LIVING DOWNSTREAM

In the Community

A guide for using the film as a catalyst for change

WWW.LIVINGDOWNSTREAM.COM
LIVING DOWNSTREAM

IN THE COMMUNITY

A GUIDE FOR USING THE FILM AS A CATALYST FOR CHANGE

By Chanda Chevannes
In Collaboration with Sandra Steingraber

WWW.LIVINGDOWNSTREAM.COM
FOR MIKE SMITH,

whose enthusiasm for this project was infectious,
whose phone calls came at the right time,
and whose voice always made us smile.

Mike’s death from cancer brought deep sorrow,
yet knowing him gave us a lasting joy.
CONTENTS

WHAT’S IN THIS GUIDE? .................................................................................................................. XIII
FOREWORD BY SANDRA STEINGRABER ................................................................................ X V
PREFACE .......................................................................................................................................... XIX
ACKNOWLEDGEMENTS ................................................................................................................ XXI

LIVING DOWNSTREAM | THE FILM

ABOUT THE FILM .......................................................................................................................... 1
THE BOOK THAT INSPIRED THE FILM .................................................................................... 3
THE FEATURED EXPERTS ........................................................................................................... 5
THE EDUCATIONAL DVD ......................................................................................................... 9

WALKING UPSTREAM | THE MOVEMENT

ABOUT THE ENVIRONMENTAL HUMAN RIGHTS MOVEMENT .............................................. 21

HOLD A SCREENING .................................................................................................................... 23
  PART 1: GOAL AND VISION ................................................................................................. 24
  PART 2: LOGISTICS ................................................................................................................ 27
  PART 3: PROMOTION ............................................................................................................. 32
  PART 4: AUDIENCE ENGAGEMENT .................................................................................... 35
  PART 5: NEXT STEPS ............................................................................................................ 41

TRAIN OTHERS TO HOLD A SCREENING ............................................................................. 45

LEAD A WORKSHOP ................................................................................................................... 49
  WHAT YOU NEED TO KNOW ............................................................................................... 50
  WORKSHOP 1: GAINING THE KNOWLEDGE THAT INSPIRES CHANGE ....................... 54
Workshop 2: Finding Your Place in the Movement ........................................... 66
Workshop 3: Taking Public Action ................................................................. 76

Create a Campaign ........................................................................................................ 91

Additional Information and Resources

Background Information ......................................................................................... 97
Glossary of Terms ........................................................................................................ 99
Facts and Figures ....................................................................................................... 113
The Precautionary Principle .................................................................................. 117
Fossil Fuels and Cancer Prevention ...................................................................... 119
Learning from Europe .......................................................................................... 123
Stories from the Movement .................................................................................. 127
Evaluation Form ....................................................................................................... 133

Workshop Handouts ............................................................................................... 135
Workshop 1
Myths about Cancer and Chemicals .................................................................. 137
Chemical Exposures at Home .............................................................................. 141
Chemical Exposures in Our Institutions ............................................................. 145
Chemical Exposures in Our Communities .......................................................... 149
Workshop 2
Common Concerns about Toxics ......................................................................... 153
Assessing Challenges and Opportunities ............................................................ 157
Building on Your Strengths ................................................................................ 159
Workshop 3
Chemicals Quiz ...................................................................................................... 163
Broken Squares Template .................................................................................... 169

Recommended Reading and Viewing ................................................................. 171

Living Downstream Online ................................................................................ 173
Cancer and Environmental Health Websites ...................................................... 177
Film and Social Change Websites ....................................................................... 185
There was once a village along a river.
The people who lived there were very kind.

These residents, according to parable,
began noticing increasing numbers of drowning people
caught in the river’s swift current.

And so they went to work devising ever
more elaborate technologies to resuscitate them.

So preoccupied were these heroic villagers with rescue and treatment
that they never thought to look upstream to see who was pushing the victims in.

**THIS GUIDE IS A WALK UP THAT RIVER.**
All across North America, people are using the film *Living Downstream* to create change in their communities. And you can too. Use the ideas in this guide to raise awareness about the links between toxic chemicals and cancer incidence, to encourage public involvement in prevention of environmental contamination, and to brainstorm ways to take action to improve your community’s environmental health.

A supplement to the *Living Downstream* Educational DVD, this guide supports the creative use of the film by organizations, community groups, activists, and other professionals. Its contents have been designed for easy customization according to your group’s mandate, goals, and expertise. The tools within will help you encourage others to think differently about environmental health. They will help you move people beyond questions about preventing personal exposures to realizing that true prevention requires public efforts to stop the manufacture of toxic chemicals.

This guide is divided into four sections:

**INTRODUCTORY CONTENT**

This section includes a thought-provoking foreword by Sandra Steingraber about the reasons to take action, a preface explaining the inspiration for this guide and its accompanying resources, and acknowledgements of the many people and groups who made this initiative possible.

**LIVING DOWNSTREAM | THE FILM**

This section includes synopses of the film and book, biographies of the featured experts, and a detailed list of the contents found on the Educational DVD.

**WALKING UPSTREAM | THE MOVEMENT**

This section is the heart of the guide. It outlines four substantive ways for you and your group to effect change:

- **Hold a screening** of *Living Downstream* to raise awareness and inspire community members to take action. (Beginning on page 23.)
• **Train others to hold a screening** of *Living Downstream* through a simple step-by-step process. (Beginning on page 45.)

• **Lead a workshop** that energizes participants and helps them make a personal connection to the issue of environmental health. Choose one of three possible workshops, or conduct them all. (Beginning on page 49.)

• **Create a campaign** by using *Living Downstream* as the foundation for a large-scale project. (Beginning on page 91.)

## Additional Information and Resources

This section offers a wealth of information and handouts. It provides the in-depth conceptual and scientific information that will add to your knowledge and empower you in your work. Designed for quick reference and easy exploration, this section includes the following resources, which can be reproduced and distributed:

• **Background information** that can be used in building your knowledge or distributed as handouts to members of your organization or community. This section includes a glossary of terms, facts and figures, a discussion of the precautionary principle, and information on Europe’s precautionary approach to chemical regulation. It also includes a range of brief stories from the environmental health movement that you can use to inspire workshop participants, screening audiences, or your organization’s staff and volunteers. The final page of this section contains a short sample evaluation form for use in monitoring participants’ response to screenings, workshops, and other *Living Downstream* events.

• **Workshop handouts** designed specifically for the workshops in this guide yet generic enough to be adapted for other uses.

• **Recommended reading and viewing** lists, complete with annotations, which will guide you to a range of useful websites, books, films, and videos. You will also find details about [www.livingdownstream.com](http://www.livingdownstream.com), other publications by Sandra Steingraber, and more *Living Downstream* resources.

*Living Downstream ~ In the Community* and *Living Downstream ~ In the Classroom* (a guide for educators) are both available for download (in PDF format) at [www.livingdownstream.com/guides](http://www.livingdownstream.com/guides). We welcome your feedback on the film and the guides. Please email us at dvd@livingdownstream.com.
Half my life ago, I took a leave of absence from graduate work and traveled to East Africa. There I joined a human rights project investigating the interconnections between famine, warfare, and environmental degradation. I began my research along the Blue Nile River in a downstream refugee camp, where I interviewed refugees from the mountainous communities upstream.

One afternoon, an elderly farmer arrived in the camp. He was said to have witnessed a hillside slide into one of the Nile’s tributaries—after the army had built a road for tanks. According to rumor, the resulting siltation had forced the population of an entire village to flee. Their fish all died, my translator supposed.

I went looking for this man and asked if he would grant me an interview. He said yes, but on one condition. He wished also to interview me. Laughing, I agreed. So, after he had described for me the destruction of a river that had made him an environmental refugee, he turned the tables.

_Tell now about the rivers in your homeland_, he asked.

I was happy to oblige. My father built the house I grew up in on the east bluff of the Illinois River. I described this river to my interviewer—its barges, bridges, and sandy banks—and told him that it was my most beloved landscape. Just like his river was for him.

He pursued me further.

_Tell now about the fish in your American river. How do they taste to you?_

This was a question I could not answer. In all the years I lived in Illinois, the fish were so contaminated that government advisories warned us against eating them. I turned my thoughts to other rivers I had
lived near—the Mackinaw River, the Huron River, the upper stretches of the Mississippi—and realized that they too carried fish advisories. In fact, I had never eaten fish from any river. Ever.

My reply was translated, and my new friend grew quiet. After a long silence, he asked me another question I could not answer:

So why are you here in Africa?

The truth was that I had just passed the five-year mark of my diagnosis with bladder cancer, a disease with known links to the environment. Untethered from hospitals at last, I didn't want to think about cancer anymore. I was eager to travel abroad and do field research on—well—ecology and human health.

The irony was not lost on my new friend. He explained that he and his people were already organizing against the men who had poisoned their river—and were planning to return home as soon as possible and drive out the army.

You must go home, too, he said solemnly, and confront the ones poisoning your river. Go talk to your fish.

I like to think that I did. Living Downstream, the book and the film, is the result. The very words living downstream are intended as a statement of gratitude to that anonymous Ethiopian farmer who first encouraged me to go home and confront sources of pollution in my own community. And since the release of the first edition of the book in 1997, I’ve had the chance to travel with Living Downstream to many other communities. From my conversations in auditoriums and church basements across several time zones, I’ve made three observations.

The first observation is that science and citizen activism can work hand in hand. Throughout the 1990s, for example, women with breast cancer asked the research community important questions about the possible role of environmental pollutants in cancer causation—and insisted on answers. Scientific research was redirected by these questions and funding was channeled down new lines of inquiry.

My second observation is that most people are intensely curious about the ecology of their own community—especially if they perceive that its integrity is threatened. In my Illinois hometown, public hearings on the proposed expansion of a hazardous waste site drew a standing-room-only crowd. When residents learned that the dump was located overtop the drinking water aquifer, they became deeply interested in learning about the geological deposits of sand and quartz that make up that aquifer.

My third observation is this: what too often dampens all this cooperation and natural curiosity is a paralyzing blanket of fatalism. Fearful of despair, many people decide to not investigate environmental contaminants. They have convinced themselves that these problems are intractable and unsolvable, so
why learn about them? That attitude runs counter to the fighting spirit that cancer patients bring to their medical lives. Instead of defeatism, why not bring that same bravery and hopeful determination to the circumstances of our environmental lives?

When caring for the critically injured, emergency responders are trained to say, *I’m not giving up on you.* That’s the same message an Ethiopian farmer encouraged me to carry back to the place where I grew up. Surely it’s a phrase that applies to all the communities where we live. Our fish. Our rivers. Our homes.
I first read Sandra Steingraber’s book *Living Downstream* when I was just out of high school. It amazed and impressed me. It touched me. Sandra’s book changed the way I viewed our bodies and our environment. Her words on the page painted vivid images in my mind. The book felt utterly cinematic to me. I knew someone would make a film about it. I just didn't know it would be me.

When I first contacted Sandra to ask if she would be interested in participating in a documentary adaptation of *Living Downstream*, I didn't yet have a clear sense of what the film would be. I knew only that I wanted it to have the same impact on audiences that the book had on me. I wanted the film to change the way people saw our world and our use of chemicals in it.

*Living Downstream*, the film, was always meant to be a starting point for the general public to begin thinking about the links between environment and health. I knew that many people who saw the film would want to take the next step and start working for change. So, early in the filmmaking process I began thinking about creating additional media and materials to help these individuals move from passive viewers to active participants.

Thus, I worked with the *Living Downstream* team to create a collection of film, print, and online tools, with input and collaboration from intended end users. First we created the Educational DVD, which includes a range of bonus features that act as instructional aids, such as mini documentaries for exploring specific topics in greater depth. We then created two extensive guides to accompany the Educational DVD (available in both print and electronic formats). For educators we created *Living Downstream ~ In the Classroom*, containing detailed discussion guides, lesson plans, student assignments, and handouts. For organizations, community groups, activists, and other professionals we created this guide, *Living Downstream ~ In the Community*, which is intended to bolster the public education and outreach efforts of groups already engaged in environmental health issues. It provides easy-to-use tools for holding a screening, training others, leading workshops, and creating campaigns using *Living Downstream*—all to raise awareness and inspire action within your community. Lastly, we developed the *Living Downstream* website to support online dialogue and learning. See it at www.livingdowstream.com.
As I worked on these resources, I had the exciting opportunity to learn about the individuals and organizations blazing the trail for action in environmental health. And there are many. For example, in Illinois, The Land Connection is working to pair farmers with farmland slated to become organic. In British Columbia, a coalition of eighteen organizations that includes the Canadian Cancer Society and Canadian Association of Physicians for the Environment is actively working for a ban on the cosmetic use of pesticides (similar bans already exist in four other Canadian provinces and hundreds of municipalities). Canadians for a Safe Learning Environment is working toward the goal of providing all students in the nation with access to healthy schools. Health Care Without Harm is doing the same for the worldwide health-care system by transforming one hospital at a time. And Peaceful Uprising is using nonviolent protest in an effort to solve the climate crisis. (As Sandra points out in her book, synthetic chemicals are largely derived from petroleum and coal—and the petroleum and coal industries are responsible for much of the toxic emissions in North America. For more on the connections between fossil fuels and cancer prevention, see page 119 of this guide.) You will see these and many other groups referenced in the pages that follow.

Sandra speaks often about an emerging environmental human rights movement. The parable that opens the book, the film, and this guide tells of people living downstream who fail to look upstream for the source of their problems. Like the parable, the movement Sandra describes challenges the idea that we must live—and die—passively downstream. It insists that we begin walking upstream for change. We don't have to go it alone, but we do have to select a path and begin moving.

I believe we each have a role to play in this new movement. By using *Living Downstream* and this guide, I hope you will find your role—and help others to find theirs—in the upstream walk for change.

Chanda Chevannes
Filmmaker of *Living Downstream*
Author of *Living Downstream ~ In the Community*
The concept for this guide began during pre-production of the documentary *Living Downstream*. In that film project, I benefited from the tremendous skill and boundless energy of countless crew members. Additionally, many individuals—from toxicologists to nurses and from public health experts to filmmakers—gave their time to review the film for scientific accuracy and narrative cohesion. While they are too numerous to name here, they all deserve my greatest thanks and have been recognized in the credit list at the end of the film. However, there are a few individuals from that film project to whom I owe an unusually enormous debt; they are Nathan Shields, Benjamin Gervais, Trent Richmond, J.R. Fountain, P. Marco Veltri, and Randall Wallace.

