Editor’s note: Sustainability has become an important concept in the water and wastewater industries. This article, adapted from remarks Dr. Shinn made at Berea College’s Fall Convocation on August 24, 2002, reminds us about individual and collective responsibility in creating a sustainable future.
the scientifically persuasive and powerfully written book, *Living Downstream* (1998), Sandra Steingraber, a biologist, offers a literal and figurative portrayal of what it means to live downstream from agricultural, industrial, and other forms of pollution. A victim of bladder cancer whose causes were most likely environmental, Dr. Steingraber develops a convincing scientific case that our bodies are carrying a collective toxic chemical burden that threatens our health and, especially, that of our children. She describes the creation of toxic dioxins as the by-products of burning household garbage, hazardous waste, and similar industrial processes. She then presents numerous case studies and scientific descriptions of the ways in which these dioxins and other hydrocarbons are transmitted through the air, water, and soil to our bodies.

At one point in her studies, she returns home to her native Illinois to examine the pollution of rivers and underground aquifers by agricultural and industrial chemicals such as atrazine, DDT, and PCBs, and she questions why a disproportionate percentage of her family and community were susceptible to cancer. She learned that in 1993, 91 percent of Illinois rivers and two of the four wells serving her small town showed high levels of pesticide contamination, especially of agricultural chemicals like atrazine. She then shows how such chemicals are linked with the types of cancer that have a higher incidence in her family and community. The studies and evidence she uses support the World Health Organization’s conclusion that as much as 80 percent of all cancers are environmentally caused. One supporting example is the incidence of cancer in adopted children. Counter to common beliefs about the genetic roots of many cancers, if adoptive parents die from cancer before the age of 50, their adopted children have a five times greater chance of getting cancer than if the children’s natural parents contract cancer. These and other such studies suggest that the carcinogenic power of a child’s living environment is stronger than their genetic inheritance.

A wide array of research findings and conclusions are presented in *Living Downstream* that include the following:

1. Cancer rates have skyrocketed by 49.3 percent from 1950 to 1991, and even with the removal of lung cancer, which is usually a smoker’s (i.e., a lifestyle) disease, cancer rates still went up by 35 percent.

2. While 25 percent of Americans in 1950 could expect to contract cancer during their lifetimes, the rate was 40 percent in the year 2000.

3. Workers in polyvinyl chloride factories that produce children’s toys, credit cards, lawn furniture, and food packaging materials have incidences of liver cancer 3,000 times higher than the general population.

4. We still make, use, sell, or import from abroad more than 200 chemicals and compounds that are listed by the U.S. Environmental Protection Agency as carcinogens likely to cause cancer.

5. DDT and PCBs create cumulative toxic burdens in their fish hosts such that fish in 40 percent of the rivers in America are inedible.

6. Due to such pervasive environmental pollution, a study in the early 1990s revealed that the breast tissue of 25 percent of the nursing mothers carried a toxic burden so high that their milk did not pass U.S. Food and Drug Administration minimums for chemicals such as DDT and PCBs.

In a presentation this brief, it is impossible to convey the careful arguments, documented scientific studies, and thoughtful conclusions that *Living Downstream* conveys. I would encourage everyone to read this provocative study that links various cancers to their obvious or likely environmental causes. Reading this book caused me (a) to reflect on the critics of environmental studies like
Steingraber’s and (b) to think in new ways about living upstream on the rivers of life literally and metaphorically understood.

An Information Stalemate

Even as I repeated the statistics and results of studies in Steingraber’s book, I could hear a cacophony of critics’ voices. Regardless of the quality of any ecological study, the preponderance of any evidence of environmental degradation, or the rise in environmentally induced cancer rates, there are those who cite other statistics and studies to refute all conclusions that suggest that the environment is worsening or human health is imperiled—at least by environmental causes. Some critics will want to say that even with Sandra Steingraber’s impressive and carefully researched work, there are too many gaps in scientific knowledge to link environmental causes to various cancers for us to agree with her conclusions. One critic says she overly ignores the lifestyle influences (such as diet) that are linked to some of the cancers she analyzes. But even more to the point, Bjorn Lomborg argues in his book *The Skeptical Environmentalist* (2000) that the environment is actually getting better, not worse. As a political scientist and statistician, Lomborg recalculates the numbers and statistics used by international agencies and environmental groups around the world and argues that they are often misleading or incorrect. With the same passion he used when he was a member of Greenpeace, Lomborg belittles all claims of environmental pollution and actually argues that the land, air, and water on this earth are less polluted now than 25 years ago. And in refutation of Steingraber’s thesis, Lomborg says that most of the increase in cancer rates (which he does not dispute) can be attributed to increased longevity of the world’s population. Though Lomborg’s study has been widely criticized by reputable scientists, his work continues to be widely read and used by environmental critics.

