

# Orthodox Ecological Perspectives



## Clean Water and Future Scarcity

by Fred Krueger

*One thing we all share as a common heritage of humankind: We are united by water which comprises 70% of our body and 70% of the Earth's surface. All life depends upon its nourishing power. Flowing water makes our planet unique among all the planets in the universe. Water is a source of wonder and beauty, a cause of celebration and connection.*

*Water cradles us from our birth, sustains us in life, and heals us in sickness. It delights us in play, enlivens our spirit, purifies our body, and refreshes our mind.*

*We share the miracle of water with the entire community of life. Indeed, each one of us is a microcosm of the oceans that sustain life. Every person here, every person in the world, is in essence a miniature ocean....*

- HAH Ecumenical Patriarch Bartholomew, 2003

*Today the face of the Earth has been distorted on a global scale. Its bowels are being damaged as are its water, air, fauna and flora. Nature which surrounds us serves as the life support system for humanity.*

- HB +Alexiy and the Holy Synod of the Russian Church

*We are challenged to behold with sensitivity the state of the natural world and to respond decisively when we witness the degradation of natural resources and the problems of increasing air and water pollution in our cities.*

- HE Archbishop Demetrios

AS ORTHODOX CHRISTIANS WE HAVE TO ASK HOW WATER SUPPLY IS A CONCERN of the Church? Why should we care about such a mundane problem?

To answer this question, let's examine several situations. During the summer of 2009, hundreds of California's Central Valley farmers took their protest over water shortages to the highway. Tractors clogged Interstate 5 traffic as farmers demonstrated for more water. On the surface the issue was whether scarce water supplies would be used to keep San Francisco Bay fresh so that fish can survive and salt water kept out of the bay, or whether water would be diverted to farmers to irrigate crops. For perspective, agriculture takes roughly 80% of California's water and State government has sold

contracts to farmers for more water than it could deliver on an annual basis. The deeper problem was that the state was in the midst of a multi-year drought. Climate scientists say that weather patterns are changing and that California will have to make do with less water, especially the dry areas of southern California. Economic analysis and supply projections can never fully address this problem because rainfall varies year-to-year and because the larger issue is one of justice and fairness to all users.

On the Great Plains from South Dakota down through Nebraska and Kansas farms and cities have depended upon abundant groundwater. The Ogallala aquifer provides over 80% of the water in the State of Nebraska. The aquifer is being depleted because natural recharging from rainfall cannot keep up with water withdrawal. Now in 2016, the aquifer has dropped to unusable levels in many areas so that it can no longer be pumped. Additionally, soil erosion and salinization are polluting surface waters as sediment from farms and agricultural chemicals runs into streams and rivers. Pesticides and nitrogen fertilizers are leaching into drinking water and becoming a serious health problem. The issue is that users are taking more ground water than rainfall replenishes. Overconsumption is the cause and current laws are inadequate to address this situation. Meanwhile many parts of the Midwest are facing acute water shortages in the near future.

Down through the American heartland tens of millions of people depend on the Mississippi river for drinking water. Some cities, such as Saint Louis, discharge sewage into the river while farmers allow fertilizers and chemicals to drain into streams which lead to the Mississippi. Industries and oil refineries exacerbate the problem by dumping wastes so that the river is contaminated with lead, zinc, chromium, mercury, and a host of organic solvents. Almost any pesticide you can name is present in the Mississippi River. The result is that the lower Mississippi has become known as “cancer alley” because cancer rates in towns along the river are several times higher than anywhere else in America. Additionally, contaminants in the river are so intense that they create a 7,000 square mile “dead zone” in the Gulf of Mexico. This is due to nitrate fertilizer runoff from Corn Belt farms in Iowa, Illinois and Indiana. The nitrogen causes hypoxia, an oxygen depleted dead zone. There are no fish, no shellfish, and no shrimp in this area. Nothing lives in this dead zone. We facing an issue of pollutants seriously degrading water quality. People, birds, fish, and every living creature dependent on the river suffer. What are the moral and ethical principles that address this situation?