Before the film was even completed, we launched an outreach project aimed at promoting it, partnering with organizations, and creating a range of complementary resources. I am grateful to Marni Rosen, who helped me to see the value of this undertaking early on, and to Adam Shamoon, my creative and diligent outreach manager, who spearheaded this project and led a team of enthusiastic outreach assistants: Irene Meimaris, Zach Pedersen, Kathy Threlkeld, Kaitlyn Kochany, and Anam Abbas. I am also thankful to Sandra Steingraber’s team, who shared her with this project and provided support for our work in many ways: Merloyd Lawrence and Lissa Warren of Da Capo Press, Charlotte Sheedy and Meredith Kaffel of the Charlotte Sheedy Literary Agency, and Jodi Solomon of Jodi Solomon Speakers Bureau.

My work on this guide was heavily influenced by my past experiences with three amazing organizations: the Homelessness Action Group, a small volunteer-led organization in my hometown of Toronto that once worked to address the root causes of homelessness; Raising Voices, a dynamic nonprofit organization based in Kampala, Uganda, that works to prevent violence against women and children in sub-Saharan Africa; and the Alternatives to Violence Project, an international training program that provides conflict resolution workshops in prisons, schools, and the wider community. These groups taught me a great deal about grassroots activism, including the power of community mobilization, the value of group process, and the importance of creative resources.

This guide and the DVD bonus features could not have been all that they are without the thoughtful comments of many individuals who have dedicated themselves to the issue of environmental health:
Mia Davis formerly of the Campaign for Safe Cosmetics; Gary Cohen of Health Care Without Harm; Kathleen Cooper, Fe de Leon, and Anne Wordsworth of the Canadian Environmental Law Association; Dorothy Goldin Rosenberg and Marie Lorenzo of Women's Healthy Environments Network; Genon Jensen, Anne Stauffer, and Lisette van Vliet of Health and Environment Alliance; Joseph Guth, Nancy Myers, Carolyn Raffensperger, and Ted Schettler of Science and Environmental Health Network; Elizabeth Saunders of Clean Water Action; and Meredith Small of Toxics Action Center. I am particularly indebted to Brenda Afzal, formerly of the Environmental Health Educational Center at the University of Maryland School of Nursing, whose thoughtful critique and analysis helped me to realize the full potential of this document.

I am incredibly grateful to the team that labored with me through the various iterations of this publication. Thanks to copy editor and fact checker Susan Fitzgerald for her amazing attention to detail and to graphic designers Adam Hunt and Dominic Wong for bringing so much of themselves to this project. It is also thanks to Adam Hunt’s hard work and talent that we are able to offer such a comprehensive and beautiful Educational DVD. Liz Armstrong played a vital role in the creation of both this guide and the film, including acting as reviewer, researcher, and author on several pieces in this guide. And I am grateful to my family: Nathan, Hannah, Henry, Jill, Leighton, Margo, Brian, Beth, Stuart, Garrett, Adam, Heather, and Bethany. Throughout this journey, they provided support, encouragement, and advice; offered babysitting; or were willingly babysat. In particular, it is because of my partner Nathan’s infinite patience and understanding that I had the time and focus to dedicate to this work.

The outreach project, including the two guides, was funded by The Ceres Trust, the Kendeda Sustainability Fund of the Tides Foundation, The Fledgling Fund, Adelaide Gomer, and the Ontario Arts Council. The outreach project and film were produced in association with Insight Productions, Inc. and Women’s Healthy Environments Network. The film itself was funded by The Ceres Trust, the Kendeda Sustainability Fund of the Tides Foundation, The Canadian Independent Film and Video Fund, Canada Council for the Arts, the Park Foundation, the Canadian Auto Workers Union—Social Justice Fund, the Cancer Prevention Challenge (Ya Ya Sistahs & Bruddahs Too! and Team Vitality), Doris Cadoux and Hal Schwartz, and Saunders–Matthey Cancer Prevention Coalition. Special thanks to Judith Kern, Mike Smith, Diane Ives, and Adelaide Gomer for championing this project’s vision from beginning to end. All our funders operated at arm’s length: they provided us with the funding for this work but trusted us to make the creative and editorial decisions. For the freedom their funding provided and for showing such confidence in us, I am profoundly grateful.

Finally, I am particularly indebted to two amazing women for collaborating with me on this project: Stephanie Sauvé and Sandra Steingraber. The substantive and stylistic editor on this piece, Stephanie worked with me on its conception and execution every step of the way. Her dedication, encouragement, creativity, and fearlessness made it possible for me to take this guide much further than I ever expected. To Sandra, I owe my deepest thanks on countless levels. For writing such a compelling and inspiring book. For allowing me to adapt it into a documentary film. For engaging in the making of the film and the writing of the guides in such a wholehearted way. It has been an honor to work with and learn from someone as eloquent, passionate, knowledgeable, and skilled as Sandra.
The making of a film requires a team of people. The writing of a guide, as I have learned, also requires a team of people. And while they share in any praise for the quality of this publication, any errors or omissions are my responsibility alone. I am incredibly grateful to my team.
LIVING DOWNSTREAM

THE FILM

“Our environment is within us.”

~ SANDRA STEINGRABER
ABOUT THE FILM

Feature-Length Film: 85 minutes
One-Hour Version: 55 minutes
Format: High Definition
Produced: 2010

Based on the acclaimed book by ecologist and cancer survivor Sandra Steingraber, PhD, *Living Downstream* is an eloquent and cinematic documentary film.

This award-winning film follows Sandra during one pivotal year as she travels across North America, working to break the silence about cancer and its environmental links. After a routine cancer screening, Sandra receives some worrying results and is thrust into a period of medical uncertainty. Thus, we begin two journeys with Sandra: her private struggles with cancer and her public quest to bring attention to the urgent human rights issue of cancer prevention.

Sandra is not the only one who is on a journey—the synthetic chemicals against which she is fighting are also on the move. We follow these invisible toxicants as they migrate to some of the most beautiful places in North America. We see how these chemicals enter our bodies and once they are inside, how scientists believe they may be working to cause cancer.

Several experts in the fields of toxicology and cancer research make appearances in the film, highlighting their own findings on two pervasive chemicals: atrazine, one of the most widely used herbicides in the world, and the industrial compounds polychlorinated biphenyls (PCBs). Their research further illuminates the issues at the center of Sandra’s work.

At once Sandra’s personal journey and her scientific exploration, *Living Downstream* is a powerful reminder of the intimate connection between the health of our bodies and the health of our air, land, and water.

The documentary film *Living Downstream* is a production of The People’s Picture Company (The PPC). The PPC is an independent documentary production company that creates entertaining and educational films that compel thought, encourage discussion, and inspire change. For more information about The PPC’s work, please visit [www.theppcinc.com](http://www.theppcinc.com).
The Book that Inspired the Film

Title: Living Downstream: An Ecologist’s Personal Investigation of Cancer and the Environment

Copyright: © 1997, 2010 by Sandra Steingraber
Published by: Da Capo Press
Single copy orders: 1-800-343-4499
Bulk orders in the US: 1-800-810-4145, ext. 5000 or special.markets@perseusbooks.com
Bulk orders in Canada: 1-800-747-8147 or customerservice@raincoast.com

When Sandra Steingraber, PhD was diagnosed with bladder cancer at the age of twenty, she asked, Why me? As a biology major, she felt compelled to search for an answer in the medical libraries. This led to an early interest in the connection between her environment and her health. Years later, with the help of a post-doctoral fellowship from Harvard University, Sandra undertook a four-year investigation into the links between synthetic chemicals and human cancer. During this time, she went back to her hometown of Pekin, Illinois, in search of her ecological roots. This work became the basis for her acclaimed book, Living Downstream: An Ecologist’s Personal Investigation of Cancer and the Environment.

Published in 1997, Living Downstream was the first book to bring together toxics-release data—finally made available under right-to-know laws—and newly released cancer registry data. Sandra is also the first to trace with such compelling precision the entire web of connections between our bodies and the ecological world in which we eat, drink, breathe, and work.

Living Downstream has won praise from international media, including The Washington Post, Publishers Weekly, The Lancet, and The Times (London). Over the years it has been used enthusiastically by educators, health care professionals, and activists.
Since its original publication, the scientific evidence has been growing, and so, to coincide with the documentary adaptation, Da Capo Press released the second edition of the book in April 2010.¹ The updated science in this exciting new edition strengthens the case for banning poisons now pervasive in our air, our food, our water, and our bodies. Also in this edition, Sandra shows that investing in green energy helps prevent cancer, since synthetic chemicals linked to cancer come mostly from petroleum and coal. Just as the first edition inspired the film, the film inspired Sandra's writing of this new second edition. Readers and viewers will enjoy the creative connections between these works.

¹ Unless otherwise noted, all references made in this guide refer to the second edition of Living Downstream, published by Da Capo Press in 2010.
The descriptions below include wording that has been drawn in large part from the experts’ professional biographies.

Sandra Steingraber, PhD
Author of the book Living Downstream
Main Subject of the film

Dr. Sandra Steingraber is an internationally recognized authority on the environmental links to human health. She holds a doctorate in biology and a master’s degree in creative writing. Called “a poet with a knife” (Sojourners), Sandra is the author of the volume of poetry Post-Diagnosis and coauthor of The Spoils of Famine, a book on ecology and human rights in Africa. Her memoir, Having Faith: An Ecologist’s Journey to Motherhood, explores the intimate ecology of pregnancy and was selected by Library Journal as a best book of 2001. In her newest book, Raising Elijah: Protecting Our Children in an Age of Environmental Crisis, Sandra demonstrates through everyday moments how closely the private, intimate world of parenting connects to the public world of policy making.

For her work on Living Downstream, Sandra received the biennial Rachel Carson Leadership Award from Chatham University and the Jenifer Altman Foundation’s first annual Altman Award, and was named a Ms. Magazine woman of the year. She also received a Hero Award from the Breast Cancer Fund, the Environmental Health Champion Award from Physicians for Social Responsibility—Los Angeles, and a Heinz Award from the Heinz Family Foundation.

Sandra has served as an adviser to the California Breast Cancer Research Program, provided Congressional briefings, and lectured on many college campuses. Currently, Sandra is a columnist for Orion magazine and a scholar in residence at Ithaca College in Ithaca, New York. More information about Sandra is available at http://steingraber.com.
**Tyrone Hayes, PhD**  
Biology Professor, UC Berkeley  
Featured in scene 7

Since his childhood, Dr. Tyrone Hayes has been fascinated by amphibians and the influences that environmental changes have on their development, growth, and reproduction. A graduate of Harvard University, Dr. Hayes has published more than forty papers and 150 abstracts and has given more than 300 talks. Presently, Dr. Hayes’ work in the lab and field is focused on the effects of pesticides on amphibians and the role of this threat in amphibian declines. Among other awards, Dr. Hayes has received both the Distinguished Teaching Award and the Distinguished Research Mentoring of Undergraduates Award from the University of California, Berkeley; the Jenifer Altman Award for Integrity in Science (Jenifer Altman Foundation); the Rachel Carson Memorial Award (Pesticide Action Network); and the President's Citation Award (American Institute of Biological Sciences). Dr. Hayes was also named an Emerging Explorer by the National Geographic Society.

**Rachel Carson**  
Biologist and Author of *Silent Spring*  
Featured in scenes 10, 29, and 33

Rachel Carson graduated from Pennsylvania College for Women (now Chatham University), studied at Woods Hole Marine Biological Laboratory, and received her master's in zoology from Johns Hopkins University. She worked as a government scientist and science editor for fifteen years in the US Bureau of Fisheries (now the US Fish and Wildlife Service). Carson wrote three popular books about the ocean before writing *Silent Spring*, the book that is credited with launching the modern environmental movement. She died of breast cancer in 1964, but not before testifying before the United States Congress on the potential problems caused by the broadcast spraying of chemical pesticides.

**Stéphane Lair, PhD**  
Veterinary Professor, University of Montreal  
Featured in scene 15

Dr. Stéphane Lair is the director of the St. Lawrence beluga whale pathology program, which has been in operation for over twenty years. His work focuses on major marine ecosystem changes that result from diverse factors, including the overexploitation of resources, increased industrial activity, and climate change. Dr. Lair sees marine mammals as “signal” species. By studying the health of these animals, he hopes to contribute to a better understanding of the St. Lawrence River and other marine habitats.

---

1 Unless otherwise indicated, all scene numbers refer to the scenes in the feature-length film (85-minute version).
Linda Birnbaum, PhD
Director, National Institute of Environmental Health Sciences
Featured in scene 20

Dr. Linda Birnbaum oversees a budget that funds more than 1,000 research grants. She is the author of several hundred peer-reviewed publications, book chapters, abstracts, and reports. A board-certified toxicologist, Dr. Birnbaum has served as a federal scientist for thirty years, nineteen of which were with the US Environmental Protection Agency. Dr. Birnbaum has received numerous awards, including the Women in Toxicology Elsevier Mentoring Award, the Society of Toxicology Public Communications Award, the Environmental Protection Agency’s Health Science Achievement Award and Diversity Leadership Award, and twelve Science and Technology Achievement Awards.

John Spinelli, PhD
Senior Scientist, BC Cancer Agency
Featured in scene 25

In addition to his position at the BC Cancer Agency, Dr. John Spinelli is also a professor at the University of British Columbia’s School of Population and Public Health and an adjunct professor in Simon Fraser University’s Department of Statistics and Actuarial Science. Dr. Spinelli’s research focuses on the identification of environmental and genetic risk factors for cancer. He conducts and collaborates on a large number of epidemiological, statistical, and clinical research projects and has authored over 150 peer-reviewed publications addressing various aspects of health research and statistical methodology.