Such is the nature of the debate that “living downstream” of the environmental and sustainability movements often produces. What are we who are not scientists to make of Steingraber’s and Lomborg’s conflicting claims? Paralysis is often the result of

Berea College has undertaken several initiatives—from recycling programs to building renovations—that make its campus more sustainable and ecologically efficient. The college built a 50-apartment “Ecovillage” that boasts a 75 percent reduction in energy and water use, transforms the sewage into swimmable water, and uses edible landscaping for practical and aesthetic purposes. The photos in this article are of Berea College.
such downstream arguments and debates. So why have institutions such as Berea College invested so much time, attention, and new economic resources to ecological sustainability? Where is the irrefutable proof for the environmental crisis that such dramatic actions seem designed to address? Why should we place such emphasis on preventative measures when some scientists and engineers claim they can find solutions for any and all environmental challenges? In response to these and similar questions, I suggest that we shift the paradigm of our debates by asking, What would it mean if we adopted the view that we are living upstream, rather than down? How would the assumptions of our debate change? What new considerations would come into play?

**Different Solutions Require Different Perspectives**

There is an oft-repeated parable or folktale that I have heard in various forms (including Steingraber’s book). The essential outline of the story is this. There once were villagers who lived along a river and noticed that people were flowing downriver past their village and crying out to be saved. The villagers first used poles and then made boats to rescue the people in the river. Then, as more and more people were found in the river, the downstream villagers built a pier out into the river to better assist in their rescue. Finally one day, a villager asked, “How are these people getting into the river?” So, a scouting party went upriver and discovered a hostile tribe who was throwing their enemies into the river. Successful peacemaking efforts stopped the flow of people in this river rescue mission. Do you notice the difference in the problems to be solved when we think in an upstream versus a downstream way? To think and live downstream is to describe the pollution of others and debate the problems we inherit. To live and think upstream requires a whole new mindset, which focuses upon our actions as the legacy we put in the stream for future generations.

When we view ourselves as living downstream from others’ decisions and actions, we usually focus on the inherited elements of our current situation and debate our current options and actions. That is much like the debate over whose environmental scholarship we should believe, Steinbraber’s or Lomborg’s. Such debates often lead to inaction. But to understand ourselves as living upstream from future generations requires much more focus on our intentions and actions rather than a debate on what our inheritance from the river is and what we want to make of it. Thus, one clear principle of upstream living and thinking is the precautionary principle. This principle requires a shift in perspective to upstream thinking that says we are responsible for what we put into the river of life (literally and metaphorically), and thus our care and compassion for future generations requires caution when we act.

The Iroquois tribes have a decision-making principle, which says that each decision should be made with seven generations in mind. With an upstream mindset, would we have insisted on irrefutable proof of DDT’s deadly toxic effects before we acted in 1972 to end its use (10 years after Rachel Carson’s book Silent Spring) or should we have taken greater precautions in admitting new chemical compounds into our environmental systems so that the burden of proof rests on the creator of the compound (as the FDA does for food) rather than on the environment and us humans whose health will be the testing grounds? Such a precautionary principle would also seek reduction of the 6.3 billion tons of hydrocarbons being released into the atmosphere today (versus 1.6 billion tons in 1950) before we can demonstrate scientifically just how serious the global warming problem is and what its impact will be on future generations. Living upstream means that we will act as though we are inextricably linked with our natural environment and the people who share it with us now—and in the future. This is the heart of the precautionary principle that makes ecological actions a positive choice we can make as opposed to a fearful response to conclusively proven environmental dangers. Living upstream as self-conscious human agents choosing to act with caution stands in stark contrast to living downstream with a worldview of technological control of the environment that requires scientific proof and solutions before we decide or act.

