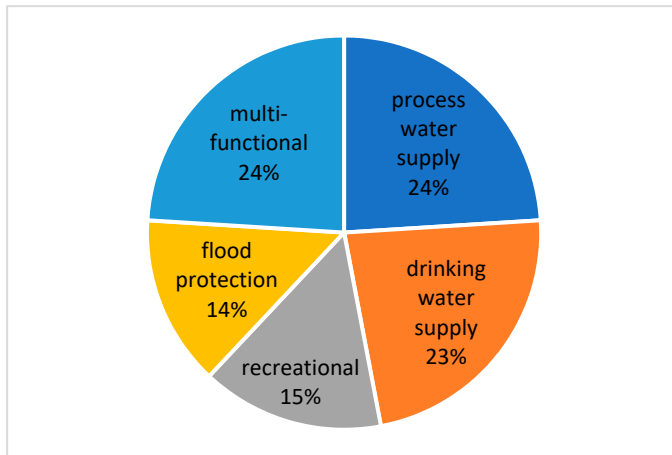


## Supplementary material



**Figure S1.** Primary uses of reservoirs in Saxony [21].



**Figure S2.** Dam of the Einsiedel Reservoir during excavation, view direction south (photo: T. Beier).



**Figure S3.** View from the dam of the Berthelsdorf Smelter pond (BSP) over the partly drained reservoir, view direction south-southeast (photo: C. J. Weber).