George Woodwell, PhD
Founder and Director Emeritus, Woods Hole Research Center
Featured in scene 30

Dr. George Woodwell is an ecologist with broad interests in global environmental issues and policies. Prior to founding the Woods Hole Research Center, he was founder and director of the Ecosystems Center of the Marine Biological Laboratory and a senior scientist at Brookhaven National Laboratory. Dr. Woodwell was also a founding trustee and continues to serve on the board of the Natural Resources Defense Council. He is a former chairman and a founding trustee of the World Resources Institute, a founder and honorary member of the board of trustees for the Environmental Defense Fund, and former president of the Ecological Society of America. Dr. Woodwell is the author of more than 300 major papers and books on ecology.
Richard Clapp, DSc, MPH
Professor Emeritus, Boston University School of Public Health
Featured in the mini docs

Dr. Richard Clapp is an epidemiologist with over forty years of experience in public health practice and consulting. He has a master's degree in public health from Harvard University and a doctorate in epidemiology from Boston University. He has worked in state and local health departments as the director of a community health center, a statewide childhood lead poisoning prevention program, and the Massachusetts Cancer Registry. He has also served as director for an environmental health consulting group at the JSI Research and Training Institute. His research focuses on cancer in military veterans and other workers whose cancers may be due to workplace exposures or living environments with toxic or radiation hazards. Dr. Clapp was co-chair of the steering committee for the Greater Boston Physicians for Social Responsibility and has served on several other professional advisory committees.
The Living Downstream Educational DVD is a two-disc set designed for use with this guide. Purchase of the DVD gives you and your group the right to screen the film publicly for educational or nonprofit purposes. The DVD contains a wide range of screening options to help you meet a specific goal, stay within strict time constraints, or focus on a specific theme, ensuring the broadest possible use. Whatever your needs, you will find an appropriate viewing option.

Purchase the Educational DVD online at www.livingdownstream.com/dvd or send your purchase order by email to dvd@livingdownstream.com or by fax to (647) 342-2867.

**DISC ONE**

*Living Downstream*

Feature-Length Film (85 minutes)

Scene Selection

Bonus Features

  - Single Scene Index
  - Scene Compilations
  - Film Trailer
  - Mini Docs
  - Audio Commentaries
  - Written Guides

**DISC TWO**

*Living Downstream*

One-Hour Version (55 minutes)

Scene Selection
About the One-Hour Version

In addition to the abbreviation of many scenes, the following scenes from the feature-length version have been entirely removed from the one-hour version of the film:

- scenes 8, 16, 21, 27 – Readings from the book *Living Downstream*
- scene 13 – Sandra Runs to Know the Land
- scene 24 – How Chemicals Can Contribute to Cancer
- scene 25 – PCBs, Non-Hodgkin Lymphoma, and John Spinelli, PhD
- scene 32 – Sandra’s Watchful Waiting

BONUS FEATURES

Single Scene Index

The single scene index allows you to navigate quickly to a specific scene found in the feature-length film (85 minutes) and play only that scene for your audience. This feature has been designed for those using individual scenes during presentations or to start discussion in lessons and workshops.

- **Scene 1 – The Parable—a reading** (1 min, 25 sec)
  Sandra reads a passage from her book *Living Downstream*, a parable that alludes to our tendency to overlook the importance of prevention.

- **Scene 2 – Introducing Sandra Steingraber, PhD** (1 min, 25 sec)
  Sandra describes the disconnect between the existing scientific knowledge about carcinogens and the information the medical community shares with patients.

- **Scene 3 – Sandra and Her Mother** (3 min, 40 sec)
  Sandra visits her mother in Pekin, Illinois. They discuss their personal experiences with cancer, as well as those of other family members. Sandra reveals that she is adopted, and asks what else families share besides genes.

---

Scene 4 – A Possible Cancer Cluster (3 min, 12 sec)

Driving through Normandale, Illinois (a subdivision of Pekin), Sandra describes the possible cancer cluster in this community and the primitive nature of the investigation undertaken by the county’s public health department.

Scene 5 – Chemicals Travel (1 min, 20 sec)

Driving through the industrialized area of Pekin, Sandra reflects on the extensive number of chemicals produced and used here. She asks, “Where is all this stuff going?”

Scene 6 – Atrazine (53 sec)

Sandra introduces the herbicide atrazine. One of the most commonly-used pesticides in North America, it is used on more than three quarters of the cornfields in Illinois. It is water-soluble and is now found in rivers, streams, and rain.

Scene 7 – Atrazine, Frogs, and Tyrone Hayes, PhD (4 min, 27 sec)

Dr. Hayes, biology professor at UC Berkeley, explains his research on frogs and atrazine. He highlights the growing evidence that atrazine converts testosterone into estrogen, turning male frogs into functional females and suggesting a link to human breast cancer.

Scene 8 – Placing People in Harm’s Way—a reading (44 sec)

Sandra reads a passage from her book Living Downstream stating that some people dismiss the link between cancer and environmental contamination as unprovable, while others believe it is our responsibility to investigate despite the limitations.

Scene 9 – Sandra’s Work (1 min, 34 sec)

At home in upstate New York, Sandra recalls her surprise when she first learned that proven carcinogens are still being manufactured and sold. She then explains her current work as a science writer, describing herself as someone who puts jigsaw puzzles together.

Scene 10 – WWII, Chemicals, and Rachel Carson (3 min, 23 sec)

Sandra describes the impact of World War II on chemical production: chemicals were manufactured for use during the war and then repurposed for use at home without adequate safety testing. In archival footage, we see the spraying and fogging of pesticides in large quantities. Rachel Carson, biologist and author of Silent Spring, describes her concerns about these chemicals. Sandra explains that she has taken up Carson’s call for a close examination of the links between environment and health.

Scene 11 – Sandra’s Congressional Briefing (2 min, 32 sec)

Sandra speaks about the power of knowledge and the importance of exercising our right to know. In Washington, DC, she briefs congressional staffers on Capitol Hill, calling for an open conversation about cancer and the environment.

---

Scene 12 – Wall of Stars (1 min, 27 sec)

Using the Wall of Stars (part of the World War II Memorial in Washington, DC) as a visual metaphor, Sandra tells us that every year over 600,000 people die of cancer in the US and Canada.

Scene 13 – Sandra Runs to Know the Land (1 min, 44 sec)

As Sandra runs through the streets and parks of Washington, DC, she describes her ritual of running in every city she visits. Running helps her to know the land. Sandra also describes her other habit, which is to search the Toxics Release Inventory (www.epa.gov/tri) for the city she is visiting. As the sun sets, data for selected carcinogens released in the US and Canada appear in the evening sky.

Scene 14 – PCBs (2 min, 3 sec)

Sandra introduces polychlorinated biphenyls (PCBs), a group of industrial compounds classified as persistent organic pollutants. PCBs can be found in remote locations such as the White Mountains of New Hampshire. Scientists now know that these chemicals travel by evaporating, moving northward, and returning to earth—and then repeating the same process again and again.

Scene 15 – PCBs, Beluga Whales, and Stéphane Lair, PhD (2 min, 43 sec)

Dr. Lair, veterinary professor at the University of Montreal, explains his autopsy study of beluga whales from the St. Lawrence River and the high incidence of cancer he has found. Dr. Lair shares his hypothesis that polycyclic aromatic hydrocarbons (PAHs) are interacting with PCBs to cause cancer in this population of whales.

Scene 16 – You Have Become a Cancer Patient—a reading (43 sec)

Sandra reads a passage from her book Living Downstream describing the experience of becoming a cancer patient.

Scene 17 – The Morning of Sandra’s Test (4 min, 58 sec)

At home in upstate New York, Sandra shares breakfast with her family. In an interview, she reflects on the uncertainty created in her life by bladder cancer and shares her anxiety about her upcoming cancer screening test. She then goes for a run to shake off the worry.

Scene 18 – Sandra Visits Her Doctor (4 min, 52 sec)

Sandra undergoes a cystoscope—the screening test for bladder cancer. Her doctor indicates that the exam shows no reason for concern, and Sandra returns home to celebrate the news with her husband.

---

3 Steingraber, Living Downstream, 2nd ed., p. 35.
Scene 19 – Children's Vulnerability to Chemicals (1 min, 3 sec)
Sandra describes children's increased vulnerability to chemicals. She then explains that early life exposure to atrazine can alter the development of the mammary tissue in lab animals.

Scene 20 – Atrazine, Rats, and Linda Birnbaum, PhD (2 min, 40 sec)
Dr. Birnbaum, director of the National Institute of Environmental Health Sciences, explains her study of atrazine in lab rats. When a rat fetus is exposed to atrazine, the chemical has major effects on the structure of the breast. Studies have shown that when exposed to a second chemical, these rats have a higher cancer rate.

Scene 21 – Uncertainty as an Excuse—a reading (44 sec)
Sandra reads a passage from her book *Living Downstream* calling for precaution and outlining her concern that uncertainty is “too often parlayed into an excuse to do nothing.”

Scene 22 – Sandra and Her Cousin, John Maurer (3 min, 53 sec)
Sandra has lunch with her cousin and his family on their corn farm in central Illinois. After lunch, Sandra and John discuss his use of atrazine and the importance of being careful with this herbicide. Driving away from the farm, Sandra expresses her respect and admiration for her cousin, but also shares her opinion that “no one can be careful enough with a chemical like atrazine.”

Scene 23 – Sandra Speaks about Breast Milk (2 min, 50 sec)
Sandra gives a speech to a group of farmers about the health benefits and chemical contamination of breast milk. She describes the process of contamination as a form of toxic trespass and explains her view that chemical-free milk is the right of every baby. She ends by saying, “What we love, we must protect.”

Scene 24 – How Chemicals Can Contribute to Cancer (1 min, 2 sec)
Sandra describes the creation of a cancer cell as a multistep process that occurs over a long period of time. She explains that chemicals can contribute at any point during the process. Sandra likens the role of genes to the keys of a piano, and the environment to the fingers of the pianist.

Scene 25 – PCBs, Non-Hodgkin Lymphoma, and John Spinelli, PhD (3 min, 34 sec)
Dr. Spinelli, senior scientist at the BC Cancer Agency, describes his study of PCBs and non-Hodgkin lymphoma, a cancer of the immune system. Dr. Spinelli’s study indicates that individuals with this form of cancer had higher levels of PCBs in their blood at the time of testing.

---

Scene 26 – PCB Cleanup (1 min, 46 sec)
Sandra describes the ongoing PCB cleanup being conducted by the US Environmental Protection Agency in Buzzards Bay in New Bedford Harbor, Massachusetts. As Sandra explains, PCBs were banned when we had an indication of harm, and we now have much more evidence telling us the decision was a good one.

Scene 27 – The Event of Diagnosis—a reading (42 sec)
Sandra reads a passage from her book *Living Downstream* describing the event of a cancer diagnosis as a “mixture of photographic recall and amnesia.”

Scene 28 – Sandra’s Test Results (2 min, 41 sec)
While vacationing with her family on Cape Cod, Sandra describes a recent phone call that she received from her doctor’s office. The cells that were collected during her cystoscopy had been analyzed in the cytology lab and appeared to be abnormal.

Scene 29 – Rachel Carson Testifies before the Senate (59 sec)
Sandra describes the hearings that were held by the US Senate after *Silent Spring* was published. In archival footage and photographs, we see Rachel Carson testifying. Sandra tells us that Carson was dying of breast cancer at the time and decided to remain silent about her disease.

Scene 30 – Sandra and George Woodwell, PhD (2 min, 49 sec)
Sandra speaks with Dr. Woodwell, founder and director emeritus of Woods Hole Research Center on Cape Cod. Sandra tells us that Dr. Woodwell’s work contributed to the US government’s decision to ban DDT, opening the way for a banning of PCBs. They speak about the duty of scientists to bring their findings into the public realm.

Scene 31 – Sandra Speaks about the Abolition of Carcinogens (3 min, 44 sec)
Sandra speaks at a black-tie event at the Abraham Lincoln Presidential Museum in Springfield, Illinois, before an audience of wealthy, powerful, and uninterested people. There, she presents cancer prevention as a human rights issue and compares the abolition of slavery to the abolition of cancer-causing chemicals. Sandra declares the need for us to become carcinogen abolitionists. She later expresses her frustration at the silence that still surrounds the topic of environmentally caused cancer.

Scene 32 – Sandra’s Watchful Waiting (1 min, 30 sec)
While running, Sandra reflects on her most recent series of tests. She explains that cancer patients and survivors often live in periods of “watchful waiting.” This is a time of ambiguity, while waiting for test results, having scans done, and going to see more doctors. Often, it is also a time of secrecy and silence.

---

Scene 33 – Rachel Carson's Death (1 min, 19 sec)
Sandra explains that she feels she is speaking for many people who have died. In archival footage, we see Rachel Carson testifying before the US Senate. Carson is describing the right to live free of poisons as a basic human right. Sandra tells us that the Environmental Protection Agency is the legacy of these hearings. These speeches were the last that Carson would give.

Scene 34 – Sandra Speaks about the Environmental Human Rights Movement (6 min, 23 sec)
Sandra speaks to a crowd of thousands about her most recent test results. She goes on to describe the growing environmental human rights movement, comparing it to two iconic social movements of the past: feminism and abolitionism. Sandra says that she hopes her children will find our current chemicals policies “unthinkable.” She receives a standing ovation.

Scene 35 – A Fighting Spirit (1 min, 48 sec)
Backstage after Sandra’s speech, a young cancer survivor shares her experiences and feelings with Sandra. Later, while cycling with her family, Sandra reflects on the fighting spirit that cancer patients bring to the disease. She argues passionately for us to bring the same fighting spirit to cancer prevention.

Scene 36 – End Credits (2 min, 11 sec)

Scene Compilations
The scene compilations each combine a selection of scenes relating to a common theme. They have been designed to support the in-depth discussion and study of particular concepts or ideas featured in the film.

