German External Quality Assessment Scheme

Prof. Dr. med. Hans Drexler
Institute and Out-Patient Clinic for Occupational, Social and Environmental Medicine of the Friedrich-Alexander University

REQUEST FORM

G-EQUAS 61 - 2018

Please order online until ***2nd* of March 2018**
or send this form until ***2nd March 2018*** at the latest to:

Prof. Dr. med. H. Drexler
Institute and Out-Patient Clinic for Occupational, Social and Environmental Medicine
of the Friedrich-Alexander University
Schillerstr. 25
91054 Erlangen
Germany

Email: info@g-equas.de

Lab.-ID:

We would appreciate it very much if you could check/update your contact dates online (www.g-equas.de).

Please note that you can only participate in G-EQUAS if we have the name of a contact partner, a valid delivery address, e-mail address and telephone number!

General price information

The basic payment of 150.00 € for European participants covers the costs for the participation in the round robin, the evaluation, the report/certification and the shipping costs. The participation fee for laboratories from overseas is 200.00 €.
Additionally 25.00 € are charged for each parameter in blood, plasma/serum or urine.

For each of the following parameter pools***** an amount of 50.00 € is charged.

parameter: **11**	Arsenic speciation (As^{3+}, As^{5+}, MMA*, DMA*, AsB*)
parameter: **117**	5-HNMP and 2-HMSI
parameter: **80**	Pyrethroide metabolites (Br_2-CA, cis-Cl_2-CA, trans-Cl_2-CA, 3-PBA, FPBA)
parameter: **87**	Alkyl phosphates (DMP, DMTP, DMDTP, DEP, DETP, DEDTP)
parameter: **93**	Cotinine, Nicotine
parameter: **122**	Phthalate metabolites DEHP (5-carboxy-MEPP, 5-oxo-MEHP, 5-OH-MEHP, MEHP)
parameter: **129**	Phthalate metabolites "other" (MnBP, MiBP, MBzP)
parameter: **127**	1-Naphthol, 2-Naphthol
parameter: **47**	Benzene, Toluene, Xylenes, Ethylbenzene in blood
parameter: **51**	Dichloromethane, 1,2-Dichloroethane, Trichloroethene, Tetrachloroethene, 1,1,1-Trichloroethane, Tetrachloromethane, Trichloromethane
parameter: **54**	Methanol, Methyl-tert-butylether, Tetrahydrofuran, n-Butanol
parameter: **55**	Acetone, Methylethylketone, Methylisobutylketone, Methyl-n-butylketone
parameter: **182**	Benzene, Toluene, Xylenes, Ethylbenzene
parameter: **134**	Diisocyanate metabolites, aromatic (MDA, 2,4-TDA, 2,6-TDA, 1,5-NDA)
parameter: **180**	Diisocyanate metabolites, aliphatic (IPDA, HDA)
parameter: **130**	Globin adducts (MeV, HEV, CEV, AAV, 2-HPV)
parameter: **95**	p,p'-DDT and p,p`-DDE
parameter: **97**	α-, β-, γ-HCH
parameter: **100**	PCB 28, 52, 101, 138, 153, 180
parameter: **120**	PFOA, PFOS
parameter: **147**	Butadiene metabolites (DHBMA, MHBMA)
parameter: **149**	Acrylamide/Acrylonitrile metabolites (AAMA, GAMA, CEMA)
parameter: **152**	other mercapturic acids (HEMA, 2-HPMA, 3-HPMA)
parameter: **182**	Benzene, Toluene, Xylenes, Ethylbenzene in urine
parameter: **195**	Arsenic speciation (As^{3+}, As^{5+}, MMA*, DMA*, AsB*)

*****: *Parameter pools comprise the combined order of the parameters (the control material supply is one price) but the entitlement to a certificate for each of the parameters in the pool.*

ORDER

Please tick the parameters that you would like to order in the current round.

I / we are going to participate in G-EQUAS 61 and would like to order the following control materials:

METALS

ANALYTICAL PARAMETERS IN **CONTROL BLOOD**

- **3 ml control blood** (for each concentration level) are available for analysis:

Occupational medical field
(control material **1** A/B)

1 Lead (Pb)
2 Cadmium (Cd)
3 Chromium (Cr)
4 Cobalt (Co)
5 Manganese (Mn)
6 Nickel (Ni)
7 Mercury (Hg)

Environmental medical field
(control material **7** A/B)

70 Lead (Pb)
71 Cadmium (Cd)
72 Mercury (Hg)

ANALYTICAL PARAMETERS IN **CONTROL PLASMA**

- **3 ml control plasma** (for each concentration level) are available for analysis:

(control material **11** A/B)

