



**WATER
FOR
PEOPLE
AND
PEACE**

WATER FOR PEOPLE AND PEACE

The Need for Safe Water

By:

Dr. George Pararas-Carayannis *

Technical Consultant,
Water for People and Peace

Safe drinking water is a problem for over a billion people worldwide. Clean water is a major need in sustaining good health for children and families throughout the world. In many developing countries, people have no choice but to drink from contaminated water supplies filled with dangerous bacteria, parasites and viruses. Following a disaster (whether earthquake, tsunami, hurricane) or a man-made disaster, water contamination inflicts the worse, collateral damage on a stricken area. This became clearly evident after the devastating 2010 earthquake in Haiti, in the countries bordering the Indian Ocean after the great 2004 tsunami, in Japan following the great tsunami of 2011 and the subsequent destruction of the Fukushima-Daichi nuclear power plant. Also, the historical record shows that after every major disaster in all other areas of the world, the greatest collateral damage from diseases occurred due to contamination of the drinking water supply.

But even without a disaster and even in developed countries, pesticides and other forms of toxic pollution contaminate the water supply and bring sickness or death to wildlife and people. In the United States for example, the Center for Biological Diversity estimates that more than 1,000 waterways are impaired by pesticide pollution. In a nationwide study, the U.S. Geological Survey found contamination in every stream that was sampled. This toxic pollution can mean sickness or death for wildlife - and people, too. Unfortunately – and in spite of these findings that indicate unsafe levels of pesticides and overall water pollution, the petrochemical industry and the big agribusiness in the United States of America, pushed the US Congress to weaken needed rules of monitoring the waterways and lobbied extensively to modify the farm bill known as the “Clean Water and Endangered Species Acts”.

Water Contaminants and Health Hazards

Based on the above brief discussion, the question arises as to what are the contaminants that must be removed from waterways and from supplies of drinking water so that good health will be assured - not only in the USA but throughout the world.

Usually, water "contaminants" in waterways and drinking water supplies include chlorine and its by-products, pesticides, herbicides, carbon-based industrial chemicals, as well as organic pharmaceuticals. Heavy metals - such as lead and mercury - may be also

included. Toxic chemicals in water can cause severe reproductive and developmental deformities, cancer and even death in fish and amphibians. Also these poisons can move up the food chain -- potentially harming people who eat tainted fish and drink tainted water. Pathogenic bacteria can cause cholera, typhoid, salmonella, dysenteries and numerous other diseases. Parasitic cysts like cryptosporidium and giardia are often present in water supplies.

It becomes obvious then that in order to sustain good human and animal health - with or without a disaster - all such toxic chemicals and parasites must be removed from drinking water supplies. However, this is very difficult to accomplish as only a few of these harmful substances can be removed by the simple filtration methods that are presently used. The really harmful chemicals that are dissolved in the water and exist in molecular or ionic form cannot be easily removed.

The Organization - Water for People and Peace (WPP)

Since clean water supplies are diminishing throughout the world, future crises and even wars over clean water rights, can be avoided by utilizing new treatment and water purification technologies. Realizing this urgent crisis that threatens humanity and that clean water is a basic element of sustaining life on this planet, "Water for People and Peace" (WPP) was organized as a non-profit organization to research the technologies that could be made available in order to mitigate health hazards from contaminated water. WPP begun looking at more sophisticated and economical methods of water purification such as Activated Carbon (AC), Reverse Osmosis (RO), Ion exchange resins (IEX), Distillation or Demineralization (DI), and "softeners" -- that could be used for specific heavy metal removal from drinking water. Also, it became apparent to WPP that water purification is essential after each natural or man-made disaster and that perhaps small portable purification units could be constructed and dispatched to disaster-stricken areas to minimize the collateral, post-disaster, health hazards. Thus, WPP began to search for new technologies of water purification and arranged for the construction of water purification modules that could be operated in needed areas, even in the absence of electrical power by utilizing solar technology. After several years of research, such units were constructed and placed in needed areas. The photographs below show a 20 ft. isolated module unit that can be easily brought - even to remote desert areas where there is an urgent need for water purification.



A water purification module that can connect to local supply – thus assuring clean, healthy water.



