and building materials	Determination of the leaching of inorganic components with the column test Associated analyses of eluates are mentioned below in package E "AP04-tests, analysis of eluates"	W0152 AP04-U-I and NEN 7383 and NEN 7373	B
AP04-verrichtingen (versie 23-06-2016) (NAW-0132), pakket U2 (uitloogonderzoek; vormgegeven bouwstoffen; diffusiebepaalde uitloging) (versie 23-06-2016) (NAW-0132-4) volledig pakket				
--	Building materials and monolites	Sample pre-treatment for AP04-U2 (and AP04-E)	W7101 AP04-V	B
j.	Building materials and monolites	Determination of the leaching of inorganic components with the diffusion test Associated analyses of eluates are mentioned below in package E "AP04-tests, analysis of eluates"	W0153 AP04-U-II and NEN 7375	B
AP04-verrichtingen (versie 23-06-2016) (NAW-0132), pakket U3 (uitloogonderzoek; vormgegeven bouwstoffen; diffusiebepaalde uitloging) (versie 23-06-2016) (NAW-0132-4) volledig pakket				
--	Building materials and waste materials	Sample pre-treatment for AP04-U3 (and AP04-E)	W7101 AP04-V	B

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No.	Material or product	Type of activity ¹	Internal reference number	Location
k.	Building materials and waste materials	Determination of the availability of inorganic components for leaching Associated analyses of eluates are mentioned below in package E "AP04-tests, analysis of eluates"	W0151 AP04-U-III and NEN 7371	B

AP04-verrichtingen (versie 23-06-2016) (NAW-0132), **pakket E (analyse van eluaten)** (versie 23-06-2016) (NAW-0132-1)
volledig pakket

118.	Eluates	Determination of pH; potentiometry	W0524 AP04-U-IV and NEN-EN-ISO 10523	B
119.	Eluates	Determination of electrical conductivity; conductometry	W0506 AP04-U-V and NEN-ISO 7888	B
120.	Eluates	Determination of the content of elements; inductively coupled plasma with mass spectrometry (ICP-MS) antimony, arsenic, barium, cadmium, calcium, chromium, cobalt, copper, mercury, lead, molybdenum, nickel, selenium, tin, vanadium and zinc	W0421 and W0426 AP04-E-I to XV and XIX and NEN 7324 (mercury) and NEN-EN-ISO 17294-2 (remaining metals)	B
121.	Eluates	Determination of the content of cyanides (free and complex); continuous flow analysis and spectrometry	W0517 AP04-E-XVI and NEN-EN-ISO 14403-2	B
122.	Eluates	Determination of the content of bromide, chloride and sulphate; liquid chromatography of ions	W0504 AP04-E-XVII and NEN-EN-ISO 10304-1	B
123.	Eluates	Determination of the content of fluoride; potentiometry	W0546 AP04-E-XVIII and NEN 6578	B

AS SIKB 3000 (versie 23-06-2016) (NAW-0133); **protocol 3010** (versie 23-06-2016) (NAW-0133-2); **(Laboratoriumanalyses voor grond-, waterbodem- en grondwateronderzoek; grond standaardpakket) volledig pakket**

--	Soil	Sample pre-treatment for package 3010	W0101 AS3000 and NEN-EN 16179	B
124.	Soil	Determination of pH-CaCl ₂ ; potentiometry	W0524 performance sheet 3010-1 and NEN-ISO 10390	B
125.	Soil	Determination of dry matter content; gravimetry	W0104 performance sheet 3010-2 and NEN-EN 15934	B

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126.	Soil	Determination of organic matter content; gravimetry	W0109 performance sheet 3010-3 and NEN 5754	B
127.	Soil	Determination of the clay content; sedimentation	W0105 and W0173 performance sheet 3010-4 and NEN 5753	B
128.	Soil	Determination of the clay content; sedimentation and density determination	W0171 performance sheet 3010-4 and NEN 5753	B
129.	Soil	Determination of the content of metals; inductively coupled plasma with mass spectrometry (ICP-MS) barium, cadmium, cobalt, copper, mercury (non-volatile), lead, molybdenum, nickel and zinc	W0107, W0423 and W0426 performance sheet 3010-5 and NEN-EN-ISO 17294-2	B
130.	Soil	Determination of the content of polycyclic aromatic hydrocarbons (PAH); gas chromatography with mass spectrometry naphthalene, phenanthrene, anthracene, fluoranthene, benzo(a)anthracene, chrysene, benzo(k)fluoranthene, benzo(a)pyrene, benzo(g,h,i)perylene, indeno(1,2,3-c,d)pyrene and the sum of these 10 PAH	W0120 and W0271 performance sheet 3010-6 and NEN-ISO 18287)	B
131.	Soil	Determination of the hydrocarbon oil index; gas chromatography with flame-ionisation detection	W0120 and W0202 performance sheet 3010-7 and NEN-EN-ISO 16703	B
132.	Soil	Determination of the content of polychlorinated biphenyls (PCB); gas chromatography with mass spectrometry PCB 28 (2,4,4' trichlorobiphenyl), PCB 52 (2,5 2,5' tetrachlorobiphenyl), PCB 101 (2,4,5 2',5' pentachlorobiphenyl), PCB 118 (2,4,5 3',4' pentachlorobiphenyl), PCB 138 (2,3,4 2',4',5' hexachlorobiphenyl), PCB 153 (2,4,5 2',4',5' hexachlorobiphenyl), PCB 180 (2,3,4,5 2',4',5' heptachlorobiphenyl) and the sum of these seven PCB	W0120 and W0262 performance sheet 3010-8 and NEN 6980	B
133.	Soil	Determination of the content of polychlorinated biphenyls (PCB); gas chromatography with mass spectrometry PCB 28 (2,4,4' trichlorobiphenyl), PCB 52 (2,5 2,5' tetrachlorobiphenyl), PCB 101 (2,4,5 2',5' pentachlorobiphenyl), PCB 118 (2,4,5 3',4' pentachlorobiphenyl), PCB 138 (2,3,4 2',4',5' hexachlorobiphenyl), PCB 153 (2,4,5 2',4',5' hexachlorobiphenyl), PCB 180 (2,3,4,5 2',4',5' heptachlorobiphenyl) and the sum of these seven PCB	W0120 and W0271 performance sheet 3010-8 and NEN 6980	B

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No.	Material or product	Type of activity ¹	Internal reference number	Location
AS SIKB 3000 (versie 23-06-2016) (NAW-0133); protocol 3020 (versie 23-06-2016) (NAW-0133-2) (Laboratoriumanalyses voor grond-, waterbodem- en grondwateronderzoek; grond aanvullend I) volledig pakket				
--	Soil	Sample pre-treatment for package 3020	W0101 AS3000 and NEN-EN 16179	B
134.	Soil	Determination of the content of organochloropesticides (OCP); gas chromatography with mass spectrometry hexachlorobenzene (HCB), α -hexachlorocyclohexane (α -HCH), β -hexachlorocyclohexane (β -HCH), γ -hexachlorocyclohexane (γ -HCH), aldrin, dieldrin, endrin, sum of these three "drin's", o,p'-DDD, p,p'-DDD, sum of these two DDD's, o,p'-DDE, p,p'-DDE, sum of these two DDE's, o,p'-DDT, p,p'-DDT, sum of these two DDT's, heptachlor, α -endosulfan, isodrin, telodrin, cis-heptachlor epoxide, trans-heptachlor epoxide, sum of these two heptachlor epoxides, cis-chlorodane, trans-chlorodane, sum of these two chlorodanes, sum of organochloropesticides and hexachlorobutadiene	W0120 and W0262 performance sheet 3020-1 and NEN 6980	B
135.	Soil	Determination of the content of less volatile chlorobenzenes; gas chromatography with mass spectrometry 1,2,3-trichlorobenzene, 1,2,4-trichlorobenzene, 1,3,5-trichlorobenzene, sum of these three trichlorobenzenes, 1,2,3,4-tetrachlorobenzene, 1,2,3,5-tetrachlorobenzene, 1,2,4,5-tetrachlorobenzene, sum of these three tetrachlorobenzenes, pentachlorobenzene and hexachlorobenzene, sum of chlorobenzenes	W0120 and W0262 performance sheet 3020-2 and NEN 6980	B
136.	Soil	Determination of the content of miscellaneous organochloropesticides (OCP); gas chromatography with mass spectrometry δ -HCH, the sum of the HCH-compounds and endosulphansulphate	W0120 and W0262 performance sheet 3020-3 and NEN 6980	B
AS SIKB 3000 (versie 23-06-2016) (NAW-0133); protocol 3030 (versie 23-06-2016) (NAW-0133-2) (Laboratoriumanalyses voor grond-, waterbodem- en grondwateronderzoek; grond aanvullend II) volledig pakket				
--	Soil	Sample pre-treatment for package 3030	W0101 AS3000 and NEN-EN 16179	B

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No.	Material or product	Type of activity ¹	Internal reference number	Location
137.	Soil	Determination of the content of volatile aromatic hydrocarbons, volatile halogenated hydrocarbons, MTBE and ETBE; static headspace – gas chromatography with mass spectrometry volatile aromatic hydrocarbons: benzene, toluene, ethylbenzene, o-xylene, m-xylene, p-xylene, sum of these three xylenes, styrene, sum of aromatic solvents, naphthalene volatile halogenated hydrocarbons: chloroethylene (vinyl chloride), dichloromethane, trichloromethane, tetrachloromethane, trichloroethylene, tetrachloroethylene, 1,1-dichloroethane, 1,2-dichloroethane, 1,1-dichloroethylene, cis-1,2-dichloroethylene, trans-1,2-dichloroethylene, sum of these three dichloroethylenes, 1,1,1-trichloroethane, 1,1,2-trichloroethane and the sum of these two trichloroethanes, 1,1-dichloropropane, 1,2-dichloropropane, 1,3-dichloropropane and the sum of these three dichloropropanes, tribromomethane other volatile compounds: methyltertiarybutylether (MTBE) and ethyltertiarybutylether (ETBE)	W0136, W0254 performance sheet 3030-1 and NEN-EN-ISO 22155	B
138.	Soil	Determination of the content of volatile chlorobenzenes; static headspace – gas chromatography with mass spectrometry monochlorobenzene, 1,2-dichlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene and the sum of dichlorobenzenes	W0136, W0254 performance sheet 3030-2 and NEN-EN-ISO 22155	B
139.	Soil	Determination of the content of other solvents; static headspace – gas chromatography with mass spectrometry 1,2,3-trimethylbenzene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 2-ethyltoluene, 3-ethyltoluene, 4-ethyltoluene, isopropylbenzene, propylbenzene and the sum aromatic solvents	W0136, W0254 performance sheet 3030-3 and NEN-EN-ISO 22155	B

AS SIKB 3000 (versie 23-06-2016) (NAW-0133); **protocol 3040** (versie 23-06-2016) (NAW-0133-2) **(Laboratoriumanalyses voor grond-, waterbodem- en grondwateronderzoek; grond aanvullend III) volledig pakket**

--	Soil	Sample pre-treatment for package 3040	W0101 AS3000 and NEN-EN 16179	B
140.	Soil	Determination of the content of cyanides (free, total and complex); continuous flow analysis and spectrometry	W0117 and W0517 performance sheet 3040-1 and NEN-EN-ISO 17380	B
141.	Soil	Determination of chloride; liquid chromatography of ions	W0504 performance sheet 3040-2 (analysis NEN-EN-ISO 10304-1)	B

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 Normative document: EN ISO/IEC 17025:2005
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No.	Material or product	Type of activity ¹	Internal reference number	Location
AS SIKB 3000 (versie 23-06-2016) (NAW-0133); protocol 3050 (versie 23-06-2016) (NAW-0133-2) Laboratoriumanalyses voor grond-, waterbodem- en grondwateronderzoek; grond aanvullend IV) volledig pakket				
--	Soil	Sample pre-treatment for package 3050	W0101 AS3000 and NEN-EN 16179	B
142.	Soil	Determination of the content of metals; inductively coupled plasma with mass spectrometry (ICP-MS) antimony, arsenic, chromium, tin, vanadium, beryllium, tellurium, thallium and silver	W0107, W0423 and W0426 performance sheet 3050-1 and -2 and NEN-EN-ISO 17294-2	B
AS SIKB 3000 (versie 23-06-2016) (NAW-0133); protocol 3110 (versie 23-06-2016) (NAW-0133-3) (Laboratoriumanalyses voor grond-, waterbodem- en grondwateronderzoek; grondwater standaardpakket) volledig pakket				
143.	Groundwater	Determination of pH; potentiometry	W0524 performance sheet 3110-1 and NEN-EN-ISO 10523	B
144.	Groundwater	Determination of electrical conductivity; conductometry	W0506 performance sheet 3110-2 and NEN-ISO 7888	B
145.	Groundwater	Determination of the content of metals; inductively coupled plasma with mass spectrometry (ICP-MS) barium, cadmium, cobalt, copper, mercury (non-volatile), lead, molybdenum, nickel and zinc	W0421 and W0426 performance sheet 3110-3 and NEN-EN-ISO 17294-2	B
146.	Groundwater	Determination of the content of polycyclic aromatic hydrocarbons (PAH); gas chromatography with mass spectrometry naphthalene, phenanthrene, anthracene, fluoranthene, benzo(a)anthracene, chrysene, benzo(k)fluoranthene, benzo(a)pyrene, benzo(g,h,i)perylene, indeno(1,2,3-c,d)pyrene and the sum of these 10 PAH	W0137 and W0260 performance sheet 3110-4	B
147.	Groundwater	Determination of the hydrocarbon oil index; gas chromatography with flame-ionisation detection	W0123 and W0215 performance sheet 3110-5	B

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AS SIKB 3000 (versie 23-06-2016) (NAW-0133); protocol 3120 (versie 23-06-2016) (NAW-0133-3) (Laboratoriumanalyses voor grond-, waterbodem- en grondwateronderzoek; grondwater aanvullend I); volledig pakket				
148.	Groundwater	Determination of the content of polychlorinated biphenyls (PCB) and organochloropesticides (OCP); gas chromatography with mass spectrometry PCB 28 (2,4,4' trichlorobiphenyl), PCB 52 (2,5 2,5' tetrachlorobiphenyl), PCB 101 (2,4,5 2',5' pentachlorobiphenyl), PCB 118 (2,4,5 3',4' pentachlorobiphenyl), PCB 138 (2,3,4 2',4',5' hexachlorobiphenyl), PCB 153 (2,4,5 2',4',5' hexachlorobiphenyl), PCB 180 (2,3,4,5 2',4',5' heptachlorobiphenyl), sum of these seven PCB, α-hexachlorocyclohexane (α-HCH), β-hexachlorocyclohexane (β-HCH), γ-hexachlorocyclohexane (γ-HCH), δ-hexachlorocyclohexane (δ-HCH), sum of these four HCH's, aldrin, dieldrin, endrin, sum of these three "drin's", p,p'-DDE, o,p'-DDD, o,p'-DDT, p,p'-DDD, o,p'-DDE, p,p'-DDT, sum of these six DD's, heptachlor, α-endosulfan, cis-heptachlor epoxide, trans-heptachlor epoxide, sum of these two heptachlor epoxides, cis-chlorodane, trans-chlorodane and sum of these two chlorodanes	W0137 and W0260 performance sheet 3120-1 and NEN-EN-ISO 6468	B
149.	Groundwater	Determination of the content of tri- and tetrachlorobenzenes, penta- and hexachlorobenzene; gas chromatography with mass spectrometry 1,2,3-trichlorobenzene, 1,2,4-trichlorobenzene, 1,3,5-trichlorobenzene, sum of these three trichlorobenzenes, 1,2,3,4-tetrachlorobenzene, 1,2,3,5-tetrachlorobenzene, 1,2,4,5-tetrachlorobenzene, sum of these three tetrachlorobenzenes, pentachlorobenzene and hexachlorobenzene	W0137 and W0260 performance sheet 3120-2 and NEN-EN-ISO 6468	B

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No.	Material or product	Type of activity ¹	Internal reference number	Location
AS SIKB 3000 (versie 23-06-2016) (NAW-0133); protocol 3130 (versie 23-06-2016) (NAW-0133-3) (Laboratoriumanalyses voor grond-, waterbodem- en grondwateronderzoek; grondwater aanvullend II); volledig pakket				
150.	Groundwater	Determination of the content of volatile aromatic hydrocarbons and volatile halogenated hydrocarbons; static headspace – gas chromatography with mass spectrometry volatile aromatic hydrocarbons: benzene, toluene, ethylbenzene, o-xylene, m-xylene, p-xylene, sum of these three xylenes, styrene and naphthalene volatile halogenated hydrocarbons: chloroethylene (vinyl chloride) dichloromethane, trichloromethane, tetrachloromethane, trichloroethylene, tetrachloroethylene, 1,1-dichloroethane, 1,2-dichloroethane, 1,1-dichloroethylene, cis-1,2-dichloroethylene, trans-1,2-dichloroethylene, sum of these two 1,2-dichloroethylenes, 1,1,1-trichloroethane, 1,1,2-trichloroethane, 1,1-dichloropropane, 1,2-dichloropropane, 1,3-dichloropropane, the sum of these three dichloropropanes and tribromomethane other volatile compounds: methyltertiarybutylether (MTBE) and ethyltertiarybutylether (ETBE)	W0122 and W0254 performance sheet 3130-1, ISO 11423-1 (volatile aromatic hydrocarbons) and NEN-EN-ISO 10301 (volatile halogenated hydrocarbons)	B
151.	Groundwater	Determination of the content of monochlorobenzene and dichlorobenzenes; static headspace – gas chromatography with mass spectrometry monochlorobenzene, 1,2-dichlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene and the sum of these three dichlorobenzenes	W0122 and W0254 performance sheet 3130-2 and NEN-EN-ISO 10301	B
AS SIKB 3000 (versie 23-06-2016) (NAW-0133); protocol 3140 (versie 23-06-2016) (NAW-0133-3) (Laboratoriumanalyses voor grond-, waterbodem- en grondwateronderzoek; grondwater aanvullend III); volledig pakket				
152.	Groundwater	Determination of the content of cyanide (free, total and complex); continuous flow analysis and spectrometry	W0517 performance sheet 3140-1 and NEN-EN-ISO 14403-2	B
153.	Groundwater	Determination of the content of anions; liquid chromatography of ions chloride, nitrate and sulphate	W0504 performance sheet 3140-2 and NEN-EN-ISO 10304-1	B
154.	Groundwater	Determination of the content of anions; discrete analysis and spectrometry chloride, nitrate, ortho-phosphate and sulphate	W0566 performance sheet 3140-2 and NEN-ISO 15923-1	B

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No.	Material or product	Type of activity ¹	Internal reference number	Location
AS SIKB 3000 (versie 23-06-2016) (NAW-0133); protocol 3150 (versie 23-06-2016) (NAW-0133-3) (Laboratoriumanalyses voor grond-, waterbodem- en grondwateronderzoek; grondwater aanvullend IV); volledig pakket				
155.	Groundwater	Determination of the content of metals; inductively coupled plasma with mass spectrometry (ICP-MS) antimony, arsenic, chromium, tin, vanadium, beryllium, tellurium, thallium and silver	W0421 and W0426 performance sheet 3150-1 and -2 and NEN-EN-ISO 17294-2	B
AS SIKB 3000 (versie 23-06-2016) (NAW-0133); protocol 3210 (versie 23-06-2016) (NAW-0133-4) (Laboratorium analyses voor grond-, waterbodem- en grondwateronderzoek; waterbodem standaard pakket) volledig pakket				
--	Sediment	Sample pre-treatment for package 3210	W0101 AS3000 and NEN 5719	B
156.	Sediment	Determination of dry matter content; gravimetry	W0104 performance sheet 3210-1 and NEN-EN 15934	B
157.	Sediment	Determination of organic matter content; gravimetry	W0109 performance sheet 3210-2 and NEN 5754	B
158.	Sediment	Determination of the particle size fractions; sedimentation < 2 µm (clay)	W0173 performance sheet 3210-3 and NEN 5753	B
159.	Sediment	Determination of the content of metals; inductively coupled plasma with mass spectrometry (ICP-MS) barium, cadmium, cobalt, copper, mercury (non-volatile), lead, molybdenum, nickel and zinc	W0107, W0423 and W0426 performance sheet 3210-4 and NEN-EN-ISO 17294-2	B
160.	Sediment	Determination of the content of polycyclic aromatic hydrocarbons (PAH); gas chromatography with mass spectrometry naphthalene, phenanthrene, anthracene, fluoranthene, benzo(a)anthracene, chrysene, benzo(k)fluoranthene, benzo(a)pyrene, benzo(g,h,i)perylene, indeno(1,2,3-c,d)pyrene and the sum of these 10 PAH	W0120 and W0271 performance sheet 3210-5 and NEN-ISO 18287	B
161.	Sediment	Determination of the hydrocarbon oil index; gas chromatography with flame-ionisation detection	W0120 and W0202 performance sheet 3210-6 and NEN 6978	B

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No.	Material or product	Type of activity ¹	Internal reference number	Location
162.	Sediment	Determination of the content of polychlorinated biphenyls (PCB); gas chromatography with mass spectrometry PCB 28 (2,4,4' trichlorobiphenyl), PCB 52 (2,5 2,5' tetrachlorobiphenyl), PCB 101 (2,4,5 2',5' pentachlorobiphenyl), PCB 118 (2,4,5 3',4' pentachlorobiphenyl), PCB 138 (2,3,4 2',4',5' hexachlorobiphenyl), PCB 153 (2,4,5 2',4',5' hexachlorobiphenyl), PCB 180 (2,3,4,5 2',4',5' heptachlorobiphenyl) and the sum of these seven PCB	W0120 and W0262 performance sheet 3210-7 and NEN 6980	B
163.	Sediment	Determination of the content of polychlorinated biphenyls (PCB); gas chromatography with mass spectrometry PCB 28 (2,4,4' trichlorobiphenyl), PCB 52 (2,5 2,5' tetrachlorobiphenyl), PCB 101 (2,4,5 2',5' pentachlorobiphenyl), PCB 118 (2,4,5 3',4' pentachlorobiphenyl), PCB 138 (2,3,4 2',4',5' hexachlorobiphenyl), PCB 153 (2,4,5 2',4',5' hexachlorobiphenyl), PCB 180 (2,3,4,5 2',4',5' heptachlorobiphenyl) and the sum of these seven PCB	W0120 and W0271 performance sheet 3210-7 and NEN 6980	B

AS SIKB 3000 (versie 23-06-2016) (NAW-0133); **protocol 3220** (versie 23-06-2016) (NAW-0133-4) **(Laboratorium analyses voor grond-, waterbodem- en grondwateronderzoek; waterbodem aanvullend I) volledig pakket**

--	Sediment	Sample pre-treatment for package 3220	W0101 AS3000 and NEN 5719	B
164.	Sediment	Determination of the content of organochloropesticides (OCP); gas chromatography with mass spectrometry hexachlorobutadiene, pentachlorobenzene, hexachlorobenzene, the sum of chlorobenzenes, α -HCH, β -HCH, γ -HCH, the sum of these three HCH-compounds, aldrin, dieldrin, endrin, the sum of these three drin's, isodrin, telodrin, o,p'-DDD, p,p'-DDD, the sum of these two DDD's, o,p'-DDE, p,p'-DDE, the sum of these two DDE's, o,p'-DDT, p,p'-DDT, the sum of these two DDT's, the sum of these DD's, heptachlor, α -endosulfan, cis-heptachlor epoxide, trans-heptachlor epoxide, the sum of these two heptachlor epoxides, cis-chlorodane, trans-chlorodane and the sum of these two chlorodanes	W0120 and W0262 performance sheet 3220-1 and NEN 6980	B
165.	Sediment	Determination of the content of miscellaneous organochloropesticides (OCP); gas chromatography with mass spectrometry δ -HCH, the sum of the HCH-compounds and endosulphansulphate	W0120 and W0262 performance sheet 3220-1 and NEN 6980	B

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No.	Material or product	Type of activity ¹	Internal reference number	Location
AS SIKB 3000 (versie 23-06-2016) (NAW-0133); protocol 3230 (versie 23-06-2016) (NAW-0133-4) (Laboratorium analyses voor grond-, waterbodem- en grondwateronderzoek; waterbodem aanvullend II) volledig pakket				
--	Sediment	Sample pre-treatment for package 3230	W0101 AS3000 and NEN 5719	B
166.	Sediment	Determination of the content of monochlorobenzene and dichlorobenzenes; static headspace – gas chromatography with mass spectrometry monochlorobenzene, 1,2-dichlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene and the sum of these three dichlorobenzenes	W0136, W0254 performance sheet 3230-1 and NEN-EN-ISO 22155	B
167.	Sediment	Determination of the content of tri- and tetrachlorobenzenes; gas chromatography with mass spectrometry 1,2,3-trichlorobenzene, 1,2,4-trichlorobenzene, 1,3,5-trichlorobenzene, sum of these three trichlorobenzenes, 1,2,3,4-tetrachlorobenzene, 1,2,3,5-tetrachlorobenzene, 1,2,4,5-tetrachlorobenzene, the sum of these three tetrachlorobenzenes and the sum of the chlorobenzenes	W0120 and W0262 performance sheet 3230-2 and NEN 6980	B
AS SIKB 3000 (versie 23-06-2016) (NAW-0133); protocol 3240 (versie 23-06-2016) (NAW-0133-4) (Laboratorium analyses voor grond-, waterbodem- en grondwateronderzoek; waterbodem aanvullend III) volledig pakket				
--	Sediment	Sample pre-treatment for package 3240	W0101 AS3000 and NEN 5719	B
168.	Sediment	Determination of the content of cyanide (free, total and complex); continuous flow analysis and spectrometry	W0117 and W0517 performance sheet 3240-1 and NEN-EN-ISO 17380	B
169.	Sediment	Determination of the content of chloride; liquid chromatography of ions	W0504 performance sheet 3240-2 and NEN-EN-ISO 10304-1 (analysis)	B
170.	Sediment	Determination of pH-H ₂ O; potentiometry	W0524 performance sheet 3240-3 and NEN-ISO 10390	B
AS SIKB 3000 (versie 23-06-2016) (NAW-0133); protocol 3250 (versie 23-06-2016) (NAW-0133-4) (Laboratorium analyses voor grond-, waterbodem- en grondwateronderzoek; waterbodem aanvullend IV) volledig pakket				
--	Sediment	Sample pre-treatment for package 3250	W0101 AS3000 and NEN 5719	B

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No.	Material or product	Type of activity ¹	Internal reference number	Location
171.	Sediment	Determination of the content of metals; inductively coupled plasma with mass spectrometry (ICP-MS) antimony, arsenic, chromium, tin and vanadium	W0107, W0423 and W0426 performance sheet 3250-1 and NEN-EN-ISO 17294-2	B
AS SIKB 3000 (versie 23-06-2016) (NAW-0133); protocol 3260 (versie 23-06-2016) (NAW-0133-4) (Laboratorium analyses voor grond-, waterbodem- en grondwateronderzoek; waterbodem aanvullend V) volledig pakket				
--	Sediment	Sample pre-treatment for package 3260	W0101 AS3000 and NEN 5719	B
172.	Sediment	Determination of the content of pentachlorophenol; gas chromatography with mass spectrometry	W0139 and W0267 performance sheet 3260-1 and NEN-ISO 14154	B
173.	Sediment	Determination of the content of organotin compounds; gas chromatography with mass spectrometry tributyltin compounds (TBT), triphenyltin compounds (TPhT) and the sum of these organotin compounds	W0140 and W0268 performance sheet 3260-2 and NEN-EN-ISO 23161	B

Our reference R001-1288451RRS-V01

Appendix 8 Target values Dutch STI-system

Our reference R001-1288451RRS-V01

Appendix 8a Target values soil

TTT standaard bodem - Date: 20 dec 2022			
Lutum		25%	
Humus		10%	
	Background levels	T	I
METALS			
Arsenic (As)	20	48	76
Barium (Ba)	-	-	920
Cadmium (Cd)	0,6	6,8	13
Chromium (Cr)	55	118	180
Cobalt (Co)	15	103	190
Copper (Cu)	40	115	190
Mercury (Hg)	0,15	18,08	36
Lead (Pb)	50	290	530
Molybdenum (Mo)	1,5	95,8	190
Nickel (Ni)	35	68	100
Tin (Sn)	6,5	3,3	-
Vanadium (V)	80	40	-
Zinc (Zn)	140	430	720
POLYCYCLIC AROMATIC HYDROCARBONS			
Total PAH 10 (Dutch Ministry)	1,5	20,8	40
CHLORINATED HYDROCARBONS			
Hexachlorobenzene (HCB)	0,0085	1,0043	2
Sum of 7 PCB Ballschmiter	0,02	0,51	1
dioxine	5,5E-05	0,000118	0,00018
PESTICIDES			
Chlordane	0,002	2,001	4
DDT (total)	0,2	1	1,7
DDE (total)	0,1	1,2	2,3
DDD (total)	0,02	17,01	34
Aldrin	-	0,16	0,32
Drins (Aldrin+Dieldrin+Endrin)	0,015	2,007	4
alpha-Endosulfan	0,0009	2,0005	4
alpha-HCH	0,001	8,501	17
beta-HCH	0,002	0,801	1,6
gamma-HCH	0,003	0,601	1,2

Our reference R001-1288451RRS-V01

TTT standaard bodem - Date: 20 dec 2022			
Heptachlor	0,0007	2,0004	4
Heptachloroepoxide	0,002	2,001	4
Hexachloorbutadieen	0,003	0,002	-
Organo-Cl pesticides	0,4	0,2	-
OTHER COMPOUNDS			
Hydrocarbon Fraction C10-C40	190	2595	5000

Background levels Background values [mg/kg d.m.]
 T Intermediate values soil [mg/kg d.m.]
 I Intervention values soil [mg/kg d.m.]

Our reference R001-1288451RRS-V01

Appendix 8b Target values groundwater

TTT - Date: 20 dec 2022			
	So	T	I
METALS			
Arsenic (As)	10	35	60
Barium (Ba)	50	338	625
Cadmium (Cd)	0,4	3,2	6
Chromium (Cr)	1	16	30
Cobalt (Co)	20	60	100
Copper (Cu)	15	45	75
Mercury (Hg)	0,05	0,18	0,3
Lead (Pb)	15	45	75
Molybdenum (Mo)	5	153	300
Nickel (Ni)	15	45	75
Vanadium (V)	-	35	70
Zinc (Zn)	65	433	800
AROMATIC COMPOUNDS			
Benzene	0,2	15,1	30
Ethylbenzene	4	77	150
Toluene	7	504	1000
Sum of Xylenes	0,2	35,1	70
Styrene	6	153	300
som 16 aromatische oplosmiddelen (Bbk, 1-1-2008) (_US	-	75	150
POLYCYCLIC AROMATIC HYDROCARBONS			
Naphthalene	0,01	35,01	70
CHLORINATED HYDROCARBONS			
Vinyl Chloride	0,01	2,51	5
Dichloromethane	0,01	500,01	1000
1,1-Dichloroethane	7	454	900
1,2-Dichloroethane	7	204	400
1,1-Dichloroethylene	0,01	5,01	10
Sum of 1,2-Dichloroethenes	0,01	10,01	20
Dichloorpropaan	0,8	40,4	80
Chloroform	6	203	400
1,1,1-Trichloroethane	0,01	150,01	300
1,1,2-Trichloroethane	0,01	65,01	130

Our reference R001-1288451RRS-V01

TTT - Date: 20 dec 2022			
Trichloroethylene (tri)	24	262	500
Carbontetrachloride (tetra)	0,01	5,01	10
Tetrachloroethylene (per)	0,01	20,01	40
Monochlorobenzene	7	94	180
Sum of Dichlorobenzenes	3	27	50
Sum of Trichlorobenzenes	0,01	5,01	10
Sum of Tetrachlorobenzenes	0,01	1,25	2,5
Pentachlorobenzene (QCB)	0,003	0,501	1
Hexachlorobenzene (HCB)	9E-05	0,25005	0,5
PESTICIDES			
Chlordane	2E-05	0,10001	0,2
Som of DDT/DDE/DDD	4E-06	0,005002	0,01
som DDT-, DDE- en DDD-isomeren	4E-06	0,005002	0,01
Aldrin	9E-06	-	-
Dieldrin	0,0001	-	-
Endrin	4E-05	-	-
alpha-Endosulfan	0,0002	2,5001	5
alpha-HCH	0,033	-	-
beta-HCH	0,008	-	-
gamma-HCH	0,009	-	-
Sum of HCH (STI-list)	0,05	0,53	1
Heptachlor	5E-06	0,150002	0,3
Heptachloroepoxide	5E-06	1,500003	3
OTHER COMPOUNDS			
Hydrocarbon Fraction C10-C40	50	325	600
Tribromomethane (bromoform)	-	315	630

So Target values groundwater [ug/l]
 T Intermediate values groundwater [ug/l]
 I Intervention values groundwater [ug/l]

Our reference R001-1288451RRS-V01

Appendix 9 Tested Chemical-Analytical Results

Our reference R001-1288451RRS-V01

Appendix 9a Results of soil samples tested against Dutch STI-values

Sample description	S1-2		S2-1		S2-2		S2-3	
Depth (m bgl)	8-8,1		0-0,3		8-8,5		11-11,1	
Lutum (%)	8,3		8,3		8,3		5,6	
Humus (%)	0,7		1,5		0,7		0,7	
Unit	mg/kg Ds		mg/kg Ds		mg/kg Ds		mg/kg Ds	
METALS								
Arsenic (As)	< 4	-	11	-	7,4	-	< 4	-
Barium (Ba)	66	-	91	-	37	-	33	-
Cadmium (Cd)	< 0,2	-	0,3	-	< 0,2	-	< 0,2	-
Chromium (Cr) ###	20	-	57	+	13	-	32	-
Cobalt (Co)	11	+	16	+	9,2	+	21	+
Copper (Cu)	23	-	25	+	20	-	46	+
Mercury (Hg)	0,18	+	< 0,05	-	< 0,05	-	0,053	-
Lead (Pb)	33	-	22	-	< 10	-	16	-
Molybdenum (Mo)	< 1,5	-	< 1,5	-	< 1,5	-	< 1,5	-
Nickel (Ni)	25	+	70	+++	34	+	53	+++
Tin (Sn)	2,1	-	< 1,5	-	< 1,5	-	< 1,5	-
Vanadium (V)	24	-	38	-	17	-	36	+
Zinc (Zn)	51	-	56	-	34	-	70	+
POLYCYCLIC AROMATIC HYDROCARBONS								
Total PAH 10 (Dutch Ministry)	< 0,35	-	< 0,35	-	< 0,35	-	< 0,35	-
CHLORINATED HYDROCARBONS								
Hexachlorobenzene (HCB)	< 10	+++ (41)	< 0,1	+(41)	< 0,02	+(41)	< 0,001	-
Sum of 7 PCB Ballschmiter	0,0089	+	0,0079	+	< 0,0049	-	< 0,0049	-
dioxine								
PESTICIDES								
Chlordane	14	+++	0,14	+	0,028	+	< 0,0014	-
DDT (total)	14	+++	0,14	+	0,028	-	< 0,0014	-
DDE (total)	14	+++	0,14	+	0,028	+	< 0,0014	-

Our reference R001-1288451RRS-V01

Sample description	S1-2	S2-1	S2-2	S2-3
DDD (total)	14	+++	0,14	+ 0,028
Aldrin	< 10	+++ (41)	< 0,1	+++ (41) < 0,02
Drins (Aldrin+Dieldrin+Endrin)	21	+++	0,21	+ 0,042
alpha-Endosulfan	< 10	+++ (41)	< 0,1	+(41) < 0,02
alpha-HCH	6300	+++	25	+++ 5,1
beta-HCH	650	+++	2,7	+++ 0,61
gamma-HCH	170	+++	1,2	+++ 0,087
Heptachlor	< 10	+++ (41)	< 0,1	+(41) < 0,02
Heptachloroepoxide	14	+++	0,14	+ 0,028
Hexachloorbutadieen	< 10	+(41)(5)	< 0,1	+(41)(5) < 0,02

OTHER COMPOUNDS

Hydrocarbon Fraction C10-C40	1500	+++	< 35	-	< 35	-	< 35	-
Conclusion (BoToVa)		+++		+++		+++		+++

Sample description	S2-4	S3-1	S3-2	S3-3
Depth (m bgl)	12,4-12,7	0,05-0,15	4-4,5	6,5-6,7
Lutum (%)	8,3	8,3	8,3	5,6
Humus (%)	0,7	1,5	0,7	0,7
Unit	mg/kg Ds	mg/kg Ds	mg/kg Ds	mg/kg Ds