107 Aluminium (Al)
108 Chromium (Cr)
109 Cobalt (Co)
110 Copper (Cu)
112 Manganese (Mn)
113 Nickel (Ni)

(control material **11** A/B)

114 Platinum (Pt)
115 Selenium (Se)
116 Zinc (Zn)
157 Molybdenum (Mo)
158 Magnesium (Mg)
199 Lead (Pb)

Inorganic parameters

ANALYTICAL PARAMETERS IN **CONTROL URINE**

- **5 ml control urine** (for each concentration level) are available for analysis:

Occupational medical field
(control material **2** A/B)

8 Aluminium (Al)
9 Antimony (Sb)
10 Arsenic (by hydride technique) (As- Hydride)
11 Arsenic speciation (As^{3+}, As^{5+}, MMA*, DMA*, AsB)
15 Beryllium (Be)
16 Lead (Pb)
17 Cadmium (Cd)
18 Chromium (Cr)
19 Cobalt (Co)
20 Fluoride (F)
21 Copper (Cu)
22 Manganese (Mn)
23 Nickel (Ni)

Occupational medical field
(control material **2** A/B)

24 Mercury (Hg)
25 Thallium (Tl)
26 Vanadium (V)
27 Zinc (Zn)
29 Creatinine
126 Total Arsenic (As-tot)
141 Selenium (Se)
142 Tungsten (W)
145 Iodine compounds (as iodine) in urine (I)
159 Barium (Ba)
160 Lithium (Li)
161 Molybdenum (Mo)
176 Gallium (Ga)
194 Indium (In)
198 Tellurium (Te)
201 Germanium (Ge)
202 Tantal (Ta) –

* MMA: Monomethylarsonic acid

* DMA: Dimethylarsenic acid

Inorganic parameters

ANALYTICAL PARAMETERS IN **CONTROL URINE**

- **5 ml control urine** (for each concentration level) are available for analysis:

Environmental medical field
(control material **8** A/B)

73 Arsenic (by hydride technique) (As- Hydride)
74 Cadmium (Cd)
75 Chromium (Cr)
76 Nickel (Ni)
77 Mercury (Hg)
78 Platinum (Pt)
156 Total Arsenic (As-tot)
162 Calcium (Ca)
163 Copper (Cu)
164 Strontium (Sr)
165 Zinc (Zn)
190 Antimony (Sb)
191 Molybdenum (Mo)
192 Tin (Sn)
195 Arsenic species (As+5, As+3, MMA, DMA, AsB)

Organic Parameters

ANALYTICAL PARAMETERS IN **CONTROL URINE**

- **5 ml control urine** (for each concentration level) are available for the analysis in the **occupational medical field**; **2 x 5 ml control urine** (for each concentration level) are available for the **environmental medical field**:

Occupational medical field

(control material **3** A/B, 5 ml)

30 Hippuric acid (HA)
32 Mandelic acid (MA)
33 Methylhippuric acids (MHA)
34 t,t-Muconic acid (t,t-MA)
37 Phenylglyoxylic acid (PGA)
39 Trichloroacetic acid (TCA)
41 2-Thio-thiazolidine-4-carboxylic acid (TTCA)
42 Ethoxyacetic acid (EAA)
43 Butoxy acetic acid (BAA)
44 N-Methylformamide (NMF)
45 2,5-Hexandione (2,5-HD)
46 Creatinine
117 5-Hydroxy-N-methylpyrrolidine (5-HNMP),
2-Hydroxy-N-methylsuccinimide (2-HMSI)
135 Methoxyacetic acid (MAA)
28 δ-Aminolaevulinic acid (ALA)

Environmental medical field

(control material **9** A/B, 2 x 5 ml)

80 Pyrethroide metabolites (Br_2-CA, cis-Cl_2-CA, trans-Cl_2-CA, 3-PBA, FPBA ,
87 Alkyl phosphates* (DMP, DMTP, DMDTP, DEP, DETP, DEDTP)
122 Phthalate metabolites "DEHP"(5-OH-MEHP, 5-oxo-MEHP, 5-carboxy-MEPP, MEHP)
129 Phthalate metabolites "other"(MnBP, MiBP, MBzP)
204 6-Chloronicotinic acid (6-ClNA) NEW!)

