# Ensuring Safe Water Supplies Across the World

By Kanetoshi ODA

## Introduction

In 1995, Dr. Ismail Serageldin, then senior vice president of the World Bank, was quoted as saying, "Many of the wars this century were about oil, but those of the next century will be over water."

By the remark Dr. Serageldin meant that the supply of safe drinking water, of all the global problems yet to be solved, is a "matter of emergency" inseparable from human life. It was against the backdrop of the time that I successfully developed an epoch-making biodegradable flocculant for water treatment, which led to the foundation of our company, Nippon Poly-glu Co., in 2002.

## World's Water Situation

According to international standards set by the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF), 20 liters of water readily available from a source within a 1 km distance is necessary per person a day. This is a level of water needed for drinking and minimum personal hygiene. A supply of water below this level robs people of a hygienic environment, making it difficult to lead a healthy life with dignity. With water necessary for bathing and laundry considered as well, per capita water needs reach 50 liters per day. At the beginning of the 21st century, however, one in every five persons living in the developing world, totaling 1.1 billion people, has no access to safe water, according to the Human Development Report 2006 issued by the United Nations Development Program (UNDP). By the broader standard taking account of sanitation, a fact of life is that about half the developing world's entire population, about 2.6 billion people, has no access to basic hygienic necessities.

In short, the vast majority of people have no choice but to live more than 1 km away from a safe water source and end up getting a water supply far below the standard level necessary for a minimum daily life. Particularly in farming districts, many people get water from sewage/drainage ditches and streams polluted by germs and bacteria, causing serious diseases and death. There are countless other cases of dependence on substandard water supplies such as water sources shared by wild animals and germ-proliferating unhygienic wells.

"It is not that the world is without water, but that it is without drinkable water." That's my belief. Needless to say, there are arid places without a single drop of water in Arabia and Africa. However, China, which faces a serous water shortage, has an abundance of water, albeit polluted. Bangladesh, also suffering from polluted water, has many ponds and rivers and in fact it is full of water. There are countries scarce in surface water but rich in underground water. If muddy water can be purified and underground water recycled, water shortages would be less of a problem. The question is how we can make water purification technology available to everyone.

## Japanese Technology for Safe Water

Nippon Poly-glu manufactures a biodegradable flocculant for water treatment, made from polyglutamic acid – extracted from the sticky paste of *natto* fermented soybeans, a traditional Japanese food – as well as natural mineral content.

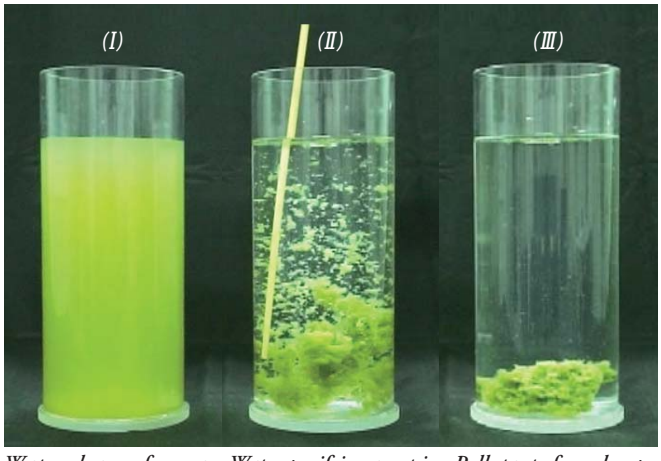
The water treatment agent features the following, among other things:

**(1) harmless to humans and organisms**
**(2) easy to use**
**(3) no need for electricity or other power sources**
**(4) low cost**

Simply put, polluted water has pollutant particles floating in it, with the surface of particles charged with negative electricity, repelling one another *(I)*. As the treatment agent is added *(II)*, the particles neutralize electric charges and begin to be caught in the polyglutamic acid, forming lumps of pollutants. As the lumps grow in size and gravity, they eventually settle to the bottom *(III)*. The large lumps can be filtered with a sheet of cloth or cotton. Most colon bacilli and germs are soaked up in the lumps, nonetheless leaving some floating in water, a drawback of a treatment agent devoid of toxicity.