METALS

Arsenic (As)	14	+	10	-	63	+++	< 4	-
Barium (Ba)	22		88		57		34	
Cadmium (Cd)	< 0,2	-	< 0,2	-	< 0,2	-	< 0,2	-
Chromium (Cr) ###	30	-	40	+	31	-	27	-
Cobalt (Co)	22	+	12	+	9	+	17	+
Copper (Cu)	17	-	20	-	14	-	41	+
Mercury (Hg)	0,19	+	< 0,05	-	< 0,05	-	< 0,05	-
Lead (Pb)	18	-	17	-	< 10	-	17	-
Molybdenum (Mo)	< 1,5	-	< 1,5	-	< 1,5	-	< 1,5	-
Nickel (Ni)	52	+(+)	53	+++	28	+	50	+++
Tin (Sn)	< 1,5	-	< 1,5	-	< 1,5	-	< 1,5	-
Vanadium (V)	23	-	31	-	28	-	28	-
Zinc (Zn)	44	-	43	-	30	-	67	-

Our reference R001-1288451RRS-V01

Sample description	S2-4		S3-1		S3-2		S3-3	
POLYCYCLIC AROMATIC HYDROCARBONS								
Total PAH 10 (Dutch Ministry)	< 0,35	-	< 0,35	-	< 0,35	-	< 0,35	-
CHLORINATED HYDROCARBONS								
Hexachlorobenzene (HCB)	< 1	+++ (41)	< 0,001	-	< 0,001	-	< 0,001	-
Sum of 7 PCB Ballschmiter	< 0,0049	-	< 0,0049	-	< 0,0049	-	< 0,0049	-
dioxine								
PESTICIDES								
Chlordane	1,4	+++	< 0,0014	-	< 0,0014	-	< 0,0014	-
DDT (total)	1,4	+++	< 0,0014	-	< 0,0014	-	< 0,0014	-
DDE (total)	1,4	+++	< 0,0014	-	< 0,0014	-	< 0,0014	-
DDD (total)	1,4	+	< 0,0014	-	< 0,0014	-	< 0,0014	-
Aldrin	< 1	+++ (41)	< 0,001	-	< 0,001	-	< 0,001	-
Drins (Aldrin+Dieldrin+Endrin)	2,1	+++	< 0,0021	-	< 0,0021	-	< 0,0021	-
alpha-Endosulfan	< 1	+(41)	< 0,001	-	< 0,001	-	< 0,001	-
alpha-HCH	1100	+++	0,34	+	1,4	+	1,1	+
beta-HCH	130	+++	0,04	+	0,17	+(+)	0,15	+
gamma-HCH	37	+++	0,0076	+	0,057	+	0,029	+
Heptachlor	< 1	+(41)	< 0,001	-	< 0,001	-	< 0,001	-
Heptachloroepoxide	1,4	+++	< 0,0014	-	< 0,0014	-	< 0,0014	-
Hexachloorbutadien	< 1	+(41)(5)	< 0,001	-	< 0,001	-	< 0,001	-
Organo-Cl pesticides	1300		0,4		1,6		1,3	
OTHER COMPOUNDS								
Hydrocarbon Fraction C10-C40	370	+	< 35	-	130	+	< 35	-
Conclusion (BoToVa)		+++		+++		+++		+++

Our reference R001-1288451RRS-V01

Sample description	S3-4	S6-1	S7-1	S7-2
Depth (m bgl)	9,3-9,5	0-2,6	0-2,6	2,6-3,4
Lutum (%)	8,3	11	11	11
Humus (%)	0,7	1,5	1,5	1,5
Unit	mg/kg Ds	mg/kg Ds	mg/kg Ds	mg/kg Ds

METALS

Arsenic (As)	< 4	-	83	+++	21	+	9,5	-
Barium (Ba)	26		68		450		41	
Cadmium (Cd)	0,26	-	1,1	+	0,74	+	0,63	+
Chromium (Cr) ###	30	-	38	-	41	+	26	-
Cobalt (Co)	9	+	6	-	5,5	-	7	-
Copper (Cu)	14	-	62	+	28	+	13	-
Mercury (Hg)	< 0,05	-	0,32	+	0,34	+	< 0,05	-
Lead (Pb)	< 10	-	7100	+++	480	+++	57	+
Molybdenum (Mo)	< 1,5	-	< 1,5	-	< 1,5	-	< 1,5	-
Nickel (Ni)	39	+(+)	82	+++	46	+(+)	44	+(+)
Tin (Sn)	< 1,5	-	15	+	< 1,5	-	< 1,5	-
Vanadium (V)	22	-	78	+	28	-	21	-
Zinc (Zn)	30	-	160	+	79	-	29	-

POLYCYCLIC AROMATIC HYDROCARBONS

Total PAH 10 (Dutch Ministry)	< 0,35	-	< 0,35	-	0,54	-	0,37	-
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CHLORINATED HYDROCARBONS

Hexachlorobenzene (HCB)	< 0,001	-	< 0,05	+(41)	< 1	+++ (41)	< 0,005	+(41)
Sum of 7 PCB Ballschmiter	< 0,0049	-	0,0061	+	0,029	+	< 0,0049	-
dioxine								

PESTICIDES

Chlordane	< 0,0014	-	0,07	+	1,4	+++	0,007	+
DDT (total)	< 0,0014	-	0,07	+	1,4	+++	0,007	-
DDE (total)	< 0,0014	-	0,07	+	1,4	+++	0,007	-
DDD (total)	< 0,0014	-	0,07	+	1,4	+	0,007	+

Our reference R001-1288451RRS-V01

Sample description	S3-4		S6-1		S7-1		S7-2	
Aldrin	< 0,001		< 0,05	(41)(+*)	< 1	+++ (41)	< 0,005	(41)
Drins (Aldrin+Dieldrin+Endrin)	< 0,0021	-	0,1	+	2,1	+++	0,01	+
alpha-Endosulfan	< 0,001	-	< 0,05	+(41)	< 1	+(41)	< 0,005	+(41)
alpha-HCH	1,2	+	6,2	+++	18	+++	10	+++
beta-HCH	0,16	+	1,2	+++	170	+++	2,9	+++
gamma-HCH	0,021	+	0,16	+(+)	< 1	+++ (41)	0,21	+(+)
Heptachlor	< 0,001	-	< 0,05	+(41)	< 1	+(41)	< 0,005	+(41)
Heptachloroepoxide	< 0,0014	-	0,07	+	1,4	+++	0,007	+
Hexachloorbutadieen	< 0,001	-	< 0,05	+(41)(5)	< 1	+(41)(5)	< 0,005	+(41)(5)
Organo-Cl pesticides	1,4		8,2		200		13	

OTHER COMPOUNDS

Hydrocarbon Fraction C10-C40	350	+	< 35	-	120	+	330	+
Conclusion (BoToVa)		+		+++		+++		+++

Sample description	S8-1		S11-1		S12-1		S12-2	
Depth (m bgl)	0-3,6		0-0,5		0-0,2		0,2-1	
Lutum (%)	5,6		22		22		22	
Humus (%)	3,3		1,9		1,9		1,9	
Unit	mg/kg Ds		mg/kg Ds		mg/kg Ds		mg/kg Ds	

METALS

Arsenic (As)	29	+	7	-	8,7	-	8,5	-
Barium (Ba)	140		32		45		31	
Cadmium (Cd)	1,5	+	0,29	-	< 0,2	-	< 0,2	-
Chromium (Cr) ###	45	+	22	-	17	-	< 10	-
Cobalt (Co)	5,9	-	5,3	-	4	-	4,3	-
Copper (Cu)	65	+	12	-	11	-	14	-
Mercury (Hg)	0,067	-	< 0,05	-	< 0,05	-	< 0,05	-
Lead (Pb)	1700	+++	120	+	390	+(+)	290	+(+)
Molybdenum (Mo)	1,9	+	< 1,5	-	< 1,5	-	< 1,5	-
Nickel (Ni)	56	+++	29	-	22	-	26	-
Tin (Sn)	3,1	+	1,9	-	< 1,5	-	< 1,5	-
Vanadium (V)	22	-	15	-	12	-	< 10	-
Zinc (Zn)	99	+	34	-	44	-	24	-

Our reference R001-1288451RRS-V01

Sample description	S8-1		S11-1		S12-1		S12-2	
POLYCYCLIC AROMATIC HYDROCARBONS								
Total PAH 10 (Dutch Ministry)	0,37	-	< 0,35	-	< 0,35	-	< 0,35	-
CHLORINATED HYDROCARBONS								
Hexachlorobenzene (HCB)	0,0038	+	< 1	+++ (41)	< 0,001	-	< 0,02	+(41)
Sum of 7 PCB Ballschmiter	0,067	+	0,01	+	< 0,0049	-	< 0,0049	-
dioxine								
PESTICIDES								
Chlordane	< 0,0014	-	1,4	+++	< 0,0014	-	0,028	+
DDT (total)	0,003	-	1,4	+++	0,003	-	0,028	-
DDE (total)	< 0,0014	-	1,4	+++	0,0064	-	0,028	+
DDD (total)	< 0,0014	-	1,4	+	< 0,0014	-	0,028	+
Aldrin	< 0,001	-	< 1	+++ (41)	< 0,001	-	< 0,02	(41)
Drins (Aldrin+Dieldrin+Endrin)	< 0,0021	-	2,1	+++	< 0,0021	-	0,042	+
alpha-Endosulfan	< 0,001	-	< 1	+(41)	< 0,001	-	< 0,02	+(41)
alpha-HCH	0,16	+	46	+++	0,83	+	2,5	+(+)
beta-HCH	0,73	+++	7,8	+++	0,11	+	3,4	+++
gamma-HCH	0,0081	+	1,8	+++	0,019	+	0,071	+
Heptachlor	< 0,001	-	< 1	+(41)	< 0,001	-	< 0,02	+(41)
Heptachloroepoxide	< 0,0014	-	1,4	+++	< 0,0014	-	0,028	+
Hexachloorbutadien	< 0,001	-	< 1	+(41)(5)	< 0,001	-	< 0,02	+(41)(5)
Organo-Cl pesticides	0,92		69		0,99		6,2	
OTHER COMPOUNDS								
Hydrocarbon Fraction C10-C40	400	+	55	+	64	+	< 35	-
Conclusion (BoToVa)		+++		+++		+		+++

Our reference R001-1288451RRS-V01

Our reference R001-1288451RRS-V01

Sample description	S15-1	S16-1	S19-1	S21-1
Depth (m bgl)	0-0,5	0-1,5	1,5-3	0-3
Lutum (%)	22	22	5,6	5,6
Humus (%)	1,9	1,9	3,3	3,3
Unit	mg/kg Ds	mg/kg Ds	mg/kg Ds	mg/kg Ds

METALS

Arsenic (As)	15	-	28	+	11	-	17	+
Barium (Ba)	140		110		49		73	
Cadmium (Cd)	< 0,2	-	0,31	-	0,33	-	0,53	+
Chromium (Cr) ###	46	-	48	-	55	+	40	+
Cobalt (Co)	15	+	14	+	12	+	7	+
Copper (Cu)	27	-	25	-	23	+	23	+
Mercury (Hg)	< 0,05	-	0,06	-	<	-	0,08	-
			8		0,05		4	
Lead (Pb)	21	-	73	+	48	+	780	+++
Molybdenum (Mo)	< 1,5	-	<	-	< 1,5	-	< 1,5	-
			1,5					
Nickel (Ni)	68	+(73	+(+)	110	+++	110	+++
)						
Tin (Sn)	< 1,5	-	<	-	< 1,5	-	8	+
			1,5					
Vanadium (V)	30	-	34	-	30	-	27	-
Zinc (Zn)	54	-	63	-	50	-	74	+

POLYCYCLIC AROMATIC HYDROCARBONS

Total PAH 10 (Dutch Ministry)	< 0,35	-	0,85	-	<	-	<	-
					0,35		0,35	

CHLORINATED HYDROCARBONS

Hexachlorobenzene (HCB)	<	-	< 1	+++ (41)	< 1	+++ (41)	<	+(41)
	0,001						0,01	
Sum of 7 PCB Ballschmitter	<	-	0,05	+	0,022	+	0,01	+
	0,0049		1				3	
dioxine (mg/kg Ds (TEQ))	unkno	-						
	wn	(2)						

PESTICIDES

Chlordane	<	-	1,4	+++	1,4	+++	0,01	+
	0,0014						4	
DDT (total)	<	-	1,4	+++	1,4	+++	0,01	-
	0,0014						4	
DDE (total)	<	-	1,4	+++	1,4	+++	0,01	-
	0,0014						4	

Our reference R001-1288451RRS-V01

Sample description	S15-1		S16-1		S19-1		S21-1	
DDD (total)	< 0,0014	-	1,4	+	1,4	+	0,014	+
Aldrin	< 0,001	-	< 1	+++ (41)	< 1	+++ (41)	< 0,01	(41)
Drins (Aldrin+Dieldrin+Endrin)	< 0,0021	-	2,1	+++	2,1	+++	0,021	+
alpha-Endosulfan	< 0,001	-	< 1	+(41)	< 1	+(41)(+)	< 0,01	+(41)
alpha-HCH	5,6	++	61	+++	1200	+++	0,29	+
beta-HCH	1,1	++	7,5	+++	150	+++	2,2	+++
gamma-HCH	0,41	++	1,8	+++	80	+++	0,02	+
Heptachlor	< 0,001	-	< 1	+(41)	< 1	+(41)(+)	< 0,01	+(41)
Heptachloroepoxide	< 0,0014	-	1,4	+++	1,4	+++	0,014	+
Hexachloorbutadieen	< 0,001	-	< 1	+(41)(5)	< 1	+(41)(5)	< 0,01	+(41)(5)
Organo-Cl pesticides	7,1	-	83		1500		2,6	
OTHER COMPOUNDS								
Hydrocarbon Fraction C10-C40	< 35	-	150	+	550	+	80	+
NOT CATEGORIZED COMPOUNDS								
Calcium carbonate (% (m/m) ds)	18						15	
TEQ volgens NATO/CCMS	0,000000432							
Conclusion (BoToVa)		++	+++		+++		+++	

Our reference R001-1288451RRS-V01

Appendix 9b Results of groundwater samples tested against Dutch STI-values

Monitoring well	GMW1-1	GMW2-1	GMW3-1	GMW100-1				
Screen depth (m bgl)	13.5-16.5	9.7-12.7	9,0-12,0	19,0-20,0				
Unit	ug/l	ug/l	ug/l	ug/l				
METALS								
Arsenic (As)	68	+++	< 5	-				
Barium (Ba)	1200	+++	< 50	-(41)				
Cadmium (Cd)	< 0,4	-(41)	< 0,4	-(41)				
Chromium (Cr)	20	+(+*)	< 1	-				
Cobalt (Co)	20	-	< 3	-(41)				
Copper (Cu)	< 5	-(41)	< 5	-(41)				
Mercury (Hg)	< 0,05	-	< 0,05	-				
Lead (Pb)	25	+	< 5	-(41)				
Molybdenum (Mo)	< 5	-(41)	24	+				
Nickel (Ni)	130	+++	15	-				
Vanadium (V)	< 10	(41)(14)	< 10	(41)(14)				
))				
Zinc (Zn)	47	-	< 10	-				
AROMATIC COMPOUNDS								
Benzene	16000	+++	42	+++				
Ethylbenzene	1,3	-	< 0,2	-				
Toluene	66	+	3	-				
Sum of Xylenes	7,2	+	< 0,4	+				
Styrene	0,22	-	< 0,1	-				
som 16 aromatische oplosmiddelen (Bbk, 1-1-2008) (_US	16075	(2)(13)	45	(2)(14)				
))				
POLYCYCLIC AROMATIC HYDROCARBONS								
Naphthalene	10	+	< 0,2	+(41)				
CHLORINATED HYDROCARBONS								
Vinyl Chloride	5,9	+++	< 0,1	-				
Dichloromethane	5	+	< 0,1	-				
1,1-Dichloroethane	0,23	-	< 0,1	-				
1,2-Dichloroethane	< 10	-(41)	< 0,1	-				
1,1-Dichloroethylene	0,35	+	< 0,1	-				
Sum of 1,2-Dichloroethenes	19	+(+*)	< 0,2	-				
Dichloorpropaan	<0,21	-	<0,21	-				

Our reference R001-1288451RRS-V01

Monitoring well	GMW1-1		GMW2-1		GMW3-1		GMW100-1	
Chloroform	< 0,1	-	< 0,1	-				
1,1,1-Trichloroethane	< 0,1	-	< 0,1	-				
1,1,2-Trichloroethane	< 0,1	-	< 0,1	-				
Trichloroethylene (tri)	16	-	< 0,1	-				
Carbontetrachloride (tetra)	< 0,1	-	< 0,1	-				
Tetrachloroethylene (per)	3,4	+	< 0,1	-				
Monochlorobenzene	< 0,1	-	38	+	5,6	-	< 0,1	-
Sum of Dichlorobenzenes	6630	+++	18	+	2,1	-	0,21	-
Sum of Trichlorobenzenes	5,8	+	770	+++	21	+++	< 0,021	-
Sum of Tetrachlorobenzenes	2	+	140	+++	14	+++	< 0,014	-
Pentachlorobenzene (QCB)	< 1	+(41)(+*)	< 100	+++ (41)	< 5	+++ (41)	< 0,005	-
Hexachlorobenzene (HCB)	< 1/ 0,5	+++ (41)	< 50/ 100	+++ (41)	< 5/ 5	+++ (41)	< 0,005/ 0,005	-

PESTICIDES

Chlordane (ng/l)	1400	+++	14000 0	+++	14	+++	< 0,014	-
Som of DDT/DDE/DDD (ng/l)	< 6000	+++	< 60000 0	+++	42000	+++	< 42	-
som DDT-, DDE- en DDD-isomeren (ng/l)					42000		< 42	
Aldrin (ng/l)	< 1000	+(41)	< 10000 0	+(41)	< 10000	+(41)	< 10	-
Dieldrin (ng/l)	< 1000	+(41)	< 10000 0	+(41)	< 10000	+(41)	< 10	-
Endrin (ng/l)	< 1000	+(41)	< 10000 0	+(41)	< 10000	+(41)	< 10	-
alpha-Endosulfan (ng/l)	< 1000	+(41)	< 10000 0	+++ (41)	< 10000	+++ (41)	< 10	-
alpha-HCH (ng/l)	78000 0	+	21000 00	+	85000 0	+	320	+
beta-HCH (ng/l)	11000 0	+	25000 0	+	98000	+	15	+

Our reference R001-1288451RRS-V01

Monitoring well	GMW1-1		GMW2-1		GMW3-1		GMW100-1	
gamma-HCH (ng/l)	19000	+	31000	+	40000	+	< 9	-
	0		00					
Sum of HCH (STI-list)	1470	+++	11750	+++	1100	+++	0,35	+
Heptachlor (ng/l)	< 1000	+++ (41)	< 10000	+++ (41)	< 10000	+++ (41)	< 10	-
)	0))		
Heptachloroepoxide (ng/l)	1400	+	14000	+++	14000	+++	< 14	-
			0					

OTHER COMPOUNDS

Hydrocarbon Fraction C10-C40	4700	+++	860	+++				
Tribromomethane (bromoform)	< 0,1	(14)	< 0,1	(14)				

Not in STI-list of the SPA

CKW (som)	43		< 1,1					
beta-Endosulfan	< 1		< 100					
Total PAH 10 (Dutch Ministry) (DIMSLs)	0,14	(11)	0,002	(11)				
1,2-Dichloroethylene (cis)	16		< 0,1					
DDT (total)					14		< 0,014	
DDE (total)					14		< 0,014	
DDD (total)					14		< 0,014	
Drins (Aldrin+Dieldrin+Endrin)	< 3	+++	< 300	+++	21	+++	< 0,021	
Hexachloorbutadieen	< 1		< 100					
Organo-Cl pesticides					1200		0,5	
delta-HCH	390		6300		93		< 0,008	
Hydrocarbon Fraction C10-C12	640		< 10					
Hydrocarbon Fraction C12-C16	1000		< 10					
Orthoxylene	1,2		< 0,2	(41)				
m,p-Xylene	6		< 0,2					
1,2-Dichloroethylene (trans)	3,2		< 0,1					
1,2-Dichlorobenzene	< 0,1		9,3		1,3		< 0,1	
1,3-Dichlorobenzene	430		0,46		< 0,1		< 0,1	
1,4-Dichlorobenzene	6200		7,9		0,74		< 0,1	
1,2,3-Trichlorobenzene	< 1	(41)	< 100	(41)	< 10	(41)	< 0,01	
1,2,4-Trichlorobenzene	4,4		630		< 10	(41)	< 0,01	
1,3,5-Trichlorobenzene	< 1	(41)	< 100	(41)	< 10	(41)	< 0,01	
1,2,3,4-Tetrachlorobenzene	1,3		< 100	(41)	< 10	(41)	< 0,01	

Our reference R001-1288451RRS-V01

Monitoring well	GMW1-1		GMW2-1		GMW3-1		GMW100-1	
1,2,3,5-/1,2,4,5-Tetrachlorobenzene	< 1	(41)	< 100	(41)	< 10	(41)	< 0,01	
T-Chlordane	< 1	(41)	< 100	(41)	< 10	(41)	< 0,01	
2,4-DDD	< 1	(41)	< 100	(41)	< 10	(41)	< 0,01	
4,4-DDD	< 1	(41)	< 100	(41)	< 10	(41)	< 0,01	
2,4-DDT	< 1	(41)	< 100	(41)	< 10	(41)	< 0,01	
4,4-DDT	< 1	(41)	< 100	(41)	< 10	(41)	< 0,01	
2,4-DDE	< 1	(41)	< 100	(41)	< 10	(41)	< 0,01	
4,4-DDE	< 1	(41)	< 100	(41)	< 10	(41)	< 0,01	
Endosulfan Sulphate	< 1		< 100					
Isodrin	< 1		< 100					
Telodrin	< 1		< 100					
1,2-Dichloropropane	< 0,1		< 0,1					
1,3-Dichloropropane	< 0,1		< 0,1					
--aromaten (BTEX)	17000		45					
cis-Chloordane	< 1	(41)	< 100	(41)	< 10	(41)	< 0,01	
--trans-Heptachloorepoxide	< 1	(41)	< 100	(41)	< 10	(41)	< 0,01	
1,1-Dichloorpropan	< 0,1		< 0,1					
alfa-Heptachloorepoxide	< 1	(41)	< 100	(41)	< 10	(41)	< 0,01	
Drins (som 5)	< 2		< 200					
HCH (som alfa t/m epsilon)	1500		12000					
(alfa+beta)-Chloordaan (som)	< 2		< 200					
Minerale olie C16-C21	3000		530					
Minerale olie C21-C30	< 15		120					
Minerale olie C30-C35	< 10		150					
Minerale olie C35-C40	< 10		47					
som chloorbenzenen	< 6		630		< 55		< 0,055	
pH (-)	6.48		7.48		-		-	
Conclusie (BoToVa)		+++		+++		+++		+

(+*) The analysed parameter exceeds target level due to elevated reporting concentration

< Below reporting value

Our reference R001-1288451RRS-V01

Appendix 10 Certificates of laboratory results



TAUW B.V.
T.a.v. Guido Van de Coterlet
Postbus 133
7400 AC DEVENTER

Analyscertificaat

Datum: 20-Dec-2022

Hierbij ontvangt u de resultaten van het navolgende laboratoriumonderzoek.

Certificaatnummer/Versie	2022193618/1
Uw project/verslagnummer	1288451
Uw projectnaam	Macedonia - Pelenica dumpsite
Uw ordernummer	478495
Uw datum aanlevering monster(s)	08-Dec-2022

Dit certificaat mag uitsluitend in zijn geheel worden gereproduceerd.
De analyse resultaten hebben alleen betrekking op het beproefde object.

De grondmonsters worden tot 4 weken na datum ontvangst bewaard en watermonsters tot 2 weken na datum ontvangst. Zonder tegenbericht worden de monsters nadien afgevoerd.
Indien de monsters langer bewaard dienen te blijven verzoeken wij U dit exemplaar uiterlijk 1 werkdag voor afloop van de standaardbewaarperiode ondertekend aan ons te retourneren. Voor de kosten van het langer bewaren van monsters verwijzen wij naar de prijslijst.

Bewaren tot:

Datum:

Naam:

Handtekening:

Wij vertrouwen erop uw opdracht hiermee naar verwachting te hebben uitgevoerd, mocht U naar aanleiding van dit analyscertificaat nog vragen hebben verzoeken wij U contact op te nemen met de afdeling Verkoop en Advies.

Met vriendelijke groet,

Eurofins Analytico B.V.



Ing. A. Veldhuizen
Technical Manager

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KvK/CoC: 09088623
BTW/VAT: NL 8043.14.883.B01

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Analysecertificaat

Uw project/verslagnummer	1288451	Certificaatnummer/Versie	2022193618/1
Uw projectnaam	Macedonia - Pelenica dumpsite	Startdatum analyse	12-Dec-2022
Uw ordernummer	478495	Datum einde analyse	20-Dec-2022
Uw monsternemer		Rapportagedatum	20-Dec-2022/09:09
		Bijlage	A, B, C
		Pagina	1/2

Analyse	Eenheid	1	2
Vluchtige organische halogeenkoolwaterstoffen			
S Monochloorbenzeen	µg/L	5.6	<0.10
S 1,2-Dichloorbenzeen	µg/L	1.3	<0.10
S 1,3-Dichloorbenzeen	µg/L	<0.10	<0.10
S 1,4-Dichloorbenzeen	µg/L	0.74	<0.10
S Som dichloorbenzenen corr. *0.7	µg/L	2.1	0.21
S Som mono& dichloorbenzenen corr. *0.7	µg/L	7.7	0.28
Organo chloorbestrijdingsmiddelen, OCB			
S alfa-HCH	µg/L	850	0.32
S beta-HCH	µg/L	98	0.015
S gamma-HCH	µg/L	40	<0.0090
S delta-HCH	µg/L	93	<0.0080
S Hexachloorbenzeen	µg/L	<5.0 ¹⁾	<0.0050
S Heptachloor	µg/L	<10 ¹⁾	<0.010
S Heptachloorepoxide (cis, beta)	µg/L	<10 ¹⁾	<0.010
S Heptachloorepoxide (trans, alfa)	µg/L	<10 ¹⁾	<0.010
S Aldrin	µg/L	<10 ¹⁾	<0.010
S Dieldrin	µg/L	<10 ¹⁾	<0.010
S Endrin	µg/L	<10 ¹⁾	<0.010
S alfa-Endosulfan	µg/L	<10 ¹⁾	<0.010
S HCH (som) (factor 0,7)	µg/L	1100	0.35
S alfa-Chloordaan	µg/L	<10 ¹⁾	<0.010
S gamma-Chloordaan	µg/L	<10 ¹⁾	<0.010
S Drins (som) (factor 0,7)	µg/L	21	0.021 ²⁾
S o,p-DDT	µg/L	<10 ¹⁾	<0.010
S p,p-DDT	µg/L	<10 ¹⁾	<0.010
S Heptachloorepoxide (som) (factor 0,7)	µg/L	14	0.014 ²⁾
S o,p-DDE	µg/L	<10 ¹⁾	<0.010
S DDD (som) (factor 0,7)	µg/L	14	0.014 ²⁾
S p,p-DDE	µg/L	<10 ¹⁾	<0.010
S DDE (som) (factor 0,7)	µg/L	14	0.014 ²⁾

Nr.	Uw monsteromschrijving	Opgegeven monstermatrix	Monster nr.
1	Pb 3 F(9,0-12,0)	Water (AS3000)	13274668
2	Pb 100 F(19,0-20,0)	Water (AS3000)	13274669

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Q: door RvA geaccrediteerde verrichting
 R: AP04 erkende en geaccrediteerde verrichting
 S: AS SIKB erkende en geaccrediteerde verrichting
 V: VLAREL erkende verrichting
 W: Waals Gewest erkende verrichting

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 het Brusselse Gewest (BIM), het Waalse Gewest (DGRNE-OWD)
 en door de overheid van Luxemburg (MEV).



Analysecertificaat

Uw project/verslagnummer 1288451
 Uw projectnaam Macedonia - Pelenica dumpsite
 Uw ordernummer 478495
 Uw monsternemer

Certificaatnummer/Versie 2022193618/1
 Startdatum analyse 12-Dec-2022
 Datum einde analyse 20-Dec-2022
 Rapportagedatum 20-Dec-2022/09:09
 Bijlage A, B, C
 Pagina 2/2

Analyse	Eenheid	1	2
S o,p-DDD	µg/L	<10 ¹⁾	<0.010
S DDT (som) (factor 0,7)	µg/L	14	0.014 ²⁾
S p,p-DDD	µg/L	<10 ¹⁾	<0.010
S DDX (som) (factor 0,7)	µg/L	42	0.042 ²⁾
S Chloordaan (som) (factor 0,7)	µg/L	14	0.014 ²⁾
OCB (som) (factor 0,7)	µg/L	1200	0.50
Chloorbenzenen			
S 1,2,3-Trichloorbenzeen	µg/L	<10 ¹⁾	<0.010
S 1,2,4-Trichloorbenzeen	µg/L	<10 ¹⁾	<0.010
S 1,3,5-Trichloorbenzeen	µg/L	<10 ¹⁾	<0.010
S 1245/1235-Tetrachloorbenzeen	µg/L	<10 ¹⁾	<0.010
S 1,2,3,4-Tetrachloorbenzeen	µg/L	<10 ¹⁾	<0.010
S Pentachloorbenzeen	µg/L	<5.0 ¹⁾	<0.0050
S Hexachloorbenzeen	µg/L	<5.0 ¹⁾	<0.0050
S Som minder vluchtig chloorbenzenen	µg/L	<55	<0.055
S Som tri-hexachloorbenzenen corr. *0.7	µg/L	42	0.042 ²⁾
S Som trichloorbenzenen corr *0.7	µg/L	21	0.021 ²⁾
S Som tetrachloorbenzenen corr *0.7	µg/L	14	0.014 ²⁾

Nr. Uw monsteromschrijving

1 Pb 3 F(9,0-12,0)
 2 Pb 100 F(19,0-20,0)

Opgegeven monstermatrix

Water (AS3000)
 Water (AS3000)

Monster nr.

13274668
 13274669

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Akkoord
 Pr.coörd.





Bijlage (A) met de opgegeven deelmonsterinformatie behorende bij het analysecertificaat. 2022193618/1

Pagina 1/1

Monster nr.	Uw monsteromschrijving			Uw datum monstername	Monsteromsch./Monstername ID
	Barcode	Boornr	Van Tot		
13274668	Pb 3 F(9,0-12,0)				
0670482052	DM2	0	0	08-Dec-2022	
0650341939	DM1	0	0	08-Dec-2022	
13274669	Pb 100 F(19,0-20,0)				
0650341937	DM2	0	0	08-Dec-2022	
0670482057	DM1	0	0	08-Dec-2022	



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**Bijlage (B) met opmerkingen behorende bij analysecertificaat 2022193618/1**

Pagina 1/1

Opmerking 1)

Rapportagegrens verhoogd t.g.v. verdunning monster.

Opmerking 2)De toetswaarde van de som is gelijk aan de sommatie van $0,7 \star RG$ **Eurofins Analytico B.V.**

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Bijlage (C) met methodeverwijzingen behorende bij analysecertificaat 2022193618/1

Analyse	Methode	Techniek	Methode referentie
Vluchtige organische halogeenkoolwaterstoffen			
Monochloorbenzeen	W0254	HS-GC-MS	pb 3130-2 & NEN-EN-ISO 10301
1,2-Dichloorbenzeen	W0254	HS-GC-MS	pb 3130-2 & NEN-EN-ISO 10301
1,3-Dichloorbenzeen	W0254	HS-GC-MS	pb 3130-2 & NEN-EN-ISO 10301
1,4-Dichloorbenzeen	W0254	HS-GC-MS	pb 3130-2 & NEN-EN-ISO 10301
CB (4 vl) som AS3000	W0254	HS-GC-MS	pb 3130-2 & NEN-EN-ISO 10301
Organo chloorbestrijdingsmiddelen, OCB			
OCB som AS3000	W0260	GC-MS	pb 3120-1/2 en NEN-EN-ISO 6468
OCB (25)	W0260	GC-MS	pb 3120-1/2 en NEN-EN-ISO 6468
Chloorbenzenen			
Chloorbenzenen (8) (minder vluchtig)	W0260	GC-MS	pb 3120-1/2 en NEN-EN-ISO 6468
CB (8 mvl) som AS3000	W0260	GC-MS	pb. 3120-1 en gw NEN-EN-ISO 6468

Nadere informatie over de toegepaste onderzoeksmethoden alsmede een classificatie van de meetonzekerheid staan vermeld in ons overzicht "Specificaties analysemethoden", versie april 2022.



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TAUW B.V.
Att. Ilona van der Kroeff
PO Box 133
7400 AC DEVENTER

Certificate of analysis

Date: 23-Nov-2022

Please find enclosed the analytical results of the test carried out for the project.

Certificate number/Version	2022179472/1
Your project number	1288451
Your project name	Macedonia - Pelenica dumpsite
Your order number	477753
Your Sample delivery date	15-Nov-2022

This Certificate of Analysis shall not be reproduced except in full, without written approval of the laboratory. Interpretations and opinions are outside the scope of our accreditation, and all results relate only to samples supplied.

Soil samples will be stored for a period of 4 weeks and water samples for a period of 2 weeks after receipt of the samples at our laboratory. Without any additional request, samples will be disposed when the above mentioned periods have expired. If you require Eurofins Analytico to store the samples for a longer period, please complete this page and return it to Eurofins Analytico at least one businessday before the period is due to expire. The costs of prolonged storage periods may be found in our pricelist.

Storage period:

Date:

Name:

Signature:

We are confident that we have performed the order in accordance with your expectations. If you have any remaining questions concerning this Certificate of Analysis, please don't hesitate to contact our Customer Service.

Yours sincerely,

Eurofins Analytico B.V.



Ing. A. Veldhuizen
Technical Manager

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Certificate of analysis

Your project number	1288451	Certificate number/Version	2022179472/1
Your project name	Macedonia - Pelenica dumpsite	Start date	15-Nov-2022
Your order number	477753	End date analysis	23-Nov-2022
Your sample taker		Report date	23-Nov-2022/16:38
		Annex	A, B, C
		Page	1/4

Analysis	Unit	1	2
Metals			
Q Arsenic (As)	µg/L	68	<5.0
Q Barium (Ba)	µg/L	1200	<50
Q Cadmium (Cd)	µg/L	<0.40	<0.40
Q Cobalt (Co)	µg/L	20	<3.0
Q Chromium (Cr)	µg/L	20	<1.0
Q Copper (Cu)	µg/L	<5.0	<5.0
Q Mercury (Hg)	µg/L	<0.050	<0.050
Q Molybdenum (Mo)	µg/L	<5.0	24
Q Nickel (Ni)	µg/L	130	15
Q Lead (Pb)	µg/L	25	<5.0
Q Vanadium (V)	µg/L	<10	<10
Q Zinc (Zn)	µg/L	47	<10
Mono Aromatic Hydrocarbons			
Q Benzene	µg/L	16000	42
Q Toluene	µg/L	66	3.0
Q Ethylbenzene	µg/L	1.3	<0.20
Q o-Xylene	µg/L	1.2	<0.20
Q m,p-Xylene	µg/L	6.0	<0.20
Q Xylenes (sum)	µg/L	7.2	<0.40
Q BTEX (sum)	µg/L	17000	45
Q Naphtalene	µg/L	10	<0.20
Q Styrene	µg/L	0.22	<0.10
Volatile halogenated Hydrocarbons			
Q Dichloromethane	µg/L	5.0	<0.10
Q Trichloromethane	µg/L	<0.10	<0.10
Q Tetrachloromethane	µg/L	<0.10	<0.10
Q Trichloroethene	µg/L	16	<0.10
Q Tetrachloroethene	µg/L	3.4	<0.10
Q 1,1-Dichloroethane	µg/L	0.23	<0.10
Q 1,2-Dichloroethane	µg/L	<10 ¹⁾	<0.10

No. Your sample description

1	GWM1-1 (13.5-16.5)
2	GWM2-1 (9.7-12.7)

Specified sample matrix

Groundwater
Groundwater

Sample nr.