* Alkyl phosphates:
DMP: Dimethylphosphate
DMTP: Dimethylthiophosphate
DMDTP: Dimethyldithiophosphate
DEP: Diethylphosphate
DETP: Diethylthiophosphate
DEDTP: Diethyldithiophosphate

Environmental medical field

- **5 ml control urine** (for each concentration level) are available for analysis:

Tobacco-specific N-nitrosamines
(control material **18** A/B, 5 ml)

172 4-(Methylnitrosamine)-1-(3-pyridyl)-1-butanol after hydrolysis (NNAL)
93 Cotinine, Nicotine

Mercapturic acids in urine

Occupational medical field

- **5 ml control urine** (for each concentration level) are available for analysis:

Mercapturic acids in urine
(control material **17** A/B, 5 ml)

38 S-PMA (Benzene-metabolite)
147 Butadiene-metabolites (DHBMA, MHBMA)
149 Acrylamide-/Acrylonitrile- metabolite (AAMA, GAMA, CEMA)
152 other mercapturic acids (HEMA, 2-HPMA, 3-HPMA)
155 AMCC (DMF-metabolite)

S-PMA: S-Phenylmercapturic acid
AMCC: Acetyl-S-(N-methylcarbamoyl)cysteine
DHBMA: 3,4-Dihydroxybutylmercapturic acid
MHBMA: 2-Hydroxy-3-butenylmercapturic acid
AAMA: 2-Carbonamideethylmercapturic acid
GAMA: 2-Carbonamide-2-hydroxyethylmercapturic acid
CEMA: 2-Cyanoethylmercapturic acid
HEMA: 2-Hydroxyethylmercapturic acid
2-HPMA: 2-Hydroxypropylmercapturic acid
3-HPMA: 3-Hydroxypropylmercapturic acid

Amines and phenolic parameters (after hydrolysis)

(The control material is spiked with the native phenolic compounds as well as with their conjugates (glucuronides and acetates)).

- To analyse parameter (-group) 36, 40,134, 174,175,177,178 and 179 (control material **14**, occupational medical field) **5 ml control urine** are available.
- To analyse parameter (-group) 79, 86, 127,140,166 and 167 (control material **15**, environmental medical field) **2 x 5 ml control urine** are available.

Amines and phenolic parameters (after hydrolysis)
(control material **14 / 15** A/B, 5 ml in brown glass vials)

36	Phenol
40	o-Cresol
79	1- Hydroxypyrene (1-HP)
86	Pentachlorophenol (PCP)
127	1-Naphthol, 2-Naphthol
140	Bisphenol A
166	Trichloropyridinol (TCPy)
167	Isopropoxyphenol (IPP)
174	4-Nitrophenol
175	Aniline
134	Diisocyanate metabolites, aromatic (MDA, 2,4-TDA, 2,6-TDA, 1,5-NDA)
180	Diisocyanate metabolites, aliphatic (IPDA, HDA)
200	Triclosan (TCS)
205	4,4'-Methylenebis(2-chloroaniline)(MOCA) NEW!

HEADSPACEANALYSIS

Control blood

AROMATIC AND HALOGENATED HYDROCARBONS

- To analyze the aromatic- or chlorinated hydrocarbons **2 x 2 ml or 2 x 1 ml control blood** (for each concentration level and each group of hydrocarbons) are available in gas-tight ampoules. The ampoules are offered in two different sizes due to the different headspace analysers.

Aromatic hydrocarbons

(control material **4** A/B)

47 Benzene, Toluene, Xylenes, Ethylbenzene

For carrying out the determination I require vials with the following volume:

20 ml (Perkin Elmer HS) (2 ml blood)
10 ml (1 ml blood)

Halogenated hydrocarbons

(control material **5** A/B)

51 Dichloromethane, 1,2-Dichloroethane, Trichloroethene, Tetrachloroethene, 1,1,1-Trichloroethane, Tetrachloromethane, Trichloromethane

For carrying out the determination I require vials with the following volume:

20 ml (Perkin Elmer HS) (2 ml blood)
10 ml (1 ml blood)

Control urine

ALCOHOLS/ KETONES/ ETHER

- To analyze alcohols/ketones **2 x 2 ml or 2 x 1 ml control urine** are available in gas-tight ampoules. The ampoules are offered in two different sizes due to the different headspace-analysers.

Alcohols/Ketones/Ether

(control material **12** A/B)

54 Methanol, Methyl-tert-butylether, Tetrahydrofuran, n-Butanol

55 Acetone, Methylethylketone (MEK), Methylisobutylketone, Methyl-n-butylketone

For carrying out the determination I require vials with the following volume:

20 ml (Perkin Elmer HS) (2 ml urine)

10 ml (1 ml urine)

Aromatic hydrocarbons

(control material **19** A/B)

182 Benzene, Toluene, Xylenes, Ethylbenzene

For carrying out the determination I require vials with the following volume:

20 ml (Perkin Elmer HS) (2 ml urine)

10 ml (1 ml urine)

ORGANOHALOGEN COMPOUNDS

ANALYTICAL PARAMETERS IN **CONTROL SERUM**

- **5 ml control serum** (for each concentration level) are available for analysis of a parameter/group of parameters:

Organohalogen compounds

(control material **10** A/B)

95	p,p`-DDT	p,p`-Dichlorodiphenyltrichloroethane
	p,p`-DDE	p,p`-Dichlorodiphenyldichloroethene
96	HCB	Hexachlorobenzene
97	α-, β-, γ-HCH	Hexachlorocyclohexane
100	PCB	Polychlorinated biphenyls (Ballschmiter numbers: 28, 52, 101, 138, 153, 180)
106	PCP	Pentachlorophenol
120	PFOA	Perfluorooctanoic acid
	PFOS	Perfluorooctanoic sulfonic acid (n-Isomer)

N-terminal adducts in Hemoglobin

Human globin - N-terminal adducts in hemoglobin

- To analyse N-terminal adducts 300 mg human globin is available for each concentration level
- The analysis of the five substances counts as one parameter

N-terminal adducts in human globin

(control material **13** A/B)

130 Globin adducts:	Methylvaline (MeV)
	2-Hydroxyethylvaline (HEV)
	2-Cyanoethylvaline (CEV)
	2-Carbamoylethylvaline (AAV)
	2-Hydroxypropylvaline (2-HPV)

*Date:*_____

*Lab-ID (please do always quote!):*_____

*Signature and stamp:*_____

Order form - additional material

Please note: We are not able to provide more than **2 vials of additional samples** for each control material due to reasons of capacity. We have to charge a fee 15.00 € for each vial you order.

In order to carry out the analysis we require more sample material.

I/We would like to order the following additional control materials:

Metals – Blood (3 ml):

(control material **1** A/B)

ZA1 A_____x 15.00 €
ZB1 B_____x 15.00 €

(control material **7** A/B)

ZA7 A_____x 15.00 €
ZB7 B_____x 15.00 €

Metals - Plasma (3 ml):

(control material **11** A/B)

ZA11 A_____x 15.00 €
ZB11 B_____x 15.00 €

Headspace Analyses - Blood

Aromatic hydrocarbons
(control material **4** A/B)

vial, 20 ml
ZA41 A_____x 15.00 €
ZB41 B_____x 15.00 €

vial, 10 ml
ZA42 A_____x 15.00 €
ZB42 B_____x 15.00 €

*Date:*_____

*Lab-ID (please do always quote!):*_____

*Signature and stamp:*_____

Headspace Analyses - Blood

Chlorinated hydrocarbons

(control material **5** A/B)

vial, 20 ml			vial, 10 ml		
ZA51	A_____	x 15.00 €	**ZA52**	A_____	x 15.00 €
ZB51	B_____	x 15.00 €	**ZB52**	B_____	x 15.00 €

Headspace Analyses – Urine

Alkohols/Ketones/Ether

(control material **12** A/B)

vial, 20 ml			vial, 10 ml		
ZA01	A_____	x 15.00 €	**ZA02**	A_____	x 15.00 €
ZB01	B_____	x 15.00 €	**ZB02**	B_____	x 15.00 €

Aromatic hydrocarbons

(control material **19** A/B)

vial, 20 ml			vial, 10 ml		
ZA182	A_____	x 15.00 €	**ZA282**	A_____	x 15.00 €
ZB182	B_____	x 15.00 €	**ZB282**	B_____	x 15.00 €

Organohalogen compounds **Serum** (5 ml)

(control material **10** A/B)

ZA10	A_____	x 15.00 €
ZB10	B_____	x 15.00 €

*Date:*_____

*Lab-ID (please do always quote!):*_____

*Signature and stamp:*_____

Inorganic components - Urine (5 ml)

(control material **2** A/B)

ZA2 A_____x 15.00 €
ZB2 B_____x 15.00 €

(control material **8** A/B)

ZA8 A_____x 15.00 €
ZB8 B_____x 15.00 €

Organic Components - Urine (5 ml)

(control material **3** A/B)

ZA3 A_____x 15.00 €
ZB3 B_____x 15.00 €

(control material **9** A/B)

ZA9 A_____x 15.00 €
ZB9 B_____x 15.00 €

Tobacco-smoke related parameters– Urine

(control material **18** A/B)

ZA18 A_____x 15.00 €
ZB18 B_____x 15.00 €

Amines and Phenolic Components- Urine (5 ml)

(control material **14** A/B)

ZA14 A_____x 15.00 €
ZB14 B_____x 15.00 €

(control material **15** A/B)

ZA15 A_____x 15.00 €
ZB15 B_____x 15.00 €

Mercapturic acids - Urine (5 ml)

(control material **17** A/B)

ZA17 A_____x 15.00 €
ZB17 B_____x 15.00 €

*Date:*_____

*Lab-ID (please do always quote!):*_____

*Signature and stamp:*_____