In Arizona the mighty Colorado river once poured a huge volume of Rocky Mountain runoff into the Gulf of California where it supported a thriving fishery and a vigorous Mexican agriculture. The river is now bone dry before it reaches the Mexican border, drained into irrigation canals and piped into the desert megacities of Phoenix, Tucson, Las Vegas, and San Diego. This is not an isolated predicament. Across America numerous rivers no longer reach the ocean. What values determine how we use water in areas that cannot naturally support these large populations? What are the moral issues that determine propriety in this situation?

In Florida, groundwater pumping has dried up scores of lakes. In South Carolina, a paper company recently furloughed hundreds of workers because low river flows prevented the company from discharging wastewater. In Texas, new records were set in 2011 for drought intensity and heat. In Massachusetts, the Ipswich River has gone dry in five of the past eight years. In Tennessee, the town of Orme ran out of drinking water in 2007, forcing the Red Cross to truck in supplies from Alabama. Droughts make matters worse, but the larger problem is population growth. Over the next four decades, it is estimated that the U.S. will add 100 million more people. The heart of these problems is that human populations require water, but we are approaching a situation in which we have more people than water availability. What are the spiritual principles that address this situation? How does the Orthodox Church translate its moral and ethical principles into public policy so that parishioners can constructively participate in the discussion on these developing situations? Do we as Orthodox Christians grasp the seriousness of this situation – or our responsibilities?

America, like many countries, is facing water shortages that will get worse in the years ahead. Water experts estimate that by 2017, at least 36 states will confront acute water shortages. For perspective, over 121 thousand miles of America's rivers have been polluted by agricultural, mining, logging, erosion and industrial activity. Groundwater contamination is expanding, and at the same time we continue to over-draft essential ground water supplies. Water quality is dropping so much that 43% of the nation's community water systems are in violation of federal safe drinking water laws. Clean water should be available to every person, but because of disinterest and disregard for the problem, clean water is becoming less available.

This is not just a U.S. problem. Around the world the emergence of climate change coupled with river pollution and ground water depletion are causing a global water crisis. "Unlike oil, there's no substitute for fresh water," says Maude Barlow, an advisor on water to the United Nations' General Assembly. "We all need it."

Dr. Lester Brown, president of the World Policy Institute, brings sharp focus to the picture of spreading water shortages. He correlates the drop in water supplies with declining grain production. This problem is intensifying across Asia and the arid lands of the Middle East. This raises the issue of how will these countries produce enough food for their growing populations.

More than half the world's people live in countries where water tables are falling. The politically troubled Arab Middle East is the first geographic region where grain production has peaked and begun to decline because of water shortages, even as populations continue to grow. Grain production is already going down in Syria and Iraq and may soon decline in Yemen. But the largest food bubbles are in India and China. In India, where farmers have drilled some 20 million irrigation wells, water tables are falling and wells are starting to go dry. The World

Bank reports that 175 million Indians are being fed with grain produced by overpumping. In China, overpumping is concentrated in the North China Plain, which produces half of China's wheat and a third of its corn. An estimated 130 million Chinese are currently fed by overpumping. How will these countries make up for the inevitable shortfalls when the aquifers are depleted?

## The Global Water Predicament

Climate change is already affecting global water supplies. Rising temperatures are boosting evaporation rates, altering rainfall patterns, and melting the glaciers that feed rivers during the dry seasons. Rivers are running dry from excessive withdrawals for irrigation. Lakes are drying and disappearing. Water scarcity is reducing grain supplies at the very time when populations are rising. As nations experience water scarcity, they typically prioritize the needs of cities and industries by diverting water from agriculture and then importing additional grain to offset the loss of food production.

These conditions highlight the strong link between water and food. Agriculture depends on water. For perspective the average person drinks between one-half to three-quarters of a gallon of water per day. The water that is required to produce our food totals roughly 800 gallons per person per day. This explains why roughly 70 percent of all water is used in irrigation. Another 20 percent goes to industry while the remaining 10 percent supplies residential consumption.