13224268
13224269

Q: Dutch Accreditation Council (RVA) accredited test
 R: AP04 accredited test
 S: AS SIKB recognized test
 V: VLAREL recognized test
 W: Walloon region recognized test

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 BIC: BNPANL2A
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Certificate of analysis

Your project number	1288451	Certificate number/Version	2022179472/1
Your project name	Macedonia - Pelenica dumpsite	Start date	15-Nov-2022
Your order number	477753	End date analysis	23-Nov-2022
Your sample taker		Report date	23-Nov-2022/16:38
		Annex	A, B, C
		Page	2/4

Analysis	Unit	1	2
Q 1,1,1-Trichloroethane	µg/L	<0.10	<0.10
Q 1,1,2-Trichloroethane	µg/L	<0.10	<0.10
Q cis1,2-Dichloroethene	µg/L	16	<0.10
Q trans 1,2-Dichloroethene	µg/L	3.2	<0.10
Q cis+trans 1,2-Dichloroethenes (sum)	µg/L	19	<0.20
Q Chlorinated Hydrocarbons (sum)	µg/L	43	<1.1
Q Tribromomethane	µg/L	<0.10	<0.10
Q Vinyl chloride	µg/L	5.9	<0.10
Q 1,1-Dichloroethene	µg/L	0.35	<0.10
Q 1,1-Dichloropropane	µg/L	<0.10	<0.10
Q 1,2-Dichloropropane	µg/L	<0.10	<0.10
Q 1,3-Dichloropropane	µg/L	<0.10	<0.10
Q Monochlorobenzene	µg/L	<0.10	38
Q 1,2-Dichlorobenzene	µg/L	<0.10	9.3
Q 1,3-Dichlorobenzene	µg/L	430	0.46
Q 1,4-Dichlorobenzene	µg/L	6200	7.9
Petroleum Hydrocarbons			
TPH (C10-C12)	µg/L	640	<10
TPH (C12-C16)	µg/L	1000	<10
TPH (C16-C21)	µg/L	3000	530
TPH (C21-C30)	µg/L	<15	120
TPH (C30-C35)	µg/L	<10	150
TPH (C35-C40)	µg/L	<10	47
Q TPH Sum (C10-C40)	µg/L	4700 ²⁾	860
Chromatogram		See annex	See annex
Organic Chlorinated Pesticides			
Q alfa-HCH	µg/L	780	2100
Q beta-HCH	µg/L	110	250
Q gamma-HCH	µg/L	190	3100
Q delta-HCH	µg/L	390	6300
Q Hexachlorobenzene	µg/L	<0.50 ¹⁾	<50 ¹⁾

No.	Your sample description	Specified sample matrix	Sample nr.
1	GWM1-1 (13.5-16.5)	Groundwater	13224268
2	GWM2-1 (9.7-12.7)	Groundwater	13224269

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Certificate of analysis

Your project number	1288451	Certificate number/Version	2022179472/1
Your project name	Macedonia - Pelenica dumpsite	Start date	15-Nov-2022
Your order number	477753	End date analysis	23-Nov-2022
Your sample taker		Report date	23-Nov-2022/16:38
		Annex	A, B, C
		Page	3/4

Analysis	Unit	1	2
Q Heptachlor	µg/L	<1.0 ¹⁾	<100 ¹⁾
Q Heptachloroepoxide (cis)	µg/L	<1.0 ¹⁾	<100 ¹⁾
Q Heptachloroepoxide (trans)	µg/L	<1.0 ¹⁾	<100 ¹⁾
Q Hexachlorobutadiene	µg/L	<1.0 ¹⁾	<100 ¹⁾
Q Aldrin	µg/L	<1.0 ¹⁾	<100 ¹⁾
Q Dieldrin	µg/L	<1.0 ¹⁾	<100 ¹⁾
Q Endrin	µg/L	<1.0 ¹⁾	<100 ¹⁾
Q Isodrin	µg/L	<1.0 ¹⁾	<100 ¹⁾
Q Telodrin	µg/L	<1.0 ¹⁾	<100 ¹⁾
Q α-Endosulfan	µg/L	<1.0 ¹⁾	<100 ¹⁾
Q beta-Endosulfan	µg/L	<1.0 ¹⁾	<100 ¹⁾
Q α-Endosulfansulphate	µg/L	<1.0 ¹⁾	<100 ¹⁾
Q α-Chlordan	µg/L	<1.0 ¹⁾	<100 ¹⁾
Q γ-Chlordan	µg/L	<1.0 ¹⁾	<100 ¹⁾
Q 2,4 -DDT	µg/L	<1.0 ¹⁾	<100 ¹⁾
Q 4,4 -DDT	µg/L	<1.0 ¹⁾	<100 ¹⁾
Q 2,4 -DDE	µg/L	<1.0 ¹⁾	<100 ¹⁾
Q 4,4 -DDE	µg/L	<1.0 ¹⁾	<100 ¹⁾
Q 2,4 -DDD	µg/L	<1.0 ¹⁾	<100 ¹⁾
Q p,p'-DDD	µg/L	<1.0 ¹⁾	<100 ¹⁾
Q Sum 4 HCH-compounds	µg/L	1500	12000
Q Drins (sum VROM)	µg/L	<3.0	<300
Q Drins (sum OVAM)	µg/L	<2.0	<200
Q DDX (sum)	µg/L	<6.0	<600
Q Chlordan (sum)	µg/L	<2.0	<200
Chlorobenzenes			
Q 1,2,3-Trichlorobenzene	µg/L	<1.0 ¹⁾	<100 ¹⁾
Q 1,2,4-Trichlorobenzene	µg/L	4.4	630
Q 1,3,5-Trichlorobenzene	µg/L	<1.0 ¹⁾	<100 ¹⁾
Q 1245&1235 Tetrachlorobenzene	µg/L	<1.0 ¹⁾	<100 ¹⁾
Q 1,2,3,4-Tetrachlorobenzene	µg/L	1.3	<100 ¹⁾

No. Your sample description

No.	Your sample description	Specified sample matrix	Sample nr.
1	GWM1-1 (13.5-16.5)	Groundwater	13224268
2	GWM2-1 (9.7-12.7)	Groundwater	13224269

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Certificate of analysis

Your project number	1288451	Certificate number/Version	2022179472/1
Your project name	Macedonia - Pelenica dumpsite	Start date	15-Nov-2022
Your order number	477753	End date analysis	23-Nov-2022
Your sample taker		Report date	23-Nov-2022/16:38
		Annex	A, B, C
		Page	4/4

Analysis	Unit	1	2
Q Pentachlorobenzene	µg/L	<1.0 ¹⁾	<100 ¹⁾
Q Hexachlorobenzene	µg/L	<1.0 ¹⁾	<100 ¹⁾
Q Chlorobenzenes semi volatiles (sum)	µg/L	<6.0	630
miscellaneous research			
Special research		Executed	Executed
Special research		Executed	Executed

No. Your sample description

No.	Your sample description	Specified sample matrix	Sample nr.
1	GWM1-1 (13.5-16.5)	Groundwater	13224268
2	GWM2-1 (9.7-12.7)	Groundwater	13224269

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Verified
ASM
RW

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Appendix (A) with the specified sub-sample information belonging to the analysis certificate. 2022179472/

Sample nr.	Your sample description			Your sampling date	Sample description/Sampling ID
Barcode	Drill-#	From To			
13224268	GWM1-1 (13.5-16.5)				
0670479480	DM4	0 0		15-Nov-2022	
0680656098	DM2	0 0		15-Nov-2022	
0801056167	DM3	0 0		15-Nov-2022	
0630185413	DM1	0 0		15-Nov-2022	
13224269	GWM2-1 (9.7-12.7)				
0680636397	DM3	0 0		15-Nov-2022	
0630185399	DM1	0 0		15-Nov-2022	
0801056274	DM4	0 0		15-Nov-2022	
0670479504	DM2	0 0		15-Nov-2022	



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**Annex (B) concerning remarks referring to certificate of analysis 2022179472/1**

Page 1/1

Remark 1)

Reporting limit increased due to dilution of sample.

Remark 2)

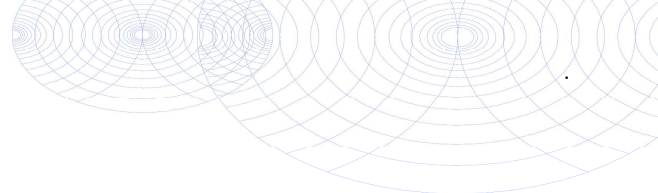
Volatile oil fraction present.

**Eurofins Analytico B.V.**

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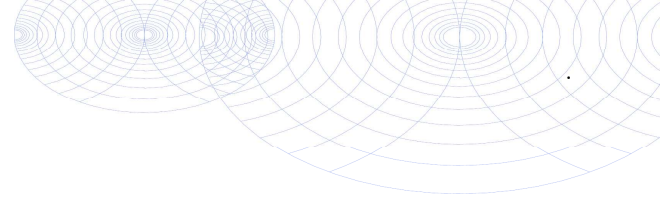
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Annex (C) method references belonging to certificate of analysis 2022179472/1

Analysis	Method	Technique	Method reference
Metals			
Arsenic (As)	W0421	ICP-MS	NEN-EN-ISO 17294-2
Barium (Ba)	W0421	ICP-MS	NEN-EN-ISO 17294-2
Cadmium (Cd)	W0421	ICP-MS	NEN-EN-ISO 17294-2
Cobalt (Co)	W0421	ICP-MS	NEN-EN-ISO 17294-2
Chromium (Cr)	W0421	ICP-MS	NEN-EN-ISO 17294-2
Copper (Cu)	W0421	ICP-MS	NEN-EN-ISO 17294-2
Mercury (Hg)	W0421	ICP-MS	NEN-EN-ISO 17294-2
Molybdenum (Mo)	W0421	ICP-MS	NEN-EN-ISO 17294-2
Nickel (Ni)	W0421	ICP-MS	NEN-EN-ISO 17294-2
Lead (Pb)	W0421	ICP-MS	NEN-EN-ISO 17294-2
Vanadium (V)	W0421	ICP-MS	NEN-EN-ISO 17294-2
Zinc (Zn)	W0421	ICP-MS	NEN-EN-ISO 17294-2
Mono Aromatic Hydrocarbons			
Aromatics (BTEXN)	W0254	HS-GC/MS	ISO 11423-1
Styrene	W0254	HS-GC/MS	ISO 11423-1
Volatile halogenated Hydrocarbons			
VOC (11)	W0254	HS-GC/MS	NEN-EN-ISO 10301
Tribromomethane (Bromoform)	W0254	HS-GC/MS	NEN-EN-ISO 10301
Vinyl chloride	W0254	HS-GC/MS	In house method
1,1-Dichloroethene	W0254	HS-GC/MS	NEN-EN-ISO 10301
1,1-Dichloropropane	W0254	HS-GC/MS	In house method
1,2-Dichloropropane	W0254	HS-GC/MS	NEN-EN-ISO 10301
1,3-Dichloropropane	W0254	HS-GC/MS	NEN-EN-ISO 10301
Monochlorobenzene	W0254	HS-GC/MS	NEN-EN-ISO 10301
1,2-Dichlorobenzene	W0254	HS-GC/MS	NEN-EN-ISO 10301
1,3-Dichlorobenzene	W0254	HS-GC/MS	NEN-EN-ISO 10301
1,4-Dichlorobenzene	W0254	HS-GC/MS	NEN-EN-ISO 10301
Petroleum Hydrocarbons			
EPH (C10-C40)	W0215	GC/FID	NEN EN ISO 9377-2
Chromatogram oil (GC)	W0215	GC/FID	In house method
Organic Chlorinated Pesticides			
OCP (25)	W0260	GC-MS	In house method
Chlorobenzenes			
Chlorobenzenes (8) (semi-volatile)	W0260	GC-MS	In house method
miscellaneous research			



Annex (C) method references belonging to certificate of analysis 2022179472/1

Analysis	Method	Technique	Method reference
Other determination (after consulting Eurofins Analytico)	P0962	Internal procedure	In house method
Other determination (after consulting Eurofins Analytico)	P0962	Internal procedure	In house method

Additional information about the applied methods as well as the classification of the accuracy, are listed in our supplement: "Specification of methods of analyses", version April 2022.



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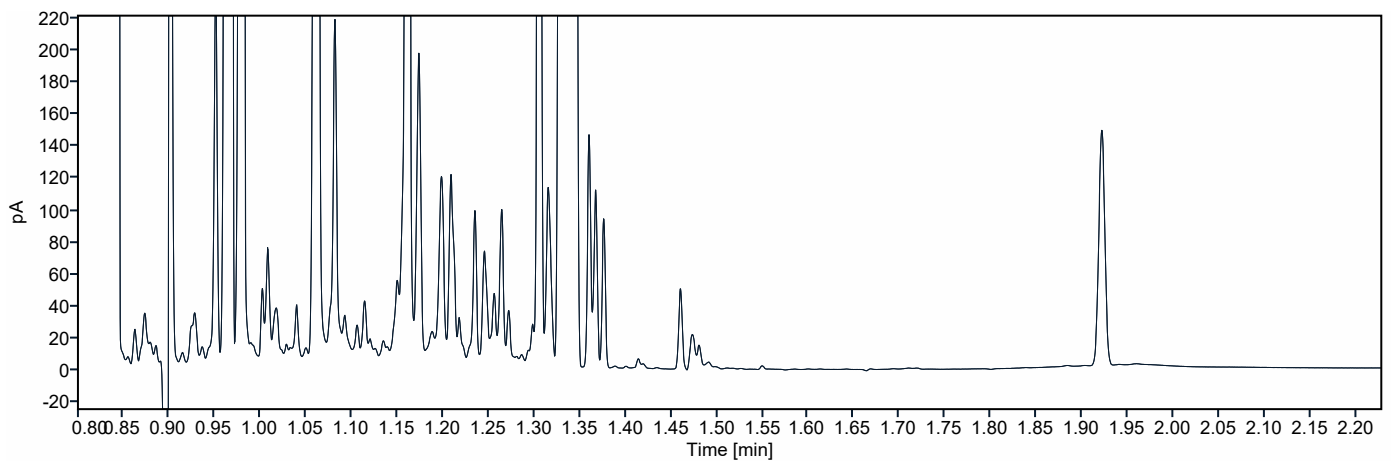
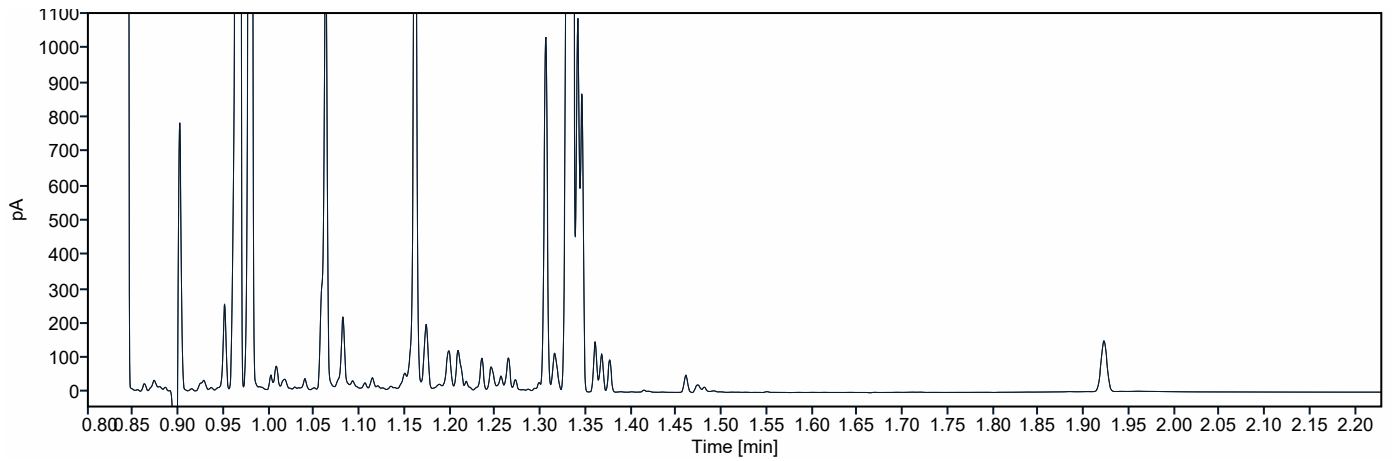
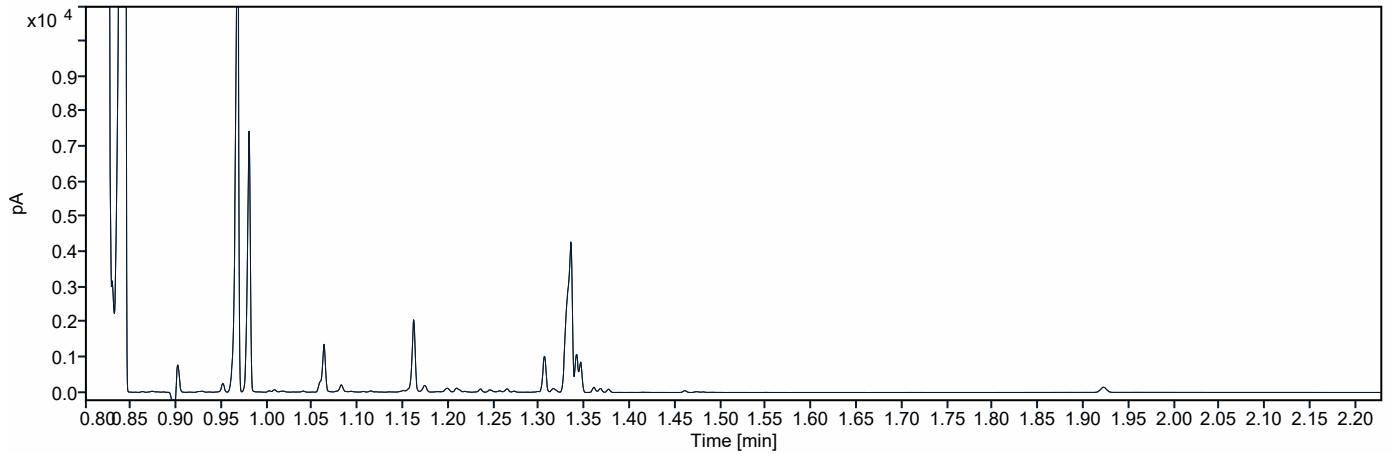
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Chromatogram TPH/ Mineral Oil

Sample ID.: 13224268
Certificate no.: 2022179472
Sample description.: GWM1-1 (13.5-16.5)

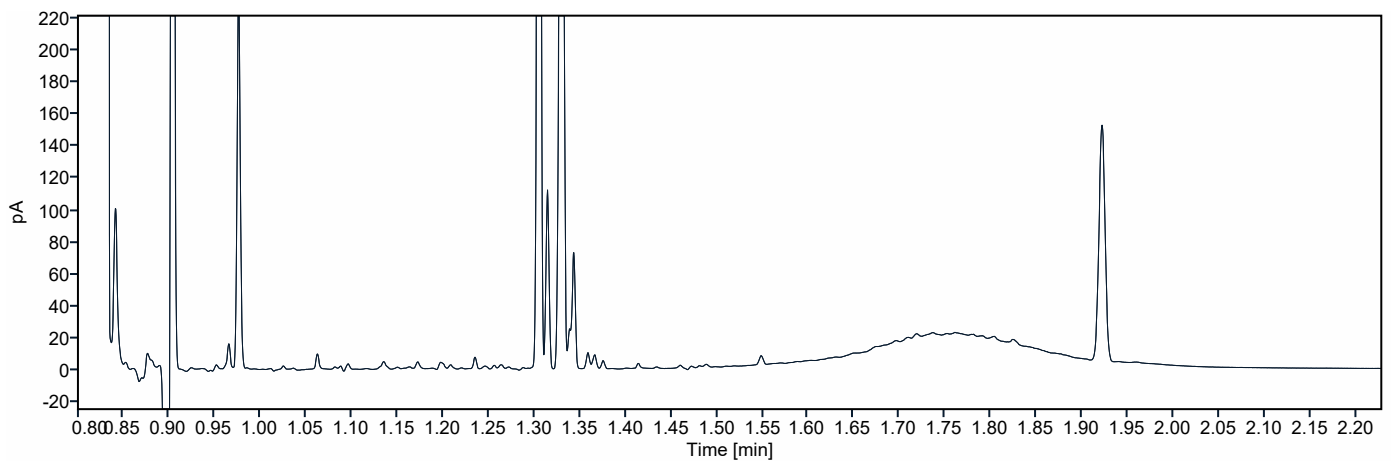
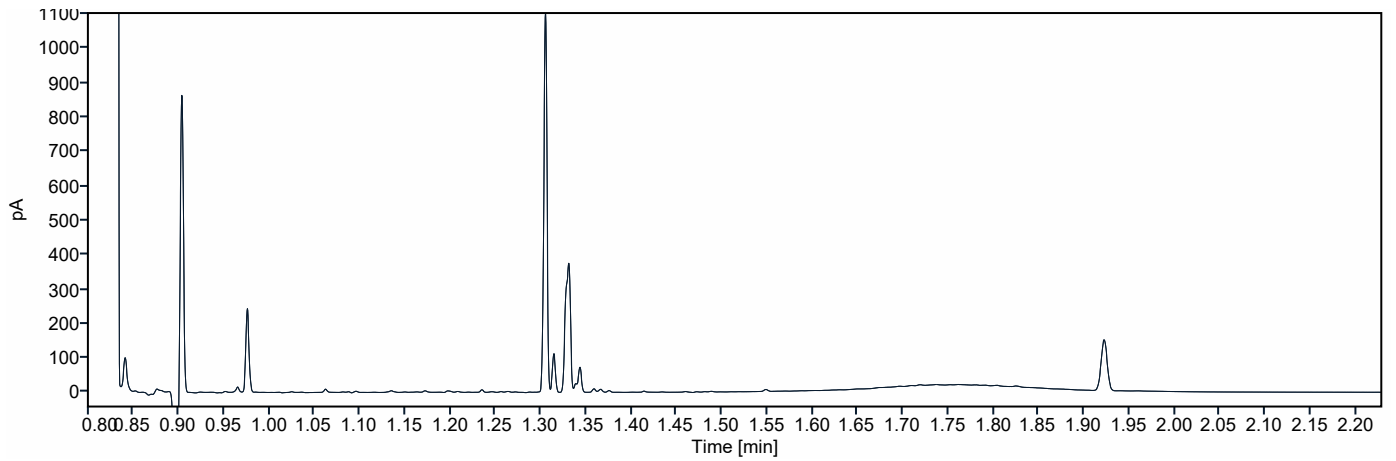
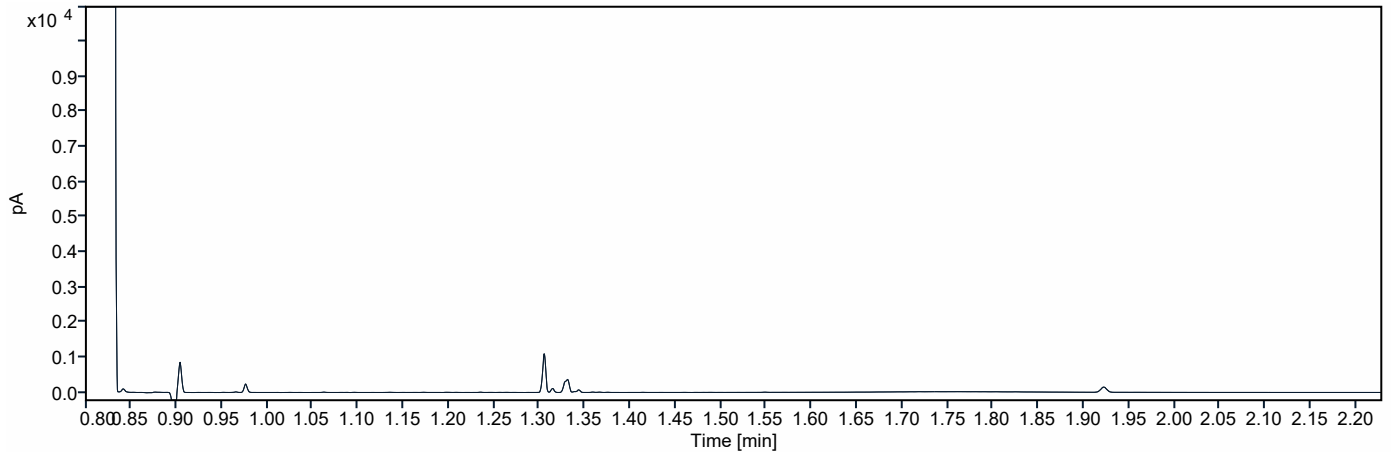
V



Chromatogram TPH/ Mineral Oil

Sample ID.: 13224269
Certificate no.: 2022179472
Sample description.: GWM2-1 (9.7-12.7)

V





TAUW B.V.
Att. Ilona van der Kroeff
PO Box 133
7400 AC DEVENTER

Certificate of analysis

Date: 28-Nov-2022

Please find enclosed the analytical results of the test carried out for the project.

Certificate number/Version	2022179461/1
Your project number	1288451
Your project name	Macedonia - Pelenica dumpsite
Your order number	477749
Your Sample delivery date	15-Nov-2022

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Soil samples will be stored for a period of 4 weeks and water samples for a period of 2 weeks after receipt of the samples at our laboratory. Without any additional request, samples will be disposed when the above mentioned periods have expired. If you require Eurofins Analytico to store the samples for a longer period, please complete this page and return it to Eurofins Analytico at least one businessday before the period is due to expire. The costs of prolonged storage periods may be found in our pricelist.

Storage period:

Date:

Name:

Signature:

We are confident that we have performed the order in accordance with your expectations. If you have any remaining questions concerning this Certificate of Analysis, please don't hesitate to contact our Customer Service.

Yours sincerely,

Eurofins Analytico B.V.



Ing. A. Veldhuizen
Technical Manager

Eurofins Analytico B.V.

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Certificate of analysis

Your project number	1288451	Certificate number/Version	2022179461/1
Your project name	Macedonia - Pelenica dumpsite	Start date	16-Nov-2022
Your order number	477749	End date analysis	28-Nov-2022
Your sample taker		Report date	28-Nov-2022/09:42
		Annex	A, B, C
		Page	1/9

Analysis	Unit	1	2	3	4
Sample Pre-treatment					
Preparation (cryo)		Executed	Executed	Executed	Executed
Characteristics					
S Dry matter	% (w/w)	92.7	92.6	93.3	92.5
Metals					
S Arsenic (As)	mg/kg dm	5.3	5.5	4.7	6.1
S Barium (Ba)	mg/kg dm	42	<20	<20	<20
S Cadmium (Cd)	mg/kg dm	<0.20	<0.20	<0.20	<0.20
S Cobalt (Co)	mg/kg dm	3.8	3.8	3.8	3.9
S Chromium (Cr)	mg/kg dm	<10	<10	<10	<10
S Copper (Cu)	mg/kg dm	<5.0	<5.0	<5.0	<5.0
S Mercury (Hg)	mg/kg dm	1.5	1.1	0.38	0.30
S Molybdenum (Mo)	mg/kg dm	<1.5	<1.5	<1.5	<1.5
S Nickel (Ni)	mg/kg dm	8.5	11	9.4	9.9
S Lead (Pb)	mg/kg dm	36	15	29	41
Q Sulphur (S)	g/kg dm				0.41
Q Sulphur as sulphate (S04)	g/kg dm				1.2
S Tin (Sn)	mg/kg dm	<1.5	<1.5	<1.5	<1.5
S Vanadium (V)	mg/kg dm	<10	<10	<10	<10
S Zinc (Zn)	mg/kg dm	<20	<20	<20	<20
Petroleum Hydrocarbons					
EPH (C10-C12)	mg/kg dm	17	7.2	6.1	
EPH (C12-C16)	mg/kg dm	130	100	120	
EPH (C16-C21)	mg/kg dm	5900	4800	5700	
EPH (C21-C30)	mg/kg dm	23	<11	16	
EPH (C30-C35)	mg/kg dm	5.7	<5.0	<5.0	
EPH (C35-C40)	mg/kg dm	<6.0	<6.0	<6.0	
S EPH Sum (C10-C40)	mg/kg dm	6100	4900	5800	
Chromatogram TPH (GC)		See annex	See annex	See annex	
Sum Organic Halogenes					

No.	Your sample description	Specified sample matrix	Sample nr.
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2	S9-1	Soil, AS3000	13224239
3	S10-1	Soil, AS3000	13224240
4	S16-2	Soil, AS3000	13224241



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Your order number	477749	End date analysis	28-Nov-2022
Your sample taker		Report date	28-Nov-2022/09:42
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Analysis	Unit	1	2	3	4
Q EOX	mg/kg dm				290
Organic Chlorinated Pesticides					
S alpha-HCH	mg/kg dm	29000	20000	23000	
S beta-HCH	mg/kg dm	2000	950	1400	
S gamma-HCH	mg/kg dm	1600	1000	1600	
S delta-HCH	mg/kg dm	1400	340	850	
S Hexachlorobenzene	mg/kg dm	<100 ¹⁾	<100 ¹⁾	<100 ¹⁾	
S Heptachloor	mg/kg dm	<100 ¹⁾	<100 ¹⁾	<100 ¹⁾	
S Heptachloorepoxide(cis- or A)	mg/kg dm	<100 ¹⁾	<100 ¹⁾	<100 ¹⁾	
S Heptachloorepoxide(trans- or B)	mg/kg dm	<100 ¹⁾	<100 ¹⁾	<100 ¹⁾	
S Hexachlorobutadiene	mg/kg dm	<100 ¹⁾	<100 ¹⁾	<100 ¹⁾	
S Aldrin	mg/kg dm	<100 ¹⁾	<100 ¹⁾	<100 ¹⁾	
S Dieldrin	mg/kg dm	<100 ¹⁾	<100 ¹⁾	<100 ¹⁾	
S Endrin	mg/kg dm	<100 ¹⁾	<100 ¹⁾	<100 ¹⁾	
S Isodrin	mg/kg dm	<100 ¹⁾	<100 ¹⁾	<100 ¹⁾	
S Telodrin	mg/kg dm	<100 ¹⁾	<100 ¹⁾	<100 ¹⁾	
S alpha-Endosulfan	mg/kg dm	<100 ¹⁾	<100 ¹⁾	<100 ¹⁾	
Q beta-Endosulfan	mg/kg dm	<100 ¹⁾	<100 ¹⁾	<100 ¹⁾	
S Endosulfansulfate	mg/kg dm	<200 ¹⁾	<200 ¹⁾	<200 ¹⁾	
S alpha-Chlordane	mg/kg dm	<100 ¹⁾	<100 ¹⁾	<100 ¹⁾	
S gamma-Chlorodane	mg/kg dm	<100 ¹⁾	<100 ¹⁾	<100 ¹⁾	
S o,p'-DDT	mg/kg dm	<100 ¹⁾	<100 ¹⁾	<100 ¹⁾	
S p,p'-DDT	mg/kg dm	<100 ¹⁾	<100 ¹⁾	<100 ¹⁾	
S o,p'-DDE	mg/kg dm	<100 ¹⁾	<100 ¹⁾	<100 ¹⁾	
S p,p'-DDE	mg/kg dm	<100 ¹⁾	<100 ¹⁾	<100 ¹⁾	
S o,p'-DDD	mg/kg dm	<100 ¹⁾	<100 ¹⁾	<100 ¹⁾	
S p,p'-DDD	mg/kg dm	<100 ¹⁾	<100 ¹⁾	<100 ¹⁾	
S HCH (som) (factor 0,7)	mg/kg dm	33000 ¹⁾	22000 ¹⁾	26000 ¹⁾	
S Drins (som) (factor 0,7)	mg/kg dm	210 ²⁾	210 ²⁾	210 ²⁾	
S Heptachloorepoxide (som) (factor 0,7)	mg/kg dm	140 ²⁾	140 ²⁾	140 ²⁾	
S DDD (som) (factor 0,7)	mg/kg dm	140 ²⁾	140 ²⁾	140 ²⁾	

No. Your sample description

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Analysis	Unit	1	2	3	4
S DDE (som) (factor 0,7)	mg/kg dm	140 ²⁾	140 ²⁾	140 ²⁾	
S DDT (som) (factor 0,7)	mg/kg dm	140 ²⁾	140 ²⁾	140 ²⁾	
S DDX (som) (factor 0,7)	mg/kg dm	420 ²⁾	420 ²⁾	420 ²⁾	
S Chloordaan (som) (factor 0,7)	mg/kg dm	140 ²⁾	140 ²⁾	140 ²⁾	
S OCB (som) LB (factor 0,7)	mg/kg dm	34000 ¹⁾	23000 ¹⁾	28000 ¹⁾	
S OCB (som) WB (factor 0,7)	mg/kg dm	34000	23000	28000	
Polychlorinated Biphenyl					
S PCB 28	mg/kg dm	<0.010 ¹⁾	<0.010 ¹⁾	<0.010 ¹⁾	
S PCB 52	mg/kg dm	<0.010 ¹⁾	<0.010 ¹⁾	<0.010 ¹⁾	
S PCB 101	mg/kg dm	0.017	<0.010 ¹⁾	0.018	
S PCB 118	mg/kg dm	0.011	<0.010 ¹⁾	0.015	
S PCB 138	mg/kg dm	0.011 ³⁾	<0.010 ¹⁾	0.013 ³⁾	
S PCB 153	mg/kg dm	0.012 ⁴⁾	<0.010 ¹⁾	0.014 ⁴⁾	
S PCB 180	mg/kg dm	0.014	<0.010 ¹⁾	0.015	
S PCB (som 7) (factor 0,7)	mg/kg dm	0.079 ¹⁾	0.049 ²⁾	0.089 ¹⁾	
Chlorobenzenes					
Q Monochlorobenzene	mg/kg dm				<10 ¹⁾
Q 1,2-Dichlorobenzene	mg/kg dm				<10 ¹⁾
Q 1,3-Dichlorobenzene	mg/kg dm				<10 ¹⁾
Q 1,4-Dichlorobenzene	mg/kg dm				<10 ¹⁾
Q Dichlorobenzenes (sum)	mg/kg dm				<30
Q 1,2,3-Trichlorobenzene	mg/kg dm				<10 ¹⁾
Q 1,2,4-Trichlorobenzene	mg/kg dm				30
Q 1,3,5-Trichlorobenzene	mg/kg dm				<1.0 ¹⁾
Q Trichlorobenzenes (sum)	mg/kg dm				30
Q 1,2,3,4-Tetrachlorobenzene	mg/kg dm				41
Q 1245&1235 Tetrachlorobenzene	mg/kg dm				22
Q Tetrachlorobenzenes (sum)	mg/kg dm				63
Q Pentachlorobenzene	mg/kg dm				4.1
Q Hexachlorobenzene	mg/kg dm				<2.0 ¹⁾

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Analysis	Unit	1	2	3	4
Polycyclic Aromatic Hydrocarbons, PAH					
S Naphtalene	mg/kg dm	<0.50 ¹⁾	<0.50 ¹⁾	<0.50 ¹⁾	
S Phenanthrene	mg/kg dm	1.9	<0.50 ¹⁾	<0.50 ¹⁾	
S Anthracene	mg/kg dm	<0.50 ¹⁾	<0.50 ¹⁾	<0.50 ¹⁾	
S Fluoranthene	mg/kg dm	0.72	<0.50 ¹⁾	<0.50 ¹⁾	
S Benzo(a)anthracene	mg/kg dm	<0.50 ¹⁾	<0.50 ¹⁾	<0.50 ¹⁾	
S Chrysene	mg/kg dm	<0.50 ¹⁾	<0.50 ¹⁾	<0.50 ¹⁾	
S Benzo(k)fluoranthene	mg/kg dm	<0.50 ¹⁾	<0.50 ¹⁾	<0.50 ¹⁾	
S Benzo(a)pyrene	mg/kg dm	<0.50 ¹⁾	<0.50 ¹⁾	<0.50 ¹⁾	
S Benzo(ghi)perylene	mg/kg dm	<0.50 ¹⁾	<0.50 ¹⁾	<0.50 ¹⁾	
S Indeno(123cd)pyrene	mg/kg dm	<0.50 ¹⁾	<0.50 ¹⁾	<0.50 ¹⁾	
S PAK VROM (10) (factor 0,7)	mg/kg dm	5.4	3.5 ²⁾	3.5 ²⁾	
miscellaneous research					
2378TetraCDD	ng/kg dm				87.3 ⁵⁾
12378-PentaCDD	ng/kg dm				1910 ⁵⁾
123478-HexaCDD	ng/kg dm				6300 ⁵⁾
123678-HexaCDD	ng/kg dm				16600 ⁵⁾
123789-HexaCDD	ng/kg dm				8950 ⁵⁾
1234678-HeptaCDD	ng/kg dm				147000 ⁵⁾
OctaCDD	ng/kg dm				378000 ⁵⁾
2378-TetraCDF	ng/kg dm				380 ⁵⁾
12378-PentaCDF	ng/kg dm				2010 ⁵⁾
23478-PentaCDF	ng/kg dm				1630 ⁵⁾
123478-HexaCDF	ng/kg dm				10600 ⁵⁾
123678-HexaCDF	ng/kg dm				2630 ⁵⁾
123789-HexaCDF	ng/kg dm				< 306 ⁵⁾
234678-HexaCDF	ng/kg dm				732 ⁵⁾
1234678-HeptaCDF	ng/kg dm				30700 ⁵⁾
1234789-HeptaCDF	ng/kg dm				4240 ⁵⁾
OctaCDF	ng/kg dm				92400 ⁵⁾
WH0(`05) PCDD/F TEQ excl LOQ	ng/kg dm				9120 ⁵⁾

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4	S16-2	Soil, AS3000	13224241



