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Antiretroviral Drugs as Emerging Environmental Contaminants in South African Water Resources

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Table S1. MECs of ARVs from WWTP influent or effluent samples reported in South Africa based on widely used treatment technologies. MECs of ARVs from WWTP influent or effluent samples reported in South Africa based on widely used treatment technologies.

ARV drug	Concentration (µg/L)		Country	Reference
	Influent	Effluent		
Abacavir	14	< LOD	South Africa	Abafe *et al*. 2018
Abacavir	3.5	< LOD	South Africa	Abafe *et al*., 2018
Atazanavir	1.4	0.74	South Africa	Abafe *et al*. 2018
Atazanavir	0.064	0.078	South Africa	Abafe *et al*., 2018
Darunavir	43	17	South Africa	Abafe *et al*. 2018
Darunavir	0.92	0.35	South Africa	Abafe *et al*., 2018
Efavirenz	140.4		South Africa	Mtolo *et al*., 2019
Efavirenz	34	20	South Africa	Abafe *et al*. 2018
Efavirenz	34	34	South Africa	Abafe *et al*., 2018
Efavirenz	24	33	South Africa	Abafe *et al*., 2018
Efavirenz	1.37	3.63	South Africa	Mlunguza *et al*., 2020
Efavirenz	26.3	37.3	South Africa	Mlunguza *et al*., 2020
Efavirenz	1.67	3.27	South Africa	Mlunguza *et al*., 2020
Efavirenz	1.02		South Africa	Mlunguza *et al*., 2020
Efavirenz	2.22	3.64	South Africa	Mlunguza *et al*., 2020
Efavirenz	13.66	7.57	South Africa	Sigonya *et al*., 2022
Efavirenz	17.4	7.1	South Africa	Schoeman *et al*., 2015
Efavirenz	15.4	1.93	South Africa	Mosekiemang *et al*., 2019
Efavirenz	11.90	4.57	South Africa	Munzhelele *et al*., 2025
Emtricitabine	172	4.23	South Africa	Mosekiemang *et al*., 2019
Emtricitabine	3.10	0.22	South Africa	Mlunguza *et al*., 2020

(Table S1) contd.....

ARV drug	Concentration (µg/L)		Country	Reference
	Influent	Effluent		
Emtricitabine	0.30	0.22	South Africa	Mlunguza *et al*., 2020
Emtricitabine	1.47	0.35	South Africa	Mlunguza *et al*., 2020
Emtricitabine	< LOQ	0.11	South Africa	Mlunguza *et al*., 2020
Emtricitabine	101.2	10.62	South Africa	Sigonya *et al*., 2022
Indinavir	0.59	0.042	South Africa	Abafe *et al*. 2018
Indinavir	0.26	0.025	South Africa	Abafe *et al*., 2018
Indinavir	0.3	0.04	South Africa	Abafe *et al*., 2018
Lamivudine	0.84	< LOD	South Africa	Abafe *et al*., 2018
Lamivudine	1.9	< LOD	South Africa	Abafe *et al*., 2018
Lamivudine	2.2	0.13	South Africa	Abafe *et al*. 2018
Lamivudine	20.9	< LOQ	South Africa	Mosekiemang *et al*., 2019
Lopinavir		0.13	South Africa	Wood *et al*., 2015
Lopinavir	1.3	3.8	South Africa	Abafe *et al*., 2018
Lopinavir	1.2	1.9	South Africa	Abafe *et al*., 2018
Lopinavir	2.5	3.8	South Africa	Abafe *et al*. 2018
Maraviroc	0.082	0.039	South Africa	Abafe *et al*., 2018
Nevirapine	0.67	0.54	South Africa	Abafe *et al*., 2018
Nevirapine	2.1	1.9	South Africa	Abafe *et al*., 2018
Nevirapine	2.8	1.4	South Africa	Abafe *et al*. 2018
Nevirapine	0.681	0.764	South Africa	Mosekiemang *et al*., 2019
Nevirapine	2.1	0.35	South Africa	Schoeman *et al*., 2015
Raltegravir	17	3.5	South Africa	Abafe *et al*. 2018
Raltegravir	0.81	0.086	South Africa	Abafe *et al*., 2018
Raltegravir	0.061	< LOD	South Africa	Abafe *et al*., 2018
Ritonavir	3.2	1.5	South Africa	Abafe *et al*. 2018
Ritonavir	1.6	0.91	South Africa	Abafe *et al*., 2018
Ritonavir	1.6	0.46	South Africa	Abafe *et al*., 2018
Saquinavir	0.18	< LOD	South Africa	Abafe *et al*. 2018
Stavudine	0.788		South Africa	Wood *et al*., 2015
Stavudine		0.413	South Africa	Wood *et al*., 2015
Tenofovir	0.25	0.17	South Africa	Mlunguza *et al*., 2020
Tenofovir	0.10	< LOQ	South Africa	Mlunguza *et al*., 2020
Tenofovir	32.25	28	South Africa	Sigonya *et al*., 2022
Zidovudine		0.97	South Africa	Wood *et al*., 2015
Zidovudine		0.22	South Africa	Wood *et al*., 2015
Zidovudine	107	97.7	South Africa	Mosekiemang *et al*., 2019
Zidovudine	6.9	0.087	South Africa	Abafe *et al*. 2018
Zidovudine	53	0.5	South Africa	Abafe *et al*., 2018
Zidovudine	11	0.43	South Africa	Abafe *et al*. 2018