Knowing Our Environment (scenes 1, 3, 4, 5, 8, 13, 21) (11 min, 21 sec)
The Personal Experience of Cancer (scenes 2, 3, 16, 17, 18, 27, 28, 32) (20 min, 31 sec)
Rachel Carson and Our Chemicals Policy (scenes 9, 10, 26, 29, 30, 31, 33) (16 min, 27 sec)
Atrazine (scenes 6, 7, 19, 20, 22) (12 min, 56 sec)
PCBs (scenes 14, 15, 24, 25, 26) (11 min, 8 sec)
A Human Rights Issue (scenes 1, 4, 8, 11, 12, 23, 30, 31, 33, 34, 35) (28 min, 13 sec)
Film Trailer

This promotional trailer introduces the audience to the story of Living Downstream and to Sandra as its main subject. The trailer is also available at www.livingdownstream.com/trailer and on YouTube, and can be embedded on your website or blog from both locations. (4 min)

Mini Docs

The mini docs are short educational documentaries that provide additional information and perspectives on concepts touched upon in the film. Using new footage (including additional interviews and graphics) these mini docs encourage critical thinking and enable viewers to explore select topics in greater depth.

- **Why Talk about Chemical Destruction? (5 min, 10 sec)**
  Sandra describes her personal connection to the Illinois River, while simultaneously outlining the chemical destruction of this ecosystem. Her reflection on the river evolves into her thoughts on why it is necessary to talk about such destruction.

- **What Causes Cancer? (3 min, 30 sec)**
  Sandra and Richard Clapp, DSc, MPH, explain the complexity of cancer causation. While outlining the role that chemicals can play in the formation of a tumor, they also debunk the commonly held misconception that environmentally caused cancers are rare.

- **Who Is Most Vulnerable? (6 min)**
  Beginning with a portion of Sandra’s speech at the Abraham Lincoln Presidential Museum (as seen in scene 31), Sandra proclaims that cancer prevention is a human rights issue, because some individuals are more vulnerable to toxic chemicals than others. Subsequently, Sandra describes the various vulnerabilities that are currently known to scientists.

- **What Is the Precautionary Principle? (6 min, 46 sec)**
  Sandra and Richard Clapp, DSc, MPH, outline the core tenets of the precautionary principle: even if some cause-and-effect relationships are not fully established, when an activity raises threats of harm, protective measures should be taken.

- **What Can We Do? (5 min, 10 sec)**
  Sandra expresses her belief that individuals and communities should decide for themselves what action they will take to preserve environmental health, not just as consumers but as citizens. Using an analogy of a human orchestra, she then encourages us all to determine what instrument we hold and what role we can each play, based on our personal interests and skills.
Audio Commentaries

➢ Commentary 1

Featuring author Sandra Steingraber and director Chanda Chevannes as they discuss the process of making the film, the science featured in the film, and the differences between literature and film. This commentary track will be especially useful to nonprofit organizations; grassroots activists; and students of biology, English, and film.

➢ Commentary 2

Featuring director Chanda Chevannes, editor Nathan Shields, and director of photography Benjamin Gervais as they discuss the creative and technical challenges of making the film. This commentary track will be especially useful to film students and enthusiasts.

Written Guides

Link for downloading the electronic guides, Living Downstream ~ In the Classroom and Living Downstream ~ In the Community: www.livingdownstream.com/guides.
Walking Upstream
The Movement

“What we love, we must protect.”
~ Sandra Steingraber
In the final moments of *Living Downstream*, Sandra speaks passionately about an emerging environmental human rights movement. This movement is one that recognizes the intimate connection between the health of our environment and the health of our bodies. It is a movement that is attracting people with different interests, occupations, and skills—from scientists to factory workers, and from artists to students.

Sandra often likens the movement to an orchestra. She writes, “I believe we are musicians in a human orchestra. It is time now to play the Save the World Symphony. It is a vast orchestral piece, and you are but one musician. You are not required to play a solo, but you are required to figure out what instrument you hold and play it as well as you can.”

Joining the movement does not mean applying for membership or paying dues. It means looking at your own life—at home and in the larger community—and taking steps to prevent cancer and other environmentally linked diseases. It means making change at the personal level with the products you buy, the foods you eat, and the chemicals to which you are exposed. But it also means working at the public level by changing the policies of our governments, businesses, workplaces, schools, hospitals, community centers, churches, and wider communities. It means working to repair the environmental damage we have caused and working to prevent further damage by divorcing our economy from its dependency on toxic chemicals. It means walking upstream for change.

We all have a role to play in this growing environmental human rights movement. This section will provide you with a range of ideas and a framework for using *Living Downstream*. It will give you and your organization the tools to find your role—and to help members of your community find theirs.

---

Hold a Screening

When using film for community outreach, holding a screening is by far the most popular activity. A well-planned screening of Living Downstream can be a catalyst for change in your community—educating audiences, encouraging discussion, and inspiring action.

Watching the film will build your audience’s awareness and concern, laying the foundation for a deeper connection with the issue of environmental health. But your screening should be about much more than the film itself. Use the event as an opportunity to further engage your audience by conducting a post-screening discussion, hosting a keynote address by a local expert, or strategizing around an issue of concern. Before your event ends, present participants with a simple first action to take in support of your work and invite them to a follow-up meeting or workshop.

Use the five checklists in this worksheet to plan a successful and customized screening event:

- Part 1: Goal and Vision
- Part 2: Logistics
- Part 3: Promotion
- Part 4: Audience Engagement
- Part 5: Next Steps

When planning a screening of Living Downstream, above all, have fun! People love an entertaining, thought-provoking film, and they enjoy spending time with others. The excitement, creativity, and hope that you bring to your screening will be felt by your audience.

Email us with any questions at screenings@livingdownstream.com.
PART 1: GOAL AND VISION

Setting a goal and a vision for your event will help make all the decisions that follow easier. Keep your goal in mind as you make your way through this worksheet.

What is my goal for this screening?

- raise awareness about the general issue of environmental health
- raise awareness about a specific and/or local issue
- inspire individuals to become active in cancer prevention and/or environmental protection
- begin a conversation about the connection between human health and seemingly unrelated environmental issues, such as climate change (See page 119 for an explanation of the link between fossil fuels and cancer prevention.)
- grow my organization by encouraging members of the community to become volunteers
- reinvigorate and inspire existing activists to continue with the work they are doing
- build relationships with other individuals and groups that are concerned about the same issues
- encourage individuals to take a specific action
- brainstorm solutions to a specific problem or concern in my community
- identify an environmental health issue with the community members who would like to work to solve it
- introduce the issue of environmental health to the community in the hopes of encouraging people to participate in follow-up workshops (See page 49 for possible workshops.)
- raise awareness about the general issue of environmental health
- raise awareness about a specific and/or local issue
- inspire individuals to become active in cancer prevention and/or environmental protection
- begin a conversation about the connection between human health and seemingly unrelated environmental issues, such as climate change (See page 119 for an explanation of the link between fossil fuels and cancer prevention.)
- grow my organization by encouraging members of the community to become volunteers
- reinvigorate and inspire existing activists to continue with the work they are doing
- build relationships with other individuals and groups that are concerned about the same issues
- encourage individuals to take a specific action
- brainstorm solutions to a specific problem or concern in my community
- identify an environmental health issue with the community members who would like to work to solve it
- introduce the issue of environmental health to the community in the hopes of encouraging people to participate in follow-up workshops (See page 49 for possible workshops.)
- raise awareness about the general issue of environmental health
- raise awareness about a specific and/or local issue
- inspire individuals to become active in cancer prevention and/or environmental protection
- begin a conversation about the connection between human health and seemingly unrelated environmental issues, such as climate change (See page 119 for an explanation of the link between fossil fuels and cancer prevention.)
- grow my organization by encouraging members of the community to become volunteers
- reinvigorate and inspire existing activists to continue with the work they are doing
- build relationships with other individuals and groups that are concerned about the same issues
- encourage individuals to take a specific action
- brainstorm solutions to a specific problem or concern in my community
- identify an environmental health issue with the community members who would like to work to solve it
- introduce the issue of environmental health to the community in the hopes of encouraging people to participate in follow-up workshops (See page 49 for possible workshops.)
- raise awareness about the general issue of environmental health
- raise awareness about a specific and/or local issue
- inspire individuals to become active in cancer prevention and/or environmental protection
- begin a conversation about the connection between human health and seemingly unrelated environmental issues, such as climate change (See page 119 for an explanation of the link between fossil fuels and cancer prevention.)
- grow my organization by encouraging members of the community to become volunteers
- reinvigorate and inspire existing activists to continue with the work they are doing
- build relationships with other individuals and groups that are concerned about the same issues
- encourage individuals to take a specific action
- brainstorm solutions to a specific problem or concern in my community
- identify an environmental health issue with the community members who would like to work to solve it
- introduce the issue of environmental health to the community in the hopes of encouraging people to participate in follow-up workshops (See page 49 for possible workshops.)

Details:

Who is my target audience?

- members of the general public
- members of my organization/group
- grassroots activists

(checklist continues)
Hold a Screening
Part 1: Goal and Vision

Details:

☐ health care professionals
☐ public health workers
☐ cancer patients and cancer survivors
☐ my colleagues and coworkers
☐ my staff and volunteers
☐ my neighbors, friends, and family
☐ members of my community group
☐ members of my faith group
☐ government representatives
☐ representatives of local businesses
☐ farmers
☐ members of my union or my nonunionized coworkers
☐ potential allies and partners
☐ donors and funders
☐ members of the media
☐ other

TIP
Even if your screening is intended for the general public, consider whether you also want to invite some specific people to attend. Whom you invite will depend on your goal. If, for example, your goal is to raise awareness about a toxic waste site in your community, you might consider inviting local public health officials, the residents who share the neighborhood with the waste facility, and the waste management company. You could also invite government representatives, funders, or members of the media as a way to advocate on the issues.

With whom will I partner?

☐ an individual
☐ an organization with a similar mandate to mine
☐ an organization with similar values to mine, but a different focus (e.g., a health organization could partner with an environmental organization)

(checklist continues)
☐ a local school, hospital, library, business, community center, or faith group
☐ a local theater
☐ a film festival or arts group
☐ nobody
☐ other

Details:

---

How will the screening be held?

☐ as its own hallmark event (e.g., fundraising evening, dinner and a movie)
☐ as part of an existing event (e.g., conference, film festival, environmental fair)
☐ as a small and intimate gathering (e.g., house party, lunchtime screening for colleagues)
☐ as an unexpected special feature (e.g., at a meeting with a politician, at a block party projected onto an outdoor wall)
☐ other

Details:

---

**TIP** Many documentary filmmakers and nonprofit organizations are using film to make change in their communities. Some websites to visit for inspiration include [www.workingfilms.org](http://www.workingfilms.org) and [http://citizenshift.org](http://citizenshift.org).
PART 2: LOGISTICS

A well-planned event helps attendees and organizers feel relaxed and engaged. Preparing for any contingencies in advance will allow you to spend time at the event interacting with participants and ensuring the event serves your goal.

When will the screening be held?
Date: ____________________________
Time: ____________________________

TIP  When selecting a date for your screening, learn about other events taking place in your community and choose a time when few events are competing for audience members.

Where will the screening be held?
☐ at a local cinema
☐ in a school auditorium
☐ in a place of worship
☐ in my home
☐ at a conference facility
☐ at a hospital or other health care facility
☐ in a community center
☐ at the public library
☐ at my workplace
☐ at a local place of business
☐ in the offices of government officials
☐ outside (projected onto a wall or screen, or on a television)
☐ other

Details:
What will I charge for tickets to the event?

☐ free
☐ $5
☐ $10
☐ donation
☐ other

Details:

**TIP** When setting a ticket price, ask yourself the following questions:

- What are the total costs for the event and are there other sources of funding?
- What is the goal of the event? Is it primarily about raising awareness or raising funds?
- What is the current cost of a movie ticket in this community?

What will I screen?

☐ feature-length film (85 min)
☐ one-hour version (55 min)
☐ single scene(s)
☐ scene compilation(s)
☐ mini doc(s)

Details:

**TIP** Screen your copy of *Living Downstream* well in advance of your event. Watching the film (or the selected clips) will help connect you with the message and will inform your planning of the event. It will also allow you to ensure that the DVD is in good working order and that the screening will not be interrupted due to technical problems.
What kind of equipment will I need?

- DVD player
- projector and screen, or television
- sound system
- comfortable seating
- microphones, chairs, and tables (for the post-screening activity)
- other

Details:

What can I include to attract audience members?

- an appearance by a special guest (e.g., someone in the community whom people know and respect)
- an appearance by an elected official, giving them the opportunity to meet with their constituents and answer questions about environmental health
- partner with a range of different groups, asking them to promote the event to their lists in exchange for the opportunity to talk about their work at the screening
- a performance by a local musician or an introduction by a local media personality or actor
- an appearance by someone connected to the film (e.g., Sandra, a featured expert, or a member of the crew)
- a post-screening discussion on an issue of interest to the community
- other

Details:

**TIP** If you are interested in having someone connected with the film appear at your screening, please contact us at screenings@livingdownstream.com to discuss the possibilities.
What will I do to show my commitment to environmental health?

☐ use rented plates, linens, and cutlery (as opposed to disposable)
☐ offer pitchers/glasses of tap water (as opposed to bottled water)
☐ provide refreshments from local, organic producers
☐ share materials electronically whenever possible—and otherwise print them on unbleached recycled paper with nontoxic vegetable inks
☐ collect donations for a local organization during the event
☐ contribute a portion of ticket sales to a local organization
☐ hold the screening in a venue using environmentally sustainable practices, and use the event to profile these practices
☐ hold the screening in a venue close to public transit
☐ assist with the coordination of carpooling
☐ invite out-of-town speakers to participate by video conference or Skype

Details:

What tasks will I need help with?

☐ selling and/or distributing tickets
☐ outreach to other groups and individuals
☐ media outreach
☐ distributing posters, flyers, and invitations
☐ venue setup
☐ refreshment preparation and sales
☐ collecting tickets
☐ greeting audience members and showing them to their seats
☐ managing the literature table and distributing printed materials
☐ taking photographs
☐ signing people up for further actions or information
☐ DVD projection
☐ facilitation of the discussion
☐ venue cleanup
☐ post-screening follow-up with audience members

(checklist continues)
Hold a Screening | Part 2: Logistics

Details:

TIP  Check with your venue to determine what equipment, staff, and publicity they can provide.