A second principle emerges from the perspective of living upstream that I will call the sustainability principle—and others have called “voluntary simplicity.” In our downstream mode of thinking we look at our ecological inheritance of natural resources (3.8 billion years of it) as ours to use as we see fit. Downstreamers often say that engineers and scientists will discover or create replacements for fossil fuels or precious metals. However, if we see ourselves as living upstream of future generations, we must ask what natural inheritance our children and grandchildren will need and make that part of our assessment of our use. In its most simple form, this is the principle of sustainability; namely, to live in such a way that our use of natural resources, including the earth’s air, water, and land systems, does not deny future generations access to similar resources and opportunities.
Dr. David Orr of Oberlin College in a speech at Berea College in 1998 said that if all of the current world population of six billion people were to attain a middle class American lifestyle, it would take two-and-a-half earths to provide the natural resources required. If we are living upstream of future generations that will expand to more than 7.5 billion in 2050, those of us in the U.S. cannot simply conserve natural resources; we need to reduce significantly our use of them. With less than 10 percent of the world’s population, the U.S. uses nearly 40 percent of the fossil energy produced each year. Such enormous use (and its increase each year) is not sustainable.

Choosing to live with less impact on the environment and its natural resources is what Duane Elgin and others have called the principle of “voluntary simplicity.” Voluntarily choosing to reduce our use of resources by living a more simple life is accepting the fact that we do live upstream of future generations and that our current lifestyles are too extravagant for the Earth to bear. Berea’s historical commitment to “plain living” is now contained in its current Workplace Expectations, which equate plain living with sustainable living. In their book *Natural Capitalism*, Hawken and Lovins argue that accepting our finite natural resources as a consideration in our economic system would require us: (a) to build in the real cost of materials and their disposal into every product’s cost; (b) to create huge incentives for reducing our use of natural resources, and thereby, (c) to create a more stable and equitable world economy. If “natural capitalism” were practiced, then greater simplicity of lifestyles and large reductions in the use of natural resources could occur in developed economies and still provide lives of considerable comfort and meaning. Certainly this is the new perspective that one gains from living upstream with voluntary simplicity.

A third principle that upstream thinking requires is that of creative and adaptive learning. The notions of precaution and sustainability in living apply to more than just ecological considerations. They must be understood as applying to the environmental, social, economic, and spiritual components of living. Therefore, our perspective of living upstream must include all elements of life and new ways to conceive problems and solutions. Living upstream requires us to focus on putting new and life-giving contributions into the river for future generations to inherit. We cannot solve today’s challenges and crises using the same logic and ways of thinking that created these problems in the first place. Thus, our contributions will often be the result of creative and adaptive learning that offers genuinely new ways of thinking and acting. Just think of the short-sightedness of the living downstream mindset. We grouse about what others have done to us or our kin in the past and let such negative feelings direct our future actions. We may speak about receiving the short end of the economic, educational, or social stick and carry that inheritance as a limitation on what we imagine for ourselves and future generations.
Living downstream can encourage holding grudges, blaming others for our deficiencies, and taking a fatalistic view of life. In this mindset, the past often controls the future-oriented outcomes we put into the river of life. Conceiving ourselves as living upstream urges us to ask how we can overcome the limitations of the past through creative problem-solving and learning that stems from an adaptation to new conditions in our local and global environments.

The Future Is Now

So the three principles of upstream thinking—precaution, sustainability, and creative and adaptive learning—apply not only to our environmental heritage, but to all aspects of living in the 21st century. The three principles of living upstream can apply to how we use our natural resources, to new ways of governing ourselves, to new ways of using our labor program, or to reconceived structures of general education. And as we reconceive ways to realize Berea’s mission through our planning processes, we are giving shape to the river in which future Bereans will swim. To focus on our contributions to the river requires both courage and new ways of thinking and acting. For it is our actions for which we will be held accountable, not those of the others that we have received. This is what makes living upstream both an exciting adventure and an enormous responsibility.

Choosing to view our challenges from an upstream perspective can revitalize each of us and the communities in which we work and live. It is we who can choose not to throw others in the water who then need to be rescued downstream. It is we who can decide to limit the questionable chemicals we will allow into our water, air, and earth. It is we who can think of the natural resource needs of future generations in the voluntary simplicity of our lives today. It is we who can change the structure of our collective work and decision-making that assumes trust rather than suspicion. It is we who live upstream in our spiritual lives who also welcome all peoples of the earth. Generations of Bereans have lived upstream in their sustainable living and creative problem solving—may such be said of our generation as well.

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