Internationally the problem is far more serious than in the United States. Around the world roughly one in three people lack access to safe drinking water, and a similar number lack adequate sanitation. This involves more than 2.6 billion people, according to the World Health Organization (WHO). A 2004 WHO report estimated that 3,900 children die every day from water borne diseases.

A 2010 United Nations Environment Programme (UNEP) report describes the serious impact of polluted water. “The sheer scale of dirty water means more people now die every year from polluted water than from all forms of violence, including wars.” This includes 2.2 million people whose deaths are attributed to diarrhea, mostly from dirty water. Another 1.8 million children succumb each year to water-borne diseases. This equates to one infant death every 20 seconds.

The World Economic Forum (WEF) projects that in less than 20 years the world will be facing “water bankruptcy” – a shortage of fresh water so huge that “global food production could crater.” This will happen because water shortages will cause “the loss of the equivalent of the entire grain production of the U.S. and India combined.”

The WEF warns that half of the planet’s population will be affected by water shortages. Millions of people will no longer have sufficient food supplies. Water wars

will erupt over shrinking supplies. The gravity of the water crisis is exacerbated by the interrelationship between water and food supplies, economic growth, political stability, human health, and life itself.

The world's population now exceeds 7 billion people, all of whom require water. According to the Johns Hopkins' School of Public Health, within thirteen years, when population is expected to reach 8 billion people, 48 countries with a combined population of 3 billion people will face chronic water shortages. In 25 years, humanity could be using over 90 percent of available freshwater, leaving only 10 percent for the world's plants and animals. Water scarcity will affect everything from the global food supply to the growth of cities, the location of jobs, the placement of industries, and even prospects for peace in the Middle East. The oil crisis of the late 20th century will pale in comparison to the emerging water crisis of the 21<sup>st</sup> century.

To reemphasize the point of this section, clean water is essential for life. It is essential for a healthy family, for a healthy parish, and for a healthy world. Every living thing relies on water to survive – from humans to animals and fish, to California's giant redwoods, Antarctica's penguins, and Africa's great elephants. Earth, robbed of its water supply, would be a terribly lonely place devoid of many of its present forms of life. Yet human activity is relentlessly polluting and destroying fresh water supplies.

For Christians clean water is a blessing from God that is already in limited supply across parts of the United States. Our first goal as the Orthodox Church is to educate parishes and their members to the seriousness of the emerging clean water problem and to enlist their participation in water conservation.

Next, we should establish a goal of persuading parish families and friends to practice respect for water and to cultivate those actions that conserve its cleanliness and preserve its purity. We must learn to treat water as a precious gift from God. Once we accord water the respect and care that attends one of God's gifts for our life and health, then we will honor clean water and do whatever is within our power to maintain its cleanliness, abundance and purity.

An additional goal is to become promoters of clean water policies through our actions and advocacy. We must discern how to develop the personal attitudes, the parish practices, and the social infrastructure that will keep water clean and healthy for all people.

Each parish might examine its responsibility, not only for the spiritual health of its members, but for the larger community or region in which it is located. Through dialogue and discussion, the Orthodox Christian message of respect for God's creation can become a means for a wider dialogue and the evangelization of society. Thus the blessings of clean fresh water from our Lord Jesus Christ can become more widely appreciated and shared.

## Spiritual principles

The Orthodox church has explicitly addressed the need of respect for creation for over twenty-five years. In 1989 His All-Holiness Ecumenical Patriarch +Dimitrios emphasized to the entire Church that humans had lost “the sense of the sacredness of creation and now act as its arbitrary ruler and rude violator.” He reminded us that, instead of the eucharistic and ascetic spirit with which the Orthodox Church historically brought up her children in past centuries, we now observe “a violation of nature for... man’s endless and constantly increasing desires of lust, encouraged by the prevailing philosophy of the consumer society.”

