

Criteria	Bio-sand filter	Lifesaver Jerrycan
Cost Breakdown		
Initial cost	\$100	\$400
Lifetime	10-30 years	20,000 liters
Maintenance/upkeep	Very little: parts are protected in concrete. Diffuser and cover may need replacing- estimate \$20/year wet harrowing to remedy slow flow rate, frequent use is needed	\$6.25/ 250L Carbon filter, front side wash, pump grease
Benefit		
Capacity	3 batches of 12-18 L/day with 6 hour resting time flow rate of ~22L/hour	Holds 18.5 L Initial flow rate is 120L/hour
Bacteria/viruses	100%/98%	100%/100%
Dissolved chemicals (salts, pesticides, metals)	Easily 50% of organic and inorganic toxicants ¹	some with carbon filter, otherwise none
Impact		
Environment	Concrete and pvc pipe Essentially no harmful waste given the lifetime of the filter	Food grade plastic and spent filter cartridges
Culture	Initial need for aid and then self sufficiency	Dependency on aid organization and/or distributors of filter cartridges
	Bio-sand filter	Lifesaver Jerrycan
Overall cost²	\$0.0023/Liter	\$0.045/Liter
Effective unit lifetime³	10-30 years	2.7 years
Max liters per day⁴	36-54 L	180 L

1. Palmateer, G.; Manz, D.; Jurkovic, A.; McInnis, R.; Unger, S.; Kwan, K.K. and Dutka, B.J. (1999). Toxicant and Parasite Challenge of Manz Intermittent Slow Sand Filter. Environmental Toxicology, vol. 14, pp. 217- 225
2. Assuming 10 year lifetime @36 L/day with \$20/year upkeep for biosand filter and continued use of carbon filters every 250 L for the Lifesaver Jerrycan.
3. Assuming need for 20 L/day-person for both consumption and hygiene/sanitation and a family of 4.
4. Assuming 3 batches of 12-18 L in the biosand filter and assuming 10 batches of 18 L in the Lifesaver Jerrycan

Note, the biosand filter can not produce 80 L/day safely. Feasibly, 3 batches of 12-18 L can be filtered with a 6 hour rest time between. This takes at least 18 hours and without round the clock operation, seems to be the upper limit of biosand filter water production.