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Analysis	Unit	1	2	3	4
WHO(`05) PCDD/F TEQ incl LOQ	ng/kg dm				9150 ⁵⁾
I-TEQ (NATO/CCMS) excl. LOQ	ng/kg dm				8850 ⁵⁾
I-TEQ (NATO/CCMS) incl. LOQ	ng/kg dm				8890 ⁵⁾
Special research		Executed	Executed	Executed	Executed
Special research		Executed	Executed	Executed	Executed
Phenols					
Q Phenol	mg/kg dm				<10 ¹⁾
Q o-Cresol	mg/kg dm				<10 ¹⁾
Q m-Cresol	mg/kg dm				<10 ¹⁾
Q p-Cresol	mg/kg dm				<10 ¹⁾
Q Cresols (sum)	mg/kg dm				<30
Q 2,4-Dimethylphenol	mg/kg dm				<10 ¹⁾
Q 2,5-Dimethylphenol	mg/kg dm				<10 ¹⁾
Q 2,6-Dimethylphenol	mg/kg dm				<10 ¹⁾
Q 3,4-Dimethylphenol	mg/kg dm				<10 ¹⁾
Q o-Ethylphenol	mg/kg dm				<20 ¹⁾
Q m-Ethylphenol	mg/kg dm				<10 ¹⁾
Q Thymol	mg/kg dm				<10 ¹⁾
Q 2,3/3,5-Dimethylphenol + 4-Ethylphenol	mg/kg dm				<10 ¹⁾
Polycyclic Aromatic Hydrocarbons					
Q Naphtalene	mg/kg dm				<10 ¹⁾
Q Acenaphtylene	mg/kg dm				<10 ¹⁾
Q Acenaphtene	mg/kg dm				<10 ¹⁾
Q Fluorene	mg/kg dm				<10 ¹⁾
Q Phenanthrene	mg/kg dm				<10 ¹⁾
Q Anthracene	mg/kg dm				<10 ¹⁾
Q Fluoranthene	mg/kg dm				<10 ¹⁾
Q Pyrene	mg/kg dm				<10 ¹⁾
Q Benzo(a)anthracene	mg/kg dm				<10 ¹⁾
Q Chrysene	mg/kg dm				<10 ¹⁾
Q Benzo(b)fluoranthene	mg/kg dm				<10 ¹⁾

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Analysis	Unit	1	2	3	4
Q Benzo(k)fluoranthene	mg/kg dm				<10 ¹⁾
Q Benzo(a)pyrene	mg/kg dm				<10 ¹⁾
Q Dibenzo(ah)anthracene	mg/kg dm				<10 ¹⁾
Q Benzo(ghi)perylene	mg/kg dm				<10 ¹⁾
Q Indeno(123cd)pyrene	mg/kg dm				<10 ¹⁾
Q PAH 10 VROM (sum)	mg/kg dm				<100
Q PAH 16 EPA (sum)	mg/kg dm				<160
Chlorophenols					
Q o-Chlorophenol	mg/kg dm				<10 ¹⁾
Q m-Chlorophenol	mg/kg dm				<10 ¹⁾
Q p-Chlorophenol	mg/kg dm				<10 ¹⁾
Q Monochlorophenols (sum)	mg/kg dm				<30
Q 2,3-Dichlorophenol	mg/kg dm				<2.0 ¹⁾
Q 2,4/2,5-Dichlorophenol	mg/kg dm				<1.0 ¹⁾
Q 2,6-Dichlorophenol	mg/kg dm				<1.0 ¹⁾
Q 3,4-Dichlorophenol	mg/kg dm				<2.0 ¹⁾
Q 3,5-Dichlorophenol	mg/kg dm				<1.0 ¹⁾
Q Dichlorophenols (sum)	mg/kg dm				<7.0
Q 2,3,4-Trichlorophenol	mg/kg dm				<10 ¹⁾
Q 2,3,5-Trichlorophenol	mg/kg dm				<1.0 ¹⁾
Q 2,3,6-Trichlorophenol	mg/kg dm				<1.0 ¹⁾
Q 2,4,5-Trichlorophenol	mg/kg dm				<1.0 ¹⁾
Q 2,4,6-Trichlorophenol	mg/kg dm				4.9
Q 3,4,5-Trichlorophenol	mg/kg dm				<2.0 ¹⁾
Q Trichlorophenols (sum)	mg/kg dm				<16
Q 2,3,4,5-Tetrachlorophenol	mg/kg dm				<2.0 ¹⁾
Q 2,3,4,6 / 2,3,5,6-Tetrachlorophenol	mg/kg dm				<10 ¹⁾
Q Tetrachlorophenols (sum)	mg/kg dm				<12
Q Pentachlorophenol	mg/kg dm				<1.0 ¹⁾
Q 4-Chloro-3-methylphenol	mg/kg dm				<1.0 ¹⁾

PolyChlorinated Biphenyl (PCB)

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Analysis	Unit	1	2	3	4
Q PCB 28	mg/kg dm				<2.0 ¹⁾
Q PCB 52	mg/kg dm				<2.0 ¹⁾
Q PCB 101	mg/kg dm				<2.0 ¹⁾
Q PCB 118	mg/kg dm				<2.0 ¹⁾
Q PCB 138	mg/kg dm				<2.0 ¹⁾
Q PCB 153	mg/kg dm				<2.0 ¹⁾
Q PCB 180	mg/kg dm				<2.0 ¹⁾
Q PCB (6) (sum)	mg/kg dm				<12
Q PCB (7) (sum)	mg/kg dm				<14
Chloronitrobenzenes					
Q o/p-Chloronitrobenzene	mg/kg dm				<10 ¹⁾
Q m-Chloronitrobenzene	mg/kg dm				<10 ¹⁾
Q Monochloronitrobenzenes (sum)	mg/kg dm				--
Q 2,3+3,4-Dichloronitrobenzene	mg/kg dm				<10 ¹⁾
Q 2,4-Dichloronitrobenzene	mg/kg dm				<20 ¹⁾
Q 2,5-Dichloronitrobenzene	mg/kg dm				<10 ¹⁾
Q 3,5-Dichloronitrobenzene	mg/kg dm				<20 ¹⁾
Q Dichloronitrobenzenes (sum)	mg/kg dm				--
Organic Chlorinated Pesticides					
Q 4,4 -DDE	mg/kg dm				<1.0 ¹⁾
Q 2,4 -DDE	mg/kg dm				<1.0 ¹⁾
Q 4,4 -DDT	mg/kg dm				<2.0 ¹⁾
Q 4,4 -DDD + 2,4 -DDT	mg/kg dm				<1.0 ¹⁾
Q 2,4 -DDD	mg/kg dm				<1.0 ¹⁾
Q DDT/DDE/DDD (sum)	mg/kg dm				<6.0
Q Aldrin	mg/kg dm				<2.0 ¹⁾
Q Dieldrin	mg/kg dm				<2.0 ¹⁾
Q Endrin	mg/kg dm				<5.0 ¹⁾
Q Drins (sum)	mg/kg dm				<9.0
Q alfa-HCH	mg/kg dm				21000 ⁶⁾
Q beta-HCH	mg/kg dm				850

No.	Your sample description	Specified sample matrix	Sample nr.
1	S1-1	Soil, AS3000	13224238
2	S9-1	Soil, AS3000	13224239
3	S10-1	Soil, AS3000	13224240
4	S16-2	Soil, AS3000	13224241



Q: Dutch Accreditation Council (RVA) accredited test
 R: AP04 accredited test
 S: AS SIKB recognized test
 V: VLAREL recognized test
 W: Walloon region recognized test

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 www.eurofins.nl www.eurofins.be

BNP Paribas S.A. 227 9245 25
 IBAN: NL71BNPA0227924525
 BIC: BNPANL2A
 KvK/CoC: 09088623
 BTW/VAT: NL 8043.14.883.B01

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Certificate of analysis

Your project number 1288451
 Your project name Macedonia - Pelenica dumpsite
 Your order number 477749
 Your sample taker

Certificate number/Version 2022179461/1
 Start date 16-Nov-2022
 End date analysis 28-Nov-2022
 Report date 28-Nov-2022/09:42
 Annex A, B, C
 Page 8/9

Analysis	Unit	1	2	3	4
Q gamma-HCH	mg/kg dm				1300
Q delta-HCH	mg/kg dm				700
Q Sum 4 HCH-compounds	mg/kg dm				23000
Q α-Endosulfan	mg/kg dm				<10 ¹⁾
Q alfa-Endosulfansulphate	mg/kg dm				<20 ¹⁾
Q α-Chlordan	mg/kg dm				<2.0 ¹⁾
Q γ-Chlordan	mg/kg dm				<2.0 ¹⁾
Q Chlordans (sum)	mg/kg dm				<4.0
Q Heptachlor	mg/kg dm				<2.0 ¹⁾
Q Heptachloroepoxide	mg/kg dm				<2.0 ¹⁾
Q Hexachlorobutadiene	mg/kg dm				<2.0 ¹⁾
Q Isodrin	mg/kg dm				<5.0 ¹⁾
Q Telodrin	mg/kg dm				<5.0 ¹⁾
Q Tedion	mg/kg dm				<5.0 ¹⁾
Phosphor pesticides					
Q Azinphos-ethyl	mg/kg dm				<5.0 ¹⁾
Q Azinphos-methyl	mg/kg dm				<5.0 ¹⁾
Q Bromophos-ethyl	mg/kg dm				<20 ¹⁾
Q Bromophos-methyl	mg/kg dm				<20 ¹⁾
Q Chloropyriphos-ethyl	mg/kg dm				<10 ¹⁾
Q Chloropyriphos-methyl	mg/kg dm				<10 ¹⁾
Q Cumaphos	mg/kg dm				<5.0 ¹⁾
Q Demeton-S/demeton-0-ethyl	mg/kg dm				<20
Q Diazinone	mg/kg dm				<5.0 ¹⁾
Q Disulphotone	mg/kg dm				<20 ¹⁾
Q Fenitrothion	mg/kg dm				<5.0 ¹⁾
Q Fenthion	mg/kg dm				<2.0 ¹⁾
Q Malathion	mg/kg dm				<5.0 ¹⁾
Q Parathion-ethyl	mg/kg dm				<5.0 ¹⁾
Q Parathion-methyl	mg/kg dm				<10 ¹⁾
Q Pyrazophos	mg/kg dm				<5.0 ¹⁾

No.	Your sample description	Specified sample matrix	Sample nr.
1	S1-1	Soil, AS3000	13224238
2	S9-1	Soil, AS3000	13224239
3	S10-1	Soil, AS3000	13224240
4	S16-2	Soil, AS3000	13224241



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Certificate of analysis

Your project number	1288451	Certificate number/Version	2022179461/1
Your project name	Macedonia - Pelenica dumpsite	Start date	16-Nov-2022
Your order number	477749	End date analysis	28-Nov-2022
Your sample taker		Report date	28-Nov-2022/09:42
		Annex	A, B, C
		Page	9/9

Analysis	Unit	1	2	3	4
Q Triazophos	mg/kg dm				<20 ¹⁾
Nitrogen pesticides					
Q Ametryn	mg/kg dm				<10 ¹⁾
Q Atrazine	mg/kg dm				<20 ¹⁾
Q Cyanazine	mg/kg dm				<20 ¹⁾
Q Desmetryn	mg/kg dm				<5.0 ¹⁾
Q Prometryn	mg/kg dm				<20 ¹⁾
Q Propazine	mg/kg dm				<20 ¹⁾
Q Simazine	mg/kg dm				<20 ¹⁾
Q Terbutylazine	mg/kg dm				<20 ¹⁾
Q Terbutryn	mg/kg dm				<50 ¹⁾
Miscellaneous pesticides					
Q Bifenthrin	mg/kg dm				<5.0 ¹⁾
Q Cypermethrin	mg/kg dm				<50 ¹⁾
Q Deltamethrin	mg/kg dm				<10 ¹⁾
Q Permethrin A	mg/kg dm				<10 ¹⁾
Q Propachlor	mg/kg dm				<20 ¹⁾
Q Trifluralin	mg/kg dm				<5.0 ¹⁾
Miscellaneous Organic compounds					
Biphenyl	mg/kg dm				<5.0 ¹⁾
Nitrobenzene	mg/kg dm				<100 ¹⁾
Dibenzofurane	mg/kg dm				<10 ¹⁾
BiphenylEther	mg/kg dm				<5.0 ¹⁾

No. Your sample description

No.	Your sample description	Specified sample matrix	Sample nr.
1	S1-1	Soil, AS3000	13224238
2	S9-1	Soil, AS3000	13224239
3	S10-1	Soil, AS3000	13224240
4	S16-2	Soil, AS3000	13224241

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Verified
 ASM





Appendix (A) with the specified sub-sample information belonging to the analysis certificate. 2022179461/

Sample nr.	Your sample description			Your sampling date	Sample description/Sampling ID
	Barcode	Drill-#	From To		
13224238		S1-1			
0539437718	DM1		7 7	14-Nov-2022	
0539437731	DM2		7 7	14-Nov-2022	
13224239		S9-1			
0539800465	DM1		1 1	14-Nov-2022	
0539437732	DM2		1 1	14-Nov-2022	
13224240		S10-1			
0539437716	DM2		2 3	14-Nov-2022	
0539437727	DM1		2 3	14-Nov-2022	
13224241		S16-2			
0539437722	DM1		1 2	14-Nov-2022	
0539437709	DM2		1 2	14-Nov-2022	



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**Annex (B) concerning remarks referring to certificate of analysis 2022179461/1**

Page 1/1

Remark 1)

Reporting limit increased due to dilution of sample.

Remark 2)

Reporting limit is raised by dilution of the sample due to matrix interference.

Remark 3)

PCB 138 could be influenced by PCB 163.

Remark 4)

PCB 153 could be influenced by PCB 132.

Remark 5)

Deze bepaling is uitbesteed bij Eurofins GFA te Hamburg.

Remark 6)

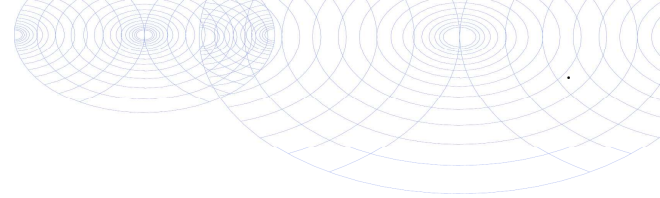
Indicative value: result is outside the calibration range of the method. No dilution possible.

**Eurofins Analytico B.V.**

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Annex (C) method references belonging to certificate of analysis 2022179461/1

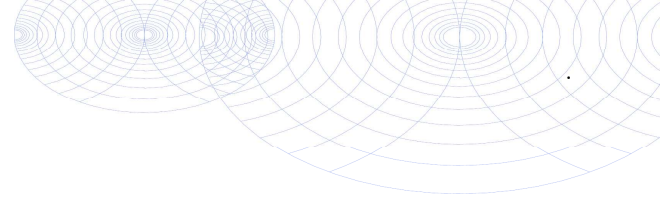
Analysis	Method	Technique	Method reference
Sample Pre-treatment			
Cryogenic grinding	W0106	Pre-treatment	AS3000
Characteristics			
Dry matter	W0104	Gravimetry	pb 3010-2 en NEN-EN 15934
Metals			
Arsenic (As)	W0423	ICP-MS	pb 3010-5 & NEN-EN-ISO 17294-2
Barium (Ba)	W0423	ICP-MS	pb 3010-5 & NEN-EN-ISO 17294-2
Cadmium (Cd)	W0423	ICP-MS	pb 3010-5 & NEN-EN-ISO 17294-2
Cobalt (Co)	W0423	ICP-MS	pb 3010-5 & NEN-EN-ISO 17294-2
Chromium(Cr)	W0423	ICP-MS	pb 3010-5 & NEN-EN-ISO 17294-2
Copper (Cu)	W0423	ICP-MS	pb 3010-5 & NEN-EN-ISO 17294-2
Mercury (Hg)	W0423	ICP-MS	pb 3010-5 & NEN-EN-ISO 17294-2
Molybdenum (Mo)	W0423	ICP-MS	pb 3010-5 & NEN-EN-ISO 17294-2
Nickel (Ni)	W0423	ICP-MS	pb 3010-5 & NEN-EN-ISO 17294-2
Lead (Pb)	W0423	ICP-MS	pb 3010-5 & NEN-EN-ISO 17294-2
Sulphur (S) total	W0423	ICP-MS	NEN-EN-ISO 17294-2
Tin (Sn)	W0423	ICP-MS	pb 3010-5 & NEN-EN-ISO 17294-2
Vanadium (V)	W0423	ICP-MS	pb 3050-1/2 & NEN-EN-ISO 17294-2
Zinc (Zn)	W0423	ICP-MS	pb 3010-5 & NEN-EN-ISO 17294-2
Petroleum Hydrocarbons			
EPH (C10-C40)	W0202	GC/FID	pb 3010-7 & to NEN-EN-ISO 16703
Chromatogram TPH (GC)	W0202	GC/FID	NEN-EN-ISO 16703
Sum Organic Halogenes			
EOX	W0351	Microcoulometry	In house methode
Organic Chlorinated Pesticides			
OCP (25)	W0262	GC-MS	pb 3020-1-3 & NEN 6980
OCB som AS3000	W0262	GC-MS	pb 3020-1-3 & NEN 6980
Polychlorinated Biphenyl			
PCB (7)	W0271	GC-MS	pb 3010-8 & NEN 6980
Chlorobenzenes			
Chlorobenzenes	W6331	GC-MS	In house method
Polycyclic Aromatic Hydrocarbons, PAH			
PAK som AS3000/AP04	W0271	GC-MS	pb. 3010-6 & NEN-ISO 18287
PAH (10) (VROM)	W0271	GC-MS	pb. 3010-6 & NEN-ISO 18287
miscellaneous research			
Dioxines (subcontracted)	W0004	External	External method

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Annex (C) method references belonging to certificate of analysis 2022179461/1

Analysis	Method	Technique	Method reference
Other determination (after consulting Eurofins Analytico)	P0962	Internal procedure	In house method
Other determination (after consulting Eurofins Analytico)	P0962	Internal procedure	In house method
Phenols			
Phenols (11) and Cresols (3)	W6331	GC-MS	In house method
Polycyclic Aromatic Hydrocarbons			
PAH 16 according EPA	W6331	GC-MS	In house method
Chlorophenols			
Chlorophenoles (20)	W6331	GC-MS	In house method
PolyChlorinated Biphenyl (PCB)			
PCB with GCMS	W6331	GC-MS	In house method
Chloronitrobenzenes			
Chloronitrobenzenes	W6331	GC-MS	In house method
Organic Chlorinated Pesticides			
Chloropesticides	W6331	GC-MS	In house method
Phosphor pesticides			
Organo phosphorous pesticides (OPP 13)	W6331	GC-MS	In house method
Nitrogen pesticides			
Organo nitrogen herbicides (ONP 4)	W6331	GC-MS	In house method
Miscellaneous pesticides			
Other pesticides	W6331	GC-MS	In house method
Miscellaneous Organic compounds			
Other organic pollutants	W6331	GC-MS	In house method

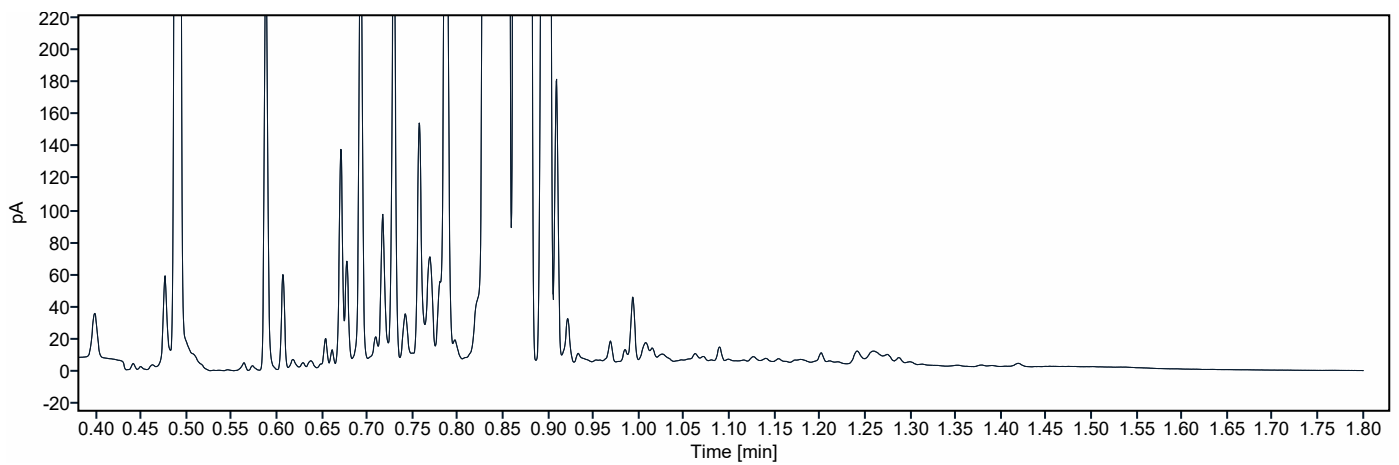
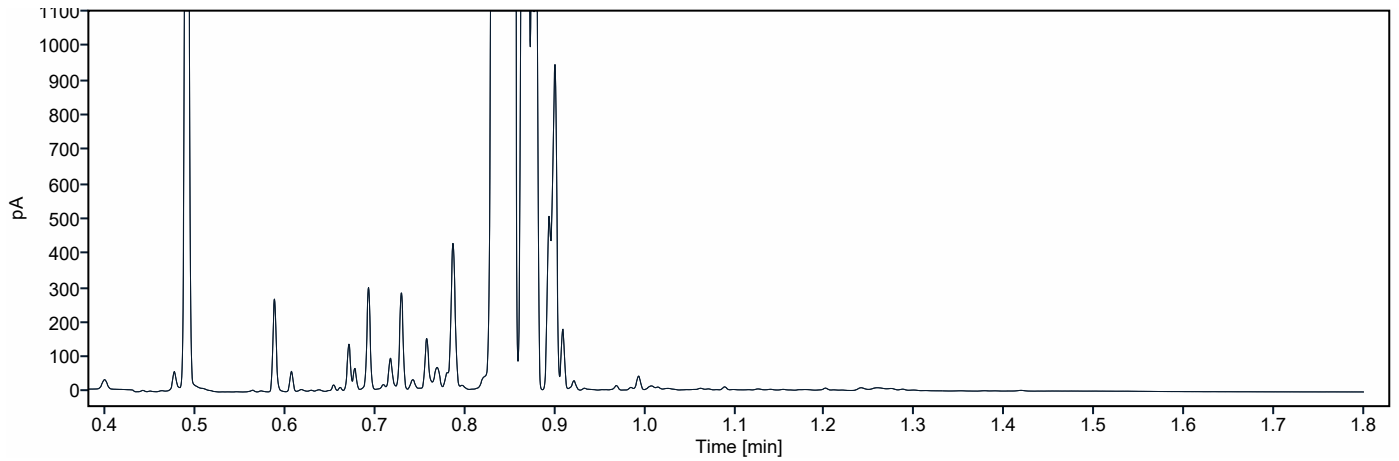
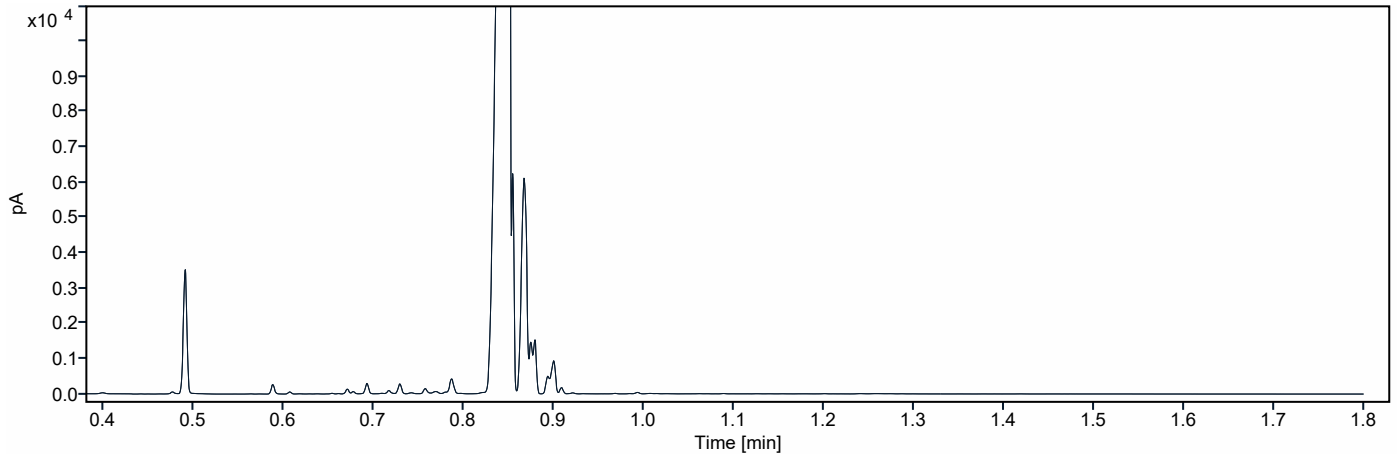
Additional information about the applied methods as well as the classification of the accuracy, are listed in our supplement: "Specification of methods of analyses", version April 2022.



Chromatogram TPH/ Mineral Oil

Sample ID.: 13224238
Certificate no.: 2022179461
Sample description.: S1-1

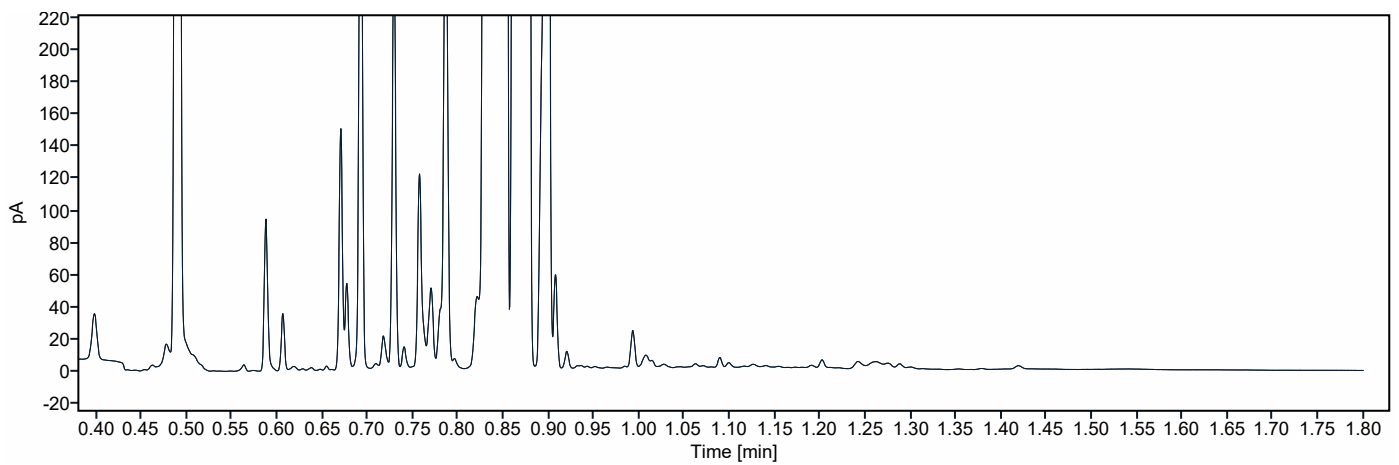
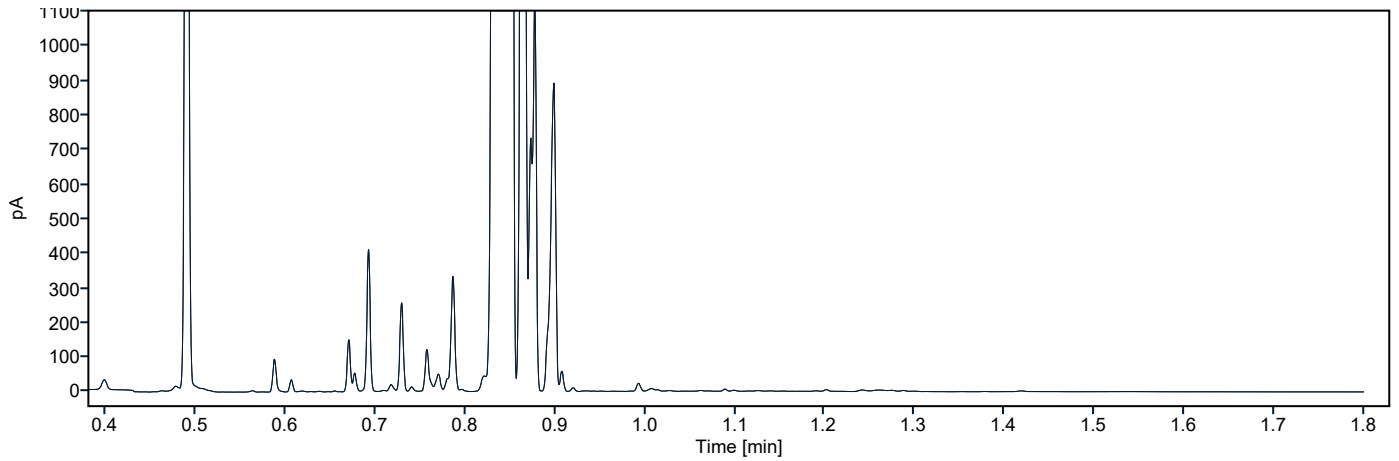
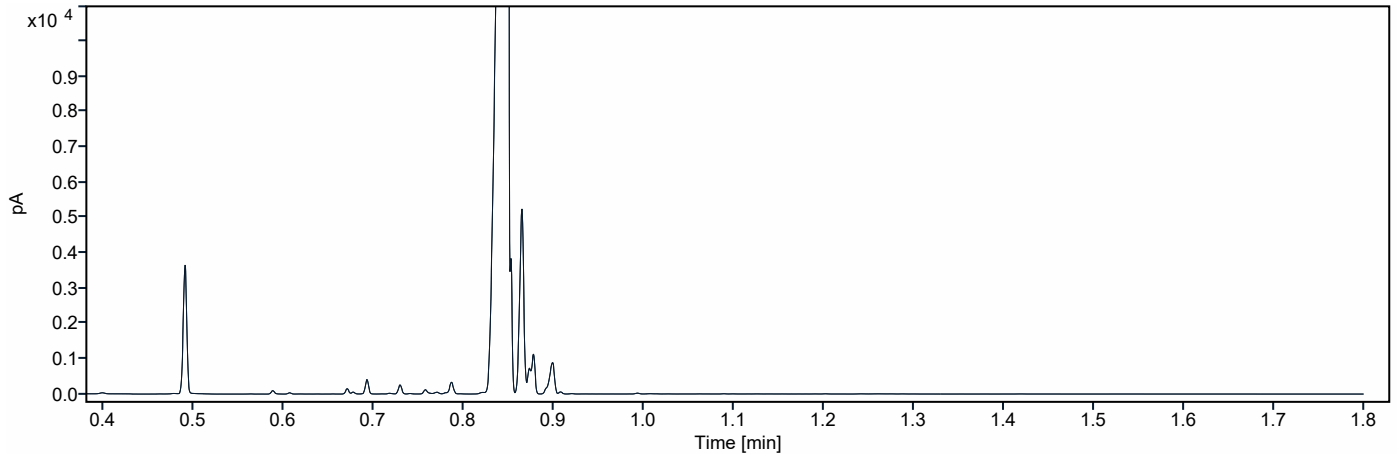
V



Chromatogram TPH/ Mineral Oil

Sample ID.: 13224239
Certificate no.: 2022179461
Sample description.: S9-1

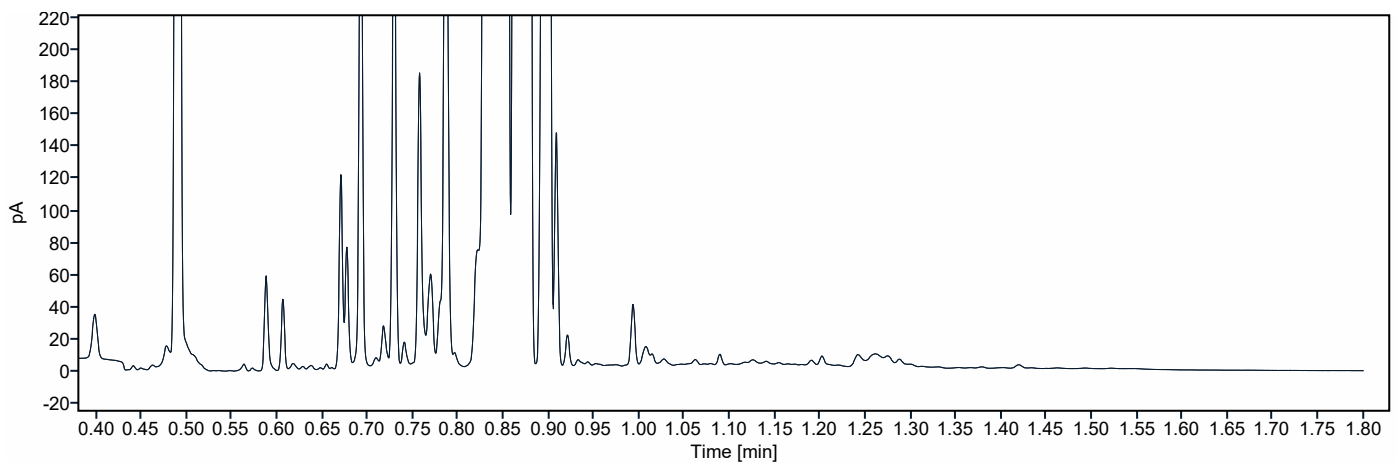
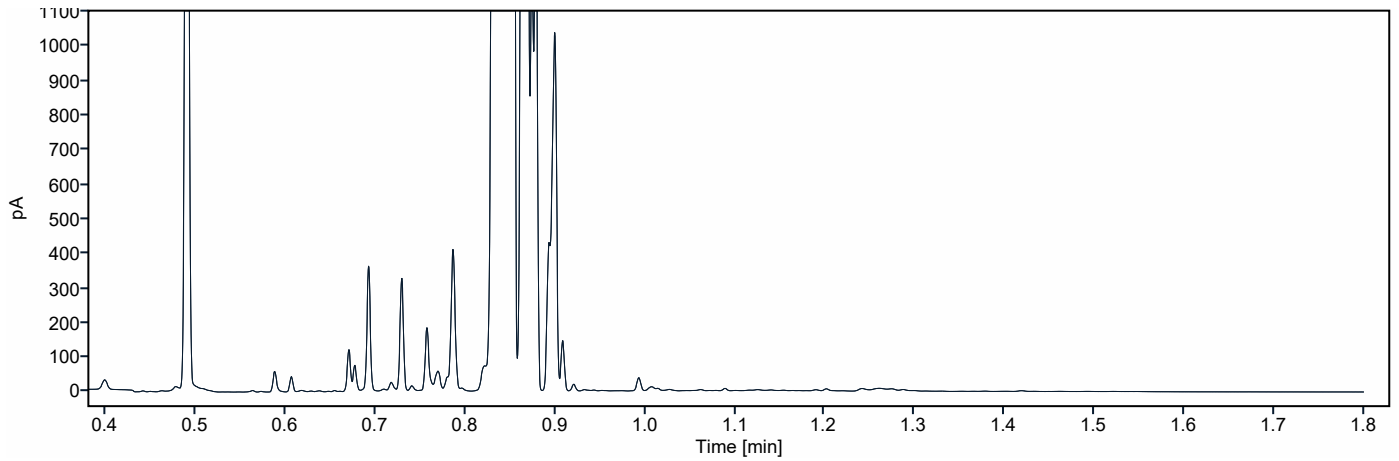
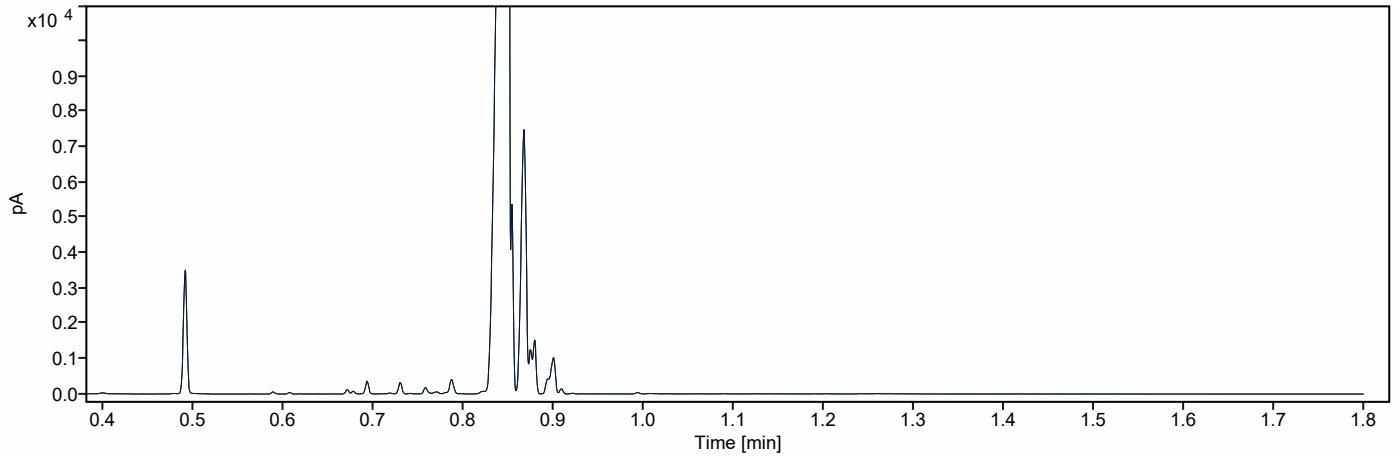
V



Chromatogram TPH/ Mineral Oil

Sample ID.: 13224240
Certificate no.: 2022179461
Sample description.: S10-1

V



Eurofins Analytico B.V.
attn. Shantal Khemai
Gildeweg 42 - 48
3771 NB Barneveld
NIEDERLANDE

Person in charge Dr. D. Stegemann
ASM Dr. D. Stegemann

Report date 25.11.2022

Page 1/3

Analytical report AR-22-GF-040351-01

Sample Code 710-2022-27919001

¹Reference	Soil
	Certificate Nr. 2022179461
¹Sample sender	Shantal Khemai
Reception date time	21.11.2022
Transport by	DHL
¹Client Purchase order nr.	Macedonia-Pelenica dumpsite
¹Purchase order date	18.11.2022
¹Client sample code	13224241
Number of containers	1
Reception temperature	room temperature
End analysis	25.11.2022

¹: This information was provided by the customer. Data provided by the customer may have an impact on the validity of the test results.