One has to assume that even transparent water is not without some germs left. Boiling or an addition of chlorine will make water safe. But I recommend a slow-speed filtering method which, once taught, can easily turn muddy water into fresh water just through manual labor. There's no need for electricity and all it takes are simple tools available everywhere. Electricity, if available, can be used to power a system consisting of a large tank, an automatic treatment agent feeder and motorized stirring to purify a large amount of water at a time.

Photos: Nippon Poly-glu Co.




*Water drawn from a pond at a scenic site*

*Water-purifying agent is added and stirred.*

*Pollutants form lumps, settling down at the bottom.*

Photo: Nippon Poly-glu Co.

*Bangladeshi boys soak their hands in a tank of water from purifying equipment installed in a cyclone-hit area.*

Photo: Nippon Poly-glu Co.

*Local residents are taught how to use a water-purifying agent after the 2004 temblor that hit Sumatra Island and elsewhere in the Southeast Asian region.*

I believe this is the kind of technology that can make a major contribution to the solution of the world's water problem. In fact, our technology has drawn attention as a sustainable means of water supply.

## Our Activities

Those who have trouble with livelihood water are mostly poor people. Without money, electricity and education, those people have no way of buying state-of-the-art water-processing equipment and, if they did, they would find it difficult to use. It is only natural then that they show little interest in costly equipment they will never be able to use. At the same time, however, it is also natural that businesses engaging in water treatment compete for sales promotion, seeking to sell expensive equipment of their manufacture. What I find regrettable is that government officials, who must be well informed of the world's water situation, appear to be focusing on expensive, large-scale technology development schemes alone. I often suspect they may have the false belief that simple water treatment technologies, like ours, will not make a major economic contribution to aid-recipient countries.

On our part, we have always set our sights on the world since the establishment of our company, actively responding to emergency calls for help from regions needing safe drinking water urgently. Our technology was highly appreciated in disaster-stricken areas in need of water and, in peacetime, in villages infested with contagious diseases.

When the killer earthquake and *tsunami* hit Sumatra Island and elsewhere in the region in December 2004, for example, we visited disaster-stricken areas such as those in Thailand and India, engaging in relief activities. When we heard of people in Mexico, Bangladesh and Cameroon having a hard time with polluted water, we were there in no time, cooperating with local residents to make safe drinking water.

We have done all those activities on a volunteer basis, paying for all expenditures by ourselves. What we have learned from many years of activities is that there are too many people out in the world who are in an urgent need of safe water.

## Conclusion

Drinking water is absolutely indispensable for humans to live. A quick look at history tells us that humans in the ancient days had the wisdom of working as a team rather than solo, hunting in the mountains and cultivating the fields. Unlike other animals, humans have lived through cooperation throughout the world.

And in locating a place for settlement, our ancestors took into consideration accessibility to drinking water as the most basic prerequisite. After all, we humans cannot survive without water.

I recall seeing a girl with a pot of dirty water on her head plodding wearily for home in the African wilderness. I wish I could purify the water for her. "Let the people of the world drink unboiled water without fear." This is our company's objective and mission. I realize that what a small company in Osaka can do is desperately little when seen from an entire world. What I am hoping for is that people around the world will understand our activities for the "matter of emergency" that I am aspiring to solve and cooperate with us in this regard. **JS**

*Kanetoshi Oda is Chairman and Chief Executive Officer, Nippon Poly-glu Co. A graduate from Osaka University, he obtained a doctorate in engineering from California Institute of Technology. He founded the company in 2002 after working at Daikin Kogyo Co. His inventions include a biodegradable water clarifier based on polyglutamic acid.*