**The Appendix is an integral part of**
**Certificate of Accreditation No. 251/2023 of 22/05/2023**

**Accredited entity according to ČSN EN ISO/IEC 17025:2018:**

**Technická univerzita v Liberci**
CAB number 1611, Chemical Decontamination Methods Laboratory
Bendlova 1409/7, 460 01 Liberec 1

*The laboratory has a flexible scope of accreditation permitted as detailed in the Annex. Updated list of activities provided within the required flexible scope of accreditation is available at the laboratory from the Laboratory Quality Manager.*
*The laboratory provides expert opinions and interprets test results.*

Tests:

| Ordinal number[1] | Test procedure/method name | Test procedure/method identification[2] | Tested object |
|---|---|---|---|
| 1 | Detection and enumeration of coliform bacteria and *Escherichia coli* by membrane filtration method | SOP M 6 (ČSN EN ISO 9308-1:2001, ČSN EN ISO 9308-1:2015) | Drinking, bathing, hot, ground, mineral water |
| 2 | Enumeration of culturable microorganisms by direct inoculation in a nutrient agar culture medium | ČSN EN ISO 6222 | Drinking, raw, bathing, surface, hot, ground, mineral water |
| 3 | Detection and enumeration of *Pseudomonas aeruginosa* by membrane filtration method | ČSN EN ISO 16266 | Drinking, raw, bathing, surface, hot, ground, bottled water |
| 4 | Enumeration of coagulase-positive staphylococci (*Staphylococcus aureus* and other species) by membrane filtration method | SOP M 3 (ČSN EN ISO 6888-1) | Drinking, raw, bathing, surface, hot water |
| 5 | Detection and enumeration of *Legionella spp.* by membrane filtration method | ČSN ISO 11731 | Hot, bathing water |
| 6 | Detection and enumeration of *Clostridium perfringens* (including spores) by membrane filtration method | SOP M 1 (MoH Regulation No. 252/2004 Coll.) | Drinking, raw, bathing, surface, ground water |

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| Ordinal number[1] | Test procedure/method name | Test procedure/method identification[2] | Tested object |
|---|---|---|---|
| 7 | Detection and enumeration of intestinal enterococci by membrane filtration method | ČSN EN ISO 7899-2 | Drinking, raw, bathing, hot, surface, ground, mineral water |
| 8 | Detection and enumeration of thermotolerant coliform bacteria and *Escherichia coli* by membrane filtration method | ČSN 75 7835 | Raw, surface, ground, bathing water |
| 9 | Examination of biological indicators by cultivation | SOP M (AHEM No. 1/2014 NIPH Prague) | Sterilizers |
| 10 | Detection and enumeration of coliform bacteria in non-disinfected water by membrane filtration method | ČSN 75 7837 | Raw, surface, ground water |
| 11 | Biological analysis - determination of microscopic image | ČSN 75 7712 | Drinking, bottled, ground, surface, raw, mineral water |
| 12 | Determination of abioseston by microscopic method | ČSN 75 7713 | Drinking, raw, ground, surface water |
| 13 | Detection and enumeration of the spores of sulphite-reducing anaerobes (*Clostridia*) | ČSN EN 26461-2 | Drinking, ground, surface, raw, mineral water |
| 14 | Determination and analyses of aerophytic green algae by optical microscopy | SOP M 7 (technical literature[8]) | External plasters of buildings |
| 15 | Determination of Clostridium perfringens by membrane filter method | ČSN EN ISO 14189 | Drinking, raw, bathing, ground, surface water |
| 16 - 48 | Reserved | | |