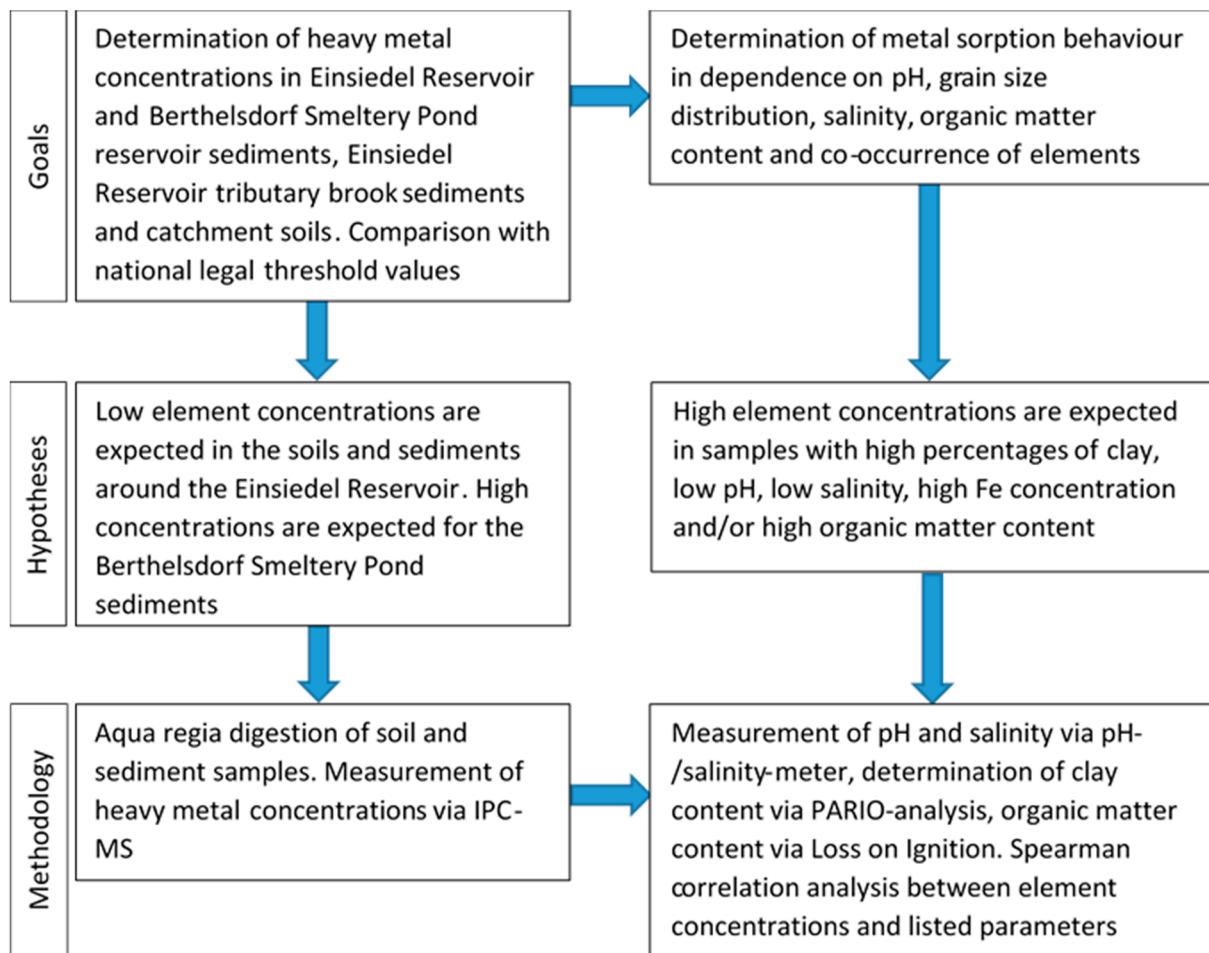
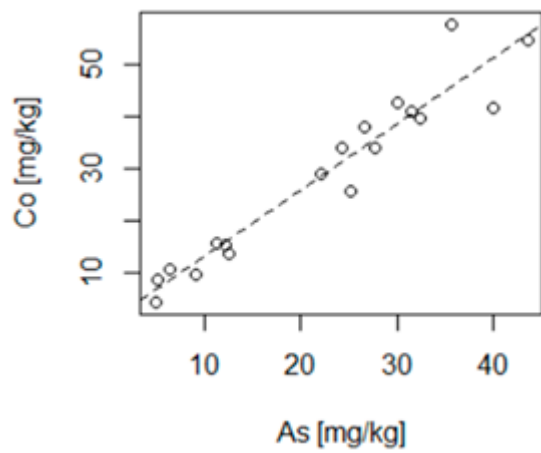
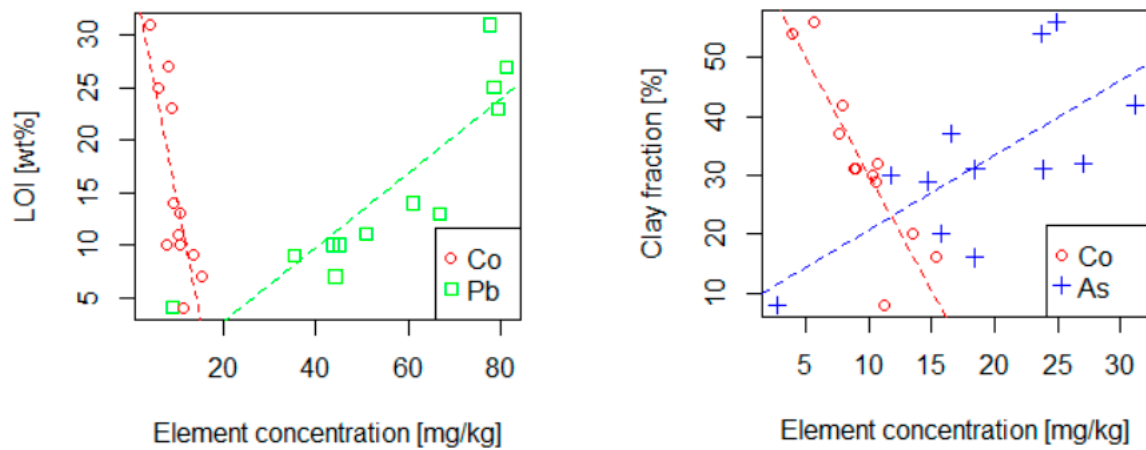


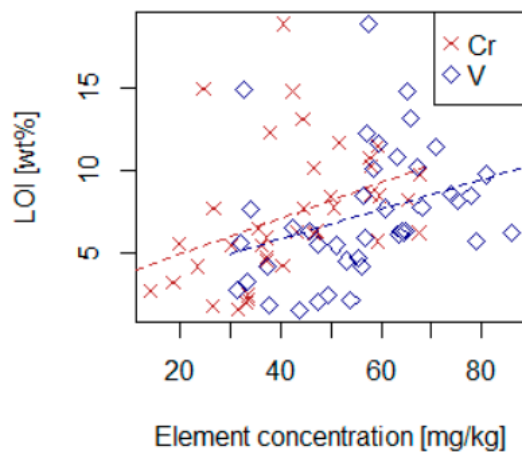
Figure S4. Schematic diagram of the research approach.