In careful language, Ecumenical Patriarch +Dimitrios reminded us that people cannot infinitely exploit the air, water, land, and energy. “The price of this arrogance could well be our self-destruction,” he declared, “if the present situation continues.”

To emphasize our obligation to care for God’s creation, the Church in her wisdom has established September 1<sup>st</sup> of every year as a day of prayers for the creation. In the prescient words of Ecumenical Patriarch +Dimitrios,

We invite... the entire Christian world to offer prayers and supplications to the Maker of all... as thanksgiving for the gift of creation and as petitions for its protection and salvation. At the same time we urge all the faithful to ... respect and protect the natural environment....

His All-Holiness Ecumenical Patriarch Bartholomew has continued to promote this message. Every year on September 1<sup>st</sup> His All-Holiness has issued a letter to the faithful that reminds us of our duties toward the natural world and that encourages more respectful attitudes toward the natural world.

In 1997 while hosting a conference in Santa Barbara, California, Ecumenical Patriarch Bartholomew declared that it is a sin to pollute the waters of the planet.

For human beings to contaminate the earth’s waters, its land, its air, and its life, with poisonous substances ... these things are sins.

The serious issues of the environment demonstrate how our lives are inextricably connected to the natural world. “This is confirmed,” declares Ecumenical Patriarch Bartholomew, “from our everyday experience of the chain reactions of environmental destruction.”

Changes in the climate are due to the stripping of the forests from the earth, torrential rainfalls, floods, mud slides; the consequence of all these is death. Atomic explosions, radioactivity, and cancerous growths; again, the consequence of these is death. Toxic wastes, pollution of the air,

water, and the ground, introduction of toxic substances into the cycle of life; once more, the consequence is death. Dispersion into the atmosphere of gases that damage the ozone, infrared radiation that damages human health; this, too, leads to death. (HAH, Santa Barbara, 1997)

To address these issues, says His All-Holiness, “We should propagate an ecological ethic, which reminds us that the world is not ours to use as we please. It is a gift of God’s love to us. It is our obligation to return that love by protecting it with whatever responsibilities this may entail. This common purpose unites all human beings in the same way as all the waters of the world are united. In order to save a sea, we must save all the rivers and oceans. God created heaven and earth as a harmonious totality; we therefore also have to face creation as a harmonious and interdependent whole.”

It is important to remember always that a vision, even a holy reality, lies at the heart of our Orthodox ecological concerns. This vision discerns Christ and the Holy Spirit filling all things. This recognition causes us to protect God’s creation while cooperating with all other people in a common endeavor to bring God’s healing and blessing to the earth. His All-Holiness describes this vision in the following way:

For us at the Ecumenical Patriarchate, the term “ecumenical” is more than a name: it is a worldview and a way of life. The Lord intervenes and fills His creation with His divine presence in a continuous bond.

Let us work together so that we may renew the harmony between heaven and earth, so that we may transform every detail and every element of life. Let us love one another. With love, let us share with others everything we know and especially that which is useful in order to educate godly persons so that they may sanctify God’s creation for the glory of His holy name.

The task before us, declares His All-Holiness, is captured in the meaning of the Great Blessing of the Waters, performed on January 6th, the Feast of Theophany. The text commemorating Christ’s Baptism in the Jordan River reads as follows:

Great art You, O Lord, and marvelous are Your works: no words suffice to sing the praise of Your wonders.... The sun sings Your praises; the moon glorifies You; the stars supplicate before You; the light obeys You.... You have established the earth upon the waters....

Then, after this all embracing cosmic doxology, there comes the culminating moment in the ceremony of blessing. The celebrant takes a Cross and plunges it into the vessel of water (if the service is being performed indoors in church) or into the river or the sea (if the service takes place out of doors).

