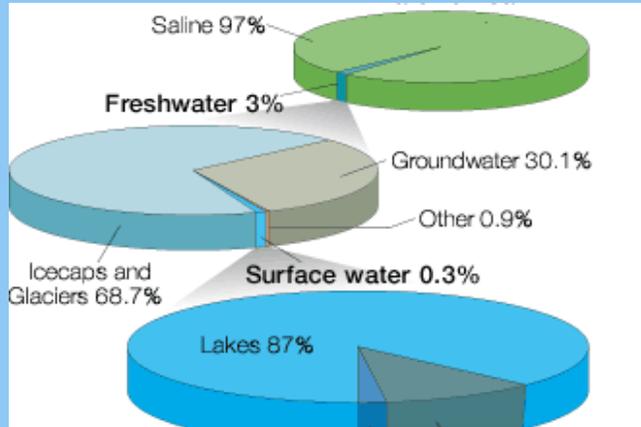


## Global Water Distribution



Parameter	SLSI Standards	WHO Standards
Cyanotoxin		
Microcystin – LR	1 µg/L	1 µg/L
Cylindrospermop sin	2 µg/L	2 µg/L
Taste and odour	Below 5ng/L	Below 5ng/L
Geosmin		
2-MIB		
Antibiotics		
Amoxicilin	Not given	0.1 µg/ml
Pesticides	Not given	0.04 mg/L
Flouride	1.5 mg/L	2.0 mg/L
Hardness	0-250 mg/L	0-75 mg/L

## What is CKD?

Chronic kidney disease (CKD) is a major burden on the healthcare system of Sri Lanka. Diabetes, hypertension, and the various forms of glomerulonephritis are well-recognized etiologies.

## What is CKDu?

Since the 1990s, a new CKD, where no obvious cause is identifiable, has been described in Sri Lanka. This new condition has resulted in a rise in the incidence of CKD in rural Sri Lanka, and has been aptly named Chronic Kidney Disease of unknown etiology (CKDu).

## Why do We Care?

As the National Centre for Water Quality and Algae Research, University of Sri Jayewardenepura, We believe we have a responsibility to provide solutions to burning issues in Sri Lanka's water sector. Many undergraduante and graduate research studies been carried out by the centre, to address the current water related problems in the country. Finding a cause and solution to CKDu is one of our major tasks. Over a team of 10 individuals are working right now to accomplish this task!!!

## Parts of the domestic water filter

- Water Softner
- Membrane filter
- UV and natural sand filter
- Bacteria layer with wood based activated carbon filter

## Water Softner

This is used to battle the hard water at some districts such as Anuradhapura, Monaragala, Hambanthota, et.. Water hardening ions being trapped and soft safe water is produced.

## Membrane filter

0.45 µm membrane is incorporated into this filter to remove most of bacteria, other small particles in the water.



## Contamination reduction % through the unit

Bacteria 100%, Antibiotics 2%, Pesticides 6%  
Taste and odour causing compound; Geosmin 6%  
Taste and odour causing compound; 2-MIB 4.3%  
Cyanotoxin 1% , Heavy metals 0%

## UV and natural sand filter

A natural Rutile sand is available in Sri Lankan coastal lines of North East was incorporated along with the UV light. Once UV light reacts with chemical on sand and highly reactive forms of hydroxide free radicals are formed which photo oxidate organic molecules in water.



## Contamination reduction

Antibiotics 68%, Pesticides 97%, Taste and odour causing compound; Geosmin 68%, Taste and odour causing compound; 2-MIB 29%, Cyanotoxin 48%, Heavy metal 14%

## Bacterial layer with bamboo wood based activated carbon filter

## Bacteria layer

*Bacillus* sp., and *Rodococcus* sp. isolated from drinking water sources were used in this layer who do degrade Cyanotoxins, taste and odour compounds, antibiotics in water.

Activated carbon was made using bamboo wood.



## Contamination reduction % through the unit

Antibiotics 100%, Pesticides 100%, Geosmin 100%  
2-MIB 100%, Cyanotoxin 100%, Heavy metal 80%



**Did You Know?**

-CKDu contributes significantly to the national burden of CKD in Sri Lanka, and the victims are often in their productive ages from the farming communities in rural Sri Lanka mainly the North Central Region.

-Early disease is asymptomatic and symptomatic disease often presents late with advanced kidney disease.

- Change in agricultural practices, provision of safe drinking water and occupational safety precautions are recommended by the WHO to reduce CKDu.

**Around 2000 people annually die from this issue, including children.**



**As Sri Lankan scientists in water sector, we believe it's our responsibility to provide a solution to their tragedy.....**



**SOLUTION!!!**

**USAGE OF CLEAN WATER.....**

**Our services**

- Organizing advising programmes to educate the people on this issue, about DOs and DONTs
- Constructing domestic water filters that remove most of the contaminants where people can get clean water

**SAFE DRINKING WATER FOR ALL!!!**



**A domestic drinking water filter as one time solution to get Contaminants free Drinking Water**

In the last two decades, chronic kidney disease of unknown etiology (CKDu) has emerged as a significant contributor to the burden of chronic kidney disease (CKD) in rural Sri Lanka. It is characterized by the absence of identified causes for CKD. The prevalence of CKDu is 15.1–22.9% in some Sri Lankan districts, and previous research has found an association with farming occupations. Regular usage of contaminated water with pesticides, heavy metals, cyanotoxins, etc.. have been identified as some hypotheses for CKDu. Clean and safe water has scientifically proven to be the SAVIOR and the SOLUTION to battle with this deadly curse.

Current domestic water filter was designed in the aim of providing a solution to the CKDu using one biological layer and 3 advanced filtering systems.

