1. INTRODUCTION

Realizing the importance of water as elixir of life, the National Water Policy (2002) has rightly recognized it as a primary natural resource, basic human need and a precious national asset. Such a resource has remained the same in the last 2000 years whereas our population has increased fifty fold. This is the reason for water becoming scarce.

Half of the humanity now lives in cities and within two decades, it may cross 60 per cent. It may place heavy demand for basic needs among which water is the prime and essential resource. According to (UNEP, 2005) India has only 4 per cent of the global waters to meet the needs of its 1.25 billion human populations.

The quality of drinking water is a powerful environmental determinant of health. Unsafe water, sanitation and hygiene kill about 2 million people every year mostly due to diarrhoeal diseases and most of them are children less than 5 years of age (UNICEF, 2008). UN, (2003) says unsanitary water is responsible for 80 per cent of all illness and is world’s number one killer. In fact, bad water is deadlier than a war. In July 2011, the UN General Assembly declared safe and clean drinking water and sanitation a human right essential to the full enjoyment of life and all other human rights.
The quality of water is a function of both natural and anthropogenic influences. Apart from the natural contamination of water with minerals, several toxic chemical contaminants and contagious germs are added owing to different anthropogenic activities in the name of development. Water being a universally and chiefly available natural solvent, it is involved in almost all cleaning operations. This property is mainly responsible for water getting polluted. Further, believing ‘dilution is the solution to pollution’ every day we pour millions of tons of untreated sewage and industrial and agricultural wastes into the nearby aquatic bodies. One litre of polluted water spoils at least 8 litres of unpolluted water (UNESCO, 2008). In India, domestic sewage contributes about 75 per cent of waste as 115 million homes are there without toilets (UNESCO, 2008). This helplessness condition forces the poor to opt the practice of open defecation even to date. Under the influence of the green revolution, agriculture sector is using several million tons of fertilizers and pesticides out of which most part of it is washed-out as agricultural runoff. In the name of blue revolution, aquaculture is also contaminating water resources by contributing the residual organic fish feed and powerful antibiotics.

Realizing the misuse of life saving water resources worldwide, the UN has earmarked March 22nd of every year as the ‘World Water Day’ and expects all the nations to celebrate the day with a distinct focal theme supplied for each year. It has declared the year of 2003 as the year of fresh water resources. It has declared the period between 2005 and 2015 as the international decade for action ‘water for life’.
The UN in collaboration with WHO and UNICEF was successful to some extent in creating awareness among the public about the need of safe drinking water. Enlightened people now started doubting the quality of treated waters supplied for drinking by municipalities. Hence, the culture of using bottled and sachet mineral water is now widespread and water business is flourishing. Some of the studies say that even these waters are also not safe (Kassenga, 2007, Olaoye et al., 2009, Flora and Michael, 2012).

As said by Ban Ki-moon, UN Secretary General, poor water quality has a serious impact on water quantity in several ways. Polluted water reduces the quantum of usable water within a given area. Further, the looming threat of climate change may exacerbate the scarcity of clean and safe water. Water scarcity is going to threaten 2/3 of the world population by 2025 (UN-Water RIO+20 Report). This scarcity may worsen the water quality further. As the water quality will be having a profound influence on human health and well-being, safety, environment, economic growth and development, ensuring access to safe drinking water and adequate sanitation have become the most serious challenges of the 21st century.

What doesn’t get measured doesn’t get managed’ is a popular saying. It is more apt in the case of water resources management. Typically, water quality is determined by comparing the physical, chemical and microbiological characteristics of a water sample with a set water quality guidelines or standards by the World Health Organization (WHO) and other regulatory and
monitoring national and international organizations/bodies. In India enactment of Water (prevention and control of pollution) Act was done as early as 1974. In spite of the pollution control acts, the pollution persists in the country and the story of pollution goes unabatedly.

In the present study area, i.e. in and around Bhimavaram, West Godavari district of Andhra Pradesh, India, rigorous urbanization, rapid industrialization, intensive aquaculture and extensive agriculture activities are taking place. These diversified anthropogenic activities create, tons and tons of sewage from domestic sector, effluents from the industrial sector, seepage from the aquaculture and run-off from the agriculture and contaminate the Gostanadi Velpuru canal water and ponds.

From the literature review, no in depth study was encountered which can holistically address the water quality status and management of drinking water needs of Bhimavaram people. This kind of data from every habitation is urgently needed to enable the provision of clean and safe water for human consumption thereby protecting human health. Without such data, we cannot think of controlling waterborne diseases.
Hence, this study with the following objectives:

i) to study the status of drinking water quality of the sources used in and around Bhimavaram town through physico-chemical and microbiological investigations;

ii) to test whether Bhimavaram people have access to truly safe drinking water, and if so, which source is safe and which one is unsafe, by calculating correlation coefficients and water quality indices; and

iii) to identify the causes of water pollution and to offer suitable remedies.