Test results
GFDRY Dry Residue (°) (#)

Method	Internal, DF110:22-06-30;DF140:22-11-09, Gravimetry		
dry residue		94.6	%

GFU04 polychlorinated dibenzodioxins and -furans (17 PCDD/F): (wet) sewage sludge, slag, ash, soil (°) (#)

Method	Internal, GLS DF 130:2021-08-20, GC-MS/MS		
2,3,7,8-TetraCDD		87.3	ng/kg dw
		± 26	ng/kg dw
1,2,3,7,8-PentaCDD		1910	ng/kg dw
		± 570	ng/kg dw

The results of examination refer exclusively to the checked samples.
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Headquarters: Eurofins GfA Lab Service GmbH – Neuländer Kamp 1a D-21079 Hamburg
HRB 115907 AG Hamburg
General Managers: Dr. Felix Focke
VAT No.: DE275912372
Hypovereinsbank • Bank code: 207 300 17 • Account No.: 7000002400 • SWIFT-BIC: HYVEDEMM33
IBAN: DE12 2073 0017 7000 0024 00


Accredited testing Laboratory by DIN EN ISO/IEC
DAKkS according to

DIN EN ISO/IEC 17025:2018

The accreditation is valid only for the scope listed in
the annex of the

1,2,3,4,7,8-HexaCDD	6300 ± 1900	ng/kg dw ng/kg dw
1,2,3,6,7,8-HexaCDD	16600 ± 5000	ng/kg dw ng/kg dw
1,2,3,7,8,9-HexaCDD	8950 ± 2700	ng/kg dw ng/kg dw
1,2,3,4,6,7,8-HeptaCDD	147000 ± 44000	ng/kg dw ng/kg dw
OctaCDD	378000 ± 110000	ng/kg dw ng/kg dw
2,3,7,8-TetraCDF	380 ± 110	ng/kg dw ng/kg dw
1,2,3,7,8-PentaCDF	2010 ± 600	ng/kg dw ng/kg dw
2,3,4,7,8-PentaCDF	1630 ± 490	ng/kg dw ng/kg dw
1,2,3,4,7,8-HexaCDF	10600 ± 3200	ng/kg dw ng/kg dw
1,2,3,6,7,8-HexaCDF	2630 ± 790	ng/kg dw ng/kg dw
1,2,3,7,8,9-HexaCDF	< 306	ng/kg dw
2,3,4,6,7,8-HexaCDF	732 ± 220	ng/kg dw ng/kg dw
1,2,3,4,6,7,8-HeptaCDF	30700 ± 9200	ng/kg dw ng/kg dw
1,2,3,4,7,8,9-HeptaCDF	4240 ± 1300	ng/kg dw ng/kg dw
OctaCDF	92400 ± 28000	ng/kg dw ng/kg dw
WHO(2005)-PCDD/F TEQ (lower-bound)	9120 ± 2300	ng/kg dw ng/kg dw
WHO(2005)-PCDD/F TEQ (upper-bound)	9150 ± 2300	ng/kg dw ng/kg dw
I-TEQ (NATO/CCMS) (lower-bound)	8860 ± 2200	ng/kg dw ng/kg dw
I-TEQ (NATO/CCMS) (upper-bound)	8890 ± 2200	ng/kg dw ng/kg dw

(°) = The test was performed at the laboratory site: Am Neuländer Gewerbepark 4

(#) = Eurofins GfA Lab Service GmbH (Hamburg) is accredited for this test.

Result +/- expanded measurement uncertainty (95%; k=2)

The results of examination refer exclusively to the checked samples.
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HRB 115907 AG Hamburg
General Managers: Dr. Felix Focke
VAT No.: DE275912372
Hypovereinsbank • Bank code: 207 300 17 • Account No.: 7000002400 • SWIFT-BIC: HYVEDEMM33
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<http://www.eurofins.de/lebensmittel/kontakt/avb.aspx>, shall apply.



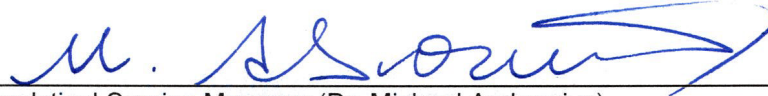
Accredited testing Laboratory by DIN EN ISO/IEC
DAkkS according to

DIN EN ISO/IEC 17025:2018

The accreditation is valid only for the scope listed in
the annex of the

< - Concentration below the indicated limit of quantification (LOQ)

L.Q. = below limit of quantification



Analytical Service Manager (Dr. Michael Ambrosius)



TAUW B.V.
Att. Ilona van der Kroeff
PO Box 133
7400 AC DEVENTER

Certificate of analysis

Date: 20-Dec-2022

Please find enclosed the analytical results of the test carried out for the project.

Certificate number/Version	2022179426/1
Your project number	1288451
Your project name	Macedonia - Pelenica dumpsite
Your order number	477742
Your Sample delivery date	15-Nov-2022

This Certificate of Analysis shall not be reproduced except in full, without written approval of the laboratory. Interpretations and opinions are outside the scope of our accreditation, and all results relate only to samples supplied.

Soil samples will be stored for a period of 4 weeks and water samples for a period of 2 weeks after receipt of the samples at our laboratory. Without any additional request, samples will be disposed when the above mentioned periods have expired. If you require Eurofins Analytico to store the samples for a longer period, please complete this page and return it to Eurofins Analytico at least one businessday before the period is due to expire. The costs of prolonged storage periods may be found in our pricelist.

Storage period:

Date:

Name:

Signature:

We are confident that we have performed the order in accordance with your expectations. If you have any remaining questions concerning this Certificate of Analysis, please don't hesitate to contact our Customer Service.

Yours sincerely,

Eurofins Analytico B.V.



Ing. A. Veldhuizen
Technical Manager

Eurofins Analytico B.V.

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BNP Paribas S.A. 227 9245 25
IBAN: NL71BNPA0227924525
BIC: BNPANL2A
KvK/CoC: 09088623
BTW/VAT: NL 8043.14.883.B01

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Certificate of analysis

Your project number	1288451	Certificate number/Version	2022179426/1
Your project name	Macedonia - Pelenica dumpsite	Start date	15-Nov-2022
Your order number	477742	End date analysis	20-Dec-2022
Your sample taker		Report date	20-Dec-2022/12:13
		Annex	A, B, C
		Page	1/16

Analysis	Unit	1	2	3	4	5
Sample Pre-treatment						
Preparation (cryo)		Executed	Executed	Executed	Executed	Executed
Characteristics						
S Dry matter	% (w/w)	83.1	82.0	92.0	83.8	87.2
S Organic matter	% (w/w) dm					0.7
Residue on ignition	% (w/w) dm					99
Q Inorganic carbon (as C)	g/kg dm					<5.0
Inorganic carbon (CaCO ₃)	% (w/w) dm					<0.50
Q Fraction < 2000 µm	% min. parts					100.0
Q Fraction < 1000 µm	% min. parts					88.3
Q Fraction < 500 µm	% min. parts					61.3
Q Fraction < 250 µm	% min. parts					43.9
Q Fraction < 125 µm	% min. parts					36.7
Q Fraction < 63 µm	% min. parts					32.0
Q Fraction < 50 µm, mineral parts	% min. parts					30.3
Q Fraction < 32 µm	% min. parts					26.3
Q Fraction < 16 µm	% min. parts					18.6
Q Fraction < 8 µm	% min. parts					10.6
Q Fraction < 2 µm (Stokes), laser	% dm					8.3
Q Fraction < 2 µm, laser	% min. parts					2.4
Metals						
S Arsenic (As)	mg/kg dm	<4.0	11	7.4	<4.0	14
S Barium (Ba)	mg/kg dm	66	91	37	33	22
S Cadmium (Cd)	mg/kg dm	<0.20	0.30	<0.20	<0.20	<0.20
S Cobalt (Co)	mg/kg dm	11	16	9.2	21	22
S Chromium (Cr)	mg/kg dm	20	57	13	32	30
S Copper (Cu)	mg/kg dm	23	25	20	46	17
S Mercury (Hg)	mg/kg dm	0.18	<0.050	<0.050	0.053	0.19
S Molybdenum (Mo)	mg/kg dm	<1.5	<1.5	<1.5	<1.5	<1.5
S Nickel (Ni)	mg/kg dm	25	70	34	53	52
S Lead (Pb)	mg/kg dm	33	22	<10	16	18

No.	Your sample description	Specified sample matrix	Sample nr.
1	S1-2	Soil, AS3000	13224093
2	S2-1	Soil, AS3000	13224094
3	S2-2	Soil, AS3000	13224095
4	S2-3	Soil, AS3000	13224096
5	S2-4	Soil, AS3000	13224097

Q: Dutch Accreditation Council (RVA) accredited test
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Certificate of analysis

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Your order number	477742	End date analysis	20-Dec-2022
Your sample taker		Report date	20-Dec-2022/12:13
		Annex	A, B, C
		Page	2/16

Analysis	Unit	1	2	3	4	5
Q Sulphur (S)	g/kg dm				<0.20	
Q Sulphur as sulphate (S04)	g/kg dm				<0.60	
S Tin (Sn)	mg/kg dm	2.1	<1.5	<1.5	<1.5	<1.5
S Vanadium (V)	mg/kg dm	24	38	17	36	23
S Zinc (Zn)	mg/kg dm	51	56	34	70	44
Petroleum Hydrocarbons						
EPH (C10-C12)	mg/kg dm	3.7	<3.0	<3.0	<3.0	<3.0
EPH (C12-C16)	mg/kg dm	36	<5.0	<5.0	<5.0	29
EPH (C16-C21)	mg/kg dm	1400	6.9	<5.0	<5.0	320
EPH (C21-C30)	mg/kg dm	<11	<11	<11	<11	<11
EPH (C30-C35)	mg/kg dm	<5.0	<5.0	<5.0	<5.0	<5.0
EPH (C35-C40)	mg/kg dm	<6.0	<6.0	<6.0	<6.0	<6.0
S EPH Sum (C10-C40)	mg/kg dm	1500	<35	<35	<35	370
Chromatogram TPH (GC)		See annex				See annex
Sum Organic Halogenes						
Q EOX	mg/kg dm				1.2	
Organic Chlorinated Pesticides						
S alpha-HCH	mg/kg dm	6300	25	5.1	1.0	1100
S beta-HCH	mg/kg dm	650	2.7	0.61	0.13	130
S gamma-HCH	mg/kg dm	170	1.2	0.087	0.023	37
S delta-HCH	mg/kg dm	120	2.9	0.23	0.055	54
S Hexachlorobenzene	mg/kg dm	<10 ²⁾	<0.10 ²⁾	<0.020 ²⁾	<0.0010	<1.0 ²⁾
S Heptachloor	mg/kg dm	<10 ²⁾	<0.10 ²⁾	<0.020 ²⁾	<0.0010	<1.0 ²⁾
S Heptachloorepoxide(cis- or A)	mg/kg dm	<10 ²⁾	<0.10 ²⁾	<0.020 ²⁾	<0.0010	<1.0 ²⁾
S Heptachloorepoxide(trans- or B)	mg/kg dm	<10 ²⁾	<0.10 ²⁾	<0.020 ²⁾	<0.0010	<1.0 ²⁾
S Hexachlorobutadiene	mg/kg dm	<10 ²⁾	<0.10 ²⁾	<0.020 ²⁾	<0.0010	<1.0 ²⁾
S Aldrin	mg/kg dm	<10 ²⁾	<0.10 ²⁾	<0.020 ²⁾	<0.0010	<1.0 ²⁾
S Dieldrin	mg/kg dm	<10 ²⁾	<0.10 ²⁾	<0.020 ²⁾	<0.0010	<1.0 ²⁾
S Endrin	mg/kg dm	<10 ²⁾	<0.10 ²⁾	<0.020 ²⁾	<0.0010	<1.0 ²⁾
S Isodrin	mg/kg dm	<10 ²⁾	<0.10 ²⁾	<0.020 ²⁾	<0.0010	<1.0 ²⁾

No. Your sample description

No.	Your sample description	Specified sample matrix	Sample nr.
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Certificate of analysis

Your project number 1288451
 Your project name Macedonia - Pelenica dumpsite
 Your order number 477742
 Your sample taker

Certificate number/Version 2022179426/1
 Start date 15-Nov-2022
 End date analysis 20-Dec-2022
 Report date 20-Dec-2022/12:13
 Annex A, B, C
 Page 3/16

Analysis	Unit	1	2	3	4	5
S Telodrin	mg/kg dm	<10 ²⁾	<0.10 ²⁾	<0.020 ²⁾	<0.0010	<1.0 ²⁾
S alpha-Endosulfan	mg/kg dm	<10 ²⁾	<0.10 ²⁾	<0.020 ²⁾	<0.0010	<1.0 ²⁾
Q beta-Endosulfan	mg/kg dm	<10 ²⁾	<0.10 ²⁾	<0.020 ²⁾	<0.0010	<1.0 ²⁾
S Endosulfansulfate	mg/kg dm	<20 ²⁾	<0.20 ²⁾	<0.040 ²⁾	<0.0020	<2.0 ²⁾
S alpha-Chlordane	mg/kg dm	<10 ²⁾	<0.10 ²⁾	<0.020 ²⁾	<0.0010	<1.0 ²⁾
S gamma-Chlorodane	mg/kg dm	<10 ²⁾	<0.10 ²⁾	<0.020 ²⁾	<0.0010	<1.0 ²⁾
S o,p'-DDT	mg/kg dm	<10 ²⁾	<0.10 ²⁾	<0.020 ²⁾	<0.0010	<1.0 ²⁾
S p,p'-DDT	mg/kg dm	<10 ²⁾	<0.10 ²⁾	<0.020 ²⁾	<0.0010	<1.0 ²⁾
S o,p'-DDE	mg/kg dm	<10 ²⁾	<0.10 ²⁾	<0.020 ²⁾	<0.0010	<1.0 ²⁾
S p,p'-DDE	mg/kg dm	<10 ²⁾	<0.10 ²⁾	<0.020 ²⁾	<0.0010	<1.0 ²⁾
S o,p'-DDD	mg/kg dm	<10 ²⁾	<0.10 ²⁾	<0.020 ²⁾	<0.0010	<1.0 ²⁾
S p,p'-DDD	mg/kg dm	<10 ²⁾	<0.10 ²⁾	<0.020 ²⁾	<0.0010	<1.0 ²⁾
S HCH (som) (factor 0,7)	mg/kg dm	7100 ²⁾	29 ²⁾	5.8 ²⁾	1.2	1300 ²⁾
S Drins (som) (factor 0,7)	mg/kg dm	21 ³⁾	0.21 ³⁾	0.042 ³⁾	0.0021 ¹⁾	2.1 ³⁾
S Heptachloorepoxide (som) (factor 0,7)	mg/kg dm	14 ³⁾	0.14 ³⁾	0.028 ³⁾	0.0014 ¹⁾	1.4 ³⁾
S DDD (som) (factor 0,7)	mg/kg dm	14 ³⁾	0.14 ³⁾	0.028 ³⁾	0.0014 ¹⁾	1.4 ³⁾
S DDE (som) (factor 0,7)	mg/kg dm	14 ³⁾	0.14 ³⁾	0.028 ³⁾	0.0014 ¹⁾	1.4 ³⁾
S DDT (som) (factor 0,7)	mg/kg dm	14 ³⁾	0.14 ³⁾	0.028 ³⁾	0.0014 ¹⁾	1.4 ³⁾
S DDX (som) (factor 0,7)	mg/kg dm	42 ³⁾	0.42 ³⁾	0.084 ³⁾	0.0042 ¹⁾	4.2 ³⁾
S Chloordaan (som) (factor 0,7)	mg/kg dm	14 ³⁾	0.14 ³⁾	0.028 ³⁾	0.0014 ¹⁾	1.4 ³⁾
S OCB (som) LB (factor 0,7)	mg/kg dm	7300 ²⁾	30 ²⁾	6.1 ²⁾	1.2	1300 ²⁾
S OCB (som) WB (factor 0,7)	mg/kg dm	7300	30	6.1	1.2	1300
Polychlorinated Biphenyl						
S PCB 28	mg/kg dm	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
S PCB 52	mg/kg dm	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
S PCB 101	mg/kg dm	0.0022	0.0014	<0.0010	<0.0010	<0.0010
S PCB 118	mg/kg dm	0.0016	<0.0010	<0.0010	<0.0010	<0.0010
S PCB 138	mg/kg dm	0.0012 ⁵⁾	0.0014 ⁵⁾	<0.0010	<0.0010	<0.0010
S PCB 153	mg/kg dm	0.0013 ⁶⁾	0.0017 ⁶⁾	<0.0010	<0.0010	<0.0010
S PCB 180	mg/kg dm	0.0012	0.0013	<0.0010	<0.0010	<0.0010
S PCB (som 7) (factor 0,7)	mg/kg dm	0.0089	0.0079	0.0049 ¹⁾	0.0049 ¹⁾	0.0049 ¹⁾

No. Your sample description

No.	Your sample description	Specified sample matrix	Sample nr.
1	S1-2	Soil, AS3000	13224093
2	S2-1	Soil, AS3000	13224094
3	S2-2	Soil, AS3000	13224095
4	S2-3	Soil, AS3000	13224096
5	S2-4	Soil, AS3000	13224097

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Certificate of analysis

Your project number	1288451	Certificate number/Version	2022179426/1
Your project name	Macedonia - Pelenica dumpsite	Start date	15-Nov-2022
Your order number	477742	End date analysis	20-Dec-2022
Your sample taker		Report date	20-Dec-2022/12:13
		Annex	A, B, C
		Page	4/16

Analysis	Unit	1	2	3	4	5
Polycyclic Aromatic Hydrocarbons, PAH						
S Naphtalene	mg/kg dm	<0.050	<0.050	<0.050	<0.050	<0.050
S Phenanthrene	mg/kg dm	<0.050	<0.050	<0.050	<0.050	<0.050
S Anthracene	mg/kg dm	<0.050	<0.050	<0.050	<0.050	<0.050
S Fluoranthene	mg/kg dm	<0.050	<0.050	<0.050	<0.050	<0.050
S Benzo(a)anthracene	mg/kg dm	<0.050	<0.050	<0.050	<0.050	<0.050
S Chrysene	mg/kg dm	<0.050	<0.050	<0.050	<0.050	<0.050
S Benzo(k)fluoranthene	mg/kg dm	<0.050	<0.050	<0.050	<0.050	<0.050
S Benzo(a)pyrene	mg/kg dm	<0.050	<0.050	<0.050	<0.050	<0.050
S Benzo(ghi)perylene	mg/kg dm	<0.050	<0.050	<0.050	<0.050	<0.050
S Indeno(123cd)pyrene	mg/kg dm	<0.050	<0.050	<0.050	<0.050	<0.050
S PAK VROM (10) (factor 0,7)	mg/kg dm	0.35 ¹⁾	0.35 ¹⁾	0.35 ¹⁾	0.35 ¹⁾	0.35 ¹⁾
Physical and chemical analyses						
Measuring temperature (pH)	°C					20
S Acidity (pH-CaCl2)						7.7

No. Your sample description

No.	Your sample description	Specified sample matrix	Sample nr.
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2	S2-1	Soil, AS3000	13224094
3	S2-2	Soil, AS3000	13224095
4	S2-3	Soil, AS3000	13224096
5	S2-4	Soil, AS3000	13224097

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Your project number	1288451	Certificate number/Version	2022179426/1
Your project name	Macedonia - Pelenica dumpsite	Start date	15-Nov-2022
Your order number	477742	End date analysis	20-Dec-2022
Your sample taker		Report date	20-Dec-2022/12:13
		Annex	A, B, C
		Page	5/16

Analysis	Unit	6	7	8	9	10
Sample Pre-treatment						
Preparation (cryo)		Executed	Executed	Executed	Executed	Executed
Characteristics						
S Dry matter	% (w/w)	83.8	91.4	85.2	84.1	85.9
Metals						
S Arsenic (As)	mg/kg dm	10	63	<4.0	<4.0	83
S Barium (Ba)	mg/kg dm	88	57	34	26	68
S Cadmium (Cd)	mg/kg dm	<0.20	<0.20	<0.20	0.26	1.1
S Cobalt (Co)	mg/kg dm	12	9.0	17	9.0	6.0
S Chromium (Cr)	mg/kg dm	40	31	27	30	38
S Copper (Cu)	mg/kg dm	20	14	41	14	62
S Mercury (Hg)	mg/kg dm	<0.050	<0.050	<0.050	<0.050	0.32
S Molybdenum (Mo)	mg/kg dm	<1.5	<1.5	<1.5	<1.5	<1.5
S Nickel (Ni)	mg/kg dm	53	28	50	39	82
S Lead (Pb)	mg/kg dm	17	<10	17	<10	7100
S Tin (Sn)	mg/kg dm	<1.5	<1.5	<1.5	<1.5	15
S Vanadium (V)	mg/kg dm	31	28	28	22	78
S Zinc (Zn)	mg/kg dm	43	30	67	30	160
Petroleum Hydrocarbons						
EPH (C10-C12)	mg/kg dm	<3.0	<3.0	<3.0	<3.0	<3.0
EPH (C12-C16)	mg/kg dm	<5.0	<5.0	<5.0	<5.0	<5.0
EPH (C16-C21)	mg/kg dm	<5.0	<5.0	<5.0	14	<5.0
EPH (C21-C30)	mg/kg dm	<11	53	<11	220	<11
EPH (C30-C35)	mg/kg dm	<5.0	50	<5.0	85	6.6
EPH (C35-C40)	mg/kg dm	<6.0	18	<6.0	27	<6.0
S EPH Sum (C10-C40)	mg/kg dm	<35	130	<35	350	<35
Chromatogram TPH (GC)			See annex		See annex	
Organic Chlorinated Pesticides						
S alpha-HCH	mg/kg dm	0.34	1.4	1.1	1.2	6.2
S beta-HCH	mg/kg dm	0.040	0.17	0.15	0.16	1.2

No.	Your sample description	Specified sample matrix	Sample nr.
6	S3-1	Soil, AS3000	13224098
7	S3-2	Soil, AS3000	13224099
8	S3-3	Soil, AS3000	13224100
9	S3-4	Soil, AS3000	13224101
10	S6-1	Soil, AS3000	13224102

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Your sample taker		Report date	20-Dec-2022/12:13
		Annex	A, B, C
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Analysis	Unit	6	7	8	9	10
S gamma-HCH	mg/kg dm	0.0076	0.057	0.029	0.021	0.16
S delta-HCH	mg/kg dm	0.014	0.10	0.046	0.079	0.21
S Hexachlorobenzene	mg/kg dm	<0.0010	<0.0010	<0.0010	<0.0010	<0.050 ²⁾
S Heptachloor	mg/kg dm	<0.0010	<0.0010	<0.0010	<0.0010	<0.050 ²⁾
S Heptachloorepoxide(cis- or A)	mg/kg dm	<0.0010	<0.0010	<0.0010	<0.0010	<0.050 ²⁾
S Heptachloorepoxide(trans- or B)	mg/kg dm	<0.0010	<0.0010	<0.0010	<0.0010	<0.050 ²⁾
S Hexachlorobutadiene	mg/kg dm	<0.0010	<0.0010	<0.0010	<0.0010	<0.050 ²⁾
S Aldrin	mg/kg dm	<0.0010	<0.0010	<0.0010	<0.0010	<0.050 ²⁾
S Dieldrin	mg/kg dm	<0.0010	<0.0010	<0.0010	<0.0010	<0.050 ²⁾
S Endrin	mg/kg dm	<0.0010	<0.0010	<0.0010	<0.0010	<0.050 ²⁾
S Isodrin	mg/kg dm	<0.0010	<0.0010	<0.0010	<0.0010	<0.050 ²⁾
S Telodrin	mg/kg dm	<0.0010	<0.0010	<0.0010	<0.0010	<0.050 ²⁾
S alpha-Endosulfan	mg/kg dm	<0.0010	<0.0010	<0.0010	<0.0010	<0.050 ²⁾
Q beta-Endosulfan	mg/kg dm	<0.0010	<0.0010	<0.0010	<0.0010	<0.050 ²⁾
S Endosulfansulfate	mg/kg dm	<0.0020	<0.0020	<0.0020	<0.0020	<0.10 ²⁾
S alpha-Chlordane	mg/kg dm	<0.0010	<0.0010	<0.0010	<0.0010	<0.050 ²⁾
S gamma-Chlorodane	mg/kg dm	<0.0010	<0.0010	<0.0010	<0.0010	<0.050 ²⁾
S o,p'-DDT	mg/kg dm	<0.0010	<0.0010	<0.0010	<0.0010	<0.050 ²⁾
S p,p'-DDT	mg/kg dm	<0.0010	<0.0010	<0.0010	<0.0010	<0.050 ²⁾
S o,p'-DDE	mg/kg dm	<0.0010	<0.0010	<0.0010	<0.0010	<0.050 ²⁾
S p,p'-DDE	mg/kg dm	<0.0010	<0.0010	<0.0010	<0.0010	<0.050 ²⁾
S o,p'-DDD	mg/kg dm	<0.0010	<0.0010	<0.0010	<0.0010	<0.050 ²⁾
S p,p'-DDD	mg/kg dm	<0.0010	<0.0010	<0.0010	<0.0010	<0.050 ²⁾
S HCH (som) (factor 0,7)	mg/kg dm	0.39	1.6	1.3	1.4	7.5 ²⁾
S Drins (som) (factor 0,7)	mg/kg dm	0.0021 ¹⁾	0.0021 ¹⁾	0.0021 ¹⁾	0.0021 ¹⁾	0.10 ³⁾
S Heptachloorepoxide (som) (factor 0,7)	mg/kg dm	0.0014 ¹⁾	0.0014 ¹⁾	0.0014 ¹⁾	0.0014 ¹⁾	0.070 ³⁾
S DDD (som) (factor 0,7)	mg/kg dm	0.0014 ¹⁾	0.0014 ¹⁾	0.0014 ¹⁾	0.0014 ¹⁾	0.070 ³⁾
S DDE (som) (factor 0,7)	mg/kg dm	0.0014 ¹⁾	0.0014 ¹⁾	0.0014 ¹⁾	0.0014 ¹⁾	0.070 ³⁾
S DDT (som) (factor 0,7)	mg/kg dm	0.0014 ¹⁾	0.0014 ¹⁾	0.0014 ¹⁾	0.0014 ¹⁾	0.070 ³⁾
S DDX (som) (factor 0,7)	mg/kg dm	0.0042 ¹⁾	0.0042 ¹⁾	0.0042 ¹⁾	0.0042 ¹⁾	0.21 ³⁾
S Chloordaan (som) (factor 0,7)	mg/kg dm	0.0014 ¹⁾	0.0014 ¹⁾	0.0014 ¹⁾	0.0014 ¹⁾	0.070 ³⁾

No. Your sample description

No.	Your sample description	Specified sample matrix	Sample nr.
6	S3-1	Soil, AS3000	13224098
7	S3-2	Soil, AS3000	13224099
8	S3-3	Soil, AS3000	13224100
9	S3-4	Soil, AS3000	13224101
10	S6-1	Soil, AS3000	13224102

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 BIC: BNPANL2A
 KvK/CoC: 09088623
 BTW/VAT: NL 8043.14.883.B01



Certificate of analysis

Your project number	1288451	Certificate number/Version	2022179426/1
Your project name	Macedonia - Pelenica dumpsite	Start date	15-Nov-2022
Your order number	477742	End date analysis	20-Dec-2022
Your sample taker		Report date	20-Dec-2022/12:13
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Analysis	Unit	6	7	8	9	10
S OCB (som) LB (factor 0,7)	mg/kg dm	0.40	1.6	1.3	1.4	8.2 ²⁾
S OCB (som) WB (factor 0,7)	mg/kg dm	0.40	1.6	1.3	1.4	8.2
Polychlorinated Biphenyl						
S PCB 28	mg/kg dm	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
S PCB 52	mg/kg dm	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
S PCB 101	mg/kg dm	<0.0010	<0.0010	<0.0010	<0.0010	0.0010
S PCB 118	mg/kg dm	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
S PCB 138	mg/kg dm	<0.0010	<0.0010	<0.0010	<0.0010	0.0012 ⁵⁾
S PCB 153	mg/kg dm	<0.0010	<0.0010	<0.0010	<0.0010	0.0011 ⁶⁾
S PCB 180	mg/kg dm	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
S PCB (som 7) (factor 0,7)	mg/kg dm	0.0049 ¹⁾	0.0049 ¹⁾	0.0049 ¹⁾	0.0049 ¹⁾	0.0061
Polycyclic Aromatic Hydrocarbons, PAH						
S Naphtalene	mg/kg dm	<0.050	<0.050	<0.050	<0.050	<0.050
S Phenanthrene	mg/kg dm	<0.050	<0.050	<0.050	<0.050	<0.050
S Anthracene	mg/kg dm	<0.050	<0.050	<0.050	<0.050	<0.050
S Fluoranthene	mg/kg dm	<0.050	<0.050	<0.050	<0.050	<0.050
S Benzo(a)anthracene	mg/kg dm	<0.050	<0.050	<0.050	<0.050	<0.050
S Chrysene	mg/kg dm	<0.050	<0.050	<0.050	<0.050	<0.050
S Benzo(k)fluoranthene	mg/kg dm	<0.050	<0.050	<0.050	<0.050	<0.050
S Benzo(a)pyrene	mg/kg dm	<0.050	<0.050	<0.050	<0.050	<0.050
S Benzo(ghi)perylene	mg/kg dm	<0.050	<0.050	<0.050	<0.050	<0.050
S Indeno(123cd)pyrene	mg/kg dm	<0.050	<0.050	<0.050	<0.050	<0.050
S PAK VROM (10) (factor 0,7)	mg/kg dm	0.35 ¹⁾	0.35 ¹⁾	0.35 ¹⁾	0.35 ¹⁾	0.35 ¹⁾

No. Your sample description

No.	Your sample description	Specified sample matrix	Sample nr.
6	S3-1	Soil, AS3000	13224098
7	S3-2	Soil, AS3000	13224099
8	S3-3	Soil, AS3000	13224100
9	S3-4	Soil, AS3000	13224101
10	S6-1	Soil, AS3000	13224102



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Certificate of analysis

Your project number	1288451	Certificate number/Version	2022179426/1
Your project name	Macedonia - Pelenica dumpsite	Start date	15-Nov-2022
Your order number	477742	End date analysis	20-Dec-2022
Your sample taker		Report date	20-Dec-2022/12:13
		Annex	A, B, C
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Analysis	Unit	11	12	13	14	15
Sample Pre-treatment						
Preparation (cryo)		Executed	Executed	Executed	Executed	Executed
Characteristics						
S Dry matter	% (w/w)	90.6	94.6	90.4	89.6	91.8
S Organic matter	% (w/w) dm	1.5				
Residue on ignition	% (w/w) dm	98				
Q Inorganic carbon (as C)	g/kg dm	15				
Inorganic carbon (CaCO ₃)	% (w/w) dm	13				
Q Fraction < 2000 µm	% min. parts	100.0				
Q Fraction < 1000 µm	% min. parts	99.2				
Q Fraction < 500 µm	% min. parts	82.5				
Q Fraction < 250 µm	% min. parts	68.3				
Q Fraction < 125 µm	% min. parts	55.6				
Q Fraction < 63 µm	% min. parts	45.7				
Q Fraction < 50 µm, mineral parts	% min. parts	42.9				
Q Fraction < 32 µm	% min. parts	36.7				
Q Fraction < 16 µm	% min. parts	26.2				
Q Fraction < 8 µm	% min. parts	15.8				
Q Fraction < 2 µm, laser	% min. parts	3.9				
Q Fraction < 2 µm (Stokes), laser	% dm	10.7				
Metals						
S Arsenic (As)	mg/kg dm	21	9.5	29	7.0	8.7
S Barium (Ba)	mg/kg dm	450	41	140	32	45
S Cadmium (Cd)	mg/kg dm	0.74	0.63	1.5	0.29	<0.20
S Cobalt (Co)	mg/kg dm	5.5	7.0	5.9	5.3	4.0
S Chromium (Cr)	mg/kg dm	41	26	45	22	17
S Copper (Cu)	mg/kg dm	28	13	65	12	11
S Mercury (Hg)	mg/kg dm	0.34	<0.050	0.067	<0.050	<0.050
S Molybdenum (Mo)	mg/kg dm	<1.5	<1.5	1.9	<1.5	<1.5
S Nickel (Ni)	mg/kg dm	46	44	56	29	22
S Lead (Pb)	mg/kg dm	480	57	1700	120	390

No.	Your sample description	Specified sample matrix	Sample nr.
11	S7-1	Soil, AS3000	13224103
12	S7-2	Soil, AS3000	13224104
13	S8-1	Soil, AS3000	13224105
14	S11-1	Soil, AS3000	13224106
15	S12-1	Soil, AS3000	13224107

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Analysis	Unit	11	12	13	14	15
Q Sulphur (S)	g/kg dm	0.22				
Q Sulphur as sulphate (S04)	g/kg dm	0.66				
S Tin (Sn)	mg/kg dm	<1.5	<1.5	3.1	1.9	<1.5
S Vanadium (V)	mg/kg dm	28	21	22	15	12
S Zinc (Zn)	mg/kg dm	79	29	99	34	44
Petroleum Hydrocarbons						
EPH (C10-C12)	mg/kg dm	<3.0	<3.0	<3.0	<3.0	<3.0
EPH (C12-C16)	mg/kg dm	<5.0	<5.0	<5.0	<5.0	<5.0
EPH (C16-C21)	mg/kg dm	44	11	36	14	<5.0
EPH (C21-C30)	mg/kg dm	37	90	170	17	22
EPH (C30-C35)	mg/kg dm	24	120	120	13	22
EPH (C35-C40)	mg/kg dm	12	110	58	<6.0	14
S EPH Sum (C10-C40)	mg/kg dm	120	330	400	55	64
Chromatogram TPH (GC)		See annex	See annex	See annex	See annex	See annex
Sum Organic Halogenes						
Q EOX	mg/kg dm	210				
Organic Chlorinated Pesticides						
S alpha-HCH	mg/kg dm	18	10	0.16	46	0.83
S beta-HCH	mg/kg dm	170	2.9	0.73	7.8	0.11
S gamma-HCH	mg/kg dm	<1.0 ²⁾	0.21	0.0081	1.8	0.019
S delta-HCH	mg/kg dm	2.7	0.20	0.0095	<1.0 ²⁾	0.021
S Hexachlorobenzene	mg/kg dm	<1.0 ²⁾	<0.0050 ²⁾	0.0038	<1.0 ²⁾	<0.0010
S Heptachloor	mg/kg dm	<1.0 ²⁾	<0.0050 ²⁾	<0.0010	<1.0 ²⁾	<0.0010
S Heptachloorepoxide(cis- or A)	mg/kg dm	<1.0 ²⁾	<0.0050 ²⁾	<0.0010	<1.0 ²⁾	<0.0010
S Heptachloorepoxide(trans- or B)	mg/kg dm	<1.0 ²⁾	<0.0050 ²⁾	<0.0010	<1.0 ²⁾	<0.0010
S Hexachlorobutadiene	mg/kg dm	<1.0 ²⁾	<0.0050 ²⁾	<0.0010	<1.0 ²⁾	<0.0010
S Aldrin	mg/kg dm	<1.0 ²⁾	<0.0050 ²⁾	<0.0010	<1.0 ²⁾	<0.0010
S Dieldrin	mg/kg dm	<1.0 ²⁾	<0.0050 ²⁾	<0.0010	<1.0 ²⁾	<0.0010
S Endrin	mg/kg dm	<1.0 ²⁾	<0.0050 ²⁾	<0.0010	<1.0 ²⁾	<0.0010
S Isodrin	mg/kg dm	<1.0 ²⁾	<0.0050 ²⁾	<0.0010	<1.0 ²⁾	<0.0010