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| Ordinal number[1] | Test procedure/method name | Test procedure/method identification[2] | Tested object |
|---|---|---|---|
| 49 | Determination Biochemical Oxygen Demand (BODn) by oxygen sensor measurement | SOP CH 54 (ČSN EN 1899-1, ČSN EN 1899-2) | Waste, surface, raw water |
| 50 | Respirometric Biochemical Oxygen Demand (BODn) determination | SOP CH 53 (WTW documents[9]) | Waste, surface, raw water |
| 51 | Determination of chemical oxygen demand (COD) by spectrophotometry with Hach set | SOP CH 1 - a (ČSN ISO 6060, Hach set manual) | Surface, ground, waste water |
| 52 | Determination of nitrate and nitrate nitrogen by spectrophotometry with Hach set | SOP CH 1 - e (ČSN 75 7455, Hach set manual) | Drinking, bathing, ground, surface, waste water |
| 53* | Determination of free and total chlorine by photometry using Hach set and bound chlorine by calculation | SOP CH 2 (ČSN EN ISO 7393-2, Hach set manual) | Drinking, bathing water, distilled, demineralized water and water for dialysis |
| 54 | Determination of turbidity by turbidimetry | ČSN EN ISO 7027-1 | Bathing water |
| 55 | Determination of dissolved solids (DS) and dissolved inorganic salts (DIS) by gravimetry. Determination of total evaporation residue. | SOP CH 4 (ČSN 75 7346, ČSN 75 7347) | Drinking, raw, surface, waste, ground water |
| 56 | Determination of suspended solids (SS) by gravimetry | SOP CH 5 (ČSN EN 872, ČSN 75 7350) | Raw, surface, waste, ground water |
| 57* | Determination of pH by potentiometry | SOP CH 7 (ČSN ISO 10523) | Drinking, raw, bathing, surface, hot, waste, ground, purified[7] water |
| 58* | Determination of redox potential | ČSN 75 7367 | Bathing, ground, waste, surface water |

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| Ordinal number[1] | Test procedure/method name | Test procedure/method identification[2] | Tested object |
|---|---|---|---|
| 59* | Determination of electrical conductivity | ČSN EN 27888 | Drinking, raw, bathing, surface, waste, ground, purified[7] water |
| 60* | Determination of dissolved oxygen electrochemically | SOP CH 6 (ČSN EN ISO 5814, ČSN ISO 17289) | Bathing, surface and ground water |
| 61* | Determination of temperature | ČSN 75 7342 | Drinking, raw, bathing, surface, hot, ground water |
| 62* | Preliminary sensory analysis of water | SOP CH 8 (ČSN 75 7340, ČSN EN 1622) | Drinking water, bathing water |
| 63 | Determination of colour by spectrophotometry | SOP CH 13 (ČSN EN ISO 7887) | Drinking, bathing, ground, surface water |
| 64 | Determination of ammonium by spectrophotometry and ammonia nitrogen by calculation | SOP CH 25 (ČSN ISO 7150-1) | Drinking, bathing, ground, surface, waste water, aqueous extract |
| 65 | Reserved | | |
| 66 | Determination of turbidity nephelometrically | SOP CH 55 (ČSN EN ISO 7027-1, Lovibond manual) | Drinking, bathing water |
| 67 | Determination of acid neutralizing capacity (ANC) by titration | SOP CH 22 (ČSN EN ISO 9963-1) | Drinking, waste, ground, surface, raw water |
| 68 | Determination of basic neutralizing capacity (BNC) by titration and of free $CO_2$ by calculation from measured values | SOP CH 23 (ČSN 75 7372, ČSN 75 7373) | Drinking, waste, ground, surface, raw water |
| 69 | Determination of chlorophyll-a by spectrophotometry | ČSN ISO 10260 | Bathing, surface water |
| 70 | Reserved | | |
| 71 | Determination of dry residue (water content) and calculation of dry matter fraction | SOP CH 48 (ČSN EN 15934) | Sludge, waste and soils |
| 72 | Determination of loss on ignition | SOP CH 49 (ČSN EN 15935) | Sludge, waste and soils |