Note: < LOD/Q – Lower than the limit of detection/quantification

Table S2. Summary of the MECs on ARVs in surface water samples from South Africa.

ARV drug	Concentration (µg/L)	Country	Reference
Didanosine	0.05	South Africa	Wood *et al*., 2015
Didanosine	0.85 – 24.6	South Africa	Horn *et al*., 2022
Efavirenz	0.0103	South Africa	Robson *et al*., 2017
Efavirenz	9.89	South Africa	Sigonya *et al*., 2022
Efavirenz	0.8 – 38.45	South Africa	Horn *et al*., 2022
Efavirenz	0.572	South Africa	Netshithothole and Madikizela., 2024
Efavirenz	0.048	South Africa	Netshithothole and Madikizela., 2024
Efavirenz	0.009	South Africa	Netshithothole and Madikizela., 2024
Emtribicine	12.2	South Africa	Sigonya *et al*., 2022
Lamivudine	0.09 – 0.24	South Africa	Wood *et al*., 2015

(Table S2) contd.....

ARV drug	Concentration (µg/L)	Country	Reference
Lopinavir	0.036 – 1.30	South Africa	Horn *et al*., 2022
Lopinavir	0.28 – 0.31	South Africa	Wood *et al*., 2015
Lopinavir	38.45	South Africa	Horn *et al*., 2022
Lopinavir	0.042	South Africa	Nibamureke and Barnhoorn, 2025
Nevirapine	0.64 – 1.95	South Africa	Horn *et al*., 2022
Nevirapine	0.24 – 1.48	South Africa	Wood *et al*., 2015
Nevirapine	0.109	South Africa	Nibamureke and Barnhoorn, 2025
Nevirapine	0.166	South Africa	Nibamureke and Barnhoorn, 2025
Ritonavir	3.68	South Africa	Horn *et al*., 2022
Stavudine	0.41 – 0.78	South Africa	Wood *et al*., 2015
Tenofovir	0.11 ± 2.0	South Africa	Mlunguza *et al*., 2020
Tenofovir	0.25	South Africa	Wood *et al*., 2015
Tenofovir	0.16 – 0.19	South Africa	Wood *et al*., 2015
Zalcitabine	0.07	South Africa	Wood *et al*., 2015
Zalcitabine	0.03	South Africa	Wood *et al*., 2015
Zidovudine	0.22 – 0.62	South Africa	Wood *et al*., 2015
Zidovudine	0.05	South Africa	Wood *et al*., 2015
Zidovudine	0.0517 – 0.973	South Africa	Wood *et al*., 2015

Table S3. MECs of ARVs from groundwater samples in South Africa.

ARV drug	Concentration (µg/L)	Location	Reference
Nevirapine	0.013	South Africa	Rimayi *et al*., 2018

Table S4. MEC of ARVs in tap water samples in South Africa.

ARV drug	Concentration (µg/L)	Location	Reference
Zalcitabine	0.008	South Africa	Wood *et al*., 2015
Zidovudine	0.07	South Africa	Wood *et al*., 2015

Table S5. MEC of ARVs in sea water samples globally.

ARV drug	Concentration (µg/L)	Location	Reference
Efavirenz	0.076	South Africa	Netshithothole and Madikizela., 2024
Efavirenz	38.3	South Africa	Sigonya *et al*., 2022
Emtricitabine	6.1	South Africa	Sigonya *et al*., 2022

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