**Figure S5.** Bivariate diagram of Co-As from the Einsiedel Reservoir sediments.



**Figure S6.** Bivariate diagrams of the LOI-Co/Pb and clay content-Co/As from the Einsiedel Reservoir catchment soils.



**Figure S7.** Bivariate diagram of the LOI-Cr/V content from the Berthelsdorf Reservoir sediments.

**Table S1.** Geogenic background values for organic cover layers (ocl), topsoils (tos) and subsoils (sus) of Saxon soils from phyllite, status May 2015 [43].

Land use	Horizon	As (mg/kg)		Cd (mg/kg)		Cr (mg/kg)		Cu (mg/kg)	
		n	median	n	median	n	median	n	median
Arable Land	tos	177	21	223	0.40	215	29	224	27
	sus	106	16	113	0.27	106	35	109	21
Grassland	tos	166	29	189	0.43	180	32	191	28
	sus	118	20	118	0.30	114	35	120	21
Forest	ocl	111	55	122	0.39	124	27	111	28
	tos	224	65	234	0.13	234	34	217	18
	sus	215	33	217	0.10	225	41	211	17
Geol. underground		49	13	50	<0.1	54	40	54	24

Land use	Horizon	Hg (mg/kg)		Ni (mg/kg)		Pb (mg/kg)		Zn (mg/kg)	
		n	median	n	median	n	median	n	median
Arable Land	tos	175	0.16	210	29	222	55	224	130
	sus	69	0.09	101	31	111	27	112	100
Grassland	tos	135	0.17	180	29	187	62	183	130
	sus	72	0.10	111	29	116	33	120	110
Forest	ocl	58	0.38	109	18	127	220	124	81
	tos	141	0.14	223	19	234	86	234	68
	sus	133	0.09	225	25	221	31	218	81
Geol. underground		46	<0.04	52	40	51	16	55	100

Land use	Horizon	Co (mg/kg)		V (mg/kg)	
		n	median	n	median
Arable Land	tos	60	18	60	55
	sus	43	19	59	59
Grassland	tos	78	14	64	55
	sus	53	16	59	60
Forest	ocl	23	4.3	00	34
	tos	84	6.6	167	53
	sus	64	10	157	57
Geol. underground		-	-	53	63

Geol. Underground: layer below the subsoil, without or nearly without influences of the soil formation;

-: no data.

**Table S2.** Geogenic background values for organic cover layers (ocl), topsoils (tos) and subsoils (sus) of Saxon soils from gneiss, status May 2015 [43].

Land use	Horizon	As (mg/kg)		Cd (mg/kg)		Cr (mg/kg)		Cu (mg/kg)	
		n	median	n	median	n	median	n	median
Arable Land	tos	697	36	866	0.59	590	30	826	22
	sus	507	20	529	0.25	258	32	496	17
Grassland	tos	560	36	717	0.50	616	30	704	21
	sus	388	26	401	0.30	262	29	372	16
Forest	ocl	154	58	154	0.32	97	21	153	23
	tos	277	70	267	0.12	214	22	271	14
	sus	264	30	261	0.13	208	26	265	14
Geol. underground		86	15	82	<0.1	86	30	88	19

Land use	Horizon	Hg (mg/kg)		Ni (mg/kg)		Pb (mg/kg)		Zn (mg/kg)	
		n	median	n	median	n	median	n	median
Arable Land	tos	532	0.12	584	17	877	83	835	140
	sus	211	0.07	256	20	503	34	494	97
Grassland	tos	541	0.12	599	16	708	71	732	130
	sus	191	0.07	257	18	390	34	385	99
Forest	ocl	77	0.25	96	12	156	200	151	65
	tos	158	0.11	210	9.1	272	110	271	53
	sus	156	0.07	207	13	259	46	264	72
Geol. underground		76	<0.04	87	20	86	17	89	71

Land use	Horizon	Co (mg/kg)		V (mg/kg)	
		n	median	n	median
Arable Land	tos	203	9.3	118	46
	sus	163	10	112	44
Grassland	tos	251	9.9	127	44
	sus	174	10	127	41
Forest	ocl	41	3.6	66	31
	tos	152	3.9	105	38
	sus	128	6.2	101	41
Geol. underground		-	-	84	41

Geol. Underground: layer below the subsoil, without or nearly without influences of the soil formation;

-: no data.