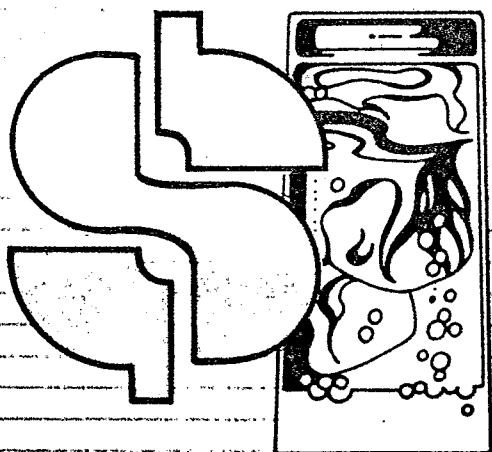


EDUCATION FOR THE FUTURE

THE VALUE  
of  
SAFE  
DRINKING  
WATER



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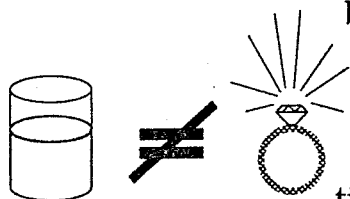
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## What is the Value of Safe Drinking Water ?

“How is it that water, which is so very useful that life is impossible without it, has such a low price — while diamonds, which are quite unnecessary, have such a high price?” This question was posed by Adam Smith, the famous 18th century economist, in his classic work, *The Wealth of Nations*. This is indeed a paradox of value. Humans cannot live without safe, potable drinking water, yet the cost of drinking water is relatively low. On the other hand, diamonds are a commodity that people can easily live without, yet their price is extremely high.



Water has traditionally been undervalued because of its abundance. Water covers nearly three quarters of the earth's surface and is abundant in underground aquifers and springs. Water is essential to every form of life on earth, but is taken for granted by consumers. Adam Smith may not have figured out the answer to the above question, but he did conclude that the value of a product — its total contribution to economic welfare — does not always correspond with its monetary value.

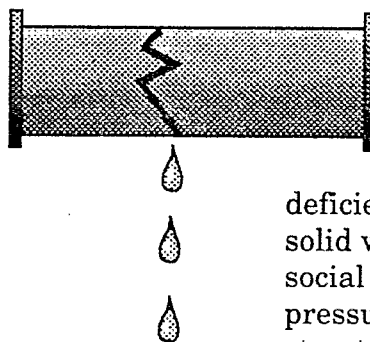
The era of inexpensive water, however, is now coming to an end. The public, concerned by news accounts about toxic waste sites, organic chemicals in municipal water supplies, and towns being shut down because of contaminated soils, has demanded additional regulation of drinking water. Additional regulation, whereas it will likely result in safer water and “peace of mind,” will also be costly. Consumers will ultimately pay for this “insurance” in the form of substantially higher water rates.

## Why was Water Inexpensive in the Past?

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### Deferred Expenditures

The proper value has never been placed on water, in part because water rates have been constrained by the political and social forces that developed when water was truly inexpensive to produce. One of the ways rates have been kept low has been to defer expenditures needed for maintenance and replacement of water treatment facilities and distribution networks. Consequently, high leakage rates have occurred in recent years in many water distribution systems due to aging infrastructures. Few actions were taken to resolve these problems because the per-gallon cost of producing water was low.



In some municipally owned water systems where the finances are co-mingled with the finances of the local government, maintenance problems have often been made worse because water revenues are "siphoned off" to pay for other municipal programs. In the local political environment, the pressure to address deficiencies in areas of high public visibility such as solid waste disposal, fire and police protection, and social services, are frequently greater than the pressure to repair water pipes buried under the street. Since the per-gallon cost of producing water has remained low, the problems resulting from deferred maintenance and replacement have been largely unaddressed. Similar problems of deferred maintenance and replacement also exist in many small private and publicly owned water systems.

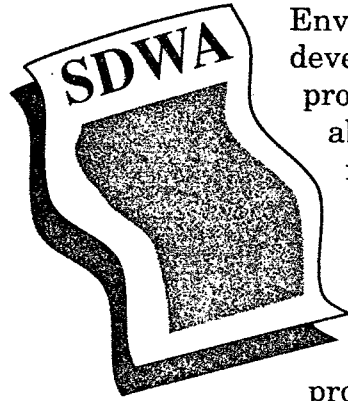
### Limited Treatment

The cost of water in the past was low because the public believed that almost all drinking water was pristine and safe and therefore did not require additional expenditures for treatment. With increased population densities, urbanization, and pollution from industries and waste facilities, the public is becoming more aware of potential threats to drinking water and the need for additional water treatment.

## Why will Water Cost More in the Future?

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### New Regulations



Congress enacted the Safe Drinking Water Act (SDWA) in 1974 with the goal of providing safe drinking water to all persons served by public water supplies (water systems serving 25 or more persons on a regular basis or a system with 15 or more service connections). This Act gave the U.S. Environmental Protection Agency (EPA) authority to develop a uniform national drinking water protection program and establish national standards (acceptable or "safe" levels) for known or suspected drinking water contaminants.

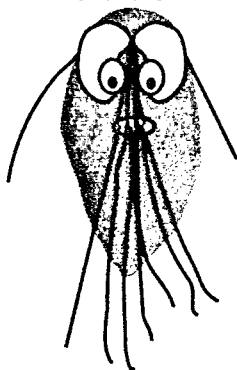
Partly in response to the new awareness by consumers for the safety of drinking water, Congress amended the SDWA in 1986 and required EPA to establish standards for approximately 83 contaminants by 1990. EPA is also required to regulate at least 25 additional contaminants every three years beginning in 1991.

