

# Pollution Research Group

University of KwaZulu-Natal, Durban, South Africa

## Support to Sanitation Practitioners

Cost of laboratory analyses

**Fourth Edition: July 2017**

Third edition: April 2017

Second edition: July 2016

First edition: April 2015

Under a Bill & Melinda Gates Foundation Capacity Grant, the PRG is able to offer laboratory analyses at a discounted rate to other sanitation practitioners up until October 2017. In order to have samples analysed in the PRG laboratories, the sample analysis questionnaire should be completed, and the associated costs identified from the table below. Please contact the laboratory manager Merlien Reddy (Reddym5@ukzn.ac.za) with any queries.

**Full cost recovery** – includes consumables, overheads, capital and labour costs for undertaking the tests. If a visiting researcher is trained in using the equipment, training costs would also be added to this total.

**Discounted cost** – cost of consumables (chemicals, laboratory consumables, maintenance etc.). Where equipment was not funded through a Bill & Melinda Gates Foundation project, capital costs are also included.

<b>Chemical test</b>	<b>Total Duration (hr.)</b>	<b>Full cost recovery (R/ test)</b>	<b>Discounted rate (R/test)</b>	<b>Max capacity (tests per day)</b>	<b>Training (R/session)</b>
Respirometric Tests	19,25	229,76	43,51	5,00	540,00
ASBR	2,50	400,42	27,92	1,00	324,00
VFA	0,50	89,22	14,72	30,00	324,00
pH and EC	0,50	85,06	10,56	30,00	192,00
COD	4,08	67,94	36,90	30,00	648,00
TKN	0,70	118,55	43,43	20,00	744,00
Ammonia	0,58	110,15	23,23	30,00	408,00
Total solids	0,28	48,14	5,92	36,00	336,00
Volatile solids	0,17	32,66	7,82	36,00	276,00
Total suspended solids	0,35	63,92	11,77	36,00	336,00
Total volatile solids	0,17	6,50	10,97	36,00	276,00
<b>Spectroquant tests</b>	<b>Total Duration (hr.)</b>	<b>Full cost recovery (R/ test)</b>	<b>Discounted rate (R/test)</b>	<b>Max capacity (tests per day)</b>	<b>Training (R/session)</b>
Total Phosphate	1,03	151,08	71,61	12,00	408,00
Soluble Phosphate	0,53	102,62	46,09	12,00	348,00
Nitrites	0,53	155,84	76,37	10,00	348,00
Nitrates	0,53	153,77	74,30	10,00	348,00
Total nitrogen	0,53	202,10	122,63	10,00	408,00
Sodium	0,53	151,10	71,63	10,00	348,00
Potassium	0,53	152,62	73,15	10,00	348,00
Ammonium	0,53	119,60	40,14	10,00	348,00
COD	0,53	132,44	52,97	10,00	348,00
TOC	0,53	213,55	134,08	10,00	336,00
<b>Mechanical tests</b>	<b>Total Duration (hr.)</b>	<b>Full cost recovery (R/ test)</b>	<b>Discounted rate (R/test)</b>	<b>Max capacity (tests per day)</b>	<b>Training (R/session)</b>
Calorific value	1,23	130,35	31,01	15,00	372,00
TCI	1,05	89,31	17,30	30,00	360,00
Rheometer and viscosity	1,00	149,02	74,52	20,00	372,00
Penetrometer	0,33	117,62	67,95	20,00	168,00
Sludge volume index	0,17	52,96	28,12	36,00	144,00
Particle size distribution	0,33	64,14	14,48	30,00	420,00
Osmotic pressure	0,25	46,80	9,55	20,00	300,00
<b>Biological tests</b>	<b>Total Duration (hr.)</b>	<b>Full cost recovery (R/ test)</b>	<b>Discounted rate (R/test)</b>	<b>Max capacity (tests per day)</b>	<b>Training (R/session)</b>
Helminths	1,00	680,00	90,00	18,00	NA
E.coli + HPC	5,83	664,95	74,95	20,00	384,00
<b>MPAES and CN Analyser</b>	<b>Total Duration (hr.)</b>	<b>Full cost recovery (R/ test)</b>	<b>Discounted rate (R/test)</b>	<b>Max capacity (tests per day)</b>	<b>Training (R/session)</b>
MPAES(Salts)	1,5	199,45	136,12	18,00	708,00
MPAES(Metals)	1,5	308,55	245,22	18,00	708,00
Sample preparation	3,75	41,10	15,03	30,00	
CN Analyser	0,42	62,77	61,11	90,00	

Other assistance	Hourly rate (R/hr.)	Estimated time per visit	Full cost recovery (R / trip)	Discounted rate (R / trip)
Quality control	189	2 to 3 hours	R 378 to R 567	0,00
Administrative	184	3 to 5 days	R 4 416 to R 7 360	0,00
Discussion with PI	460	1 to 2 days	R 3 680 to R 7 360	0,00
Data Reporting	343	1 to 2 days	R 2 744 to R 5 488	0,00
Workshop support	258	varies greatly	R 258 per hour	0,00
Sampling	143	4 hours	R 416 per trip	0,00
Pit emptying			R 1 800 per pit	1 800
Ethics application fee				3 562

Variable costs	Unit cost	Invoiced at total cost recovery
Sampling travel	R 5/km	Travel to area for sampling
Sampling consumables	Varies	Cost of replacing items in sampling box as needed
Workshop travel	R 5/km	Travel to source materials and visit sites
Workshop consumables	Varies	Building materials / consumables for equipment modifications/construction
Overheads		15% of total budget