No.	Your sample description	Specified sample matrix	Sample nr.
11	S7-1	Soil, AS3000	13224103
12	S7-2	Soil, AS3000	13224104
13	S8-1	Soil, AS3000	13224105
14	S11-1	Soil, AS3000	13224106
15	S12-1	Soil, AS3000	13224107



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Certificate of analysis

Your project number	1288451	Certificate number/Version	2022179426/1
Your project name	Macedonia - Pelenica dumpsite	Start date	15-Nov-2022
Your order number	477742	End date analysis	20-Dec-2022
Your sample taker		Report date	20-Dec-2022/12:13
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Analysis	Unit	11	12	13	14	15
S Telodrin	mg/kg dm	<1.0 ²⁾	<0.0050 ²⁾	<0.0010	<1.0 ²⁾	<0.0010
S alpha-Endosulfan	mg/kg dm	<1.0 ²⁾	<0.0050 ²⁾	<0.0010	<1.0 ²⁾	<0.0010
Q beta-Endosulfan	mg/kg dm	<1.0 ²⁾	<0.0050 ²⁾	<0.0010	<1.0 ²⁾	<0.0010
S Endosulfansulfate	mg/kg dm	<2.0 ²⁾	<0.010 ²⁾	<0.0020	<2.0 ²⁾	<0.0020
S alpha-Chlordane	mg/kg dm	<1.0 ²⁾	<0.0050 ²⁾	<0.0010	<1.0 ²⁾	<0.0010
S gamma-Chlorodane	mg/kg dm	<1.0 ²⁾	<0.0050 ²⁾	<0.0010	<1.0 ²⁾	<0.0010
S o,p'-DDT	mg/kg dm	<1.0 ²⁾	<0.0050 ²⁾	<0.0010	<1.0 ²⁾	<0.0010
S p,p'-DDT	mg/kg dm	<1.0 ²⁾	<0.0050 ²⁾	0.0023	<1.0 ²⁾	0.0023
S o,p'-DDE	mg/kg dm	<1.0 ²⁾	<0.0050 ²⁾	<0.0010	<1.0 ²⁾	<0.0010
S p,p'-DDE	mg/kg dm	<1.0 ²⁾	<0.0050 ²⁾	<0.0010	<1.0 ²⁾	0.0057
S o,p'-DDD	mg/kg dm	<1.0 ²⁾	<0.0050 ²⁾	<0.0010	<1.0 ²⁾	<0.0010
S p,p'-DDD	mg/kg dm	<1.0 ²⁾	<0.0050 ²⁾	<0.0010	<1.0 ²⁾	<0.0010
S HCH (som) (factor 0,7)	mg/kg dm	190 ²⁾	13 ²⁾	0.90	56 ²⁾	0.97
S Drins (som) (factor 0,7)	mg/kg dm	2.1 ³⁾	0.010 ³⁾	0.0021 ¹⁾	2.1 ³⁾	0.0021 ¹⁾
S Heptachloorepoxide (som) (factor 0,7)	mg/kg dm	1.4 ³⁾	0.0070 ³⁾	0.0014 ¹⁾	1.4 ³⁾	0.0014 ¹⁾
S DDD (som) (factor 0,7)	mg/kg dm	1.4 ³⁾	0.0070 ³⁾	0.0014 ¹⁾	1.4 ³⁾	0.0014 ¹⁾
S DDE (som) (factor 0,7)	mg/kg dm	1.4 ³⁾	0.0070 ³⁾	0.0014 ¹⁾	1.4 ³⁾	0.0064
S DDT (som) (factor 0,7)	mg/kg dm	1.4 ³⁾	0.0070 ³⁾	0.0030	1.4 ³⁾	0.0030
S DDX (som) (factor 0,7)	mg/kg dm	4.2 ³⁾	0.021 ³⁾	0.0058	4.2 ³⁾	0.011
S Chloordaan (som) (factor 0,7)	mg/kg dm	1.4 ³⁾	0.0070 ³⁾	0.0014 ¹⁾	1.4 ³⁾	0.0014 ¹⁾
S OCB (som) LB (factor 0,7)	mg/kg dm	200 ²⁾	13 ²⁾	0.92	69 ²⁾	0.99
S OCB (som) WB (factor 0,7)	mg/kg dm	210	13	0.92	70	0.99
Polychlorinated Biphenyl						
S PCB 28	mg/kg dm	0.0042 ⁴⁾	<0.0010	0.015 ⁴⁾	<0.0010	<0.0010
S PCB 52	mg/kg dm	0.0018	<0.0010	0.0061	<0.0010	<0.0010
S PCB 101	mg/kg dm	0.0040	<0.0010	0.0039	0.0012	<0.0010
S PCB 118	mg/kg dm	0.0051	<0.0010	0.0016	0.0013	<0.0010
S PCB 138	mg/kg dm	0.0052 ⁵⁾	<0.0010	0.015 ⁵⁾	0.0022 ⁵⁾	<0.0010
S PCB 153	mg/kg dm	0.0047 ⁶⁾	<0.0010	0.013 ⁶⁾	0.0021 ⁶⁾	<0.0010
S PCB 180	mg/kg dm	0.0042	<0.0010	0.012	0.0021	<0.0010
S PCB (som 7) (factor 0,7)	mg/kg dm	0.029	0.0049 ¹⁾	0.067	0.010	0.0049 ¹⁾

No. Your sample description

No.	Your sample description	Specified sample matrix	Sample nr.
11	S7-1	Soil, AS3000	13224103
12	S7-2	Soil, AS3000	13224104
13	S8-1	Soil, AS3000	13224105
14	S11-1	Soil, AS3000	13224106
15	S12-1	Soil, AS3000	13224107



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Your order number	477742	End date analysis	20-Dec-2022
Your sample taker		Report date	20-Dec-2022/12:13
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Analysis	Unit	11	12	13	14	15
Polycyclic Aromatic Hydrocarbons, PAH						
S Naphtalene	mg/kg dm	0.092	0.051	<0.050	<0.050	<0.050
S Phenanthrene	mg/kg dm	0.086	<0.050	<0.050	<0.050	<0.050
S Anthracene	mg/kg dm	<0.050	<0.050	<0.050	<0.050	<0.050
S Fluoranthene	mg/kg dm	0.097	<0.050	<0.050	<0.050	<0.050
S Benzo(a)anthracene	mg/kg dm	<0.050	<0.050	<0.050	<0.050	<0.050
S Chrysene	mg/kg dm	0.055	<0.050	<0.050	<0.050	<0.050
S Benzo(k)fluoranthene	mg/kg dm	<0.050	<0.050	<0.050	<0.050	<0.050
S Benzo(a)pyrene	mg/kg dm	<0.050	<0.050	<0.050	<0.050	<0.050
S Benzo(ghi)perylene	mg/kg dm	<0.050	<0.050	0.057	<0.050	<0.050
S Indeno(123cd)pyrene	mg/kg dm	<0.050	<0.050	<0.050	<0.050	<0.050
S PAK VROM (10) (factor 0,7)	mg/kg dm	0.54	0.37	0.37	0.35 ¹⁾	0.35 ¹⁾
Physical and chemical analyses						
Measuring temperature (pH)	°C	20				
S Acidity (pH-CaCl2)		8.3				

No. Your sample description

No.	Your sample description	Specified sample matrix	Sample nr.
11	S7-1	Soil, AS3000	13224103
12	S7-2	Soil, AS3000	13224104
13	S8-1	Soil, AS3000	13224105
14	S11-1	Soil, AS3000	13224106
15	S12-1	Soil, AS3000	13224107

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BNP Paribas S.A. 227 9245 25
 IBAN: NL71BNPA0227924525
 BIC: BNPANL2A
 KvK/CoC: 09088623
 BTW/VAT: NL 8043.14.883.B01



Certificate of analysis

Your project number	1288451	Certificate number/Version	2022179426/1
Your project name	Macedonia - Pelenica dumpsite	Start date	15-Nov-2022
Your order number	477742	End date analysis	20-Dec-2022
Your sample taker		Report date	20-Dec-2022/12:13
		Annex	A, B, C
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Analysis	Unit	16	17	18	19	20
Sample Pre-treatment						
Grinding		Executed		Executed		
Preparation (cryo)		Executed	Executed	Executed	Executed	Executed
Characteristics						
S Dry matter	% (w/w)	92.8	76.1	88.1	91.5	91.5
S Organic matter	% (w/w) dm		1.9			3.3
	Residue on ignition		% (w/w) dm	97		96
Q Inorganic carbon (as C)	g/kg dm		22			18
	Inorganic carbon (CaCO ₃)		% (w/w) dm	18		15
Q Fraction < 2000 µm	% min. parts		100.0			100.0
Q Fraction < 1000 µm	% min. parts		100.0			88.9
Q Fraction < 500 µm	% min. parts		99.9			73.0
Q Fraction < 250 µm	% min. parts		94.8			57.0
Q Fraction < 125 µm	% min. parts		89.1			42.3
Q Fraction < 63 µm	% min. parts		83.4			30.3
Q Fraction < 50 µm, mineral parts	% min. parts		80.9			26.8
Q Fraction < 32 µm	% min. parts		74.0			20.9
Q Fraction < 16 µm	% min. parts		56.4			13.7
Q Fraction < 8 µm	% min. parts		34.4			8.2
Q Fraction < 2 µm (Stokes), laser	% dm		21.8			5.6
Q Fraction < 2 µm, laser	% min. parts		7.8			2.4
Metals						
S Arsenic (As)	mg/kg dm	8.5	15	28	11	17
S Barium (Ba)	mg/kg dm	31	140	110	49	73
S Cadmium (Cd)	mg/kg dm	<0.20	<0.20	0.31	0.33	0.53
S Cobalt (Co)	mg/kg dm	4.3	15	14	12	7.0
S Chromium (Cr)	mg/kg dm	<10	46	48	55	40
S Copper (Cu)	mg/kg dm	14	27	25	23	23
S Mercury (Hg)	mg/kg dm	<0.050	<0.050	0.068	<0.050	0.084
S Molybdenum (Mo)	mg/kg dm	<1.5	<1.5	<1.5	<1.5	<1.5
S Nickel (Ni)	mg/kg dm	26	68	73	110	110

No.	Your sample description	Specified sample matrix	Sample nr.
16	S12-2	Soil, AS3000	13224108
17	S15-1	Soil, AS3000	13224109
18	S16-1	Soil, AS3000	13224110
19	S19-1	Soil, AS3000	13224111
20	S21-1	Soil, AS3000	13224112

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Analysis	Unit	16	17	18	19	20
S Lead (Pb)	mg/kg dm	290	21	73	48	780
Q Sulphur (S)	g/kg dm		<0.20			
Q Sulphur as sulphate (SO4)	g/kg dm		<0.60			
S Tin (Sn)	mg/kg dm	<1.5	<1.5	<1.5	<1.5	8.0
S Vanadium (V)	mg/kg dm	<10	30	34	30	27
S Zinc (Zn)	mg/kg dm	24	54	63	50	74
Petroleum Hydrocarbons						
EPH (C10-C12)	mg/kg dm	<3.0	<3.0	<3.0	<3.0	<3.0
EPH (C12-C16)	mg/kg dm	<5.0	<5.0	5.5	32	<5.0
EPH (C16-C21)	mg/kg dm	<5.0	<5.0	21	400	7.4
EPH (C21-C30)	mg/kg dm	13	<11	64	61	38
EPH (C30-C35)	mg/kg dm	8.6	<5.0	40	36	22
EPH (C35-C40)	mg/kg dm	<6.0	<6.0	18	15	10
S EPH Sum (C10-C40)	mg/kg dm	<35	<35	150	550	80
Chromatogram TPH (GC)				See annex	See annex	See annex
Sum Organic Halogenes						
Q EOX	mg/kg dm		0.72			
Organic Chlorinated Pesticides						
S alpha-HCH	mg/kg dm	2.5	5.6	61	1200	0.29
S beta-HCH	mg/kg dm	3.4	1.1	7.5	150	2.2
S gamma-HCH	mg/kg dm	0.071	0.41	1.8	80	0.020
S delta-HCH	mg/kg dm	0.046	<0.0010	2.1	76	0.041
S Hexachlorobenzene	mg/kg dm	<0.020 ²⁾	<0.0010	<1.0 ²⁾	<1.0 ²⁾	<0.010 ²⁾
S Heptachloor	mg/kg dm	<0.020 ²⁾	<0.0010	<1.0 ²⁾	<1.0 ²⁾	<0.010 ²⁾
S Heptachloorepoxide(cis- or A)	mg/kg dm	<0.020 ²⁾	<0.0010	<1.0 ²⁾	<1.0 ²⁾	<0.010 ²⁾
S Heptachloorepoxide(trans- or B)	mg/kg dm	<0.020 ²⁾	<0.0010	<1.0 ²⁾	<1.0 ²⁾	<0.010 ²⁾
S Hexachlorobutadiene	mg/kg dm	<0.020 ²⁾	<0.0010	<1.0 ²⁾	<1.0 ²⁾	<0.010 ²⁾
S Aldrin	mg/kg dm	<0.020 ²⁾	<0.0010	<1.0 ²⁾	<1.0 ²⁾	<0.010 ²⁾
S Dieldrin	mg/kg dm	<0.020 ²⁾	<0.0010	<1.0 ²⁾	<1.0 ²⁾	<0.010 ²⁾
S Endrin	mg/kg dm	<0.020 ²⁾	<0.0010	<1.0 ²⁾	<1.0 ²⁾	<0.010 ²⁾

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19	S19-1	Soil, AS3000	13224111
20	S21-1	Soil, AS3000	13224112



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Analysis	Unit	16	17	18	19	20
S Isodrin	mg/kg dm	<0.020 ²⁾	<0.0010	<1.0 ²⁾	<1.0 ²⁾	<0.010 ²⁾
S Telodrin	mg/kg dm	<0.020 ²⁾	<0.0010	<1.0 ²⁾	<1.0 ²⁾	<0.010 ²⁾
S alpha-Endosulfan	mg/kg dm	<0.020 ²⁾	<0.0010	<1.0 ²⁾	<1.0 ²⁾	<0.010 ²⁾
Q beta-Endosulfan	mg/kg dm	<0.020 ²⁾	<0.0010	<1.0 ²⁾	<1.0 ²⁾	<0.010 ²⁾
S Endosulfansulfate	mg/kg dm	<0.040 ²⁾	<0.20	<2.0 ²⁾	<2.0 ²⁾	<0.020 ²⁾
S alpha-Chlordane	mg/kg dm	<0.020 ²⁾	<0.0010	<1.0 ²⁾	<1.0 ²⁾	<0.010 ²⁾
S gamma-Chlorodane	mg/kg dm	<0.020 ²⁾	<0.0010	<1.0 ²⁾	<1.0 ²⁾	<0.010 ²⁾
S o,p'-DDT	mg/kg dm	<0.020 ²⁾	<0.0010	<1.0 ²⁾	<1.0 ²⁾	<0.010 ²⁾
S p,p'-DDT	mg/kg dm	<0.020 ²⁾	<0.0010	<1.0 ²⁾	<1.0 ²⁾	<0.010 ²⁾
S o,p'-DDE	mg/kg dm	<0.020 ²⁾	<0.0010	<1.0 ²⁾	<1.0 ²⁾	<0.010 ²⁾
S p,p'-DDE	mg/kg dm	<0.020 ²⁾	<0.0010	<1.0 ²⁾	<1.0 ²⁾	<0.010 ²⁾
S o,p'-DDD	mg/kg dm	<0.020 ²⁾	<0.0010	<1.0 ²⁾	<1.0 ²⁾	<0.010 ²⁾
S p,p'-DDD	mg/kg dm	<0.020 ²⁾	<0.0010	<1.0 ²⁾	<1.0 ²⁾	<0.010 ²⁾
S HCH (som) (factor 0,7)	mg/kg dm	6.0 ²⁾	7.1	71 ²⁾	1500 ²⁾	2.5 ²⁾
S Drins (som) (factor 0,7)	mg/kg dm	0.042 ³⁾	0.0021 ¹⁾	2.1 ³⁾	2.1 ³⁾	0.021 ³⁾
S Heptachloorepoxide (som) (factor 0,7)	mg/kg dm	0.028 ³⁾	0.0014 ¹⁾	1.4 ³⁾	1.4 ³⁾	0.014 ³⁾
S DDD (som) (factor 0,7)	mg/kg dm	0.028 ³⁾	0.0014 ¹⁾	1.4 ³⁾	1.4 ³⁾	0.014 ³⁾
S DDE (som) (factor 0,7)	mg/kg dm	0.028 ³⁾	0.0014 ¹⁾	1.4 ³⁾	1.4 ³⁾	0.014 ³⁾
S DDT (som) (factor 0,7)	mg/kg dm	0.028 ³⁾	0.0014 ¹⁾	1.4 ³⁾	1.4 ³⁾	0.014 ³⁾
S DDX (som) (factor 0,7)	mg/kg dm	0.084 ³⁾	0.0042 ¹⁾	4.2 ³⁾	4.2 ³⁾	0.042 ³⁾
S Chloordaan (som) (factor 0,7)	mg/kg dm	0.028 ³⁾	0.0014 ¹⁾	1.4 ³⁾	1.4 ³⁾	0.014 ³⁾
S OCB (som) LB (factor 0,7)	mg/kg dm	6.2 ²⁾	7.1	83 ²⁾	1500 ²⁾	2.6 ²⁾
S OCB (som) WB (factor 0,7)	mg/kg dm	6.3	7.2	85	1500	2.6
Polychlorinated Biphenyl						
S PCB 28	mg/kg dm	<0.0010	<0.0010	<0.0010	0.0019 ⁴⁾	<0.0010
S PCB 52	mg/kg dm	<0.0010	<0.0010	0.0010	0.0018	<0.0010
S PCB 101	mg/kg dm	<0.0010	<0.0010	0.0054	0.0035	0.0012
S PCB 118	mg/kg dm	<0.0010	<0.0010	0.0069	0.0020	0.0010
S PCB 138	mg/kg dm	<0.0010	<0.0010	0.017 ⁵⁾	0.0044 ⁵⁾	0.0034 ⁵⁾
S PCB 153	mg/kg dm	<0.0010	<0.0010	0.013 ⁶⁾	0.0048 ⁶⁾	0.0029 ⁶⁾
S PCB 180	mg/kg dm	<0.0010	<0.0010	0.0067	0.0037	0.0034

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20	S21-1	Soil, AS3000	13224112



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Your sample taker		Report date	20-Dec-2022/12:13
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Analysis	Unit	16	17	18	19	20
S PCB (som 7) (factor 0,7)	mg/kg dm	0.0049 ¹⁾	0.0049 ¹⁾	0.051	0.022	0.013
Polycyclic Aromatic Hydrocarbons, PAH						
S Naphtalene	mg/kg dm	<0.050	<0.050	<0.050	<0.050	<0.050
S Phenanthrene	mg/kg dm	<0.050	<0.050	0.069	<0.050	<0.050
S Anthracene	mg/kg dm	<0.050	<0.050	<0.050	<0.050	<0.050
S Fluoranthene	mg/kg dm	<0.050	<0.050	0.17	<0.050	<0.050
S Benzo(a)anthracene	mg/kg dm	<0.050	<0.050	0.085	<0.050	<0.050
S Chrysene	mg/kg dm	<0.050	<0.050	0.13	<0.050	<0.050
S Benzo(k)fluoranthene	mg/kg dm	<0.050	<0.050	0.056	<0.050	<0.050
S Benzo(a)pyrene	mg/kg dm	<0.050	<0.050	0.094	<0.050	<0.050
S Benzo(ghi)perylene	mg/kg dm	<0.050	<0.050	0.092	<0.050	<0.050
S Indeno(123cd)pyrene	mg/kg dm	<0.050	<0.050	0.089	<0.050	<0.050
S PAK VROM (10) (factor 0,7)	mg/kg dm	0.35 ¹⁾	0.35 ¹⁾	0.85	0.35 ¹⁾	0.35 ¹⁾
Physical and chemical analyses						
Measuring temperature (pH)	°C		20			20
S Acidity (pH-CaCl2)			7.6			7.9
miscellaneous research						
2378-TetraCDD	ng/kg dm		< 0.190 ⁷⁾			
12378-PentaCDD	ng/kg dm		< 0.253 ⁷⁾			
123478-HexaCDD	ng/kg dm		< 0.507 ⁷⁾			
123678-HexaCDD	ng/kg dm		1.28 ⁷⁾			
123789-HexaCDD	ng/kg dm		0.624 ⁷⁾			
1234678-HeptaCDD	ng/kg dm		12.3 ⁷⁾			
OctaCDD	ng/kg dm		48.3 ⁷⁾			
2378-TetraCDF	ng/kg dm		< 0.338 ⁷⁾			
12378-PentaCDF	ng/kg dm		< 0.465 ⁷⁾			
23478-PentaCDF	ng/kg dm		< 0.465 ⁷⁾			
123478-HexaCDF	ng/kg dm		0.489 ⁷⁾			
123678-HexaCDF	ng/kg dm		< 0.422 ⁷⁾			
123789-HexaCDF	ng/kg dm		< 0.422 ⁷⁾			

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16	S12-2	Soil, AS3000	13224108
17	S15-1	Soil, AS3000	13224109
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Analysis	Unit	16	17	18	19	20
234678-HexaCDF	ng/kg dm		< 0.422 ⁷⁾			
1234678-HeptaCDF	ng/kg dm		1.80 ⁷⁾			
1234789-HeptaCDF	ng/kg dm		< 0.401 ⁷⁾			
OctaCDF	ng/kg dm		3.64 ⁷⁾			
WHO(`05) PCDD/F TEQ excl LOQ	ng/kg dm		0.396 ⁷⁾			
WHO(`05) PCDD/F TEQ incl LOQ	ng/kg dm		1.21 ⁷⁾			
I-TEQ (NATO/CCMS) excl. LOQ	ng/kg dm		0.432 ⁷⁾			
I-TEQ (NATO/CCMS) incl. LOQ	ng/kg dm		1.22 ⁷⁾			

No. Your sample description

No.	Your sample description	Specified sample matrix	Sample nr.
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TESTING
RvA LO10



Appendix (A) with the specified sub-sample information belonging to the analysis certificate. 2022179426/

Sample nr.	Your sample description			Your sampling date	Sample description/Sampling ID
	Barcode	Drill-#	From To		
13224093	S1-2				
0539437598	DM1	8	8	14-Nov-2022	
13224094	S2-1				
0539437582	DM1	0	0	14-Nov-2022	
13224095	S2-2				
0539437595	DM1	8	8	14-Nov-2022	
13224096	S2-3				
0539437584	DM2	11	11	14-Nov-2022	
0539800555	DM1	11	11	14-Nov-2022	
13224097	S2-4				
0539437599	DM1	12	12	14-Nov-2022	
13224098	S3-1				
0539437619	DM1	0	0	14-Nov-2022	
13224099	S3-2				
0539437624	DM1	4	4	14-Nov-2022	
13224100	S3-3				
0539437617	DM1	6	6	14-Nov-2022	
13224101	S3-4				
0539437608	DM1	9	9	14-Nov-2022	
13224102	S6-1				
0539437607	DM1	0	2	14-Nov-2022	
13224103	S7-1				
0539437601	DM1	0	2	14-Nov-2022	
13224104	S7-2				
0539437600	DM1	2	3	14-Nov-2022	
13224105	S8-1				
0539437596	DM1	0	3	14-Nov-2022	
13224106	S11-1				
0539437589	DM1	0	0	14-Nov-2022	
13224107	S12-1				
0539437583	DM1	0	0	14-Nov-2022	
13224108	S12-2				



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BNP Paribas S.A. 227 9245 25
 IBAN: NL71BNP0227924525
 BIC: BNPANL2A
 KvK/CoC: 09088623
 BTW/VAT: NL 8043.14.883.B01

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Appendix (A) with the specified sub-sample information belonging to the analysis certificate. 2022179426/

Sample nr.	Your sample description			Your sampling date	Sample description/Sampling ID
	Barcode	Drill-#	From To		
	0539437588	DM1	0 1	14-Nov-2022	
	13224109	S15-1			
	0539437707	DM2	0 0	14-Nov-2022	
	0539437586	DM1	0 0	14-Nov-2022	
	13224110	S16-1			
	0539437592	DM1	0 1	14-Nov-2022	
	13224111	S19-1			
	0539437610	DM1	1 3	14-Nov-2022	
	13224112	S21-1			
	0539437626	DM1	0 3	14-Nov-2022	



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**Annex (B) concerning remarks referring to certificate of analysis 2022179426/1**

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Remark 1)

The reported value for the limit check is the sum of 0.7 times the reporting limits of the individual components.

Remark 2)

Reporting limit increased due to dilution of sample.

Remark 3)

Reporting limit is raised by dilution of the sample due to matrix interference.

Remark 4)

PCB 28 could be affected by PCB 31.

Remark 5)

PCB 138 could be influenced by PCB 163.

Remark 6)

PCB 153 could be influenced by PCB 132.

Remark 7)

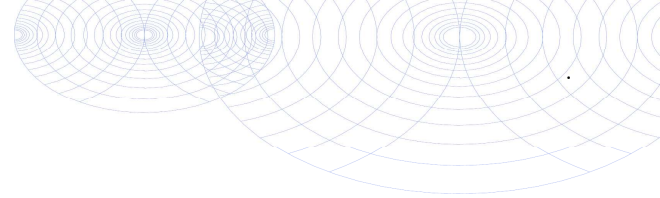
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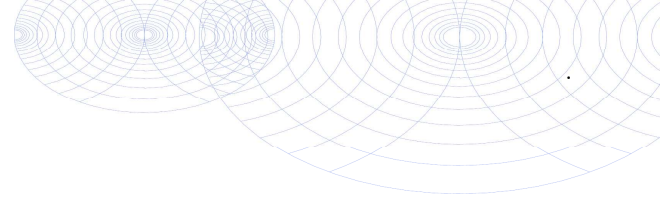
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KvK/CoC: 09088623
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Annex (C) method references belonging to certificate of analysis 2022179426/1

Analysis	Method	Technique	Method reference
Sample Pre-treatment			
Grinding jaw crusher (1 kg)	W0101	Pre-treatment	EN 16179
Cryogenic grinding	W0106	Pre-treatment	AS3000
Characteristics			
Dry matter	W0104	Gravimetry	pb 3010-2 en NEN-EN 15934
TIC	W0594	Element analysis	NEN-EN 15936
Grainsize < 2000 µm, mineral parts	W0174	Laserdiffractie	NEN-ISO 13320
Grainsize < 1000 µm, mineral parts	W0174	Laserdiffractie	NEN-ISO 13320
Grainsize < 500 µm, mineral parts	W0174	Laserdiffractie	NEN-ISO 13320
Grainsize < 250 µm, mineral parts	W0174	Laserdiffractie	NEN-ISO 13320
Grainsize < 125 µm, mineral parts	W0174	Laserdiffractie	NEN-ISO 13320
Grainsize < 63 µm (mineral parts)	W0174	Laserdiffractie	NEN-ISO 13320
Grainsize < 50 µm, mineral parts	W0174	Laserdiffractie	NEN-ISO 13320
Grainsize < 32 µm (mineral parts)	W0174	Laserdiffractie	NEN-ISO 13320
Grainsize < 16 µm (mineral parts)	W0174	Laserdiffractie	NEN-ISO 13320
Grainsize < 8 µm, mineral parts	W0174	Laserdiffractie	NEN-ISO 13320
Grainsize < 2 µm, mineral parts	W0174	Laserdiffractie	NEN-ISO 13320
Grainsize < 2 µm (clay) (mineral parts)	W0174	Laserdiffractie	NEN-ISO 13320
Metals			
Arsenic (As)	W0423	ICP-MS	pb 3010-5 & NEN-EN-ISO 17294-2
Barium (Ba)	W0423	ICP-MS	pb 3010-5 & NEN-EN-ISO 17294-2
Cadmium (Cd)	W0423	ICP-MS	pb 3010-5 & NEN-EN-ISO 17294-2
Cobalt (Co)	W0423	ICP-MS	pb 3010-5 & NEN-EN-ISO 17294-2
Chromium (Cr)	W0423	ICP-MS	pb 3010-5 & NEN-EN-ISO 17294-2
Copper (Cu)	W0423	ICP-MS	pb 3010-5 & NEN-EN-ISO 17294-2
Mercury (Hg)	W0423	ICP-MS	pb 3010-5 & NEN-EN-ISO 17294-2
Molybdenum (Mo)	W0423	ICP-MS	pb 3010-5 & NEN-EN-ISO 17294-2
Nickel (Ni)	W0423	ICP-MS	pb 3010-5 & NEN-EN-ISO 17294-2
Lead (Pb)	W0423	ICP-MS	pb 3010-5 & NEN-EN-ISO 17294-2
Sulphur (S) total	W0423	ICP-MS	NEN-EN-ISO 17294-2
Tin (Sn)	W0423	ICP-MS	pb 3010-5 & NEN-EN-ISO 17294-2
Vanadium (V)	W0423	ICP-MS	pb 3050-1/2 & NEN-EN-ISO 17294-2
Zinc (Zn)	W0423	ICP-MS	pb 3010-5 & NEN-EN-ISO 17294-2
Petroleum Hydrocarbons			
EPH (C10-C40)	W0202	GC/FID	pb 3010-7 & to NEN-EN-ISO 16703



Annex (C) method references belonging to certificate of analysis 2022179426/1

Analysis	Method	Technique	Method reference
Chromatogram TPH (GC)	W0202	GC/FID	NEN-EN-ISO 16703
Sum Organic Halogenes			
EOX	W0351	Microcoulometry	In house methode
Organic Chlorinated Pesticides			
OCP (25)	W0262	GC-MS	pb 3020-1-3 & NEN 6980
OCB som AS3000	W0262	GC-MS	pb 3020-1-3 & NEN 6980
Polychlorinated Biphenyl			
PCB (7)	W0271	GC-MS	pb 3010-8 & NEN 6980
Polycyclic Aromatic Hydrocarbons, PAH			
PAH (10) (VR0M)	W0271	GC-MS	pb. 3010-6 & NEN-ISO 18287
PAK som AS3000/AP04	W0271	GC-MS	pb. 3010-6 & NEN-ISO 18287
Physical and chemical analyses			
Acidity (pH-CaCl2)	W0524	Potentiometry	pb 3010-1 en NEN-ISO 10390
miscellaneous research			
Dioxines (subcontracted)	W0004	External	External method

Additional information about the applied methods as well as the classification of the accuracy, are listed in our supplement: "Specification of methods of analyses", version April 2022.



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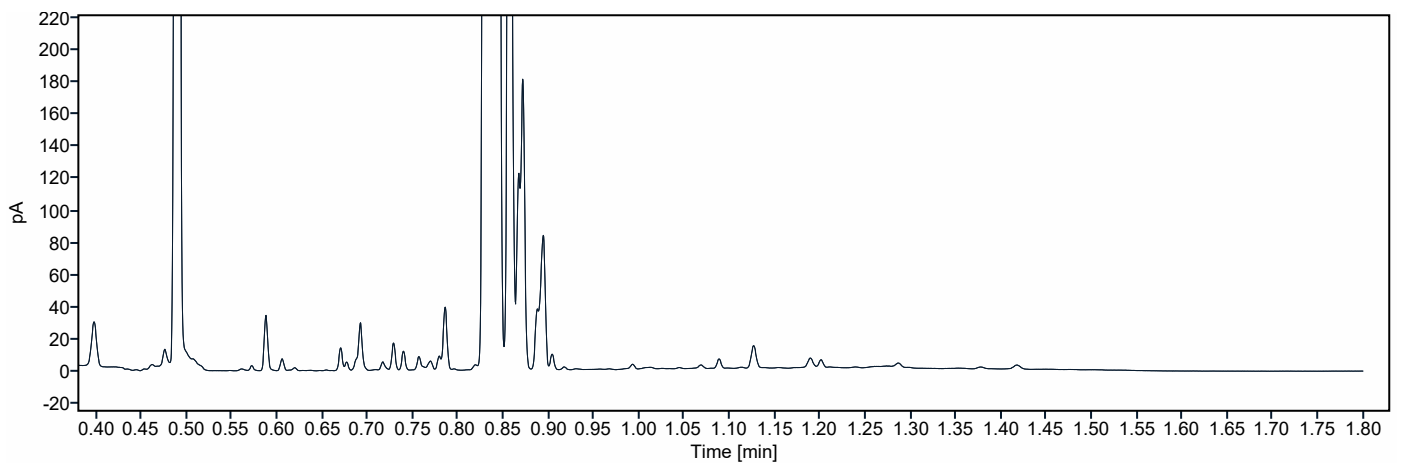
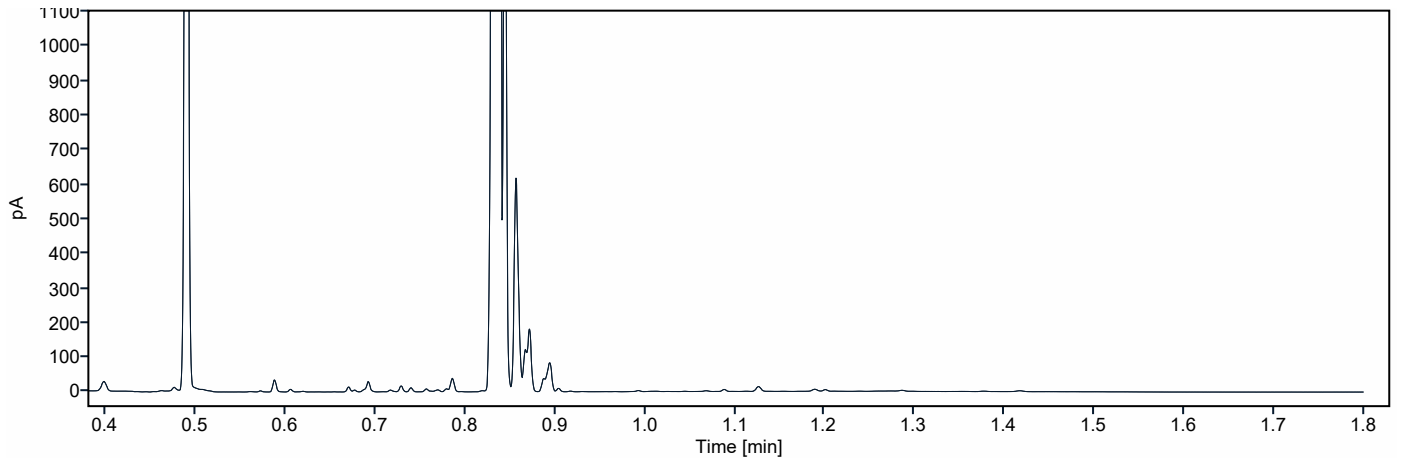
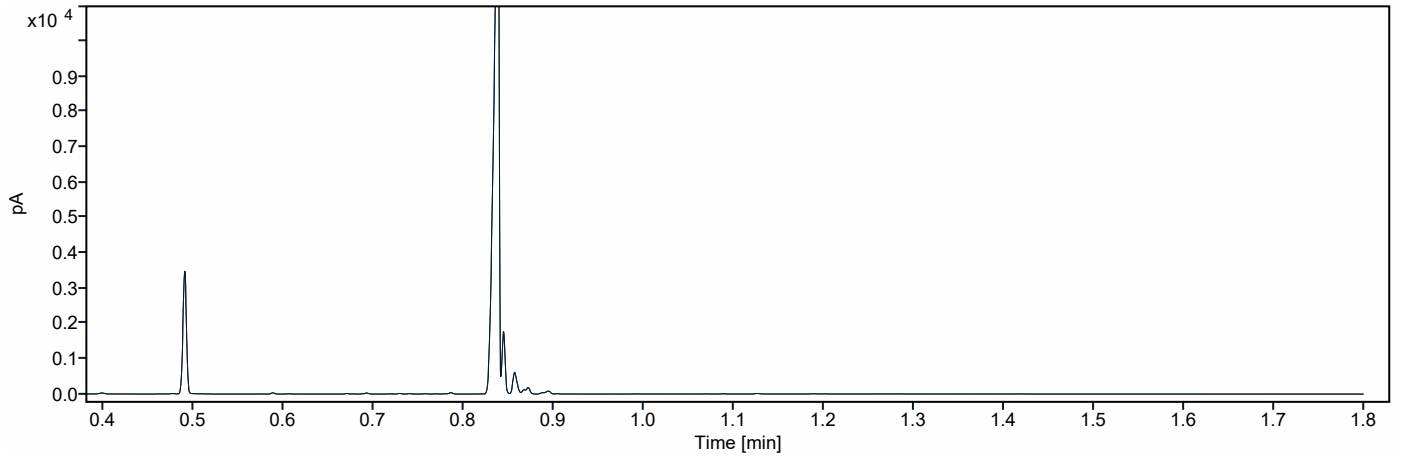
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Chromatogram TPH/ Mineral Oil