### Improved Contaminant Detection

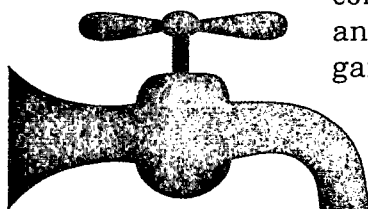
Many of these standards will control chemical contaminants to below the levels that were measurable when the SDWA was first passed in 1974. As the ability to monitor has grown more sophisticated, we have documented more subtle types of health effects such as certain forms of cancer which can result from long term exposure to very low levels of chemical contamination.

In similar fashion, the understanding of microbiological contamination of drinking water has also grown. In the early 1900's drinking water treatment was revolutionized through the widespread introduction of disinfection. This resulted in dramatic reductions in the incidence of waterborne diseases such as typhoid, cholera, dysentery, and hepatitis. With the removal of these very visible health threats, there was a perception that the problem of assuring safety in drinking water had been solved.

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### Improved Treatment

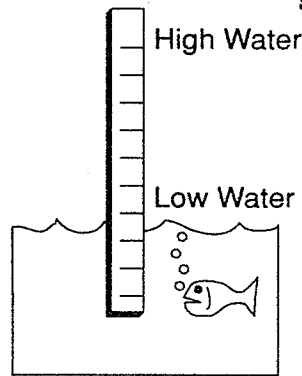


There may still, however, be large numbers of cases of waterborne diseases. Characterized by common symptoms of diarrhea, nausea, and abdominal distress, they may not always be identified as being of waterborne origin and therefore go unreported. Though non-fatal, these diseases may be quite debilitating for periods of time and result in discomfort and economic losses due to lost work and medical expenses. Assuring the elimination of these more subtle disease agents will require a re-examination of the effectiveness of filtration and disinfection practices and upgrading of many treatment facilities.

New regulations under the SDWA Amendments will also require utilities using surface waters to install filtration and disinfection treatment to remove viruses, cysts, bacteria, and other microorganisms. Although many surface supplies have been considered safe in the past, increasing population densities and the resultant pollution of watershed lands has rendered many of these systems incapable of producing safe reliable water on a continual basis. Groundwater systems will also be required to provide disinfection.

Upgrading water treatment to remove chemical contaminants to low levels and provide greater assurance of the inactivation of disease-causing microorganisms will be expensive. Safe, reliable drinking water, however, is an integral part of the nation's "infrastructure" — the mechanical foundation — on which our society depends. Wherever we go, we want to be able to turn the tap without any doubts or second thoughts; knowing the water will be there and that it will be safe for drinking and other uses. These expectations regarding the reliability and safety of public drinking water supplies are no different from what we expect of other categories of physical infrastructure such as roads, bridges, and buildings.

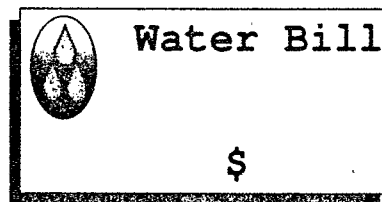
## Limited Water Resources



Low water rates have encouraged the consumption of water and discouraged conservation. Recent droughts, affecting even humid areas of the country, have provided a timely reminder that water resources are not as abundant as they once were. The number of regions with water shortages is increasing. Conservation incentives have already begun to be incorporated into regional and interstate negotiations on the allocation of scarce supplies. Wherever water is in short supply, those water systems that have conservation-oriented rates in place will fare the best. The customers of water systems that ignore the need for conservation-oriented rates will pay more for both quantity and quality.

## How Much will it Cost?

All of this activity is going to cost money .....money that the consumer will be asked to pay in exchange for the assurance that they are receiving safe, potable drinking water. Some people have referred to these costs as being equivalent to purchasing "insurance."



Costs for drinking water are generally borne directly by households through the payment of water rates to local water systems. The full cost of assuring that the water one drinks is safe, however, has not typically been included in these water rates. In the future the increased costs of safe drinking water will have to be paid by the consumer. Water rates will probably increase from current levels of an average of \$100-\$250/year/household to as much as \$500-\$600/year/household. Because water has been so inexpensive in the past, consumers will likely suffer from "rate shock" in the future.

## What are the Benefits Associated with Paying the Real Value of Water?

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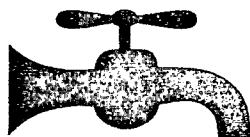


**T**he benefits of new treatment techniques will result in a decreased numbers of cancer cases and other diseases related to drinking water. Benefits may not, however, be readily apparent to many consumers since many of these benefits will be spread over several generations. The health benefits are nonetheless real and are no different than the invisible and intangible benefit derived from knowing that the risk of a bridge collapsing is negligibly small. The benefits of knowing that the water that flows from the tap is safe and reliable are an important "insurance policy" that all consumers should be willing to pay.

## What Does all this Mean?

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**I**t means times are changing. Water can no longer be used frivolously, but must be conserved. It means that water rates will go up — reflecting more accurately the true value of safe drinking water.



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\$  
\$

The new regulations being developed under the SDWA Amendments are intended to protect the public health of all Americans. These regulations also have been designed to give the consumer "peace of mind" regarding the water consumed from the tap. To ensure that "peace of mind," water rates must rise. Higher prices, however, are a small price to pay to ensure the certainty that when you turn on the tap, safe water will flow from it.

What is the value of water? The answer is .....it is as valuable as life itself. Thus, we should all willingly pay for the benefits to be derived from enhanced water quality. And we should conserve water as much as possible since safe, potable water is such a precious and scarce resource. As citizens and consumers, we all need to realize that the real cost of water must be paid to ensure a safe, potable water supply for ourselves and for future generations.