Interior of a Water Purification Module

Mandate and Functions of the Organization “Water for People and Peace”

The Mandate of WPP is the relief of poverty and deprivation and of diseases caused on communities – wherever situated – by inadequate supplies of clean, uncontaminated, drinking water. The Main Functions of the Organization are:

- 1) To facilitate the supply and distribution of clean safe drinking water by assessing the specific needs of communities;
- 2) To facilitate the provision and maintenance of water purification equipment and facilities that will assure the distribution of safe drinking water to affected areas;
- 3) To promote, encourage and provide assistance for financial support by donor governmental and non-governmental agencies for Water Purification projects;
- 4) To foster, improve, promote and increase public knowledge as to the health hazards of polluted water, as well as the understanding and significance of health benefits by consumption of safe drinking water;
- 5) To develop education, public knowledge and awareness of through developing links between regional, national and international agencies and organizations.

WPP Projects

Drinking Water Purification Projects

WPP has developed contacts or has initiated drinking water purification projects in Iraq, Syria, Greece, India, Belgium, Morocco and elsewhere. WPP is also trying to introduce similar water purification technology for clean, safe drinking water in Saudi Arabia, Dubai and the other Gulf States.

Wastewater Recycling for Agricultural Irrigation

Surface water from rivers, dams, and wells is used for agricultural irrigation. However, the amount of water pumped for irrigation of crops often exceeds the aquifer renewal capacity - thus causing lowering of the underground water table. This situation is often aggravated during very dry periods, thus causing food shortages and rises in prices. Irrigation with alternative, non-conventional water resources - such as treated wastewater - can be made possible if the quality of such wastewater can be improved.

Recycling wastewater for conservation and for irrigation has become an important aspect of water resources and of environmental management policies. Such planning ensures reliable alternative water resources, reduces pollution and achieves a more sustainable form for a community's development. In Las Vegas, Nevada for example, a desert region with serious water shortage problems, wastewater is recycled and drained into Lake Mead.

Realizing the need for efficient water conservation technology – and in addition to

drinking water purification - WPP is also developing a program to utilize water-recycling technology for advanced wastewater treatment technology that can be used for the sustainable irrigation of sensitive crops. The most important aspect of such wastewater reuse is the mitigation of health risks, which may include both microbiological and chemical agents.

In close cooperation with the ministries of different nations, WPP is working on the development of such technology. Specifically WPP and teams from interested countries are collecting information on existing wastewater irrigation systems regarding both physical and chemical parameters, both for water and soil. Desalination of seawater for agricultural irrigation is still another goal that needs to be addressed.



Photograph of the of the President of WPP, Mr. Emmanuel Gounalakis with a Committee coordinating the installation of water purification units in the Middle East.

Contact Information: If interested in more information on water purification technologies or the installation of one or more water purification modules by WPP, you may contact by email: drgeorgepc@yahoo.com

*** Note**

Dr. George Pararas-Carayannis accepted the invitation from the President of WPP, Mr. Emmanuel Gounalakis, to serve as Technical Consultant for the Organization. Although mostly known for his expertise on earthquakes, tsunamis and other natural and man-made disasters, Dr. Pararas-Carayannis has a Master's Degree in Chemistry, worked as a research chemist and taught Chemistry lab classes at the University of Hawaii. Also, he has experience in water chemistry, in Organic, Inorganic, Physical and Polymer Chemistries and in the formulation of Heterocyclic compounds (blowing agents). Additionally, he conducted research on radionuclides and heavy metals in sea water, on the environmental impact of ocean dumping in the New York Bight, on the analysis of

heavy metal distribution in water, sediments and marine organisms (in cooperation with the Lawrence Livermore and Sandy Hook Laboratories), on the use of ion-exchange resins to concentrate trace elements in water to measurable quantities using atomic absorption spectrometry and other analytical tools. Finally, he participated as an expert at meetings of President's (Nixon) Council of Environmental Quality (CEQ) in Washington DC. Also, he served as advisor to the U.S. Nuclear Regulatory Agency, and has testified to the U.S. Atomic Safety Board as a consultant to EarthJustice on the Cpbalt-60 irradiation of food products. Finally as a member of the American Nuclear Society, he co-authored the environmental safety standards for the location of nuclear power plants.



Recent photograph of the President of WPP, Mr. Emmanuel Gounalakis, with Dr. George Pararas-Carayannis, following a review meeting of necessary quality standards for water purification.