Ecumenical Patriarch Bartholomew tells us that the cross is our guiding symbol in the sacrifice to which we are all called. “The cross,” he says,

sanctifies the waters and, through them, transforms the entire world.... Such is the model of our ecological endeavors. Such is the foundation of any environmental ethic. The Cross must be plunged into the waters. The Cross must be at the very center of our vision. Without the Cross, without sacrifice, there can be no blessing and no cosmic transfiguration.

The sacrifice to which we are called extends into every facet of society. We are to remove the excesses from our lives and sacrifice for the upliftment of creation.

In the Orthodox tradition, the phrase “divine economy” is used to describe God’s extraordinary acts of love and providence toward humanity and creation.... Our human economy tends to use and discard; the natural economy is cyclical and replenishes; God’s economy is always compassionate and nurturing. Nature’s economy is profoundly violated by our wasteful human economy, which in turn constitutes a direct offense to the divine economy.

The waters of the natural world are representative of the waters of the spiritual world. His All-Holiness puts this into keen perspective:

Water signifies the depth of life and the calling to cosmic transfiguration. It can never be regarded or treated as private property or become the means and end of individual interest. Indifference towards the vitality of water constitutes both a blasphemy to God and a crime against humanity. Through the pollution... of the world’s waters, destruction is procured of the planet’s entire ecosystem, which receives its life from unceasing communication, like communicating vessels, of the watery subterranean arteries of the earth.

It is fundamental to the Christian life and the duty of every person and parish to extend the life of the Church into the life of the world (cf. Mark 16:15). This extension of the Church includes care for God’s creation. His Eminence Archbishop Demetrios of the Greek Archdiocese of America, following the lead of His All-Holiness, emphasizes this commitment in an encyclical on the Day of Prayers for the Creation.

The commitment of our Orthodox Church to protecting our environment must also be a part of the local ministry of our parishes. On this day, September 1, we are called, as members of the Body of Christ, to address the needs of our own communities concerning the environment. We are challenged to behold with sensitivity the state of the natural world and to respond decisively when we witness the degradation of natural resources and the problems of increasing air and water pollution in our cities.

All of the Orthodox patriarchs echo this theme. Each patriarch has issued strong and compelling statements urging the faithful into ecological concern. His Eminence Archbishop Lazar Pohalo from the Orthodox Church in America (Canada) provides a further perspective on this task.

The second half of Christ's great "moral imperative" ... is often described as a "command," but I would like to think of it as the truest form of morality.... Yet, surely, our own children and grandchildren are our neighbors. Even if we turned to a radical ecologically sound lifestyle today, we would still leave the next several generations with a depleted agriculture, an insufficient supply of fresh water, and large areas of formerly food producing land in a state of desiccation and ruin. The earth came to us as a sacred trust, and we should pass it on in such a condition.

Before his passing in 2009, His Beatitude Patriarch +Alexiy of Moscow and All Russia placed strong emphasis on the need to teach and maintain a right relationship to God's creation. In concert with the holy synod of Russian bishops, he issued a letter to the Russian Church on the importance of restraint in our use of the natural world.

The Orthodox Church, aware of her responsibility for the fate of the world, is deeply concerned about the problems generated by contemporary civilization. Ecological problems occupy a prominent place among them. Today the face of the Earth has been distorted on a global scale. Its bowels are being damaged as are its soil, water, air, fauna and flora. Nature which surrounds us serves as the life support system for humanity. Man however is no longer satisfied with its diverse gifts, but exploits whole ecosystems without restraint.

Human activity has acquired an ability to affect global processes and these powers increase constantly due to the development of science and technology. Industrial wastes which pollute the environment, bad agricultural technology, the destruction of forests and top-soil — these suppress biological activity and cause a steady shrinking of biological and genetic diversity of life. Limited and irreplaceable mineral resources are being exhausted and drinking water supplies are being reduced. Many harmful toxic substances have been released into the biosphere which are not part of the earth's circulation, and these are accumulating. The ecological balance has been violated. Man now has to face the emergence of pernicious processes in nature, including the failure of its natural reproductive power.