Sample ID.: 13224093
Certificate no.: 2022179426
Sample description.: S1-2

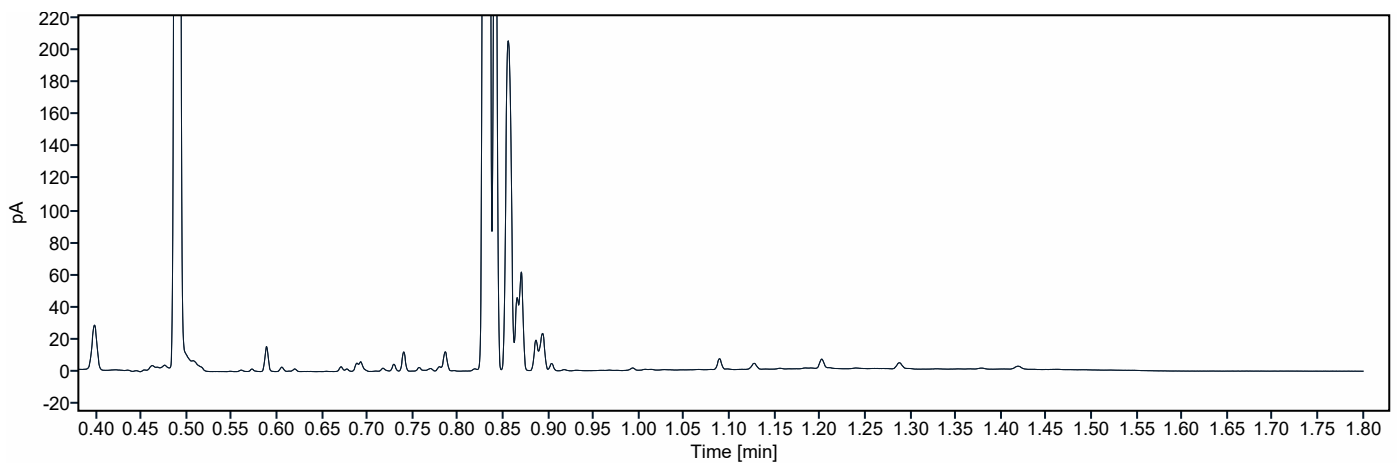
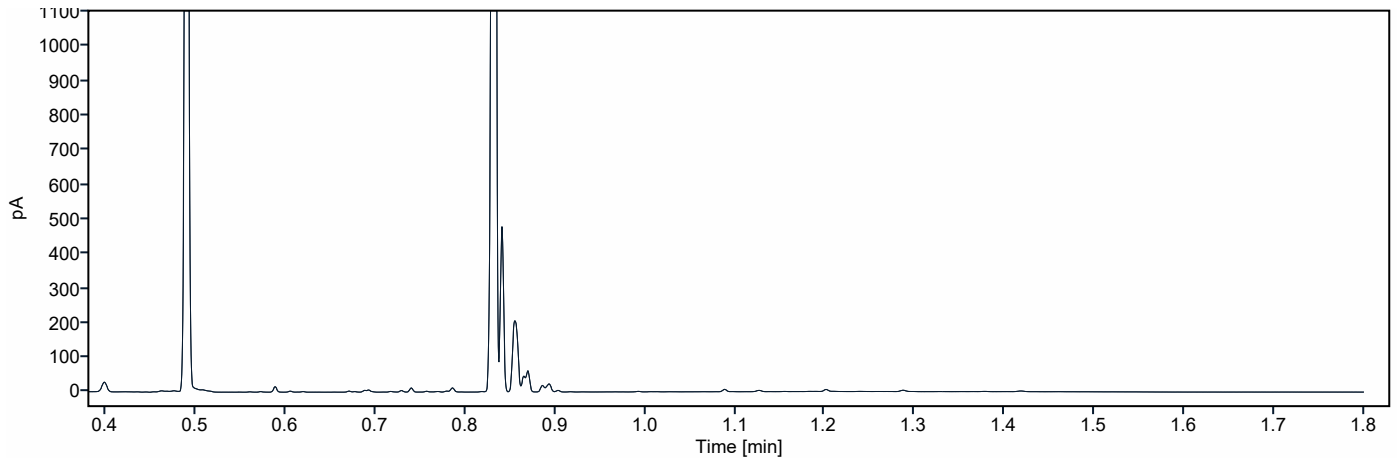
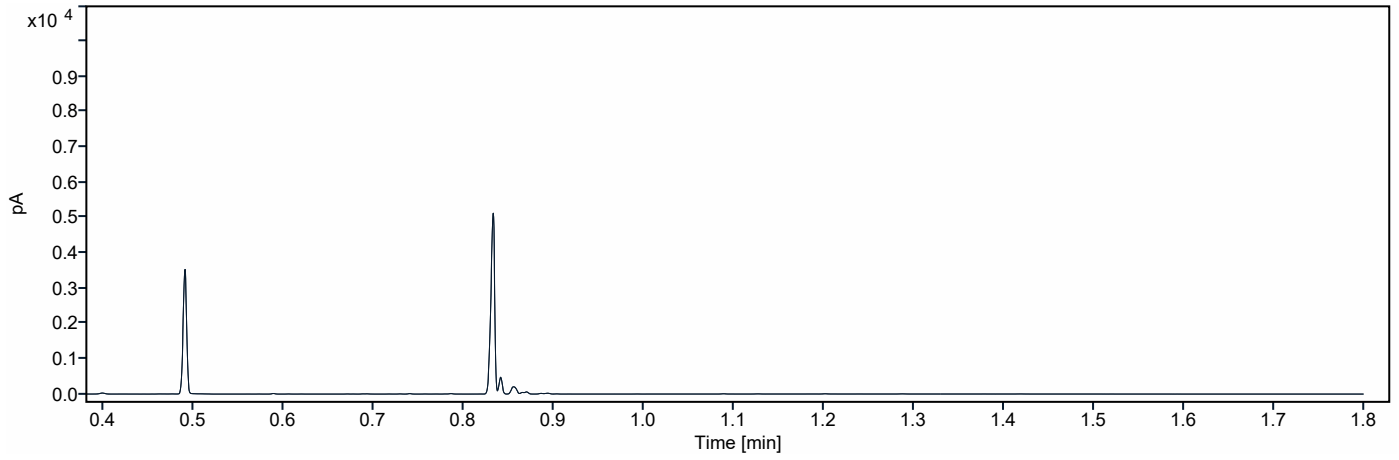
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Chromatogram TPH/ Mineral Oil

Sample ID.: 13224097
Certificate no.: 2022179426
Sample description.: S2-4

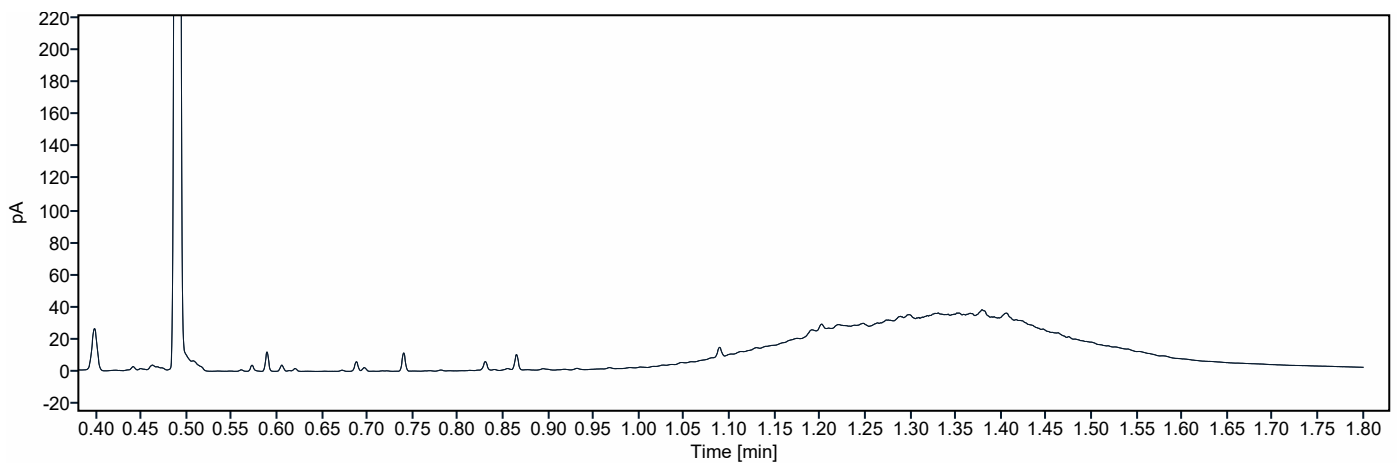
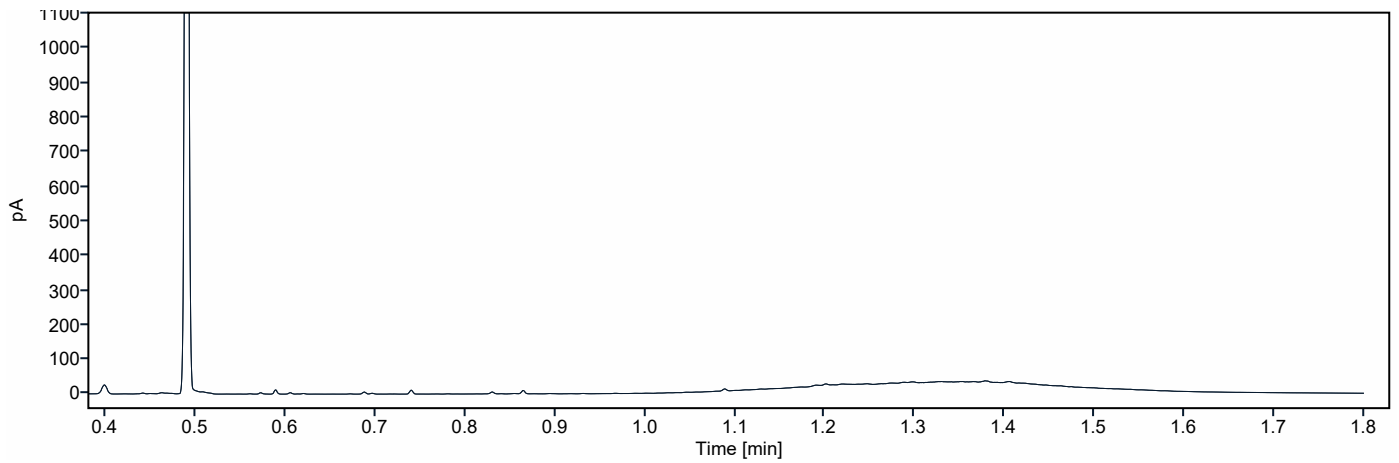
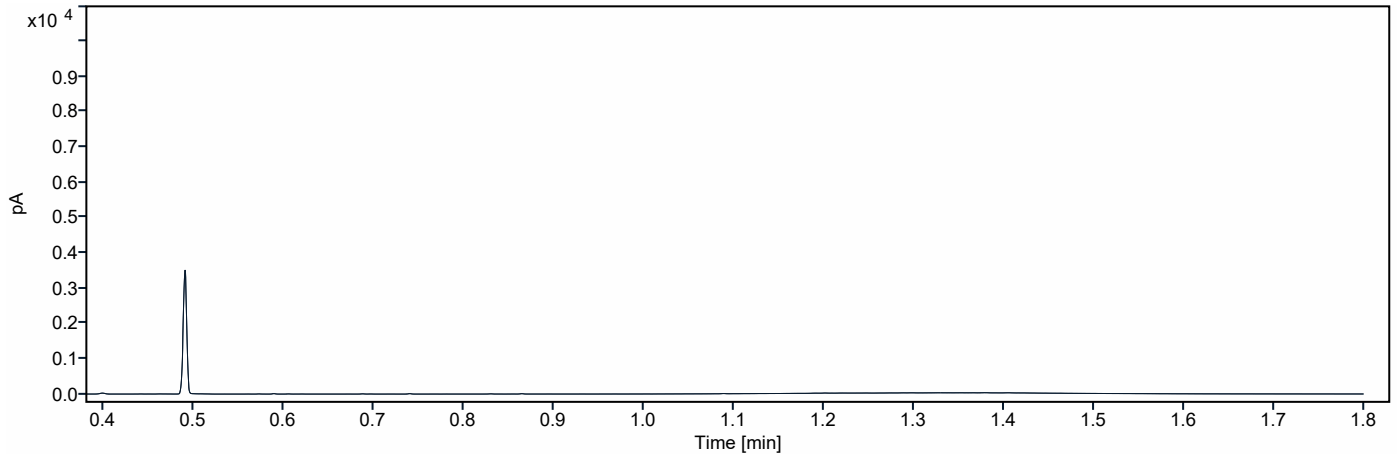
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Chromatogram TPH/ Mineral Oil

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Certificate no.: 2022179426
Sample description.: S3-2

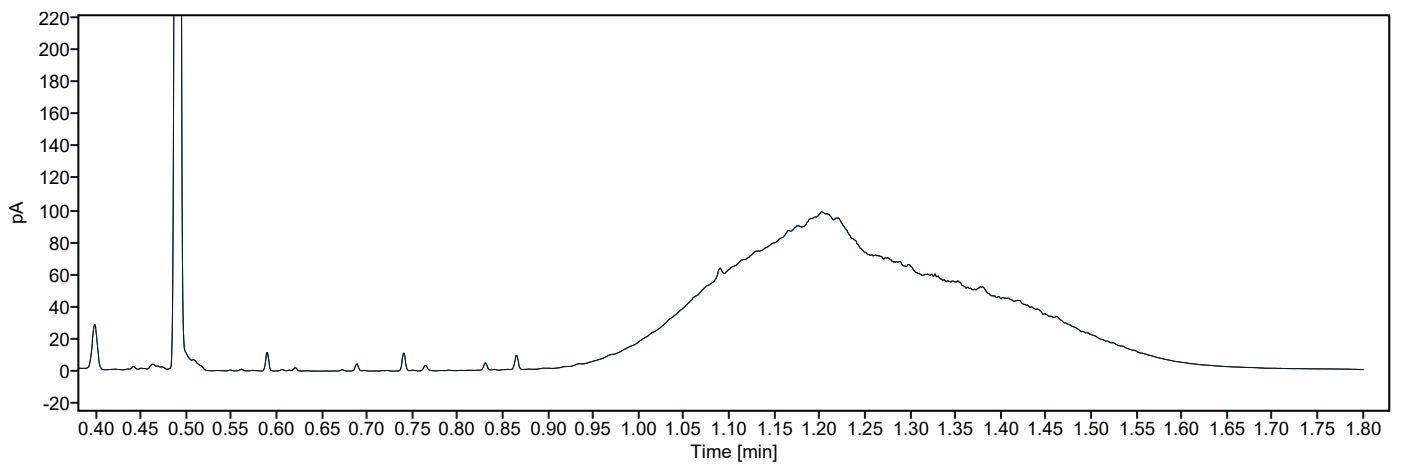
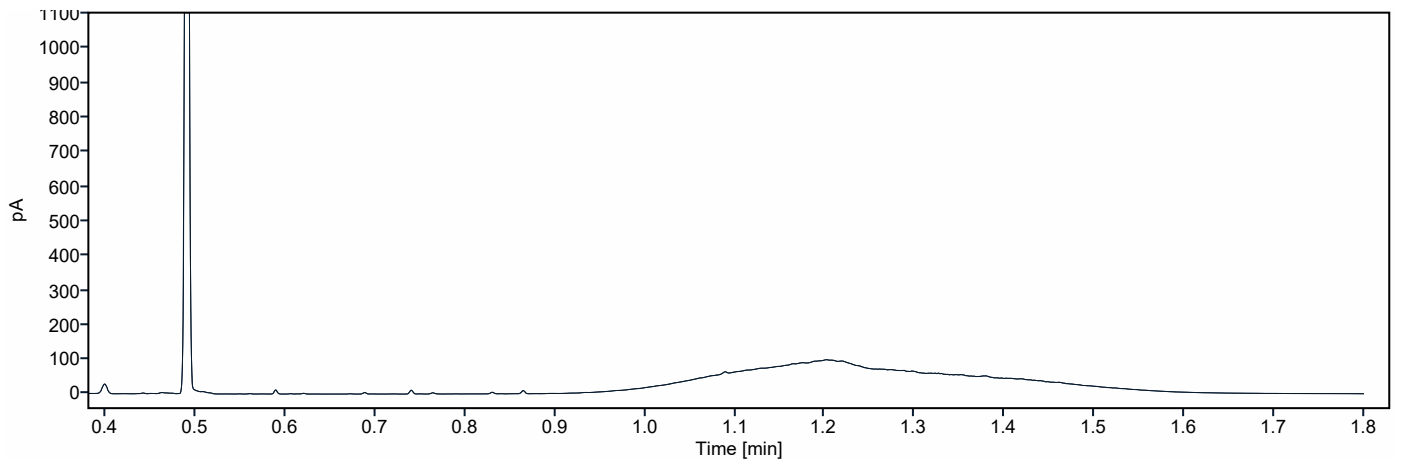
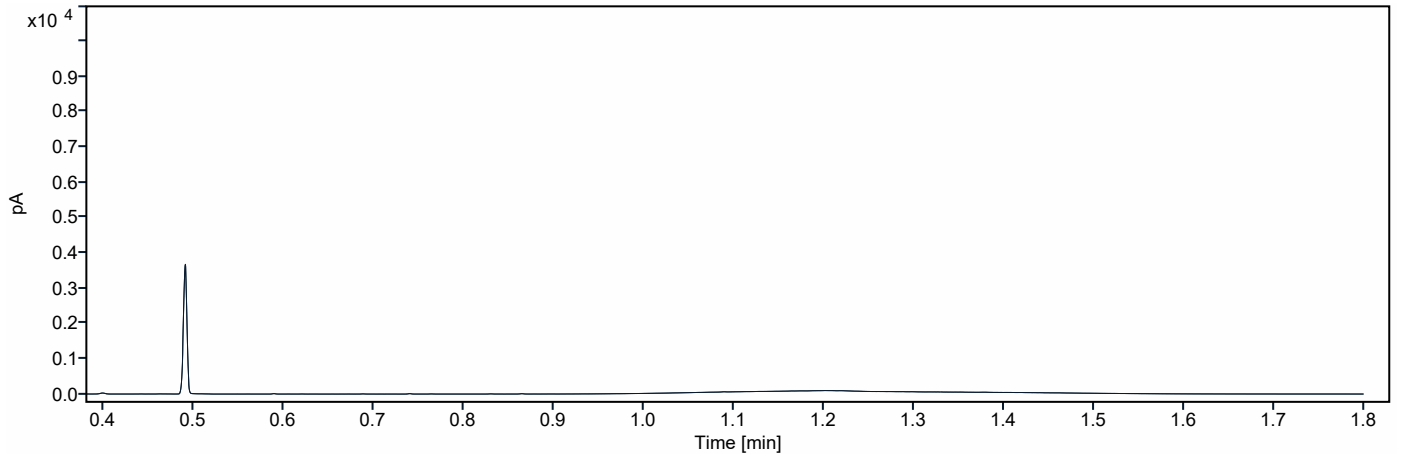
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Chromatogram TPH/ Mineral Oil

Sample ID.: 13224101
Certificate no.: 2022179426
Sample description.: S3-4

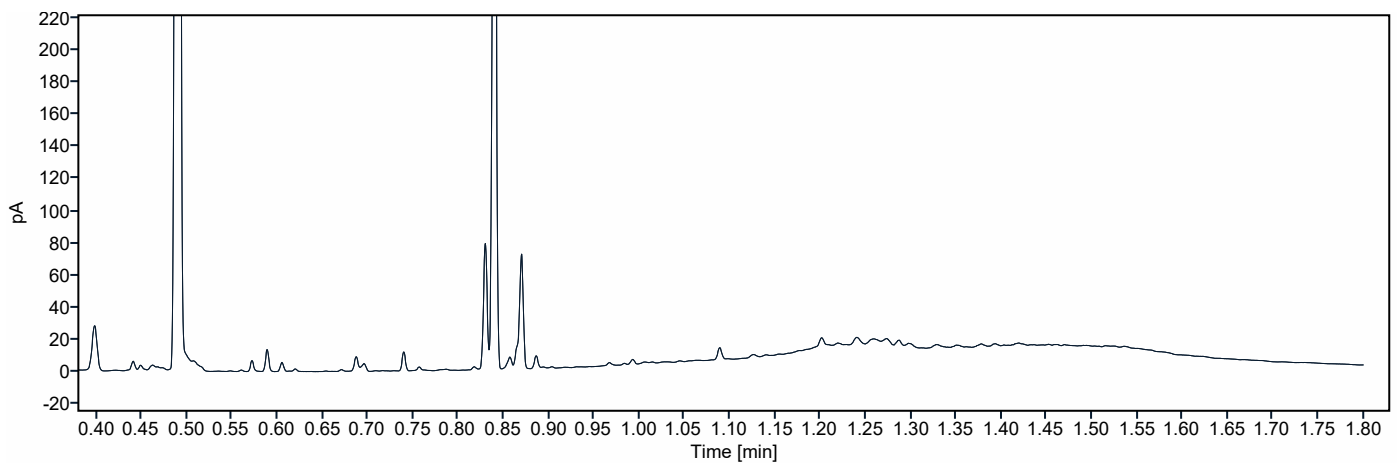
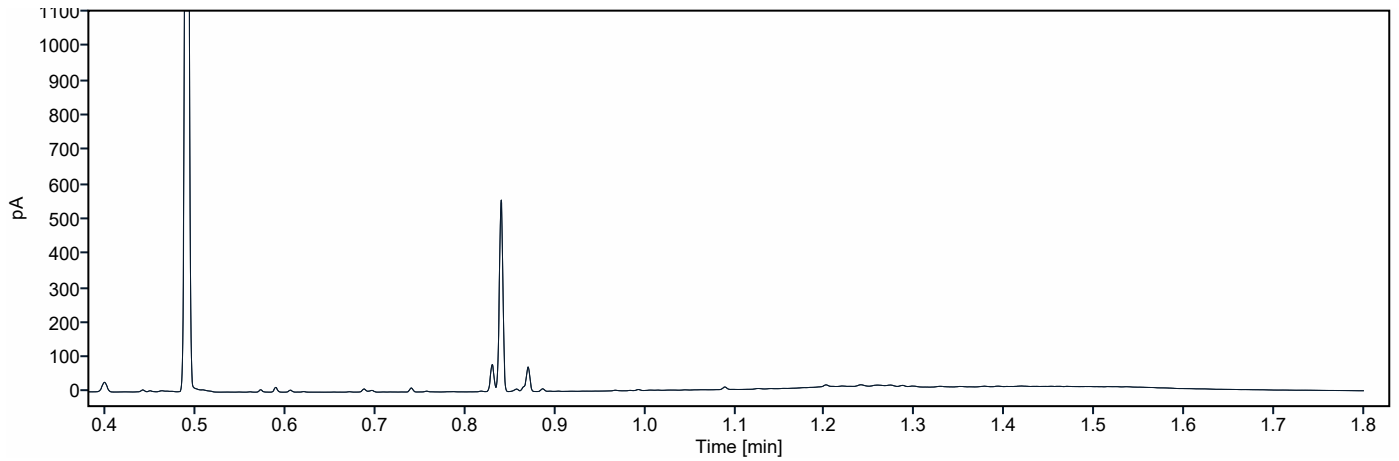
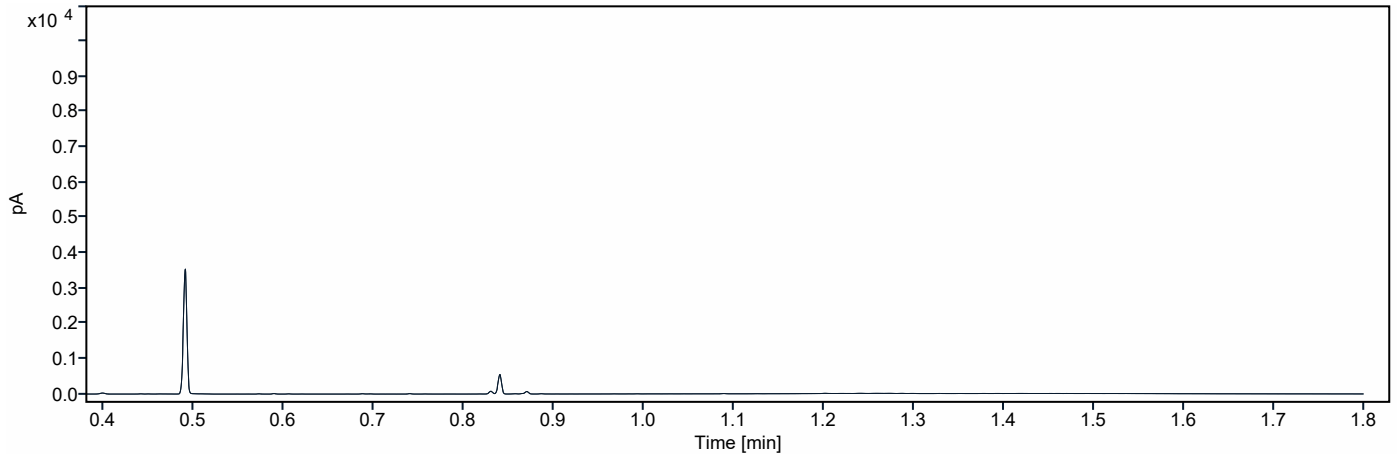
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Chromatogram TPH/ Mineral Oil

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Certificate no.: 2022179426
Sample description.: S7-1

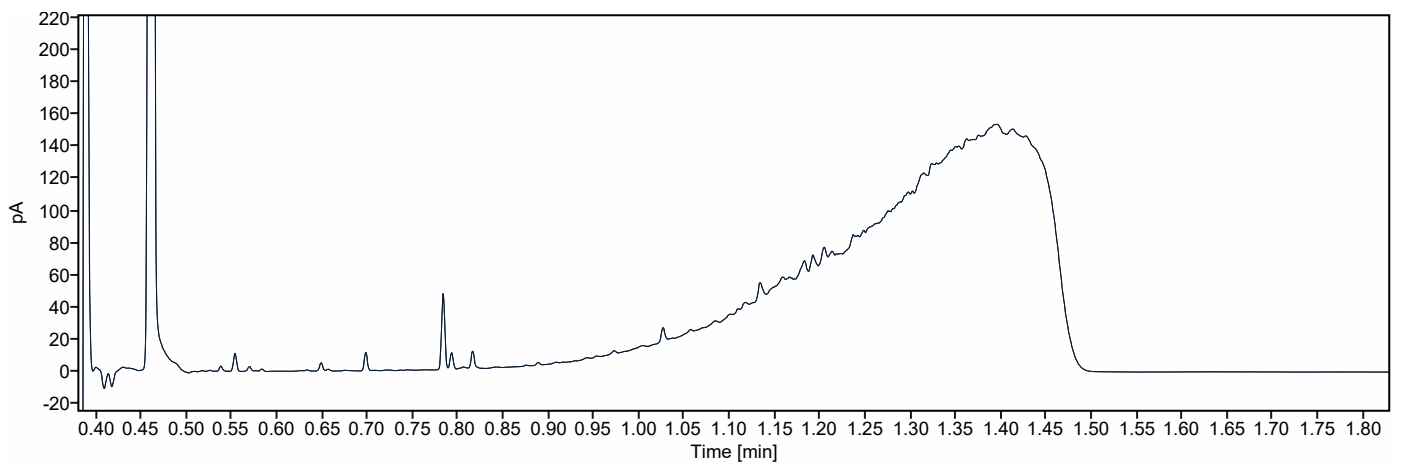
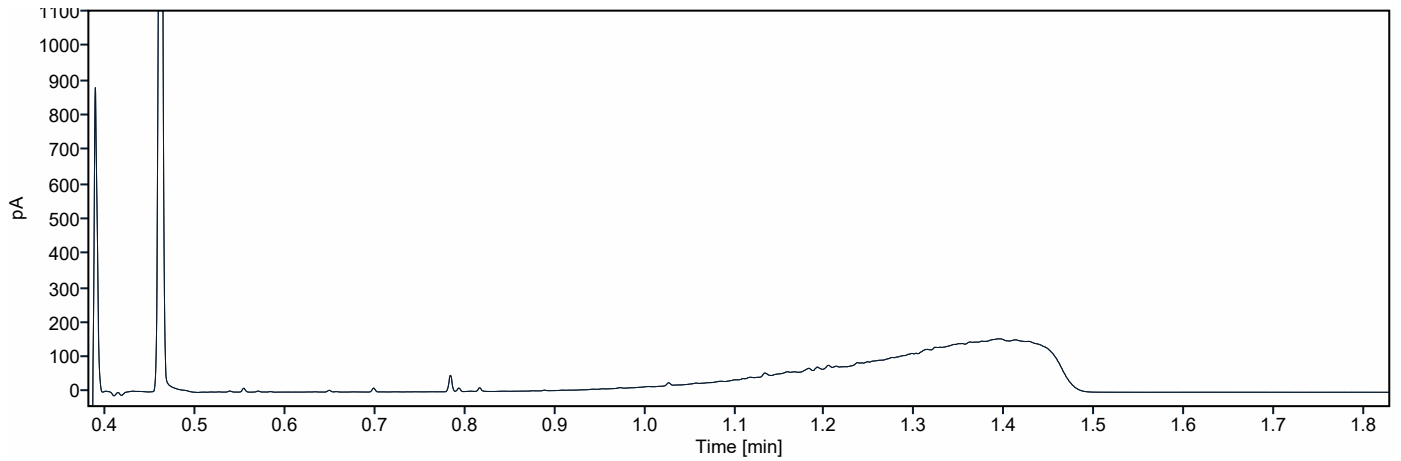
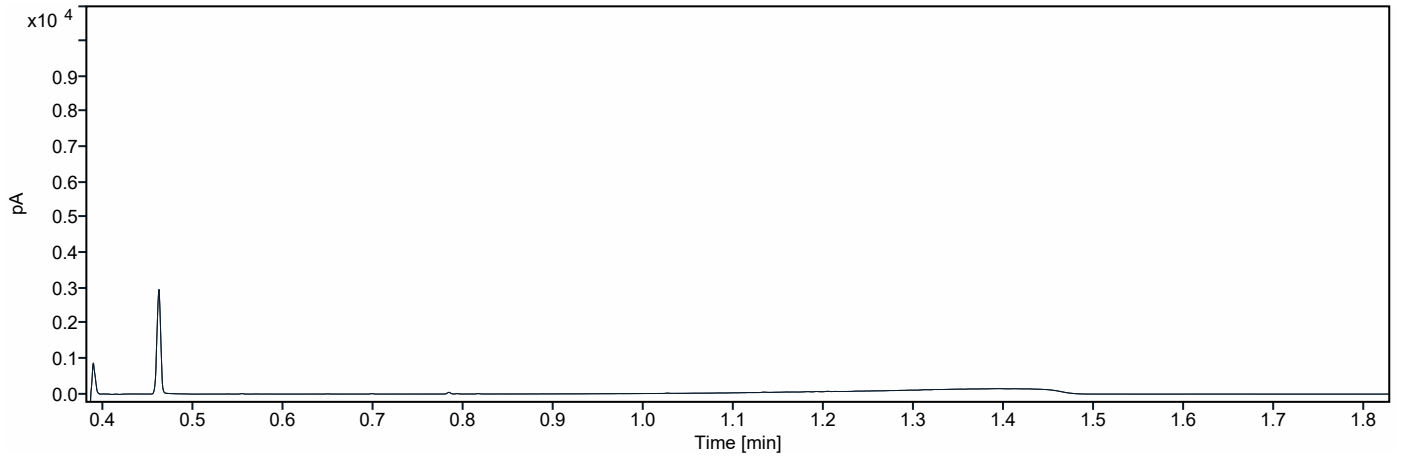
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Chromatogram TPH/ Mineral Oil

Sample ID.: 13224104
Certificate no.: 2022179426
Sample description.: S7-2

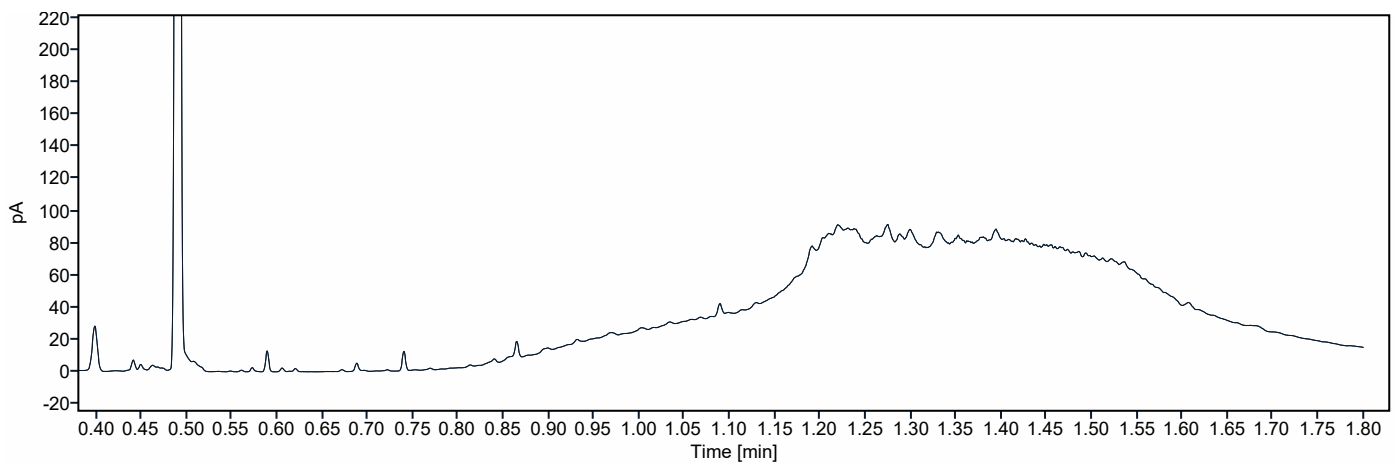
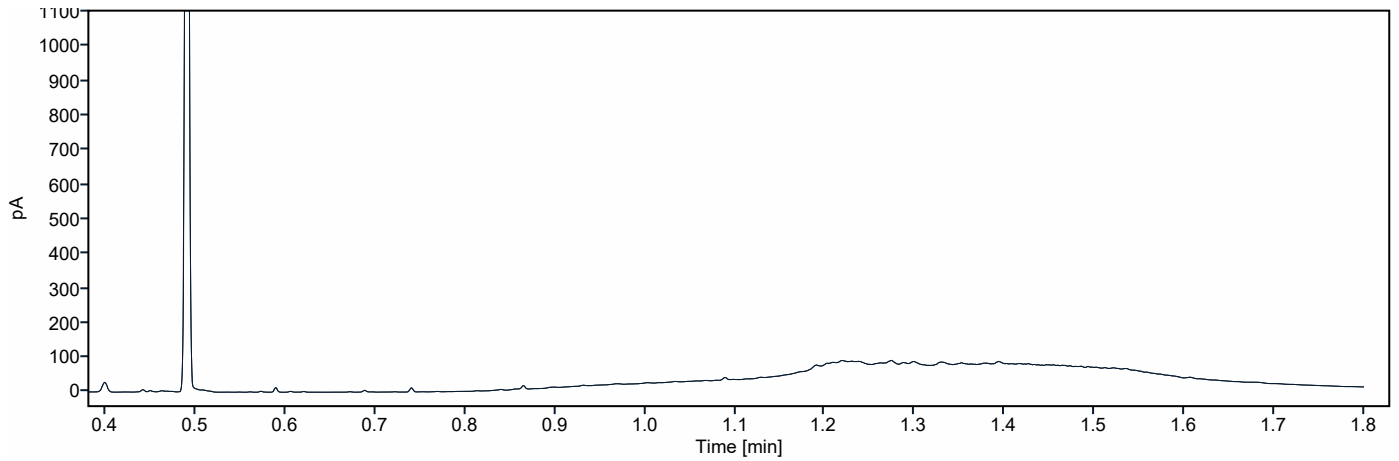
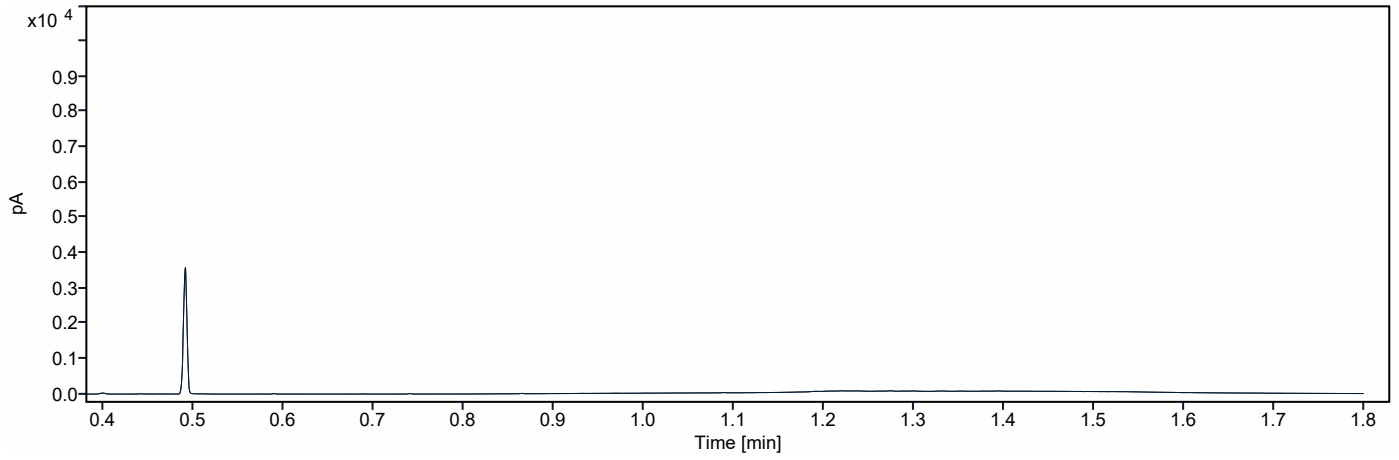
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Chromatogram TPH/ Mineral Oil

