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ATTENTION: Tony Marchesini **DATE:** 03 August 2004

TESTING OF BIO-CERAMIC LIFE ENERGY WATER FILTER

DESCRIPTION:

- Yellow plastic housing with incorporating standard water Inlet and Outlet ports.
- Plastic housing filled with what appears to be various types of stone pebbles.

DISCUSSION:

The following statements and assertions are reported for the filter:

- The pebbles or stones incorporated in the housing are mineral stones.
- These mineral stones reportedly contain Germanium.
- Roughly 20 kinds of minerals are released into water flowing through the filter. The important minerals released are stated to be Germanium, Calcium, Potassium, Magnesium and Iron.
- Claims are made that the pebbles incorporated in the filter absorb heavy metals, toxic ions, odours and impurities.
- The pH of the water flowing through the filter is adjusted to a mild alkaline state.
- The water is oxygenated in the filtration process.

BIO-CERAMIC LIFE ENERGY WATER FILTER, PERFORMANCE:

TEST PROCEDURE

The following test procedure was followed to establish performance, the above claims and general water quality produced from this filtration/water treatment system:

Table-1: Raw water used for testing the bio-ceramic filter.

TDS @ 105 °C	4 mg/l
Total Alkalinity (as $CaCO_3$)	6 mg/l
Total Hardness (as $CaCO_3$)	0.8 = SOFT Water
Bacteriological Content	Zero Colonies per 100 ml
Turbidity (NTU)	< 0.1
Colour (as Pt/Co units)	< 15
/pH	5.8

The important points to take note of concerning the raw water used for testing purposes are as follows:

- It is typical Reverse Osmosis water.
- It is highly pure water clearly showing up and extremely low mineral content.
- This type of water is generally described as "hungry" water and it correspondingly has the capacity to easily and readily dissolve minerals from any substance it comes in contact with.

GENERAL TEST PROCEDURE:

- The above Reverse Osmosis (RO) product water was pushed through the bio-ceramic filter at a flow rate of 1.2 litres per minute (lpm) at room temperature.
- The product water obtained from the bio-ceramic filter was collected in sanitised glass bottles for analyses.
- All samples collected were analysed within 2-hours of collection.
- The raw water used in the tests were nursed in exactly the same manner as the product water obtained from the bio-ceramic filter.

RESULTS

Results can best be depicted as per following Tables.

TEST-1: Product Water Mineral & Alkalinity content

Constituent	**Raw Water (RO)**	**Bio-Ceramic treated Water**
Volume of water passed through the bio-ceramic filter	**50-litres**	
Total Dissolved Salts (TDS @ 105 °C mg/l)	4.2	6.3
Total Alkalinity (as $CaCO_3$ mg/l)	5.8	7.6
Calcium as (Ca in mg/l)	0.8	1.1
Magnesium as (Mg in mg/l)	Nil	0.02
Total Iron as (Fe in mg/l)	Nil	Nil
Germanium as (Ge **in ppb or µg/l**)	Nil	23
Potassium as (K in mg/l)	Nil	0.6
Volume of water passed through the bio-ceramic filter	**150-litres**	
Total Dissolved Salts (TDS @ 105 °C mg/l)	4.2	4.3
Total Alkalinity (as $CaCO_3$ mg/l)	5.8	5.9
Calcium as (Ca in mg/l)	0.8	0.8
Magnesium as (Mg in mg/l)	Nil	Nil
Total Iron as (Fe in mg/l)	Nil	Nil
Germanium as (Ge **in ppb or µg/l**)	Nil	Nil
Potassium as (K in mg/l)	Nil	0.1

CONCLUSION:

1. The first 50-litres of water showed that the amount of minerals dissolved into the water, which was passed through the bio-ceramic filter was negligible.
2. The amount of minerals picked up in the product water after a 150-litres was passed through the bio-ceramic filter for all practical purposes can be regarded as **Zero**.
3. The increase in Alkalinity in the product water obtained from the bio-ceramic filter for all practical purposes was negligible.
4. The amount of Germanium dissolved into the water measured in parts per billion or micrograms per litre showed the same trend as for the ordinary minerals. After a 150-litres of water was passed through the filter the amount of Germanium picked up in the water was Zero.

TEST-2: Absorption of heavy metals, odours or impurities.

For this test the same procedure as described above was followed with a "contaminant" spiked into the RO water before passed through the bio-ceramic filter.

Constituent	**Raw Water (RO)**	**Bio-Ceramic treated Water**
Total Dissolved Salts (TDS @ 105 °C mg/l)	4.2	6.3
Total Alkalinity (as $CaCO_3$ mg/l)	5.8	7.6
Calcium as (Ca in mg/l)	0.8	1.1
Magnesium as (Mg in mg/l)	Nil	0.02
Total Iron as (Fe in mg/l)	Nil	Nil
Germanium as (Ge **in ppb or µg/l**)	Nil	23
Potassium as (K in mg/l)	Nil	0.6
Contaminants spiked into the RO water		
Lead as (Pb in **ppb or µg/l**)	15	13
Hydrogen Sulphide (H_2S in **ppb or µg/l**)	120	120
Mercury (Hg **ppb or µg/l**)	23	23
Atrazine Pesticide in **ppb or µg/l**	65	63

CONCLUSION:

1. For all practical purposes none of the "Contaminants" tactfully spiked into the test water, was removed by the bio-ceramic filter.

SUMMARY:

- The analytical results obtained did not support any of the claims reported for the bio-ceramic filter.

POINTS OF INTEREST:

In addition to the above data obtained from the tests performed the following points may be of interest:

- Most rocks contain some Germanium. The well-known limestone nodules used in the water treatment industry to control alkalinity, contain approximately 75 micrograms of Germanium per kilogram of limestone. It is nothing unusual to find some Germanium in most water supplies.
- The Science or reported methodology behind this water treatment equipment does not make sense. It is fairly clear, that this filtration system, the materials of construction, general characteristics and configuration, cannot support the claims and statements made. Stone pebbles or ceramics or a few rocks incorporated together in a filter configuration cannot possibly affect the statements reported.
- For the claims made or purposes intended it is my personal opinion that this water treatment system, filter or cartridge is a gimmick, and that no serious benefit or value will be attained through the use of this equipment.

If any additional information or questions crop up, please do not hesitate to contact me at the above contact details.

Yours sincerely

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