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Electronic supplementary

information



Fig. S1: Schematic diagram of the CPC frame consisting of four arch profiles (A) lined up with a side plate (B) at each end, which was connected with three flat bars (C) at both vertical sides. The side plate contains a hole (D) (radius of 10 mm) which was used to fit the socket of the reactor through.



Fig. S2: The four (A) arch profiles aligned with the two (B) end plates to form the CPC frame. (C) Stainless steel [grade 430 bright annealed (BA)] sheet which was bent and superimposed onto the end plates to fit the curves of the arch profiles. (D) The borosilicate glass tube, sealed with a (E) polymethyl methacrylate plug at the ends attached to a PVC socket, was then positioned in the centre of the CPC, where the two arches connect, axially along the focus of the CPC reflector



Fig. S3: First flush diverter with is connected in the conveyance system between the catchment area and the rainwater harvesting tank.

Table S1: Cation concentrations of rainwater samples collected from Tank 1 and the corresponding SODIS treated rainwater samples (SODIS-CPC-1)
during sampling session 1 to 7, compared to various drinking water guidelines.

Cation/ Metal	Tank 1 #1	SODIS- CPC-1 #1	Tank 1 #2	SODIS- CPC-1 #2	Tank 1 #3	SODIS- CPC-1 #3	Tank 1 #4	SODIS- CPC-1 #4	Tank 1 #5	SODIS- CPC-1 #5	Tank 1 #6	SODIS- CPC-1 #6	Tank 1 #7	SODIS- CPC-1 #7	Drinking Water Guidelines			
															DWAF ⁵⁵	SANS 241 ⁵⁶	WHO ¹⁸	ADWG ⁵⁷
Aluminium as Al (µg/L)	3.07	1.98	7.73	1.98	1.98	1.98	1.98	2.81	2.96	1.98	2.84	1.98	1.98	1.98	150	300	-	100
Iron as Fe (μg/L)	16.79	14.78	13.74	13.13	11.03	10.05	11.70	11.60	11.19	11.68	10.52	11.05	12.07	11.45	100	300	-	300
Copper as Cu (µg/L)	30.01	6.89	7.87	7.26	7.23	7.28	7.31	9.70	9.18	9.06	8.36	9.83	9.47	8.97	1000	2000	2000	2000
Arsenic as As (µg/L)	1.20	1.15	1.19	1.14	1.22	1.19	1.23	1.20	1.23	1.26	1.23	1.22	1.20	1.34	10	10	10	10
Zinc as Zn (µg/L)	9.78	53.72	13.37	22.97	24.53	22.75	26.51	36.26	14.33	31.34	13.43	38.13	21.52	33.59	3000	5000	-	3000
Mercury as Hg (µg/L)	<0.02	<0.005	<0.02	<0.007	<0.00 4	<0.004	<0.0 04	<0.004	<0.02	<0.004	<0.02	<0.004	<0.00 4	<0.004	1	6	6	1
Lead as Pb (µg/L)	<0.2	<0.29	<0.2	<0.27	<0.01	<0.58	<0.0 1	<0.23	0.20	<0.06	<0.20	<0.010	<0.24	<0.01	10	10	10	10
Calcium as Ca (mg/L)	11.42	11.16	11.42	10.90	11.31	11.21	11.67	11.60	11.40	11.59	11.86	11.31	11.39	11.31	32	-	-	200
Potassium as K (mg/L)	1.62	1.69	1.68	1.63	1.59	1.71	1.66	2.28	1.66	1.67	1.64	1.66	1.70	1.79	50	-	-	-
Magnesium as Mg (mg/L)	0.92	0.91	0.92	0.89	0.91	0.93	0.93	0.94	0.92	0.93	0.94	0.91	0.93	0.96	30	-	-	-
Sodium as Na (mg/L)	3.89	3.81	3.86	3.74	3.73	3.93	3.78	4.32	3.84	3.85	3.85	3.79	3.89	4.12	100	200	-	180
Phosphorus as P (mg/L)	0.17	0.19	0.18	0.17	0.20	0.20	0.19	0.13	0.17	0.20	0.18	0.20	0.18	0.19	-	-	-	-