Sample ID.: 13224105
Certificate no.: 2022179426
Sample description.: S8-1

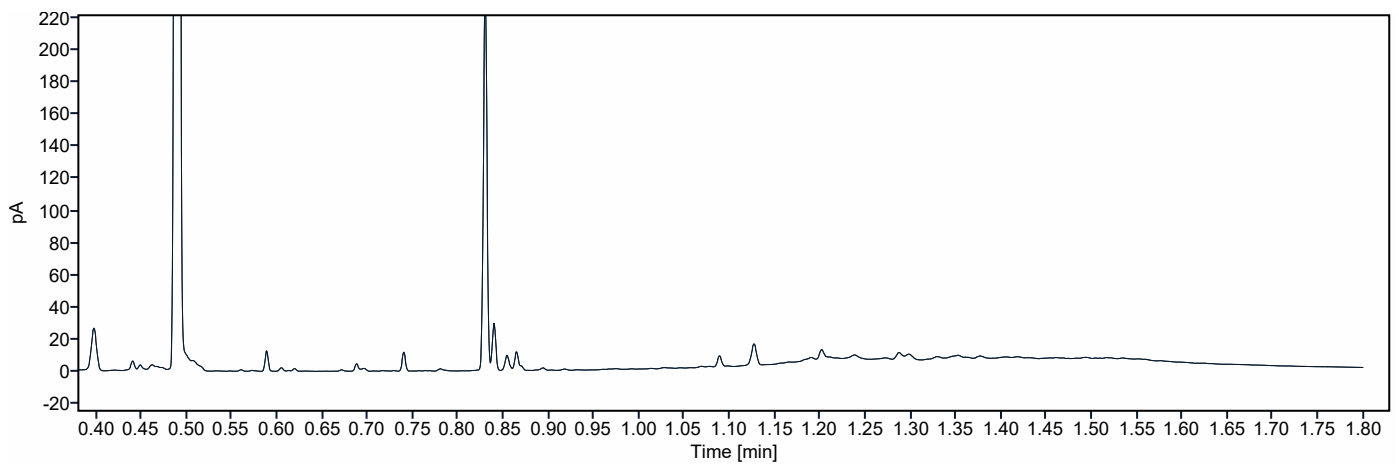
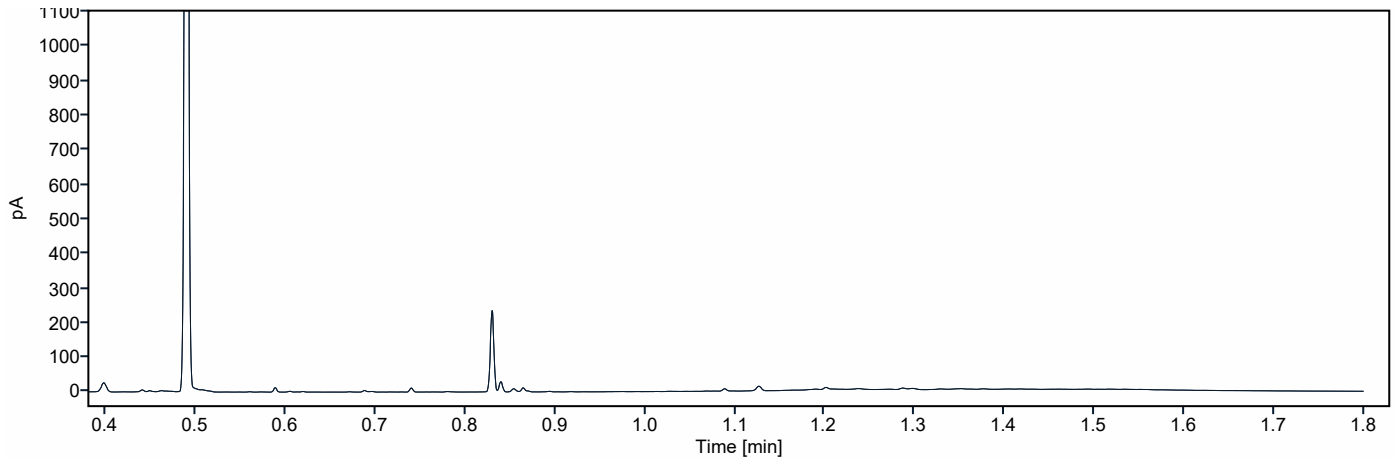
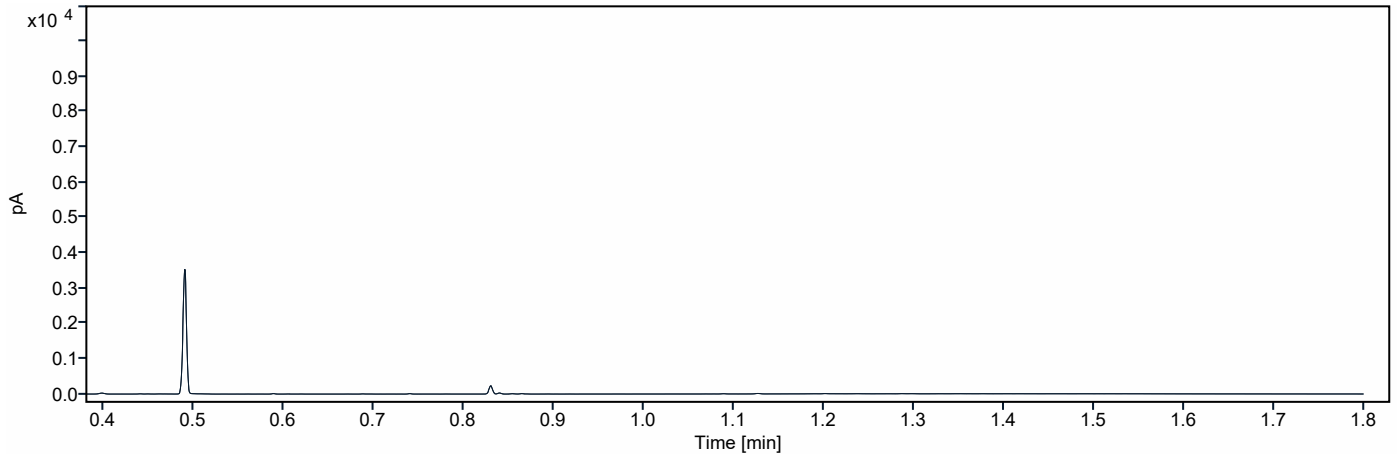
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Chromatogram TPH/ Mineral Oil

Sample ID.: 13224106
Certificate no.: 2022179426
Sample description.: S11-1

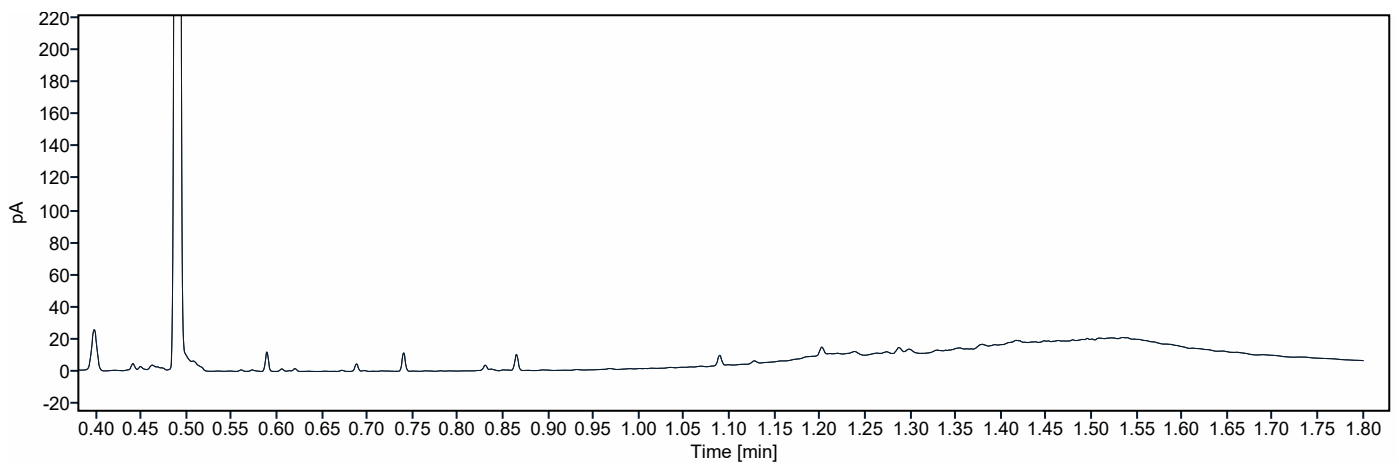
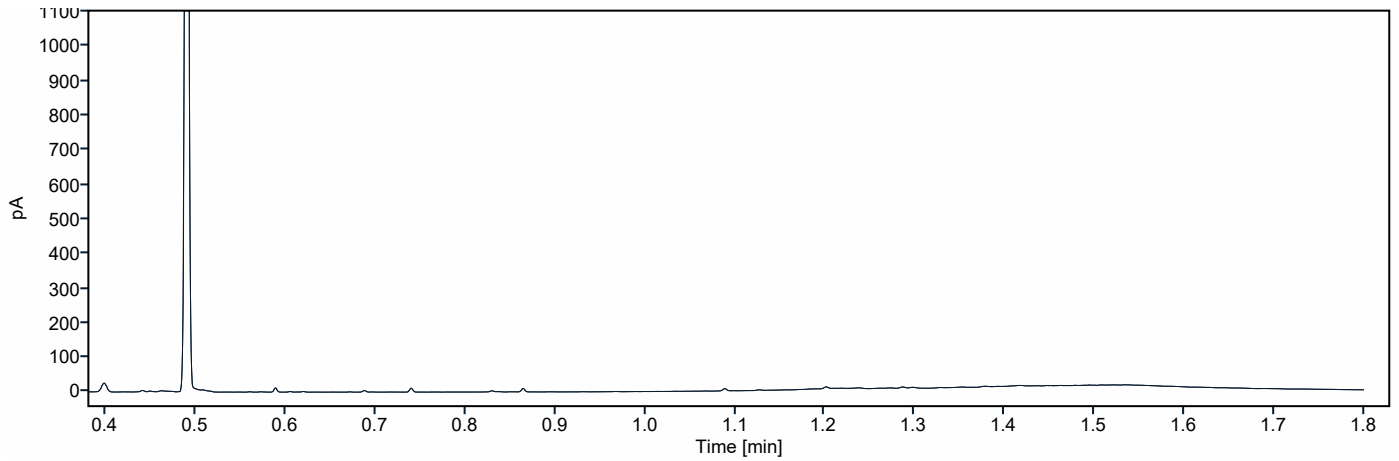
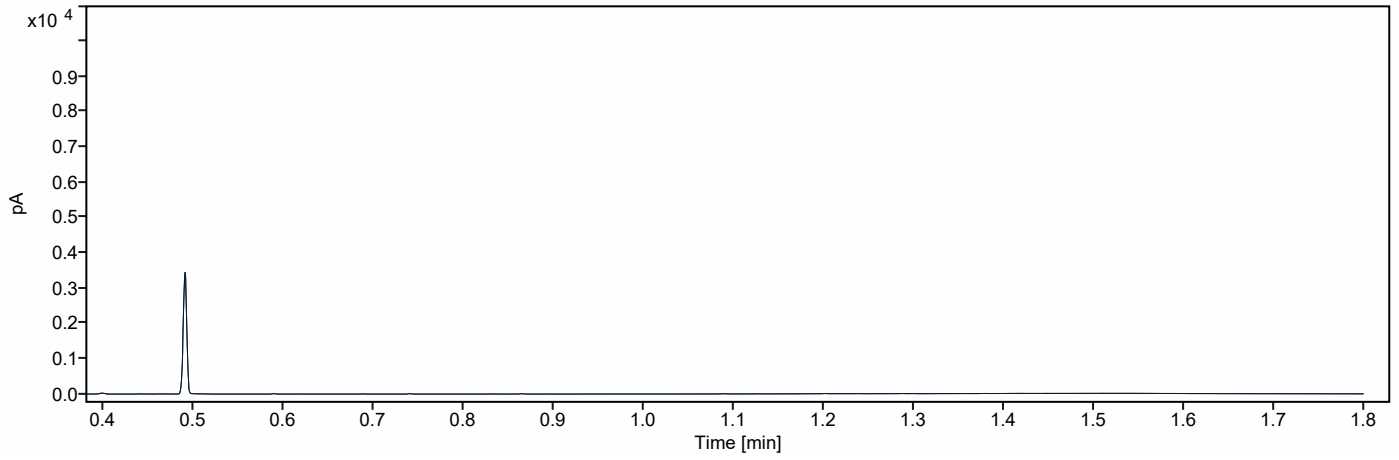
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Chromatogram TPH/ Mineral Oil

Sample ID.: 13224107
Certificate no.: 2022179426
Sample description.: S12-1

V



Eurofins Analytico B.V.
 attn. Shantal Khemai
 Gildeweg 42 - 48
 3771 NB Barneveld
 NIEDERLANDE

Person in charge Dr. D. Stegemann
ASM Dr. D. Stegemann

Report date 19.12.2022

Page 1/2

Analytical report AR-22-GF-043612-01

Sample Code 710-2022-30525001

¹Reference	Soil
	Certificate nummber:2022179426
¹Sample sender	Shantal Khemai
Reception date time	16.12.2022
Transport by	DHL
¹Client Purchase order nr.	Macedonia-Pelenica dumpsite
¹Purchase order date	15.12.2022
¹Client sample code	13224109
Number of containers	1
Reception temperature	room temperature
End analysis	19.12.2022

¹: This information was provided by the customer. Data provided by the customer may have an impact on the validity of the test results.

Test results

GFDRY	Dry Residue (°) (#)		
Method	Internal, DF110:22-06-30;DF140:22-11-09, Gravimetry		
dry residue		76.0	%
GFU04	polychlorinated dibenzodioxins and -furans (17 PCDD/F): (wet) sewage sludge, slag, ash, soil (°) (#)		
Method	Internal, GLS DF 130:2021-08-20, GC-MS/MS		
2,3,7,8-TetraCDD		< 0.190	ng/kg dw
1,2,3,7,8-PentaCDD		< 0.253	ng/kg dw
1,2,3,4,7,8-HexaCDD		< 0.507	ng/kg dw

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 HRB: 115907 AG Hamburg
 General Managers: Dr. Felix Focke
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 Hypovereinsbank • Bank code: 207 300 17 • Account No.: 7000002400 • SWIFT-BIC: HYVEDEMM33
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 Accredited testing Laboratory by DIN EN ISO/IEC
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DIN EN ISO/IEC 17025:2018

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1,2,3,6,7,8-HexaCDD	1.28 ± 0.38	ng/kg dw ng/kg dw
1,2,3,7,8,9-HexaCDD	0.624 ± 0.19	ng/kg dw ng/kg dw
1,2,3,4,6,7,8-HeptaCDD	12.3 ± 3.7	ng/kg dw ng/kg dw
OctaCDD	48.3 ± 14	ng/kg dw ng/kg dw
2,3,7,8-TetraCDF	< 0.338	ng/kg dw
1,2,3,7,8-PentaCDF	< 0.465	ng/kg dw
2,3,4,7,8-PentaCDF	< 0.465	ng/kg dw
1,2,3,4,7,8-HexaCDF	0.489 ± 0.15	ng/kg dw ng/kg dw
1,2,3,6,7,8-HexaCDF	< 0.422	ng/kg dw
1,2,3,7,8,9-HexaCDF	< 0.422	ng/kg dw
2,3,4,6,7,8-HexaCDF	< 0.422	ng/kg dw
1,2,3,4,6,7,8-HeptaCDF	1.80 ± 0.54	ng/kg dw ng/kg dw
1,2,3,4,7,8,9-HeptaCDF	< 0.401	ng/kg dw
OctaCDF	3.64 ± 1.1	ng/kg dw ng/kg dw
WHO(2005)-PCDD/F TEQ (lower-bound)	0.396 ± 0.099	ng/kg dw ng/kg dw
WHO(2005)-PCDD/F TEQ (upper-bound)	1.21 ± 0.30	ng/kg dw ng/kg dw
I-TEQ (NATO/CCMS) (lower-bound)	0.432 ± 0.11	ng/kg dw ng/kg dw
I-TEQ (NATO/CCMS) (upper-bound)	1.22 ± 0.30	ng/kg dw ng/kg dw

(°) = The test was performed at the laboratory site: Am Neuländer Gewerbepark 4

(#) = Eurofins GfA Lab Service GmbH (Hamburg) is accredited for this test.

Result +/- expanded measurement uncertainty (95%; k=2)

< - Concentration below the indicated limit of quantification (LOQ)

L.Q. = below limit of quantification



Analytical Services Manager, ASM (Dieter Stegemann)

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 General Managers: Dr. Felix Focke
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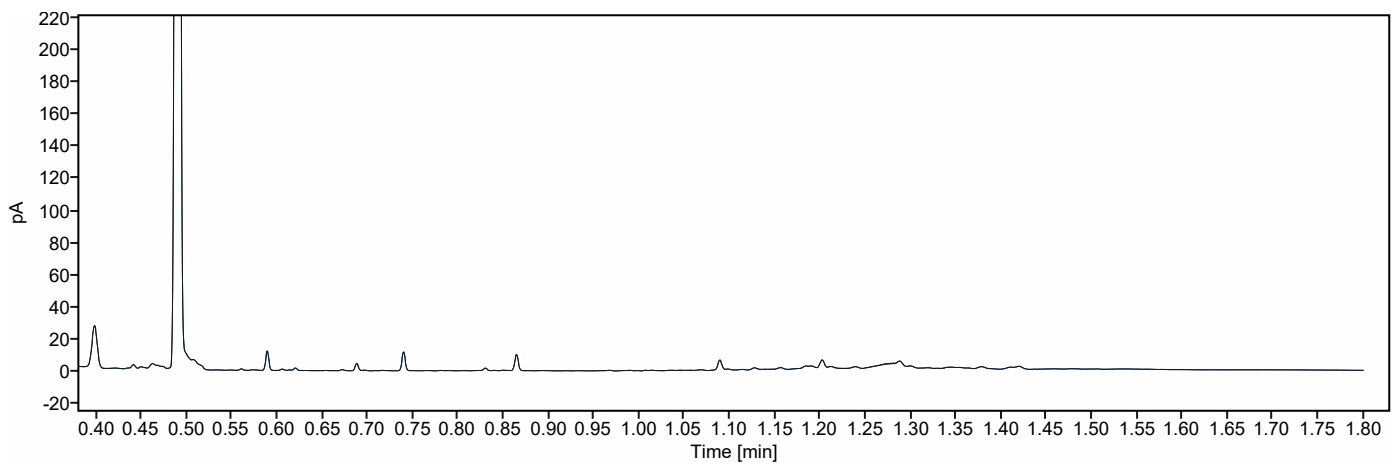
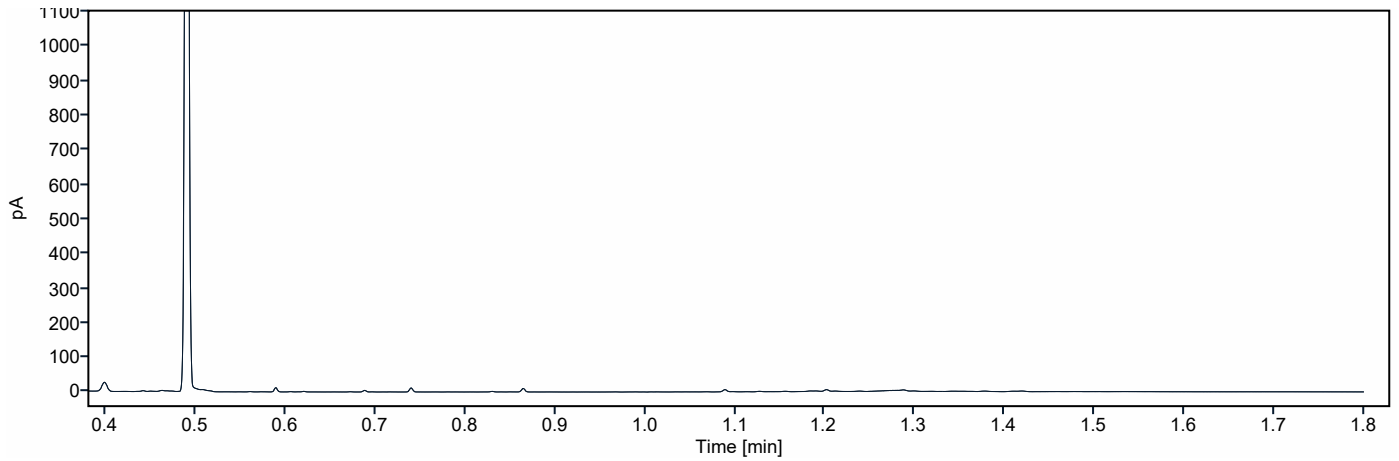
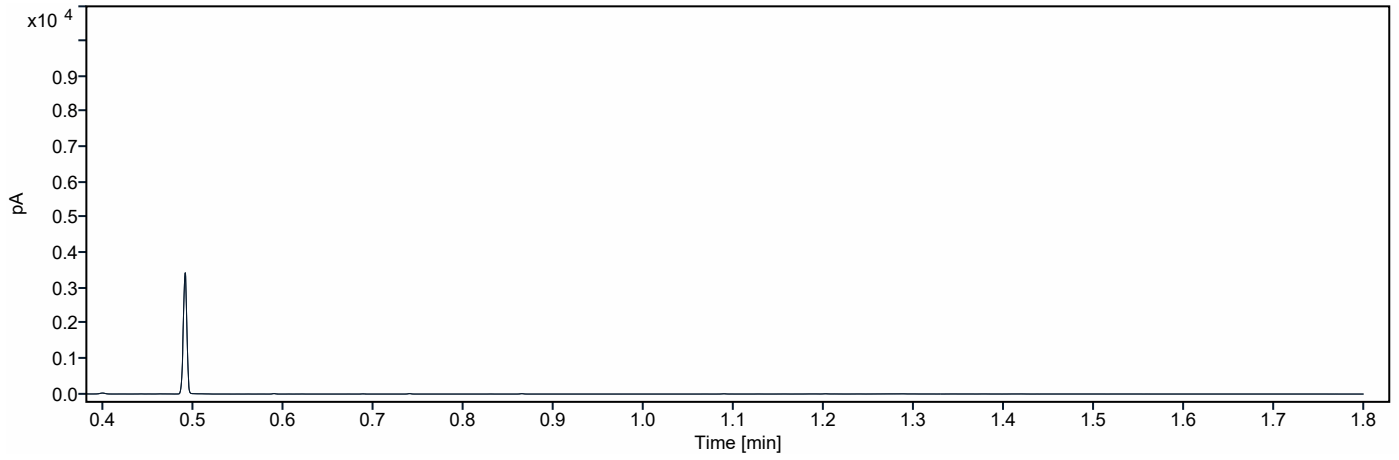
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Chromatogram TPH/ Mineral Oil

Sample ID.: 13224109
Certificate no.: 2022179426
Sample description.: S15-1

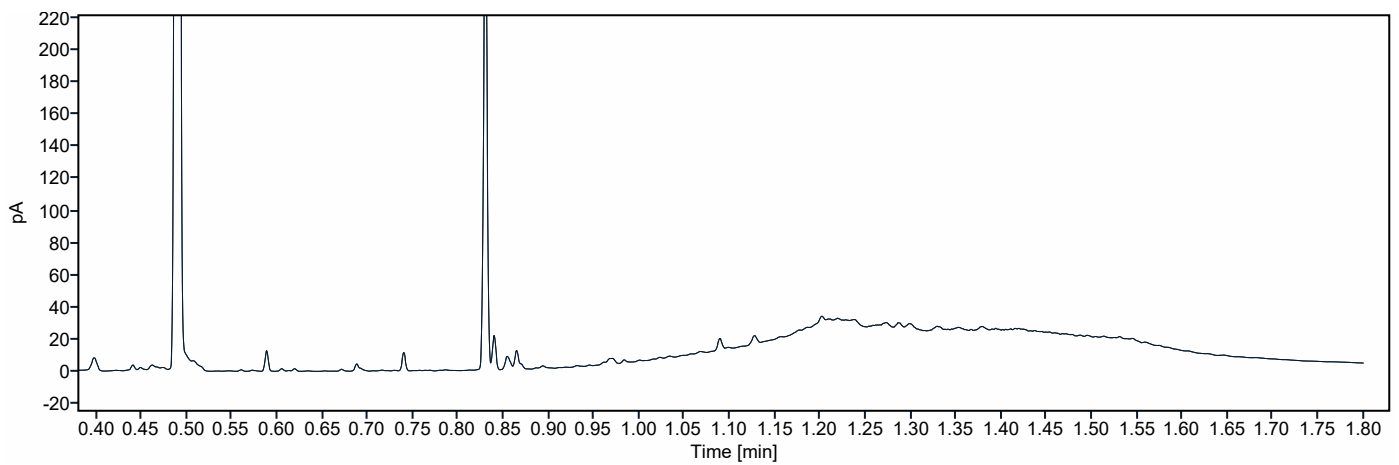
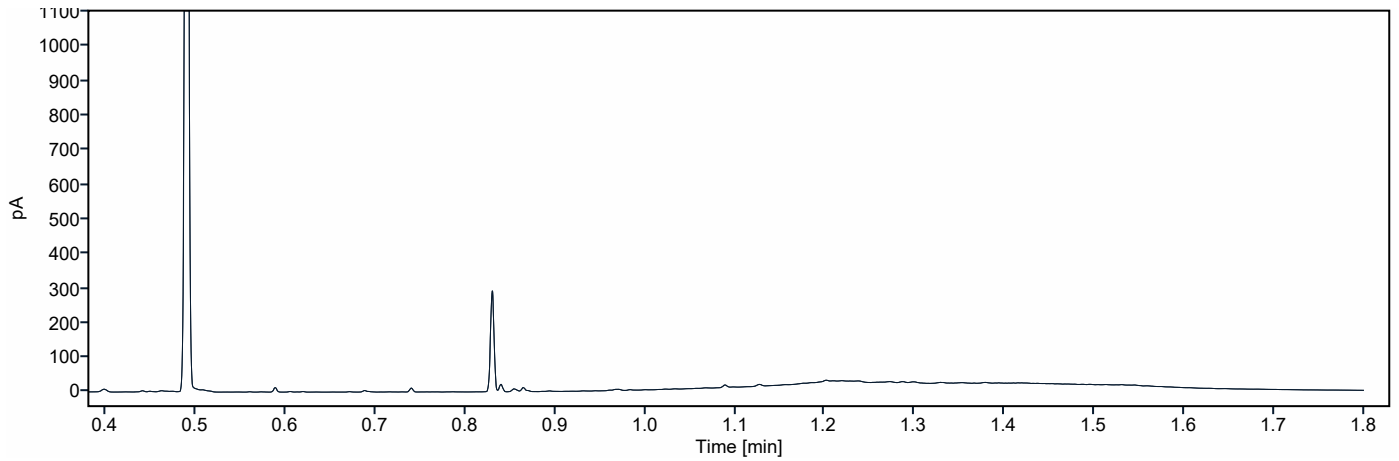
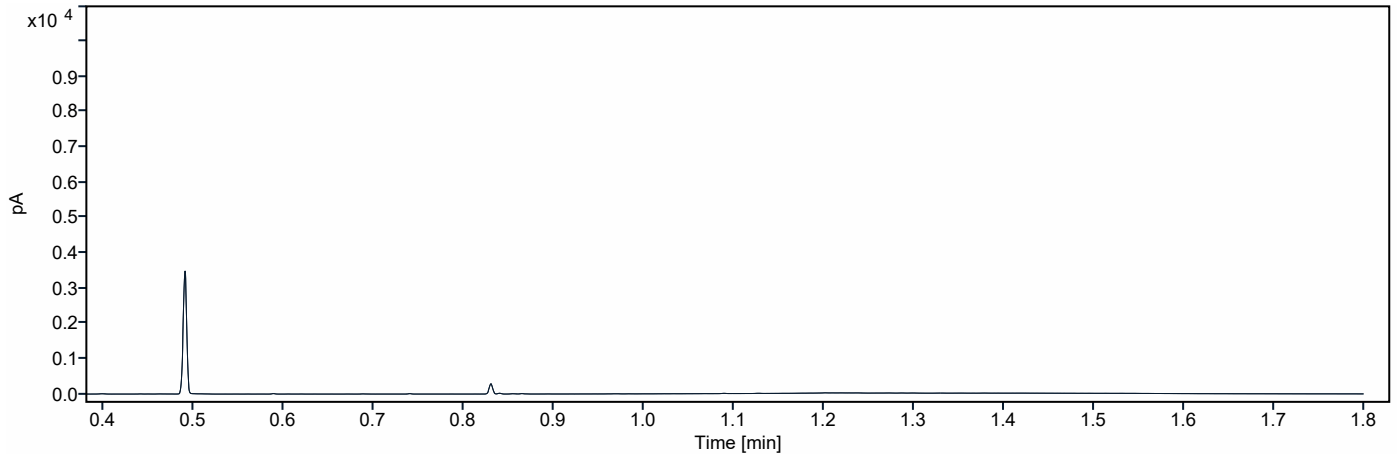
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Chromatogram TPH/ Mineral Oil

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Certificate no.: 2022179426
Sample description.: S16-1

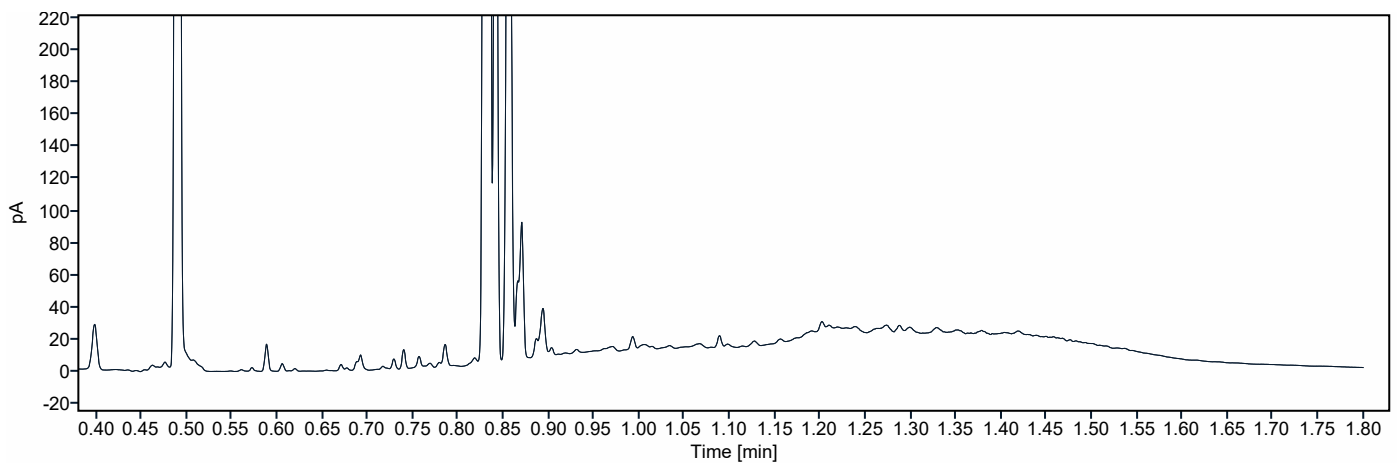
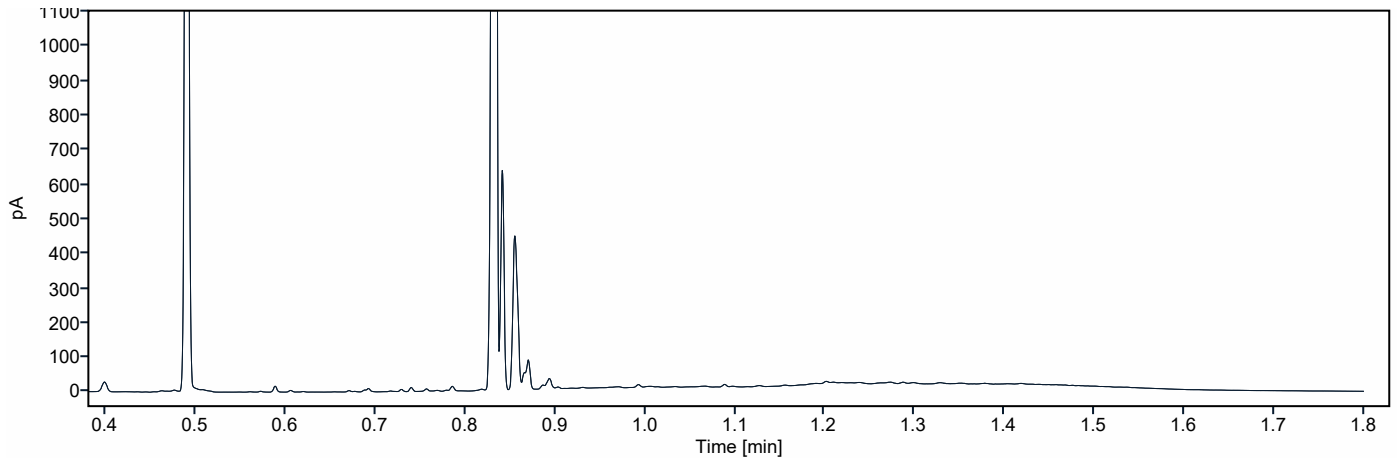
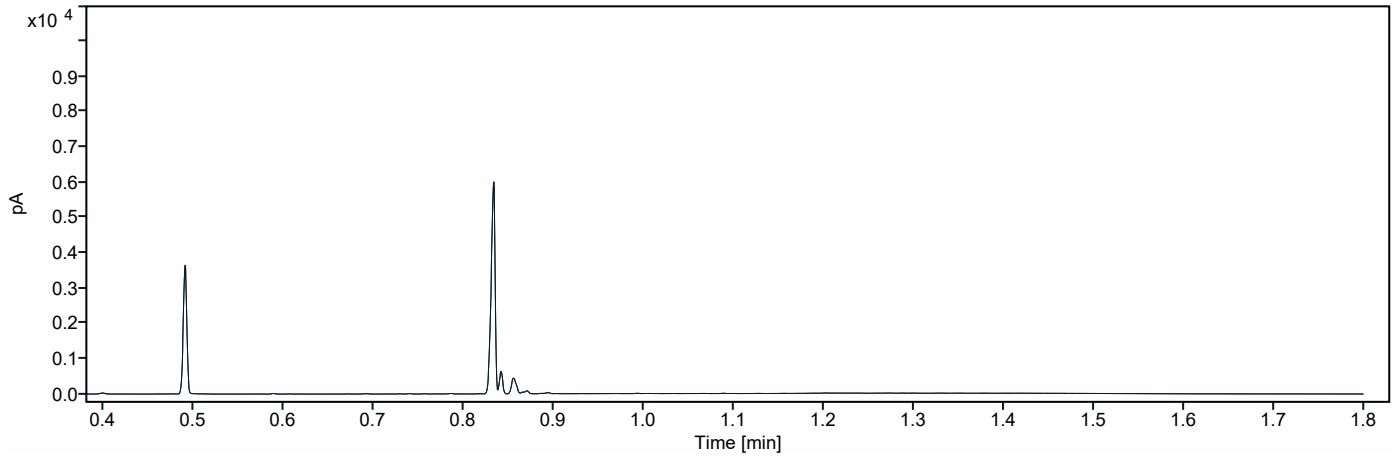
V



Chromatogram TPH/ Mineral Oil

Sample ID.: 13224111
Certificate no.: 2022179426
Sample description.: S19-1

V



Chromatogram TPH/ Mineral Oil

Sample ID.: 13224112
Certificate no.: 2022179426
Sample description.: S21-1

V