What will I do to document the event?

- invite members of the media to report on the event and the issues
- take notes on audience numbers, interesting topics discussed, and any measurable outcomes
- invite audience members, panel participants, and staff and volunteers of the venue to blog, tweet, and email their impressions of the event
- take photographs of the event
- log the action by describing the event at www.livingdownstream.com/logyouraction
- share lessons learned at www.livingdownstream.com/forums/viewforum/7
- using a ten-point scale, create a brief evaluation form for audience members to complete, or use the evaluation form found on page 133
- other

Details:
PART 3: PROMOTION

Whether or not your event is successful depends significantly on how much promotion (including word-of-mouth) you are able to generate. How well you promote your screening will determine how many people are there, but it will also determine who is there. Use promotion and outreach strategically to increase audience numbers and ensure that your event is attracting your target audience.

How will I draw an audience to the screening?

- post my screening at [www.livingdownstream.com/hold_screening](http://www.livingdownstream.com/hold_screening)
- contact local media
- email distribution lists
- post on my group’s website
- post on my blog
- post on the venue’s website
- advertise on the venue’s marquee or signboard
- post on listservs
- use my online social networking tools (e.g., Facebook, Twitter)
- post on the Living Downstream Facebook page at [www.facebook.com/livingdownstream](http://www.facebook.com/livingdownstream)
- use word of mouth: talk about the screening with neighbors, local business owners, and coworkers, and encourage others to do the same
- call or email friends, family, colleagues, etc.
- hang posters
- distribute flyers
- use existing newsletters
- place community calendar listings
- use free ticket giveaways
- require mandatory attendance (e.g., a university course, a workplace training session)
- other

Details:
What official *Living Downstream* screening resources will I use?

- customizable flyer
- printable poster
- pamphlet
- press release template
- publicity photos
- film trailer (embed it on your website or play it in front of live audiences in the weeks leading up to your screening)
- short teasers (embed them on your website)

Details:

---

**TIP** When hosting your screening, you don’t have to do everything from scratch. Visit [www.livingdownstream.com/hold_screening](http://www.livingdownstream.com/hold_screening) to download the resources listed above.

---

What information will I include in the promotional material?

- date
- time
- venue name and address
- ticket price
- how to purchase tickets or RSVP
- description of *Living Downstream*
- my organization’s contact information
- a link to my organization’s website
- a link to [www.livingdownstream.com](http://www.livingdownstream.com)
- a link to Sandra Steingraber’s website at [http://steingraber.com](http://steingraber.com)
- the activities that will occur during the event
- any special information that might draw an audience to the event
- other

Details:
Where will I go for additional ideas about how to promote my screening?

☐ discussion forums at www.livingdownstream.com/forums
☐ members of my community who have held similar events
☐ other

Details:
Part 4: Audience Engagement

People often come to a screening with something specific on their minds—such as the thoughts and questions that led them to attend. Then, over the course of watching the film, new ideas emerge. The success of your event hinges largely on your ability to engage your audience in a way that captures and grows these ideas.

Who will do the introduction at the event?

- [ ] me
- [ ] another representative of my organization
- [ ] a representative of my partner organization
- [ ] a representative of the venue
- [ ] a special guest (e.g., a media personality, a government official, another well-known individual in your community)
- [ ] other

Details:

TIP If a special guest will introduce the event, be sure to include this information in your promotional materials.

What will I talk about to welcome the audience and briefly introduce the film and the event?

- [ ] who I am and my connection to cancer and the environment
- [ ] what organization is hosting the event and why
- [ ] what Living Downstream is about
- [ ] why this film is relevant to our community
- [ ] what I am hoping the audience will take away from the event
- [ ] other

Details:
If facilitating a short pre-screening discussion, what questions will I ask?

☐ What are your reasons for attending this screening?
☐ What are you hoping to learn?
☐ Are there specific environmental health topics that concern you? If so, what?
☐ What is your current level of knowledge about the issue of cancer and the environment?
☐ other

Details:

TIP  The pre-screening discussion is most appropriate for small events that have an interactive discussion organized after the film.

What kind of activity will I use to engage the audience immediately after the film?

☐ question-and-answer session with a local expert
☐ question-and-answer session with Sandra Steingraber or a member of the film crew (Contact us at screenings@livingdownstream.com to assess this possibility.)
☐ facilitated audience discussion
☐ panel discussion with individuals representing different points of view and/or areas of expertise
☐ small group discussions
☐ half-day workshop (See “Lead a Workshop” on page 49 for ideas.)
☐ meet-and-greet over refreshments
☐ presentations or speeches by local community members
☐ town-hall meeting about a specific issue
☐ advocacy letter-writing session
☐ strategizing session
☐ other

Details:
If my post-screening activity includes a discussion, what questions will I ask to energize and direct this discussion?

☐ How did the film make you feel?
☐ Are there any moments that stood out in your mind? What did these moments make you think about or realize?
☐ What surprised you? Moved you? Angered you? Impressed you?
☐ What did you learn that you didn't know before?
☐ How did the film confirm or contradict information you have heard previously?
☐ What questions did the film raise?
☐ The film features many different communities in North America. Which one do you think most closely resembles our community? Why?
☐ Are there health and environmental problems in our community that we should be addressing?
☐ Are there groups already working on these issues in our community? If yes, describe their work for us.
☐ Is anyone here today currently doing work related to these issues (e.g., cancer, environment, environmental health)? If yes, describe your experiences for us. What have been your challenges and successes? What can the larger community do to support your work?
☐ What can we, as concerned citizens and community members, do?
☐ other

Details:

**TIP** Here are some ways to ensure your discussion is successful:

- Expect audience members to ask what they can buy or do differently to protect themselves. Provide some examples, yet emphasize that personal action provides limited protection. We need to all help change how chemicals are used in our communities.
- Make sure no one—including you—monopolizes the conversation.
- Encourage people to speak personally and to be direct and brief.
- If someone begins discussing a side issue, invite interested audience members to speak with the individual after the event, and then gently redirect the conversation.
- Strive to energize and uplift your audience with a hopeful and positive tone.
What one piece of information about environmental health do I want my audience to know by the time the event is done?

☐ There is no barrier between our bodies and our environment.
☐ Chemicals can travel far from where they were released—pollution knows no boundaries.
☐ Most chemicals on the market in the US and Canada have not been thoroughly tested for toxicity.
☐ When evidence exists for the harm of a chemical, the chemical is not automatically withdrawn from use.
☐ Once chemicals are released into the environment, it’s difficult to clean them up.
☐ Atrazine, one of the most commonly-used herbicides, may be causing cancer.
☐ PCBs, although banned, still exist in our environment and have been linked to many health problems, including cancer.
☐ The experience of cancer has a lifelong impact on cancer patients and their families.
☐ The precautionary principle means that we should take action when we have some evidence that a chemical may be harmful to human health.
☐ other

Details:

What will I do during the event to support audience members’ interest in obtaining further information?

☐ invite an expert in the area of environmental health to answer questions after the screening
☐ distribute literature about the issues and my organization
☐ invite audience members to register for a follow-up discussion or workshop
☐ direct audience members to visit www.livingdownstream.com or my organization’s website to learn more
☐ sell books and DVDs at the event (See book ordering information on pages 3 and 195 and DVD ordering information on page 9.)
☐ remain in the audience after the screening and be available to audience members for further conversation
☐ other

Details:
Sandra always ends her speeches on a hopeful and positive note, but never downplays the seriousness of our situation. What positive message will I leave with the audience?

- One person can make a difference by working in collaboration with others.
- The world is a beautiful place, deserving of our protection. (Or, as Sandra says in the film, “What we love, we must protect.”)
- Environmental health is an issue we can do something about—we can change our environment.
- There is a better way to do things.
- Others are already working on solving the problems presented by synthetic chemicals, and you can too.
- We all have talents and skills that we can contribute to the new environmental human rights movement.
- It is time for us to become heroes in the struggle for environmental human rights.
- Sandra often says, “I believe we are all musicians in a human orchestra. It is time now to play the Save the World Symphony. It is a vast orchestral piece, and you are but one musician. You are not required to play a solo. But you are required to figure out what instrument you hold and play it as well as you can.”
- other

Notes:

**TIP** Consider offering the audience one hopeful example of an initiative or change that is already occurring in your community. For some examples, see “Stories from the Movement” on page 127.

What will I do during the event to ensure that audience members commit to taking further action?

- collect names and contact information for my organization’s mailing list
- provide audience members with a simple action they can do immediately:
  - sign a petition to an elected official on an environmental health issue
  - sign and send a postcard to an industry group that advocates for the use of toxic chemicals
  - join an organizational campaign or action
  - sign up as a volunteer for my organization
  - act on an action alert featured at [www.livingdownstream.com/action_alerts](http://www.livingdownstream.com/action_alerts)

*(checklist continues)*
☐ have a computer located at the venue for people to use to immediately become a member of www.livingdownstream.com, where they can participate in discussions, share resources, and find ideas for taking action in their communities

☐ invite audience members to host their own screening of *Living Downstream*

☐ encourage the audience to share the film and its message with others at home, work, and school, in worship services, and in the broader community

☐ other

Details:
PART 5: NEXT STEPS

The greatest value from your screening may come after the event itself—in how you wrap up the effort, share what you learned with others, and use the event as a launch pad for future work. Evaluate the outcome as soon as the screening is over, remembering not only to explore what you might have done differently but also to celebrate your successes. Take the time to appreciate what you have accomplished and to thank those who helped you with the event. While the screening itself may be a one-time event, it should be seen as a starting point for new work, relationships, and discussions in your community.

When will I debrief the event with my co-organizers, staff, and/or volunteers?
Date: ____________________________

TIP Here are some possible questions for your debriefing:

- Did we meet our goal?
- Should we hold more screenings? If so, what will we do the same and what will we change?
- Who were the audience members that expressed interest in taking up the issue of environmental health? When will we follow up with them?
- What trends do we see in the audience evaluation forms? (if applicable)
- What will our next steps be, and what is the timeline for these actions?

How will I know if the event achieved its goal?

☐ The audience displays a greater awareness of the issues during the post-screening discussion.
☐ Audience members sign up to volunteer for my organization.
☐ The issue of cancer and the environment becomes a topic of greater concern in my community.
☐ Follow-up sessions are well attended and productive.
☐ Existing activists give positive feedback on how the event affected their outlook.
☐ A stronger network now exists.
☐ My community is now actively engaging with a local issue.
☐ The audience indicates that the event was successful in their responses on the evaluation form.
☐ other

Details:
Who will I thank for their help with the event?

☐ my co-organizers, staff, and/or volunteers
☐ other individuals, groups, and organizations that helped publicize the event
☐ members of the media who attended the event or announced it to the public
☐ special guests who attended the event
☐ event funders
☐ the venue
☐ other

Details:

What will I do to follow up with audience members and encourage them to take further action?

☐ send out a thank-you email, with action ideas and links to more information
☐ follow up with audience members by phone and invite them to do any of the following:
  ☐ attend a training session to learn how to hold their own screening of Living Downstream
    (See page 45.)
  ☐ participate in a workshop to further explore the issues and the opportunities for action (See
    page 49.)
  ☐ volunteer with my organization
  ☐ join an organizational campaign or action
  ☐ discuss what actions they would like to take—allowing me to find a way to support them
    in this work
  ☐ join me in a visit to an elected representative

Details:

When will I do this follow up?

Date: __________________________
How will I share what I have learned with others?

☐ log my action at www.livingdownstream.com/logyouraction
☐ join the discussion at www.livingdownstream.com/forums
☐ talk with friends and family
☐ write an article for my local paper or for my organization’s newsletter
☐ share photos of the event on my blog, website, or Facebook page
☐ train others to hold a screening (See page 45.)
☐ other

Details:

---

**TIP** Reporting on your screening is an important part of the process—for you, your group, and the wider community. Sharing your reflections on the event helps the film’s producers learn how to better support screening organizers, and the lessons you learned will be of value to others planning future screenings.
Train Others to Hold a Screening

Anyone can hold a screening of *Living Downstream*. It’s an easy way to advance the issue of environmental health, no matter what your level of expertise. Use this training process with a group of individuals seeking to hold screenings independently or with a team of people intending to hold a screening collaboratively. The steps provide a recommended procedure and many helpful tips. They can be implemented informally or they can be turned into a workshop, training series, or even a training manual tailored to your organization’s needs.

If *Living Downstream* inspires your audiences, staff, or volunteers, use the following steps to support them in holding screenings of their own.

1. **Screen the film.**
   Before preparing to hold a screening of *Living Downstream*, participants should have already seen the film at least once. Screening the film a second time at the beginning of your training session will help to refamiliarize participants with the information and story and allow them to watch the film from the perspective of a screening organizer.

   **TIP** Be sure to screen the version of *Living Downstream* that participants wish to show to their audiences—either the feature-length film (85 min) or the one-hour version (55 min). Other screening options include showing items from the bonus features menu on the Educational DVD, including a single scene from the film, a scene compilation, or a mini doc.

2. **Discuss the film.**
   Invite participants to reflect on and debrief their reactions to the film. (For potential debriefing questions, see page 37.) Not only does this discussion serve as a good icebreaker, it will also help participants bring their personal connection with the film into their planning of the event.
3. **Set a goal.**
   Give participants time to reflect on their goals for holding a screening. Are they attempting to educate others about environmental health? Are they hoping to inspire others to take action on a specific issue? Is the goal of the screening to bring more volunteers into your organization or to raise money for a specific campaign? Whatever the reason for the screening, it is vital that screening organizers articulate their goals from the outset.

4. **Practice talking about the film.**
   Tell participants that effective screening organizers must be able to speak clearly about the film. All aspects of planning a screening require organizers to talk about *Living Downstream* with enthusiasm—and to spread that enthusiasm to others. Provide participants with the opportunity to break into pairs and practice speaking about the film and its issues. Consider videotaping some participants as they practice and replaying the video for the entire group. Alternatively, invite one or two participants to practice in front of the full group. Whichever approach you use, ask participants to provide each other with encouragement and feedback by first identifying strengths and then opportunities for improvement.