From every corner of the Christian world, the Churches are speaking with one voice. They call the faithful to repent of actions which abuse the earth and despoil its life. They invite us to respect clean water and to sustain its purity. His All-Holiness Ecumenical Patriarch Bartholomew most succinctly summarizes this miracle of water.

Water cradles us from our birth, sustains us in life, and heals us in sickness. It delights us in play, enlivens our spirit, purifies our body, and refreshes our mind.

We share the miracle of water with the entire community of life. Indeed, each one of us is a microcosm of the oceans that sustain life. Every person here, every person in the world, is in essence a miniature ocean.

## Human Health and Water Pollution

One of the world's major public health challenges is dirty water. Careful environmental stewardship could fix this problem. By definition, water pollution is any contamination of water with chemicals or other foreign substances that are detrimental to human, plant, or animal health. These pollutants include fertilizers and pesticides from agricultural runoff; sewage from industry and homes; food processing waste; heavy metals such as lead, mercury, and cadmium; chemical wastes from manufacturing and mining discharges; arsenic and rocket fuels in groundwater; gender-altering hormones and medications in our rivers and streams; PCBs, dioxins, and pesticides that find their way into our bodies; and chemical contamination from hazardous waste sites. Our world is awash in chemicals and pollutants that pose serious health risks to our families, our communities, and our environment. Worldwide, several billion people have no choice but to drink contaminated water that is harmful to their health. Every year over three million people die from contaminated water, more than all the wars and urban violence.

Virtually all types of water pollution are harmful to the health of humans and animals. Water pollution may not immediately damage our health, but after long exposure, it is inevitably harmful. Different forms of pollutants affect human health and the environment in different ways. Some examples follow:

- Heavy metals from industrial processes can accumulate in lakes and rivers. These are toxic to aquatic life such as fish and shellfish, and subsequently to the humans who eat them. Heavy metals can slow childhood development, result in birth defects, and some are carcinogenic.
- Microbial pollutants from sewage often result in infectious diseases that harm aquatic life and terrestrial life through drinking water. Microbial water pollution is a major problem in the developing world, with diseases such as cholera and typhoid fever being primary causes of infant mortality.

- Industrial waste often contains toxic compounds that damage the health of fish and those who eat them. Some of the toxins in industrial waste may only have a mild effect whereas others can be fatal. They can cause immune suppression, reproductive failure or acute poisoning.
- Organic matter and nutrients cause an increase in algae and depletes oxygen from the water. This causes the suffocation of fish and other aquatic organisms.
- Sulfate particles from acid rain can cause harm to the health of marine life in the rivers and lakes it contaminates, and can result in mortality.
- Suspended particles in freshwater reduces the quality of drinking water for humans and the aquatic environment for marine life. Suspended particles can often reduce the amount of sunlight penetrating the water, disrupting the growth of photosynthetic plants and micro-organisms.

## **Actions That You Can Take to Promote Clean Water**

Everyday household activities are major contributors to polluted residential area runoff, which is among the most serious sources of America's water contamination. When it rains, fertilizer from lawns, oil from driveways, paint and solvent residues from walls and decks, and even waste from dogs and cats are all washed into storm sewers and from there into nearby lakes, rivers, and streams – the same lakes, rivers, and streams we rely on for drinking, bathing, swimming, and fishing. Here are some ways you can help reduce polluted runoff and maintain clean water:

### **In the Church**

#### ◆ Drink clean water

Emphasize the importance of clean water. Clean water is essential for healthy living. An adequate supply of fresh and clean drinking water is a basic need for all human beings on the earth, yet millions of people worldwide are deprived of this.

#### ◆ Treat water with respect

Set an example of the right use and conservation of water. In particular don't waste water. What you do on the grounds of the parish will transfer into the homes of parishioners. Avoid the use of nitrogen fertilizers, pesticides and herbicides on parish lawns and flower gardens.

#### ◆ Post notes at key locations to encourage water conservation.

People need reminders on what to do and how to do it. By making small signs in places where water is used, parishioners will do a better job of conserving water.

