



Date: 21-08-2018

Bangalore

SAFE WATER TIPS FOR PEOPLE AFFECTED BY RECENT FLOODS

Heavy rains and landslides caused by incessant rains in many districts of Kerala State and Kodagu district of Karnataka causing great damage including loss of lives and destruction of homes for thousands of people. As people are coming to grips with the devastation there is an urgent need of essential Supplies including safe drinking water. Subsequently in the coming days people need help to settle down to their normal life including rebuilding of their homes and other lost properties.

There are many Kodagu people living in Bangalore who are working to help people living in various relief camps. One of the areas which need to be addressed urgently is to provide safe drinking water. It is likely the available water sources in the area are contaminated and need extreme care with proper treatment before human consumption. We would like to give few tips to the involved Organizations and NGOs who are working to provide safe water to the people for short term and long-term periods. We are getting various questions including type of systems to buy, cost etc. to help the people affected. Here below are our general responses to few of the questions to give more clarity and help more people with info, can be expanded as we hear more questions:

1) Why people need to be careful in consuming well water after the flood?

Answer: Eating or drinking anything contaminated by flood water can cause diarrhoea disease (such as *E. coli* or *Salmonella* infection), and there could many other contaminants too in the water.

2) We need 5,000 to 10,000 litres of drinking water a day in a community and we have been told to buy Reverse Osmosis System costing 2 to 3 lakhs Rs, what do you suggest?

Answer: We can decide whether we need RO or just a lower cost Filtration system after checking the TDS (total dissolved solids) value of the open well or borewell water source. A simple TDS meter commonly available can do the work. If possible, we strongly suggest to get 2 litres of water sample to get it tested in a Water Lab to see whether it meets the Indian drinking water standards.

If you need details on the Labs to test water samples in Bangalore or at Mangalore, pl. share your details through e mail to info@elifeaqua.com

3) Is there a thumb rule to know whether we need RO or only Filtration?

Answer: Typical thumb rule is, if the feed water TDS is greater than 500 PPM, we need to look at providing RO, and if below, a good appropriate Filtration System with disinfection is fine. However, detail water test report would help to make a right decision since even small amounts of heavy metals even in low TDS water, infectious microorganisms or out of range pH value are not going to meet the Indian drinking water standards.

4) What is the approx. price of a RO system for 1,000 Litres per Hour Capacity and for Filtration System of similar capacity?

Answer: The pricing varies based on the Make Components, Quality of the Components, Systems Design Specifications etc. A Filtration System consisting of FRP Media Filter Vessel along with a disinfection unit could be anywhere between roughly **20,000 to 50,000 Rs** and a RO System price

could be between roughly **2 to 4 lakhs Rs.** consisting of Filter, Raw water and HP Pumps, Cartridge Filter, RO Vessels and Membranes, Panel, Instruments, Chemical Feed, Disinfection Unit etc. Make a right decision on what you need to buy and ensure you get good quality system for what you spend, and systems will need routine Servicing later.

5) How do we estimate capacity of the Drinking Water System Needed for communities?

Answer: A typical family may consume 40 to 60 litres of potable water a day, and overall water consumption (potable + general use) is between 400 to 600 liters a day for a family of 4 to 6 people. This is a high level consumption for estimating the plant capacity for a community.

6) What are the advantages of RO System and Only Filtration System?

Answer: A RO System reduces dissolved solids along with various other contaminants including heavy metals, bacteria, virus etc. It needs Filtration to treat the feed water primarily to remove suspended particles. It operates at a higher pressure and so, consumes more electric power, and also, generates significant amount of waste water as reject to carry the separated salts and other contaminants to the drain.

Filtration System is mainly to remove suspended particles from the water, and can't reduce dissolved solids and many other contaminants. The wastage of water is intermittent and minimum compared to a RO system, and needs less power to operate, and sometime can be operated only by gravity feed from an overhead tank is sufficient.

7) Do you have any past data on the water quality for Kodagu district?

Answer: We don't have any actual water test reports, however, 2013 report from Ministry of Water Resources, Central Water Board, Government of India says generally ground water in all the three taluks of Kodagu is good and potable. All the important parameters like EC, pH, TDS, fluoride of both, the shallow and the deep aquifer water are, in general, within the drinking water standards. But we **are not sure** of the scale of contamination of ground water after the recent flood due to heavy rain now, this caution is applicable to Kerala also.

8) Should the water be Boiled before we drink?

Answer: Yes, it safe to boil and drink even it is treated water at this time. To disinfect water by boiling, bring it to a full boil, continue to boil for two minutes, and then let the water cool before using it. Consult your family Physician for any health related questions.

9) Is there a hand-held water purifier to treat lake, river or stream and drink in Emergency situations such as what we are seeing in Kodagu and Kerala now?

Answer: Yes, there are such hand purifiers available for emergency use. It can filter water of suspended particles and also the micro-organisms. Rated to 0.1-micron absolute filtration, it removes most of the bacteria, such as salmonella, leptospirosis, cholera and E.coli, and protozoa (such as giardia and cryptosporidium). Pl. contact info@elifeaqua.com for additional details.

10) My Well water was safe before the flood, should I be concerned now after the heavy rain and flood?

Answer: You might have to take special steps to ensure that your drinking water is safe after the Well or Water treatment plant has been flooded. Boiling of water said above is one of the safety precautions to follow.

11) What is the Caution for people who use water from Wells after the flood?

Answer: Because of extensive flood in the area and the speed and direction of ground water flow, your well may not be a safe source of water for many months after the flood. The well can become contaminated with bacteria or other contaminants. Waste water from malfunctioning septic tanks or chemicals seeping into the ground can contaminate the ground water even after the water was tested and found to be safe. It will be necessary to take long range precautions, including repeated testing, to protect the safety of drinking water.

12) How do you clean flooded well?

Answer: You can use Bleach powder or liquid (Sodium Hypochlorite) to disinfect the well and to ensure there is no bacteria presence. This will need supervision of qualified person as you are dealing with a chemical. Use appropriate safety protection while using bleach.

13) What is the solution for individual homes?

Answer: Due to the possible contamination of well water sources, it is recommended to test water and decide to use a Filter + UV system or a Filter+ RO + UV system which you can get in the market as a package. Continue to boil and drink the treated water for some time as you consider safe.

14) How do we ensure disinfection of Raw Water Tanks and Sumps?

Answer: Chlorine tablets are available in different dosage sizes, this can be used in tanks and sumps to disinfect water. A free chlorine level of 0.5 mg/L (and don't exceed 2mg/l) will be enough residual to maintain the quality of water for short term storage of water. Consult manufacturer of the tablets for additional info prior to use.

15) Some families can't afford to buy a system at this time, can they get help?

Answer: B&P Aqua will arrange to provide Drinking Water Systems free of cost for five (5) families in Kodagu district once few of questions are responded by the needy Resident. Additionally, we can work with donors to provide more Water Systems as possible. Pl. share details of the needy to info@elifeaqua.com.

16) Can we get water systems to people who need in Kerala?

Answer: As we are based out of Bangalore, unfortunately we are physically not in a position to help people in Kerala at this time. However, any NGOs or Individuals who are working to support people of Kerala can contact us for any information and support we can provide from here.

Notes: Pl. note that many of the info used to respond to above questions are referred from published info of agencies such as EPA, WHO guidelines, reputed Manufacturers of the products, and other reliable sources.

Above are only General Guidelines, please follow the instructions provided by the local government agencies in case of any questions or check with them, who take precedence over any of the information provided here.