4 Table S2: Cation concentrations of rainwater samples collected from Tank 2 (FF) and the corresponding SODIS treated rainwater samples [SODIS-

5 CPC-2 (FF)] during sampling session 1 to 7, compared to various drinking water guidelines.

	Tank 2 SODIS-		Tank 2 SODIS		Tank 2 SODIS-		Tank 2 SODIS-		Tank 2 SODIS-		Tank 2 SODIS		Tank 2	SODIS-	Drinking Water Guidelines			
Cation/ Metal	(FF)	CPC-2	(FF)	CPC-2	(FF)	CPC-2	(FF)	CPC-2	(FF)	CPC-2	(FF)	CPC-2	(FF)	CPC-2		SANS		
	#1	(FF) #1	#2	(FF) #2	#3	(FF) #3	#4	(FF) #4	#5	(FF) #5	#6	(FF) #6	#7	(FF) #7	DVVAF	241 ⁵⁶	VIIO	ADVVG
Aluminium as Al (µg/L)	8.98	5.92	10.21	5.48	6.73	9.17	6.50	7.57	8.24	12.54	5.44	12.14	3.81	7.28	150	300	-	100
Iron as Fe (µg/L)	7.46	7.30	8.08	7.04	8.14	8.61	7.12	8.35	7.16	9.96	4.42	9.21	6.89	8.14	100	300	-	300
Copper as Cu (µg/L)	25.13	4.91	3.36	2.86	3.44	3.35	3.27	3.33	4.56	3.79	3.88	3.16	8.99	4.11	1000	2000	2000	2000
Arsenic as As (µg/L)	1.10	1.06	1.06	1.10	1.05	1.12	1.10	1.11	1.10	1.15	1.14	1.16	1.22	1.14	10	10	10	10
Zinc as Zn (µg/L)	5.99	16.98	3.59	15.17	7.21	5.44	7.11	5.62	3.63	28.19	7.49	21.52	5.85	8.36	3000	5000	-	3000
Mercury as Hg (µg/L)	<0.02	<0.004	<0.02	<0.004	<0.004	<0.006	<0.004	<0.004	<0.02	<0.004	<0.02	<0.004	<0.006	<0.004	1	6	6	1
Lead as Pb (µg/L)	<0.2	<0.04	<0.2	<0.01	<0.01	<0.01	<0.01	<0.01	<0.2	<0.01	<0.2	<0.01	<0.24	<0.01	10	10	10	10
Calcium as Ca (mg/L)	9.44	9.31	9.68	9.26	10.37	10.33	10.59	10.38	10.82	10.89	10.93	10.42	10.40	10.42	32	-	-	200
Potassium as K (mg/L)	3.03	2.94	2.94	2.94	3.13	3.04	3.17	3.06	2.96	3.09	2.99	3.14	3.16	3.13	50	-	-	-
Magnesium as Mg (mg/L)	1.15	1.10	1.16	1.12	1.23	1.23	1.24	1.23	1.25	1.24	1.26	1.24	1.25	1.25	30	-	-	-
Sodium as Na (mg/L)	4.54	4.32	4.44	4.44	5.34	5.30	5.48	5.27	5.31	5.37	5.36	5.49	5.52	5.43	100	200	-	180
Phosphorus as P (mg/L)	0.32	0.31	0.33	0.32	0.33	0.33	0.31	0.34	0.33	0.36	0.32	0.34	0.33	0.35	-	-	-	-

Drinking Water Guidelines:

- Department of Water Affairs and Forestry (DWAF), South African Water Quality Guidelines Volume 1: Domestic Water Use (2nd Ed.), CSIR Environmental Services, Pretoria, 1996.
- National Health and Medical Research Council, National Resource Management Ministerial Council (NHMRC & NRMMC), 2011. Australian drinking water guidelines 6, National Water Quality Management Strategy. Canberra, Australia, 2011.
- South African Bureau of Standards (SABS), South African National Standards (SANS) 241: Drinking water. Part 1: Microbiological, physical, aesthetic and chemical determinants. 2nd Ed, 2015.
- World Health Organization (WHO), Guidelines for drinking-water quality (4th Ed.), World Health Organization, Geneva, Switzerland, 2011.