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| Ordinal number[1] | Test procedure/method name | Test procedure/method identification[2] | Tested object |
|---|---|---|---|
| 73 | Determination of nitrates, nitrites, chlorides, sulphates, fluorides, phosphates, bromates, chlorites and chlorates by ion chromatography. Determination of N-inorganic and forms of N-$NO_3$, N-$NO_2$ by calculation from measured values. Determination of the sum of chlorates and chlorites by calculation from measured values. | SOP CH 9 (ČSN EN ISO 10304-1) | Drinking, bathing, waste, ground, surface, purified[7] water, extract |
| 74 | Determination of TC, TOC, TIC, DOC, NPOC and $TN_b$ by combustion method | SOP CH 17 (ČSN EN ISO 20236) | Drinking, bathing, ground, surface, waste water |
| 75 | Determination of selected elements[4] by ICP-OES method | SOP CH 11 - a (ČSN EN ISO 11885, Perkin Elmer application notes) | Drinking, bottled, raw, bathing, surface, hot, waste, ground, process, purified[7] water, extract[6] |
| 76 | Determination of selected elements[4] by ICP-OES method | SOP CH 11 - b (ČSN EN ISO 11885, Perkin Elmer application notes) | Soils, rocks, sludge, sediments and waste, including extract of them, filters with aerosol samples |
| 77 | Determination of selected elements[4] by ICP-OES method | SOP CH 11 - c (ČSN EN ISO 11885, Perkin Elmer application notes) | Vegetable materials |
| 78 | Reserved | | |
| 79 | Determination of selected elements[5] by ICP-MS method | SOP CH 16 - a (ČSN EN ISO 17294-1, ČSN EN ISO 17294-2) | Drinking, bottled, raw, bathing, surface, hot, waste, ground, process, purified[7] water, extract[6] |
| 80 | Determination of selected elements[5] by ICP-MS method | SOP CH 16 - b (ČSN EN ISO 17294-1, ČSN EN ISO 17294-2) | Soils, rocks, sludge, sediments and waste |

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| Ordinal number[1] | Test procedure/method name | Test procedure/method identification[2] | Tested object |
|---|---|---|---|
| 81 | Determination of selected elements[5] by ICP-MS method | SOP CH 16 - c (ČSN EN ISO 1729-1, ČSN EN ISO 1729-2) | Vegetable materials |
| 82-83 | Reserved | | |
| 84 | Determination of hydrocarbons $C_{10}$-$C_{40}$ by GC/FID method | SOP CH 14 a (ČSN EN ISO 9377-2) | Raw, ground, surface, waste water |
| 85 | Determination of volatile organic compounds[3] by head space GC/MS, GC/FID method | SOP CH 10 (ČSN EN ISO 10301) | Drinking, hot, raw, waste, ground, surface water |
| 86 | Determination of mercury by atomic absorption method by AMA 254 analyzor | SOP CH 30 (ČSN 75 7440) | Drinking, bottled, raw, bathing, surface, hot, waste, ground, process water, purified[7] water, extract[6], soils, rocks, sludge, sediments and waste, vegetable materials |

Annex:
Flexible scope of accreditation

| Ordinal numbers of tests |
|---|
| *1 - 13, 15* |

The Laboratory is allowed to modify the test methods listed in the Annex within the specified scope of accreditation provided the measuring principle is observed. The flexible approach to the scope of accreditation cannot be applied to the tests not included in the Annex.

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**Sampling:**

| Ordinal number | Sampling procedure name | Sampling procedure identification[1] | Sampled object |
|---|---|---|---|
| 1 | Drinking water sampling | SOP VZ 1 (ČSN EN ISO 5667-1, ČSN EN ISO 5667-3, ČSN ISO 5667-5, ČSN EN ISO 5667- 14, ČSN EN ISO 19458, MoH Regulation No. 252/2004 Coll.) | Drinking water |
| 2 | Bathing water sampling | SOP VZ 2 (ČSN EN ISO 5667-1, ČSN EN ISO 5667-3, ČSN ISO 5667- 4, ČSN EN ISO 5667-6, ČSN EN ISO 5667-14, ČSN EN ISO 19458, MoH Regulation No. 238/2011 Coll.) | Bathing water |
| 3 | Sampling by biological and non-biological systems for the check of sterilization efficiency of devices | SOP VZ 4 (ČSN EN ISO 11138-1, ČSN EN ISO 11138-3, ČSN EN ISO 11140-1, MoH Regulation No. 306/2012 Coll., AHEM No. 1/2014 NIPH Praha) | Sterilizers |