5. **Introduce the three attributes of an effective screening.**
   Explain to participants that a highly effective screening is all of the following (allow time for a brief discussion of each):
   
   • **A well-planned event.** Publicity, outreach, and invitations are done early. Tickets are easy to obtain. The location is easy to find. Audience members are seated quickly. The film begins on time. The DVD, projection, and sound equipment have all been tested in advance. Volunteers and staff are aware of their responsibilities. The audience knows what will happen after they have watched the film.
   
   • **A hopeful, positive, and informed event.** Organizers are upbeat and encouraging. They inspire audience members to care about the issue and not be depressed by it. They speak from a place of passion and personal experience. There are knowledgeable individuals at the event to answer difficult questions. The audience can access resources that provide additional information and a positive perspective.
   
   • **An opportunity for audience members to take action.** There is a range of ways for audience members to get involved in the issue of environmental health. For example, there is literature to read, upcoming campaigns to support, mailing lists to join, and/or a sign-up sheet for upcoming workshops.

6. **Establish empathy with the audience.**
   While reflecting on the three attributes discussed above, invite participants to put themselves in the shoes of their audience members. Discuss (in plenary or small groups) previous experiences participants have had when attending community events or screenings. As audience members,
Train Others to Hold a Screening

what were their needs and wants? What did they appreciate about other events? What errors did screening organizers make? How can this knowledge benefit their own screenings?

7. Guide the first steps of planning.
Distribute copies of the “Hold a Screening” section of this guide (page 23, and also found at www.livingdownstream.com/hold_screening). Invite participants to begin completing the checklists individually or in small groups. If time permits, discuss the checklists with the participants. What details had they not previously considered? Were there questions that stumped them? Is there anything they want to add?

8. Identify the support network and tools available.
Introduce participants to the Living Downstream screening resources (see page 33). Explain to participants that these resources are available online at www.livingdownstream.com/hold_screening. Describe any additional support your organization is able to provide.

9. Outline next steps.
Invite questions from participants. Ask everyone to set a tentative date for their screening and some target dates for their planning.

TIP Some participants may want to increase their knowledge of the issues, so they can share more information with their audiences. Provide those individuals with additional resources, training, or an opportunity to view the bonus features on the Living Downstream Educational DVD.

10. Follow up and check in.
If your organization has the means, arrange a check-in date to assess participants’ progress, individually or as a group. Before and after the check-in, invite participants to contact you with their questions or concerns.

11. Attend the screenings.
Planning a screening is time-consuming and stressful, especially if you have never done it before. Ensure that you and your organization provide participants with moral support by attending their screening events and being a positive, reassuring presence.
Sandra Steingraber believes that protecting our environment and our bodies from toxic chemicals is the human rights struggle of our time and that we each have an active role to play in this work. The three workshops in this section use the film *Living Downstream* to help participants connect with the issue of environmental health on their own terms. Each workshop encourages participants to tap into their day-to-day concerns, activities, and interests as starting points for making larger public change. Yet, despite this similarity, each workshop offers a unique experience and engages participants at different points of awareness and readiness.

The workshops, outlined step-by-step for your organization’s use, provide you with ready-made activities and materials. While the workshops contain extensive detail for straightforward implementation and are accompanied by a range of informative handouts, they are also flexible enough to be easily customized to your organization’s mandate, focus, and goals.

**Workshop 1 | Gaining the Knowledge That Inspires Change**
This workshop is for anyone who wants to learn more—more about the issues, more about the opportunities for action, more about where to find further information (see page 54).

**Workshop 2 | Finding Your Place in the Movement**
This workshop is for anyone asking, *What can I do?* (see page 66).

**Workshop 3 | Taking Public Action**
This workshop is for anyone seeking the skills and confidence for taking public action (see page 76).
The three workshops that follow are designed to be facilitated by individuals and organizations with expertise in environmental health and experience facilitating interactive group processes. They can be implemented as stand-alone workshops or as a series, with each topic building on the next.

General Format and Design

- These workshops can be used for many purposes, from staff/volunteer training to inspiring or organizing community action to general community outreach.
- Each workshop runs four hours, including a twenty-minute break.
- Activity descriptions and times assume a group of twenty participants. The optimal group size is between ten and twenty.
- A facilitator’s particular expertise will enhance the workshop. Facilitators can personalize group discussions and deepen the overall experience by integrating their own knowledge of the issues.
- Each workshop follows the same sequence (with some optional variations in Workshop 3):
  1. introduction featuring a film clip from the *Living Downstream* Educational DVD
  2. activity for creating emotional awareness
  3. activity for increasing knowledge
  4. activity for building skills
  5. time for considering next steps

Relationship with the Film *Living Downstream*

- Each workshop assumes that participants have already watched *Living Downstream* and that their experience of the film was part of what led them to the workshop. It is, however, possible for participants who have not seen the film to understand and participate in the activities.
- A common way of expanding the workshops is to precede the activities with a screening of the entire film and a post-screening discussion (see page 37 for potential discussion questions).
Expertise and Experience

• If you or your organization is new to these issues, consider partnering with another organization that has a firm background in environmental health. Participants will look to you for your knowledge and experience in environmental health issues. Not only will partnering with another organization give you access to important information and knowledge, it will also lighten your workload, expand your network, and increase your reach.

• If you do not have experience in workshop facilitation, consider bringing in an experienced facilitator to co-facilitate the workshop with a member of your organization. Relying on a professional facilitator will ensure that the workshop runs smoothly—and you will also have the added benefit of learning facilitation strategies by working with an expert. Alternatively, consider inviting a consultant to train your staff and volunteers in facilitation techniques so they may lead interactive workshops in the future.

Opportunities for Customization

• If you wish to lead a workshop that takes less than four hours, review the workshop outline and identify which activities will be essential for meeting your goals and engaging participants. Remove the other activities and calculate the new workshop time.

• Handouts have been provided in the “Additional Information and Resources” section beginning on page 95, to equip you with ready-made tools. However, if your intention is to direct participants down a specific line of inquiry or toward a specific goal, consider creating your own handouts by using those in this guide as a sample.

• Each workshop suggests providing a list of additional resources to participants. Consider creating a concise list of local resources by adapting the lists that begin on page 171. You can also direct participants to download the “Recommended Reading and Viewing” list from www.livingdownstream.com/resources.

• Additional tips for customization are embedded within the workshop outlines.

Facilitation Style and Pacing

• The workshops are designed to be fast paced and energetic, while rich with opportunities for discussion and personal reflection.

• The workshop activities are designed to create a feeling of opportunity for participants. While the workshops deal with serious subject matter, it is the facilitator’s role to maintain a hopeful, positive approach, working at all times to steer participants away from negative and circular discussions.
• Group discussions assume facilitators will invite three to five contributions per question.

• Whenever all participants are asked to make a contribution, it should be in the form of a single word or phrase unless otherwise noted.

• Be conscious of participants who speak too often or at great length. Individuals whose comments are aimed at grandstanding, bringing the conversation back to a pet issue, venting frustrations, or offering medical advice can negatively impact the group process. Have a plan in place for managing this type of behavior.

• There is a prescribed time frame for each activity, with approximate time guides for select steps within activities. The overall time frame for each activity is fairly exact, with little wiggle room. If a facilitator chooses to add anything to a workshop, additional time should be allotted.

Modeling Environmentally Sustainable Practices

• Be sure to consider the ways in which you might reflect your environmental values in the details of your workshop. For example, you might choose to do one or more of the following:
  • Provide refreshments for the break that have been sourced from local, organic producers.
  • Make tap water and glassware available (as opposed to bottled water).
  • Use electronic dissemination of materials whenever possible. For paper used in the workshop activities, make use of double-sided printing, scrap paper, and unbleached recycled paper with nontoxic vegetable inks.
  • Hold the workshop at a venue committed to environmentally sustainable practices.
  • Hold the workshop in a venue close to public transit and assist those who live far away with organizing a carpool.

Wrapping Up the Workshops

• Be sure to provide participants with information on your organization at the end of the workshop. Invite them to contact you with any questions or thoughts in the days or weeks that follow.

• Stay after the workshop to chat informally with any participants who wish to do so.

• Consider asking participants to fill out a brief evaluation form at the end of the workshop, so you can assess what you are doing well and where you could improve. (See the evaluation form on page 133.)
• Beyond providing valuable learning opportunities for participants, these workshops can provide you with the chance to build support for your organization and its work. Tap into this opportunity by following up with participants after the workshop and encouraging them to take further action.

Technical Considerations

• All the workshops include the optional use of internet-connected computers. A minimum of three computers, and ideally more, would be required for a group of twenty. Facilitators are encouraged to plan and manage computer use to ensure that all participants have the opportunity to go online.

• If computers with internet access are not available, the activities remain complete when you simply remove the computer portion.
This workshop engages participants who want to learn more—more about the issues, more about the opportunities for action, more about where to find further information. Watching the film Living Downstream often sparks a desire for more information about environmental health. By leading this workshop, your organization will guide participants through a process of learning and discovery.

When Sandra Steingraber began the work of researching her book Living Downstream, she went back to her hometown of Pekin, Illinois. She launched an investigation into the toxic chemicals found there and the effects they might be having on the health of the residents. Even as a biologist, Sandra was surprised by what she learned about the chemicals in her hometown.

When people watch the film Living Downstream, or when they read the book, there are often many pieces of information that surprise them too. Some are surprised that chemicals are not thoroughly tested for toxicity before entering the marketplace. Some are surprised that specific chemicals are not automatically banned once scientists have shown that they are harmful to human health. And many people are surprised by how much researchers do know about the environment’s contribution to the burden of human cancer.

Today, Sandra continues to share information about the links between toxic chemicals and human health because she believes we have the right to know about the potentially harmful substances that are in our communities and in our bodies. But you don’t have to be a scientist to access and share this information. We can each exercise our right to know by taking the time to learn about the research and
conduct our own investigations. And we can inspire others to do the same. Only when we are aware of our chemical exposures—and the risks they present—can we begin the work of eliminating them from our communities and our lives.
WORKSHOP 1: FACILITATOR’S CHECKLIST

Familiarize yourself with the resources

- Read “What You Need to Know” (page 50).
- Read the workshop outline (page 58).
- Decide where and how you will customize the workshop.
- Watch the film Living Downstream.
- Watch the mini docs used in the workshop:
  - Why Talk about Chemical Destruction? (5 min, 10 sec)
  - What Causes Cancer? (3 min, 30 sec) or Who Is Most Vulnerable? (6 min)
- Decide which story you will tell in activity 1.5 (see examples on page 127).
- Visit www.livingdownstream.com and navigate to “Register” and “Log Your Action.”

Assemble the necessary materials

- Living Downstream Educational DVD
- pens (one per participant + extras)
- one pack of blank paper
- flipchart stand and pad
- prepared flipchart sheets for activity 1.3 (see the activity in the workshop outline for definitions):
  - one sheet titled “Home Life” with its definition
  - one sheet titled “Institutional Life” with its definition
  - one sheet titled “Community Life” with its definition
- presentation markers
- masking tape
- watch or clock
- clipboards or alternatives (for participants to write on, if needed)
- photocopies of all handouts (one per participant + extras, double sided when possible)
- a selection of print resources recommended by you or your organization
Organize the audiovisual equipment

☐ either a television and DVD player or a computer, speakers, projector, and screen
☐ computers with internet access (optional)
☐ projector for group exploration of www.livingdownstream.com (optional)

Set up the workshop space

☐ Arrange chairs in a circle, with an opening at one end (no tables).
☐ Set up the flipchart stand and pad at the opening of the circle.
☐ Arrange three worktables around the room for activity 1.3, one for each of the chemical exposures handouts. On each table place one piece of blank flipchart paper, one marker, and a stack of one set of the chemical exposures handouts (one for each participant). The three chemical exposures handouts are “Chemical Exposures at Home,” “Chemical Exposures in Our Institutions,” and “Chemical Exposures in Our Communities.”
☐ Set up computers and connect them to the internet. (optional)
☐ Set up the projector connected to one of the computers. (optional)

Handouts for workshop 1

• “Myths about Cancer and Chemicals” (page 137)
• “Chemical Exposures at Home” (page 141)
• “Chemical Exposures in Our Institutions” (page 145)
• “Chemical Exposures in Our Communities” (page 149)
• Selected pages of your choice from “Recommended Reading and Viewing” (page 171) or create your own customized resource list. (Alternately, participants may download the full list from www.livingdownstream.com/links.)
• “Living Downstream Online” (page 173) if not included already in the “Recommended Reading and Viewing”
• “Evaluation Form” (page 133) (optional)
WORKSHOP 1: OUTLINE

1.1 Introduction (20 min)

Objective: To create a positive group dynamic and focus participants’ attention on the topic.

1. Welcome participants to this workshop on *gaining the knowledge that inspires change*—specifically in relation to environmental health and the use of toxic chemicals. Express your excitement about the next few hours together. (5 min)

2. As an icebreaker, ask everyone to stand up, walk around the room, and share something personal about themselves with at least three other people. After two or three minutes invite everyone back to the circle. (5 min)

3. Explain that you have a short documentary that was produced in conjunction with *Living Downstream* to get the day started. Play the mini doc *Why Talk about Chemical Destruction?* from the Educational DVD. (5 min)

4. Explain that this mini doc captures some of Sandra Steingraber’s reasons for becoming an authority on environmental health. Ask participants to think of one short phrase or sentence that would capture their primary reason for deciding to expand their knowledge on this topic. Provide participants a moment to reflect.

5. Go around the circle, giving each participant a chance to share their reason with the group in one short phrase or sentence. (5 min)
1.2  Facing the Fear of Knowing (25 min)

Objective: To create emotional awareness by having participants explore the facts that prevent and encourage the learning of unpleasant truths.

1. Explain that we often have good intentions to increase our knowledge about environmental health, but our fear of knowing the truth can sometimes get in the way. Therefore, it is these emotions that we first need to face.

