

Application of a MEA conditioner magnetic device to treat wastewater: household septic water

The results in the table on page 2 are a comparison between wastewater in a septic tank (Raw septic water) and water after it has been processed through a magnetic (MEA) water conditioner. The conditioner in this case was a 2" inner diameter pipe device. MEA is a short description for Magnetic, Energised and Activated water.

The purpose of the test was to measure the change in the chemical and mineral composition of the wastewater after treatment with a 2" magnetic (MEA) water conditioner device.

The water that is used for this household septic system has already been treated with a ¾" MEA water conditioner and therefore the water that is used for flushing the toilets, showering, cooking, etc. is already conditioned with a MEA device. The primary source of the water is from a bore and from rainwater, generally in a 50:50 mix.

The major differences between the source (unconditioned) water and the raw septic water are:

Description	Measure	Source water	Septic water	% change
pH	mg/L	5.8	6.5	+12
Eh	mV	+430	-180	-142
Chromium	mg/L	<0.01	0.03	+200
Copper	mg/L	0.07	0.05	-29
Lead	mg/L	<0.01	0.02	+100
Manganese	mg/L	<0.01	0.13	+1200
Selenium	mg/L	<0.005	<0.01	+100
Zinc	mg/L	0.06	1.1	+1733

The source water also has very low conductivity (46 us/cm), slight iron (0.04 mg/L) and comparatively low alkalinity (14 mg/l), Calcium (1.7 mg/L), Magnesium (2.2 mg/L) Potassium (0.6 mg/L) Sodium (5.0 mg/L) and Chloride (7.0 mg/L)

The method for treating the septic wastewater involved pumping 600L of septic water straight from the septic tank into a 100L IBC and then cycling this septic wastewater through a 2" MEA water conditioner for a period of about 60 minutes. That is, septic water was pumped from the IBC through the MEA device and returned to the IBC. After about 30 minutes of cycling a dense white gas started to emit from the top of the IBC and continued for about 15 minutes. This gas is assumed to be a range of gasses comprising methane, sulphur, nitrogen, hydrogen, etc. Further tests of this process will be undertaken to test the nature of the gas.

The organic solids from the septic water settled to the bottom of the IBC and all septic smell has been eliminated from the resulting water. The smell was not detected within 2 hours of starting this process and no smell is evident after 3 months.

The following table (page 2) describes the comparison between the raw septic water and water after treatment through the MEA (magnetic) device. The chemical and mineral tests were undertaken by Sydney Analytical Laboratories on 17 September 2014.

Description	Measure	Raw Septic Water	MEA device results	% change	Standard Industry achievement	Comments
pH	mg/L	6.5	6.8	+ 0.7	NA	
Biochemical Oxygen Demand (BOD)	mg/L	730	460	-37	-20	Significantly better than most existing technologies
Chemical Oxygen Demand	mg/L	1310	470	-64	-20	Significantly better than most existing technologies
Total Organic Carbon	mg/L	340	265	-22		Significant change
Nitrate NO3-	mg/L	<0.01	<0.01	nil		
Nitrate NO2-	mg/L	2.9	1.1	-62		Significant change
Ammonia NH3-N	mg/L	61	69	+13		
Phosphate PO4	mg/L	69	35	-49		Significant change
Eh	mV	-180	-260	-44		
Total Suspended Solids	mg/L	800	87	-89	-50	Significantly better than most existing technologies
Arsenic	mg/L	<0.01	<0.01	nil		
Barium	mg/L	<0.1	<0.1	nil		
Cadmium	mg/L	<0.001	<0.001	nil		
Chromium	mg/L	0.03	0.02	-33		Significant change
Copper	mg/L	0.05	0.02	-60		Significant change
Lead	mg/L	0.02	<0.01	-50+		Significant change
Manganese	mg/L	0.13	0.12	-7		
Mercury	mg/L	<0.0001	<0.0001	nil		
Selenium	mg/L	<0.01	<0.01	nil		
Zinc	mg/L	1.1	0.24	-78		Significant change

Previous laboratory tests have been conducted to test for the reduction in E.coli (pathogenic microbe) in various waters after treatment through a MEA device. These tests were undertaken independently by government accredited and approved laboratories.

The results include:

1. Comparison of water draw from a creek and passed through a 1 and ¼" MEA device and the water drawn from the kitchen tap after passing through the device. The E.coli count at the creek was **250** faecal coliforms (cfu/100 ml) and was reduced to **2** at the kitchen tap outlet. This test was undertaken by laboratories at Southern Cross University (14 Nov 2013)

2. Comparison of wastewater from a piggery and water after it had passed through a 2" MEA device. The wastewater had **2,178** faecal coliforms (cfu/100 ml) and only **1** in the water once it had passed through the device. This water was tested by the Tweed Laboratory Centre of the Tweed Shire Council (12 Mar 2014)

Clearly, these results are significant, and while preliminary until further tests confirm this result with other smaller devices, these results indicate the capacity of the devices to restructure water into a coherent, life affirming and natural structure form.