◆ Keep water systems in good maintenance

Repair all water leaks, don't let water hoses run without oversight (or a timer), prevent even the smallest pollution of water.

◆ Ensure that toilets are low water users

The simple act of placing a brick in the toilet water storage tank will save water. Test it to make sure that sufficient flow remains to remove wastes with one flush.

◆ Practice water conservation

Minimize lawn watering, encourage individuals in the parish to reduce water use, both at church and at home, by hanging signs in kitchens and bathrooms.

## **In the Home**

◆ Recycle and dispose of all trash properly

Never flush non-degradable products – such as chemicals, disposable diapers or plastic tampon applicators – down the toilet. They can damage the sewage treatment process and may end up littering beaches and waterways.

◆ Use nontoxic household products

Discarding toxic products correctly is important, but not buying them in the first place is even better. Ask local stores to carry nontoxic products. For examples of safe substitutes for toxic household products, check the EPA's EnviroSense website.

◆ Find methods that respect water

Use efficient plumbing fixtures. Studies show that roughly 73 percent of the water you use in your home is flushed down the toilet or washed down the shower drain. Toilet dams or bricks placed in your toilet tank can save water every time you flush – which amounts to 13,000 gallons per year for a family of four. Low-flow toilets and showerheads also yield major water savings. Repair faucet drips promptly; a dripping faucet can waste 20 gallons of water a day, a leaking toilet more than 200 gallons. Operate the dishwasher and washing machine with full loads.

◆ Use low-flow technology

Replace showerheads and hose nozzles with low-flow models, put a water bottle or other object in the toilet tank to displace a certain amount of water, or buy a low-flow toilet. Some of these methods will reduce water waste by half.

◆ Consider grey water usage

Water from your shower or sinks can be safely used in your garden or on your lawn. This plumbing method reduces the amount of water that drains into your sewer and helps to conserve water. It does require some replumbing of sink and bath drains. Remember to use biodegradable soaps that do not harm your garden.

◆ Remove lead from your water

Before 1930 lead was routinely used in water pipes. After 1949 the solder holding copper pipes together still contained lead. If you still have lead pipes, replace them with stainless steel or copper. For the health of your family, remove all old lead pipes or lead-soldered connections.

◆ Save a flush

One toilet flush in the United States wastes the same amount of water that the average person in Asia or Africa will use all day for washing, drinking, cooking, and cleaning.

◆ Minimize water use

Turn off the tap when possible while washing dishes, washing hands, brushing teeth, and showering

◆ Use a home water filter

A home water filter removes lead and a variety of harmful chemicals from your tap water. Across America over 40% of water districts are not in compliance with EPA water quality standards and inadvertently deliver polluted water to homes. For best results, obtain a filtration system that uses activated carbon and reverse osmosis.

## Outdoors

Sewage overflows and runoff from yards, farms, and city streets close thousands of miles of beaches each year and taint our food supply and drinking water. The good news is that there are many things that you can do to help America clean up. Here are some simple actions to help stem the tide of polluted runoff – and clean up and conserve our fresh waters.

◆ Manage runoff from roofs and walkways

Redirect rain gutters and downspouts onto soil, grass, or gravel areas. This helps to restore underground water supplies. Planting vegetation at lower elevations than nearby hard surfaces allows runoff to seep into soil.

◆ Maintain septic systems properly

Clean out any septic tanks that you may have every three to five years. Effluent from failed or poorly maintained septic systems often contaminates groundwater. Monitoring and cleaning your system regularly also saves money by prolonging the life of the system.

◆ Avoid over-watering lawns and gardens

Use slow-watering techniques on lawns and gardens. The over-watering of lawns can increase the leaching of fertilizers into groundwater. Trickle or "drip" irrigation systems and soaker hoses are 20 percent more efficient than sprinklers. If you can't

apply drip irrigation, be sure to water early in the morning or late in the evening to conserve water and reduce moisture loss through daytime evaporation. Water only when it is needed.