2. Have participants stand in a line shoulder to shoulder. Ask them to step forward if they agree with the following statement: “I would rather not know if someone in my family drinks from the milk carton.” Ask those who stepped forward to step back into the line. (5 min)

3. Explain that you will now continue with several statements. Encourage participants to respond with their first impulse and to not judge others by their responses. Repeat the above step using the following statements: (5 min)
   - I would rather not know if I spent the day with my zipper down.
   - I would rather not know if I paid more than I should have for a new shirt.
   - I would rather not know if someone dislikes me.
   - I would rather not know if my neighbors are smuggling drugs.
   - I would rather not know if my partner is having an affair.
   - I would rather not know what toxic substances are in my drinking water.
   - I would rather not know if my children's toys contain lead.
   - I would rather not know if I have a high risk of developing cancer.

4. Invite participants to return to the circle, and use the following questions to facilitate a discussion: (10 min)
   - Why do we sometimes prefer not to know the truth?
   - What gives us the courage to learn things that are difficult to know?
   - What path do our emotions take once we begin facing an unpleasant truth?
5. Distribute a piece of paper and pen to each participant. Ask participants to label their papers “What I’m Ready to Know.” Ask them to reflect on the environmental health issues about which they have previously been afraid to know but about which they are now ready to learn (e.g., What toxic chemicals are in my personal care products? What effect does my electronic equipment have on the environment?). Explain that the group will return to these questions later in the workshop. (5 min)

1.3 Learning the Basics about Cancer and Chemicals (1 hr, 25 min)

Objective: To expand participants’ knowledge about chemical exposures and their potential impact on our bodies.

1. Explain that building a foundation of knowledge requires us first to understand some basic facts about chemicals. Distribute pens and the handout “Myths about Cancer and Chemicals.” Ask participants to read the handout and mark the items they find the most provocative. (5 min)

TIP To customize the information for your group, create your own handout that debunks some of the common myths associated with your specific area of concern.

2. Gather participants’ reactions to the handout by asking the following questions: (5 min)
   - What fact did you find the most provocative and why?
   - What does this information mean for all of us seeking change?

TIP Use the first question to allow participants to digest the information. Use the second question to shift participants to an action-oriented frame of mind.
3. Explain that another way of learning the facts about chemicals and cancer is through film and video. Explain that the next five-minute documentary was produced in conjunction with the film *Living Downstream*. Play either of the following mini docs from the Educational DVD: *What Causes Cancer?* or *Who Is Most Vulnerable?* (5 min)

4. Discuss the mini doc using the following questions: (5 min)
   - What information stood out the most for you in this mini doc?
   - What does this mini doc make you think about your own life?

   **TIP** Use the first question to understand how the participants have interpreted the mini doc’s message. Use the second question to shift their attention to their own lives, as a transition to the next part of this activity.

5. Explain that given these insights about cancer and chemicals, the next task is to understand where and how we are exposed to toxic chemicals. Explain that our chemical exposures can be divided into three areas of life, based on where these exposures occur. Post three sheets of flipchart paper titled in advance to match the following areas of life (including the definition provided). On each sheet, write one of the examples provided below, and then prompt participants to generate further examples. Add participants’ contributions to the corresponding sheet. (10 min)
   - **Home Life**
     Exposures in our personal and home lives (e.g., the cosmetics and cleaning products we use; the food we eat; the water we drink; and the materials used to build and decorate our homes, such as lead paint, plywood bonded with formaldehyde, and old pressure-treated wood).
   - **Institutional Life**
     Exposures from the institutions we frequent (e.g., chemicals used in our workplaces, toxic art supplies in our schools, and the by-products of medical waste incineration in hospitals).
   - **Community Life**
     Exposures that broadly affect our community’s environment (e.g., car exhaust, industrial discharge, toxic waste, pesticides, and power plant emissions).

6. Explain that for each area of life there are two types of actions recommended for creating change: personal actions and public actions. Provide an example: a personal action is buying organic food; a public action is working to increase the community’s access to organic food by starting a farmers’ market, bringing local organic food into the school’s cafeteria, or beginning a community vegetable garden. (5 min)
7. Gather participants’ ideas for why it might be important to engage in both private and public action. (5 min)

**TIP** During this discussion, acknowledge that modeling personal change is important, yet emphasize that lasting improvements will happen only when we begin making public change.

8. Explain that the three worktables set up in the room each focus on one area of life (home life, institutional life, and community life) and the related chemical exposures. Divide participants into three groups and assign each group a worktable. (5 min)

9. Explain that each table has a stack of handouts and a sheet of flipchart paper. Each group's task is to read the handout aloud and add new ideas to the sheet of flipchart paper. Every ten minutes the groups will rotate, repeating the process at the next table. The flipchart paper stays behind, to be added to by the next group. Participants can take home one copy of each handout. (5 min)

**TIP** There should be a pile of one handout on each table (“Chemical Exposures at Home” on one table, “Chemical Exposures in Our Institutions” on another, and “Chemical Exposures in Our Communities” on the last table). Each handout includes facts about chemical exposures as well as recommended actions. Once you have explained the activity, run through one example of adding additional facts and/or action ideas to the flipchart sheets.

10. Answer clarifying questions and implement the process described. (30 min)

11. Gather participants back into a circle. Read aloud a few ideas from each of the flipchart sheets from the worktables. Ask for brief clarifications if needed, and thank participants for their efforts. Post the flipchart sheets on the wall for people to review or copy during the break. (5 min)
Break  

Organize a fifteen-minute break for participants, with access to washrooms and a snack. Allow an extra five minutes to accommodate for any delays.

1.4 Making the Knowledge Your Own  

Objective: To build participants’ skills in personalizing and taking control of their own learning.

1. Explain that this is the time in the workshop when participants will personalize their learning for going forward. Ask participants to review their handouts and their “What I’m Ready to Know” list from the beginning of the workshop and to privately identify the topics that most interest them. (5 min)

2. Once participants have chosen their interests, explain that there are a number of resources available for learning more. Distribute your resource list, providing a moment for participants to review its contents. (5 min)

3. Explain that the group will now have thirty minutes to search for additional information on topics of interest using internet-connected computers and a selection of print resources. Explain that this is an opportunity for participants to get a taste of the range of resources available. Encourage participants to seek opportunities and ideas for both personal and public action. (5 min)

4. Organize a system of rotation, so that each participant gets equal time on the computers. Circulate to provide individual support as needed, ensuring all participants are engaged in the activity. (30 min)

TIP  
Highlight a few resources that participants may find useful and consider projecting some onto a large screen and searching them with the full group. Some possibilities include the following:

- Toxics Release Inventory (United States) at www.epa.gov/tri
5. Gather participants back into the circle and invite volunteers to share something they discovered. (5 min)

1.5 Preparing for Next Steps (40 min)

Objective: To ensure participants leave with a plan and a connection to the larger Living Downstream community.

1. Explain that one of the most inspiring aspects of learning is the impulse to take action based on newfound knowledge. Demonstrate the connection between gathering knowledge and taking action by telling one of the stories on page 127. (5 min)

2. Explain that the motivation to take action will depend on two things: (1) connecting with a like-minded community and (2) planning some immediate next steps.

3. Pass out “Living Downstream Online” and review it with the group. Indicate that in just a few minutes participants will be able to take turns on the internet-connected computers to join this online community, log their action of attending this workshop, and explore the online resources. (5 min)

TIP If you have only one computer for a large group, consider projecting the website onto a large screen and exploring the site together.

4. Give each participant a blank piece of paper. Invite participants to draw a long horizontal line across the paper to represent their life from birth to five years into the future (show an example). Ask participants to mark on this line the events that have brought them to this point of action
around environmental health (e.g., experiences they have had, conversations with others, books they have read, films they have seen). (5 min)

5. Ask participants to now think about the future—what kinds of activities do they want to be doing, what kinds of personal and public action do they want to take. Explain to participants that while they wait for their turn on the computers their final task will be to extend their timeline into the future by developing a vision for the next five years. Instruct them to choose some immediate next steps for working toward that long-term vision.

6. Give participants twenty minutes to work on their timeline and on the computers, and then gather their attention for final words. (20 min)

**TIP** If time allows, consider asking participants to complete a brief evaluation of the workshop. Their feedback will give you a greater understanding of what they have learned, what changes the workshop has inspired, and what you could do differently next time. See page 133 for a ready-made evaluation form.

7. Thank participants for their energy and engagement throughout the workshop. Ask each participant to share one word or phrase that describes the biggest feeling or idea they are taking away from the day. (5 min)
This workshop engages participants who are asking what they can do. There is a contagious energy that surrounds any growing social movement. Watching the film Living Downstream gives people a taste of that energy and inspires many to find their place in it all. By leading this workshop, your organization will help participants harness their desire to get involved and will give them the tools to find their role in the environmental human rights movement that Sandra Steingraber describes.

In Living Downstream, Sandra shares her strong belief that we are at the beginning of an environmental human rights movement. This movement is one that will work for the protection of human health and the environment. It will repair existing environmental damage and prevent future damage by banning the manufacture, use, and disposal of toxic chemicals.

Sandra also believes that every person has an important role to play in this new movement. She sees us as a great human orchestra and believes that the time has come for us all to play the Save the World Symphony. We each have an instrument and an important part to play—but no one has to perform a solo. We simply have to practice and play our instruments to the best of our abilities.

This means that we each have to find the role that is right for us. One size does not fit all. Every one of us has specific passions and skills that make us better suited for some issues and tasks than others. By tapping into who we are as individuals, into our own passions and skills, we can each find our unique place in this movement.
Workshop 2: Facilitator’s Checklist

Familiarize yourself with the resources

☐ Read “What You Need to Know” (page 50).
☐ Read the workshop outline (page 69).
☐ Decide where and how you will customize the workshop.
☐ Watch the film Living Downstream.
☐ Watch the mini doc What Can We Do? (5 min, 10 sec)
☐ Decide which story you will tell in activity 2.4 (see examples on page 127).
☐ Visit www.livingdownstream.com and navigate to “Register” and “Log Your Action.”

Assemble the necessary materials

☐ Educational DVD
☐ pens (one per participant + extras)
☐ large index cards (ten per participant + extras)
☐ one pack of blank paper
☐ flipchart stand and pad
☐ presentation markers
☐ masking tape
☐ watch or clock
☐ clipboards or alternatives (for participants to write on if needed)
☐ a soft ball or throwing object
☐ photocopies of all handouts (one per participant, except as noted, + extras, double sided when possible)

Organize the audiovisual equipment

☐ either a television and DVD player or a computer, speakers, projector, and screen
☐ computers with internet access (optional)
☐ projector for group viewing of www.livingdownstream.com (optional)
Set up the workshop space

- Arrange chairs in a circle, with an opening at one end (no tables).
- Set up the flipchart stand and pad at the opening of the circle.
- Ensure there is enough space in the room for participants to spread out with a few feet between them.
- Arrange several worktables around the room for activity 2.4 (enough for groups of four participants).
- Set up computers and connect them to the internet. (optional)

Handouts for workshop 2

- “Common Concerns about Toxics” (page 153)
- “Assessing Challenges and Opportunities” (three per participant + extras) (page 157)
- “Building on Your Strengths” (page 159)
- Selected pages of your choice from “Recommended Reading and Viewing” (page 171) or create your own customized resource list. (Alternately, participants may download the full list from www.livingdownstream.com/links.)
- “Living Downstream Online” (page 173) if not included already in the “Recommended Reading and Viewing”
- “Evaluation Form” (page 133) (optional)
Workshop 2: Outline

2.1 Introduction (25 min)

Objective: To create a positive group dynamic and focus participants’ attention on the topic.

1. Welcome participants to this workshop on *finding your place in the environmental human rights movement* and express your excitement about the next few hours together. (5 min)

2. As an icebreaker, ask everyone to stand up, walk around the room, and share something personal about themselves with at least three people. After two or three minutes invite everyone back to the circle. (5 min)

3. Explain that Sandra Steingraber's work, and the work of many other environmental health advocates, is giving rise to an environmental human rights movement. Explain that this movement is not a members-only club, with hierarchy, membership applications, and dues. It’s an informal—and potentially powerful—collection of individuals and groups inspired to work toward a reduction of their community’s dependency on toxic chemicals.

4. Explain that you have a short documentary produced in conjunction with *Living Downstream* to get the day started. Play the mini doc *What Can We Do?* from the Educational DVD. (5 min)

5. Debrief the mini doc using the following questions: (10 min)
   - What does Sandra mean when she says that we are not just consumers, but we are also citizens?
   - What intrigues you the most about Sandra’s description of the human orchestra?
   - What is the power of this approach?

TIP Use the first question to confirm that participants have understood Sandra’s message. Use the next two questions to generate energy and interest around the idea of creating change in an area of personal passion and on a public scale.
2.2 Beginning with Your Passions

(1 hr)

Objective: To create emotional awareness by having participants identify the activities and roles about which they are passionate.

1. Explain that today’s workshop will build on Sandra’s examples of acting not only as individuals, but as members of larger communities. Participants will identify the roles and activities that define them and then work to learn about and address the connection between these roles and the use of toxic chemicals in the wider world. (5 min)

2. Provide each participant with a pen and five index cards. On a sheet of flipchart paper write, “What activities do I most enjoy?” Ask participants to think of their five most enjoyed activities and to write each activity on its own index card in large print. These may be simple pleasures, professional interests, or elaborate hobbies. (5 min)

3. Provide each participant with five more index cards. On a sheet of flipchart paper write, “What roles hold the most meaning for me?” Ask participants to think of the five roles that most define them and to write each role on its own index card in large print. These may be professional roles, personal roles (e.g., mother, sister, son), or roles acquired through life experience (e.g., cancer survivor). (5 min)

4. Explain that our lives are filled with seemingly simple activities and roles that we may not realize are linked to toxic exposures. For example, architects, builders, and construction workers may be surprised to know that many building products contain toxic chemicals, such as formaldehyde, polyvinyl chloride (PVC), and arsenic. Parents may be surprised to learn that a large percentage of children’s toys still contain lead, cadmium, arsenic, and mercury.