[1] asterisk at the ordinal number identifies the tests, which the laboratory is qualified to carry out outside the permanent laboratory premises

[2] if the document identifying the test/sampling procedure is dated, only these specific procedures are used. If the document identifying the test/sampling procedure is not dated, the latest edition of the specified procedure is used (including any changes)

[3] benzene, toluene, ethylbenzene, xylenes, 1,1-DCE, cis-1,2-DCE, trans-1,2-DCE, TCE (trichloroethene), VC (vinylchloride), PCE (tetrachloroethene), TCM (trichloromethane), PCM (tetrachloromethane), chlorobenzene, dichlorbenzenes, 1,2-dichlorethane, bromdichloromethane, dibromchloromethane, bromoform

[4] Ag, Al, As, Au, B, Ba, Be, Ca, Cd, Co, Cr, $Cr^{3+}$, $Cr^{6+}$, Cu, Fe, Ir, K, Mg, Mn, Mo, Na, Ni, P, Pb, Pd, Pt, Rh, Ru, Sb, Sn, Se, Sr, Ti, Tl, V, Zn, total Ca + Mg

[5] Ag, Al, As, Au, B, Ba, Be, Br, Ca, Cd, Co, Cr, $Cr^{3+}$, $Cr^{6+}$, Cu, Fe, Hg, I, Ir, K, Mg, Mn, Mo, Na, Ni, P, Pb, Pd, Pt, Rh, Ru, Sb, Sn, Se, Sr, Th, Ti, Tl, U, V, Zn, total Ca + Mg

[6] extract - from solid materials, waste or products (including consumer goods and products for contact with water or food), into water or other liquid media according to the requirements of customers or valid regulations

[7] purified water – distilled, demineralized water and/or water treated by softening agent

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[8] technical literature:
T. KALINA, J. VÁŇA. Sinice, řasy, houby, mechorosty a podobné organismy v současné biologii. Praha: Karolinum, 2005
M. ZAHRADNÍKOVÁ, H. L. ANDERSEN, T. TØNSBERG a A. BECK. Molecular Evidence of Apatococcus, including A. fuscideae sp. nov., as Photobiont in the Genus Fuscidea. Protist [online]. 2017, 168(4), 425-438.Available at: http://linkinghub.elsevier.com/retrieve/pii/S1434461017300548
H. ETTL, G. GÄRTNER. Syllabus der Boden-, Luft- und Flechtenalgen. 2., ergänzte Aufl. Berlin: Springer Berlin, 2013

[9] WTW literature:
Operation of the Single Measuring System OxiTop, Instruction manual
AR_BOD5_domestic waste water_lab_02_E, Application report, WTW
AR_BOD5_ waste water, (in)organic toxins or inhibitors_lab_01_E, Application report, WTW
AR_BOD_system supervision_lab_01_E, Application report, WTW
Determination of Biochemical Oxygen Demand (BOD), WTW

**Explanations and abbreviations:**

GC/MS – Gas Chromatography/Mass Spectrometry
GC/FID – Gas chromatography / Flame Ionization Detector
ICP-OES – Inductively Coupled Plasma - Optical Emission Spectrometry
ICP-MS – Inductively Coupled Plasma - Mass Spectrometry
AMA – Advanced Mercury Analyzer
TC – total carbon
TOC – total organic carbon
TIC – total inorganic carbon
DOC – dissolved organic carbon
NPOC – non-purgeable organic carbon
$TN_b$ – total nitrogen bound