◆ Use natural fertilizers

Apply natural fertilizer such as compost, manure, bone meal, or peat whenever possible. Ask your local hardware and garden supply stores to stock these natural fertilizers. You can also buy a composting bin at a garden supply, hardware store, or by mail. Composting decreases the need for fertilizer and helps soil retain moisture. If you don't know how to compost, visit [The Compost Resource Page](#) on-line or the EPA's composting pages.

◆ Decrease impervious surfaces around your home

Hard surfaces increase rainwater runoff. Having fewer hard surfaces of concrete and asphalt will improve drainage on your parking lot or around your home and yard. For landscaping use vegetation, gravel, or other porous materials instead of cement; install wood decking instead of concrete, and interlocking bricks, wood chips, or stones for walkways.

◆ Dispose of hazardous household products properly

Keep paints, used oil, cleaning solvents, polishes, pool chemicals, insecticides, and other hazardous household chemicals out of drains, sinks, and toilets. These products contain harmful substances – such as sodium hypochlorite, petroleum distillates, nitrogen fertilizers, ammonia, and formaldehyde – that can end up in nearby water bodies. Contact your local sanitation, public works, or environmental health department to find out about hazardous waste collection and disposal. If a local program isn't available, request one or initiate your own effort for the parish.

## **Maintaining Your Car**

◆ Recycle used motor oil

Never pour waste oil or paint solvents into gutters or down storm drains; always resist the temptation to dump wastes onto the ground. One quart of motor oil that leaks into groundwater or a stream can pollute 250,000 gallons of water. If you don't have a place to recycle used motor oil, ask your local public works department to create one. When you buy motor oil, ask if the store or service station has a program to buy back waste oil and dispose of it properly. Keep up with car maintenance to reduce the leaking of oil, coolant, antifreeze and other hazardous fluids.

◆ Avoid motor oil drips, leaks and spills

Oil on pavement soon runs off into groundwater or the sewer during a rain. Oil is a major polluter of groundwater, lakes, and even the oceans. Never dump used motor oil into the sewer or on the ground

◆ Keep your auto clean

Regular car washing helps maintain your vehicle. Nothing protects your auto's paint more than regular washing. To minimize the frequency of car washes, park in a garage whenever possible. Avoid parking under trees, which may attract birds or emit damaging sap. Avoid driving through standing water, or on gravel or muddy roads.

◆ Be "GREEN" when washing your car

The most economical wash is usually done at home. This should be your last resort. Residential hoses typically dispense ten gallons per minute. Average car washes use a minimum of 65 gallons of clean water. Use a hose nozzle attachment that produces a strong spray at low pressure, and that allows complete shut-off when not in use. Remember that the contaminated water goes into the storm drainage system or the groundwater. If you must do it yourself, hand-wash your car on the lawn with a bucket of biodegradable soapy water, rags and a hose. Just turning off the hose between rinsings can save up to 100 gallons. Dispose of excess soapy water down the toilet. If you don't want to wash it yourself, choose a car wash that recycles its water.

◆ Use a commercial carwash that recycles

Professionals can clean your car better, and use less water than a home-wash. Some carwash operations use as little as eight gallons per vehicle.

The dumping of industrial, chemical, or nuclear waste into a river constitutes an arbitrary, abusive and destructive interference on the part of humanity. The pollution or contamination of river waters damages the entire ecosystem of the region.

- HAH Ecumenical Patriarch Bartholomew  
October 26, 1999

If we want to improve the material and psychological conditions for humanity, we are obliged to recognize and respect the natural order, harmony and balance, and to avoid causing disarray in the natural forces, which are released when the universal harmony, especially the ecological one, is audaciously overturned.

Nature was placed by God into the service of man, on the condition that man would respect the laws that pertain to it and would work in it and protect it (cf. Genesis 2:15).

- HAH Ecumenical Patriarch Bartholomew,  
2003

