

The risk of a cholera epidemic within the United States is already too great to entertain a reduction in disinfection standards, much less an elimination of chlorination, especially in those areas where the residents are lacking any sort of water treatment. "Tens of thousands of people live along the border in Texas, New Mexico, Arizona and California, in crowded substandard housing, without any water or waste services. These communities are called colonias and they face real health and environmental problems," said House Agriculture Committee Chairman Kika de la Garza in a news release in July.

Water treatment procedures

Water treatment usually consists of four steps: coagulation, clarification, filtration, and disinfection.

1) Coagulation: The precipitation or flocculation of suspended organic matter and particles such as bacteria and viruses by the use of compounds such as aluminum sulfate or ferric sulfate. These are reported as being effective in

removing bacteria and more than 99% of viruses.

2) Clarification: The separation of the precipitated solids from the liquid.

3) Filtration: Removes any remaining suspended solids and bacteria. The two most common filter materials are diatomaceous earth and rapid sand.

4) Disinfection: Involves the addition of chlorine, often in the form of hypochlorous acid. Chlorine gas is most economical and easiest to apply in large systems. For small works, calcium hypochlorite or sodium hypochlorite is used. The amount depends on the quantity of organic matter in the water that will antagonize the halogen. It is usual to aim for 0.1-0.8 milligram per liter of free chlorine in the water after treatment. Chlorine will affect most viruses and bacteria but not protozoan cysts or some bacterial endospores.

The level of by-products formed by the addition of chlorine to water can be reduced by using chlorine compounds with small quantities of ammonia added. This process, called chloramination, is as effective a disinfectant if the exposure

Pope issues appeal to avert water catastrophe

The following are portions of Pope John Paul II's message for Lent 1993, titled "I Thirst," which was issued by the Vatican on Sept. 18, 1992.

Regarding the root causes of desertification and pollution, the Jan. 1, 1993 special issue of EIR on "The Rebirth of Africa" documents the nefarious role of International Monetary Fund debt collection, as the main culprit for enforcing backwardness in the world. The articles on pages 69-74 of that issue outline the kinds of water management projects needed to "make the deserts bloom."

. . . During Lent of 1993, in order to practice in a concrete way the solidarity and fraternal charity associated with the spiritual quest of this special season of the year, I ask the members of the Church to remember particularly the men and women suffering from the tragic desertification of their lands, and those who in too many parts of the world are lacking that basic yet vital good which is water.

Today we are concerned to see the desert expanding to lands which only yesterday were prosperous and fertile. We cannot forget that in many cases man himself has been the cause of the barrenness of lands which have become desert, just as he has caused the pollution of formerly clean waters. When people do not respect the goods of the earth, when they abuse them, they act unjustly, even criminally, because for many of their brothers and sisters

their actions result in poverty and death.

We are deeply worried to see that entire peoples, millions of human beings, have been reduced to destitution and are suffering from hunger and disease because they lack drinking water. In fact, hunger and many diseases are closely linked to drought and water pollution. In places where rain is rare or the sources of water dry up, life becomes more fragile; it fades away to the point of disappearing. Immense areas of Africa are experiencing this scourge, but it is also present in certain areas of Latin America and Australia.

Furthermore, it is quite clear to everyone that uncontrolled industrial development and the use of technologies which disrupt the balance of nature have caused serious damage to the environment and caused grave disasters. We are running the risk of leaving as our heritage to future generations the tragedy of thirst and desertification in many parts of the world.

I earnestly invite you to give generous support to the institutions, organizations, and social agencies which are trying to help peoples suffering from shortages or drought and experiencing difficulties of increasing desertification. I likewise urge you to cooperate with those engaged in scientific analysis of all the causes of desertification and in the quest for solutions to this problem.

May the active generosity of the sons and daughters of the Church, and of all men and women of good will, hasten the fulfillment of the prophecy of Isaiah: "For waters shall break forth in the wilderness, and streams in the desert; the burning sand shall become a pool, and the thirsty ground springs of water" (Is 35:6-7)!