5. Give each participant a copy of the handout “Common Concerns about Toxics” and provide a moment for them to read through the examples of toxic concerns linked to our everyday roles and interests. Invite comments from participants about the examples that most surprised or intrigued them. (10 min)

6. Invite participants to move to a private area of the room with some space to lay out their index cards. (5 min)
7. Once everyone has found a spot, ask participants to begin with their stack of cards face down. Instruct them to turn over their first card. Explain that, as seen on the handout, many activities and roles connect us to toxic substances. Ask participants to consider the possible toxic concerns related to the activity/role on this first index card and to write those concerns on the back of the card. Invite participants to write down either the facts they know or the questions they have. Encourage them to use the handout for inspiration. (5 min)

8. Ask participants to place that index card title-side up when finished and then to repeat the process for each card until all ten cards are laid out before them. (10 min)

9. Ask participants to then gradually remove cards of least interest from their selection, until they are left with only three cards. Ask them to tape their other seven index cards to the wall for sharing (or to keep any cards they would prefer not to share). (5 min)

10. Once all participants have returned to the circle, have everyone stand, stretch, and remain standing. Encourage participants to look at the wall of cards and think about all the activities/roles in our lives that can help to direct our efforts for change.

11. Introduce the soft ball or throwing object. Throw the ball to a participant. Ask them to hold the ball and share their top three index cards, for now providing just the names of the activities/roles. Instruct them to then throw the ball to another participant. Continue in this way until each participant has had an opportunity to speak. (10 min)

2.3 Assessing the Challenges and Opportunities (55 min)

Objective: To increase participants’ knowledge of their top three activities/roles, so they can evaluate them in relation to their potential place in the movement.

1. Explain to participants that the aim is to leave the workshop having chosen one area of interest where they want to create change on a public scale.

2. Explain that a worksheet has been designed to help them assess their three index cards and to ultimately select one for further action. Provide each participant with three copies of the handout.
“Assessing Challenges and Opportunities,” which includes a list of questions for detailing concerns and the corresponding opportunities for creating change. Read through the handout together and invite any clarifying questions. (5 min)

3. Encourage participants to complete each handout quickly with the first answers that come to mind and then to fill in further detail as time allows. Explain that they have twenty-five minutes to work through the handout and that you will circulate to provide individual support. Identify the internet-connected computers available for quick searches (optional), and encourage participants to share ideas with others who have similar interests. Invite participants to begin. After twenty minutes, give a five-minute warning. (25 min)

4. After twenty-five minutes, ask participants to use the information they have gathered to select one card representing the area of interest where they would initially like to work for change. Explain that they can change their minds later in the workshop, but to use their current instincts to select one card now. (5 min)

5. Introduce the soft ball or throwing object as in the previous activity. This time, ask participants to name the one idea they are currently considering. After everyone has had a turn, ask if there is anyone who is still feeling unsettled about their decision and who would like to briefly present their dilemma for feedback. (20 min)

**TIP** For each participant who asks for group guidance, take only two or three contributions. Encourage participants to share further feedback with each other at the break, and explain that the next activity will include further group consultation.

**Break**

Organize a fifteen-minute break for participants, with access to washrooms and a snack. Allow five additional minutes to accommodate for any delays.
2.4 Building on Your Strengths

Objective: To build participants’ skills by helping them identify the personal strengths they can use for taking action.

1. Explain that working to create change related to a personal area of interest can be very powerful. Read one of the stories from page 127. (5 min)

2. Explain to participants that now that they have chosen *what* area of interest they will focus on, the final piece of the puzzle is to decide how they can work for change by incorporating the things they do best. Explain that there are many ways to influence change and that each approach draws on different skills and strengths.

3. Divide participants into groups of four. Give each participant the handout “Building on Your Strengths,” a chart that lists some possible strengths and then provides ideas for ways to inspire change using those skills. (5 min)

   **TIP** To customize this activity for members of your staff or volunteers who are looking for their role within your organization, create your own handout tailored to the available tasks within your organization.

4. Instruct participants to read through the handout privately and circle the actions they might like to try. (5 min)

5. Invite participants to share what they circled with their group for feedback (five minutes each). Keep time and signal the five-minute intervals when new group members should begin sharing their thoughts. (20 min)

6. Gather participants back in the circle. Invite each participant to state their final—or current favorite—idea for their place in the movement, using one short sentence. (10 min)
2.5 Preparing for Next Steps

(35 min)

Objective: To ensure participants leave with a plan and a connection to the larger *Living Downstream* community.

1. Explain to participants that maintaining the momentum created today will depend on two things: (1) connecting with a like-minded community and (2) creating a detailed list of next steps.

2. Pass out “*Living Downstream* Online” and review it with the group. Indicate that in just a few minutes participants will be able to take turns on the internet-connected computers to join this online community, log their action of attending this workshop, and explore the online resources. (5 min)

   **TIP** If you have only one computer for a large group, consider projecting the website onto a large screen and exploring the site together.

3. Give each participant a blank piece of paper. Explain that while they wait for their turn on the computers their final task is to write down five next steps with deadlines. For participants who have already decided on their place in the movement, ask them to write down the five next steps for putting that idea into motion. For participants who have not yet decided, ask them to write down the five next steps for further evaluating their options. Suggest that participants look back at their “Assessing Challenges and Opportunities” worksheets for ideas about next steps. (5 min)

4. Give participants twenty minutes to work on their next steps and on the computers, and then gather their attention for final words. (20 min)

   **TIP** If time allows, consider asking participants to complete a brief evaluation of the workshop. Their feedback will give you a greater understanding of what they have learned, what changes the workshop has inspired, and what you could do differently next time. See page 133 for a ready-made evaluation form.
5. Thank participants for their energy and engagement throughout the workshop. Ask each participant to share one word or phrase that describes the biggest feeling or idea they are taking away from the day. (5 min)

6. Upon departure invite participants to pick up a copy of your list of recommended resources.
This workshop engages participants who are seeking the skills and confidence for taking public action. The film Living Downstream proposes that safeguarding environmental health is a human rights issue, requiring community members to work for change in all areas of community life—from engaging in political advocacy to calling for changes in industrial practices to creating new policies in our schools, workplaces, hospitals, churches, and neighborhoods. These actions can sometimes seem daunting to undertake—requiring interaction, cooperation, and, at times, confrontation with others. By leading this workshop, your organization will be supporting individuals in this work and nurturing their potential as community leaders and role models.

Note: This workshop is designed for one of two purposes: (1) to prepare participants for undertaking a specific action with your organization’s support or (2) to provide general skill building for individuals seeking to increase their effectiveness as activists.

When we learn about the links between synthetic chemicals and human health problems, often our first impulse is to ask what we can do to protect ourselves. What products can we buy, what should we avoid, and what foods should we eat? But Sandra Steingraber’s message is that our environment is really within us. The walls of our homes are not barriers to the toxic chemicals circulating within our environment, just as there is no real barrier between our bodies and the chemicals in our environment.

Therefore, we cannot protect ourselves by focusing only on our personal choices. While buying nontoxic cleaning products, avoiding the purchase of vinyl products, and eating organic food—for example—we also need to be working simultaneously for large-scale public change. Public change means encouraging greater access to organic food in your community. It means lobbying government for stricter regulations on our cleaning products and stronger right-to-know laws. It means working
with the local school, church, and hospital to ensure they make a conscious choice to avoid vinyl products and building supplies.

Whatever issue your organization is working on, you have an ability to empower and support community members in taking steps toward this type of action. Volunteer a specific skill or expertise to others interested in leading public change. Or organize for a single action to be pursued simultaneously by many community members in their various neighborhoods. Or gather a team of volunteers to plan and implement a comprehensive action plan. However you choose to implement public change, this workshop can help participants prepare for the work ahead.
WORKSHOP 3: FACILITATOR’S CHECKLIST

Familiarize yourself with the resources

☐ Read “What You Need to Know” (page 50).
☐ Read the workshop outline (page 80).
☐ Decide where and how you will customize the workshop (including selecting the most appropriate option in activity 3.4).
☐ Watch the film Living Downstream.
☐ Watch the video(s) used in the workshop:
  • a scene compilation or mini doc of your choice to begin the workshop (see descriptions on page 15)
  • scene 34, “Sandra Speaks about the Environmental Human Rights Movement” (6 min, 23 sec) (only if using activity 3.4 C)
☐ Decide which story you will tell in activity 3.5 (see examples on page 127).
☐ Visit www.livingdownstream.com and navigate to “Register” and “Log Your Action.”

Assemble the necessary materials

☐ Living Downstream Educational DVD
☐ pens (one per participant + extras)
☐ one pack of blank paper
☐ flipchart stand and pad
☐ prepared flipcharts sheets for activity 3.3:
  • one sheet labeled “Fact”
  • one sheet labeled “Fiction”
  • one sheet labeled “Unsure”
☐ presentation markers (one per participant)
☐ masking tape
☐ watch or clock
☐ clipboards or alternatives (for participants to write on if needed)
☐ photocopies of all handouts (one per participant + extras, double sided when possible)
one-line instruction sheets for activity 3.2 (one per participant, an equal number of each instruction):
  • “Put all the chairs in the center of the room.”
  • “Put all the chairs near the door.”
  • “Put all the chairs near the [name another object in the room, such as a window or a table].”

Activity 3.4 A
envelopes of broken squares (Photocopy and cut out the broken squares templates, label according to the instructions, and place each broken square in its own envelope. Ensure that there is a full set of five squares for each group of six participants.) (page 169)

Activity 3.4 B
large index cards (one per participant + extras)

Organize the audiovisual equipment
- either a television and DVD player or a computer, speakers, projector, and screen
- computers with internet access (optional)
- projector for group viewing of www.livingdownstream.com (optional)

Set up the workshop space
- Arrange chairs in a circle, with an opening at one end (no tables).
- Set up the flipchart stand and pad at the opening of the circle.
- Arrange several worktables around the room (enough to accommodate groups of six participants) for activity 3.4 A.
- Set up computers and connect them to the internet. (optional)

Handouts for workshop 3
  • “Chemicals Quiz” (page 163) (Or create your own customized version.)
  • Selected pages of your choice from “Recommended Reading and Viewing” (page 171) or create your own customized resource list. (Alternately, participants may download the full list from www.livingdownstream.com/links.)
  • “Living Downstream Online” (page 173) if not included already in the “Recommended Reading and Viewing”
  • “Evaluation Form” (page 133) (optional)
3.1 Introduction (30 min)

Objective: To create a positive group dynamic and focus participants’ attention on the topic.

1. Welcome participants to this workshop on taking public action and express your excitement about the next few hours together. (5 min)

2. As an icebreaker, ask everyone to stand up, walk around the room, and share something personal about themselves with at least three people. After two or three minutes invite everyone back to the circle. (5 min)

3. Explain that you have a short video to get the day started. Play the mini doc or scene compilation from the Educational DVD that most suits the needs of your group and/or the action they are preparing to take. (See pages 15 and 16 for descriptions of the scene compilations and mini docs available.) (10 min)

**TIP** For workshops designed for generalized skill building (with no specific action in mind), consider showing the mini doc What Is the Precautionary Principle?, which offers a detailed and inspiring rationale for taking action.

4. Debrief the video using the question that applies to your group: (10 min)
   - How can the messages in this video inspire each of us in our future efforts to create change?
   
   OR

   - What thoughts does this video bring to mind for [insert the action your group will be undertaking]?
3.2 Facing Opposition\(^1\) (35 min)

Objective: To create awareness of the emotions that arise when we are faced with opposition.

1. Have participants stand up. Tell them that for the first exercise of the day they will each be given a task to complete. They will have ten minutes to try to accomplish that task. (5 min)

2. In preparing to facilitate this activity, you created multiple copies of three different one-line instruction sheets. Randomly distribute one instruction to each participant. Invite participants to begin following their directive, and allow the process to unfold for ten minutes. (15 min)

3. After ten minutes, gather participants back into a circle and debrief the exercise using the following questions: (10 min)
   - What emotions arise when you are working for a particular change while others seem to be working in opposition?
   - In this activity people’s goals seemed to be in complete opposition to one another. Is this always the case when we face opposition in our work for change?
   - How is this activity a metaphor for the opportunities and challenges that may arise in our public action, particularly when [insert the action your group will be undertaking]?

**TIP** Use the first question to discuss the emotions and self-awareness provoked through this activity. Use the second and third questions to discuss the subtleties of real-life conflict:
   - Sometimes multiple goals can be achieved simultaneously.
   - People in opposition often want similar things.
   - Sometimes opposition reveals an opportunity for building new alliances.
   - Often, the group that achieves its goal is simply the most persistent.

4. Ask participants to consider, in silence, the emotions and reactions that arose for them in this activity and how these compare to the ways they want to approach the work ahead. (5 min)

---

3.3 Separating Fact from Fiction

Objective: To enable participants to acquire knowledge that will increase their effectiveness in public action.

1. Explain to participants that for the action(s) they are taking, it will be important to be knowledgeable about the issues.

2. Ask for three volunteers to hang the flipchart sheets ("Fact," "Fiction," and "Unsure") in three different corners of the room. (5 min)

3. Explain to participants that you will read a list of statements, one at a time. Once each statement has been read, they must either decide whether they believe this statement to be fact or fiction or declare themselves unsure. Upon your cue they should move to the corresponding area of the room.

4. Conduct the activity using the "Chemicals Quiz" handout, which presents true/false statements about toxic chemicals and human health. For each question, after participants have moved to their chosen area of the room, read the brief explanation of the answer. (35 min)

TIP To customize this activity to prepare participants for a particular action, use the "Chemicals Quiz" as a model for your own quiz containing the specific knowledge participants will need. Include statements not only about the issue but also about the type of action required. For example, if participants will be writing letters to government about the pesticides used in local parks, include information about the specific laws that need to change as well as about the qualities of an effective advocacy letter.

5. Debrief the activity using the following questions: (10 min)
   - What was one of the most critical pieces of new information for you?
   - What did you know already but are thankful to be reminded of, and why?
6. Distribute copies of the quiz so participants will leave with accurate information.

7. Ask participants for ideas about where they could seek additional information as needed (e.g., from experts in the field, government websites, reports published by nonprofit organizations, printed or audiovisual resources). Have them call out their answers while you write them on a flipchart sheet at the front of the room. Encourage them to be as concrete as possible, naming specific individuals, government agencies, nonprofit organizations, and resources. (10 min)

8. Distribute your list of recommended resources. Encourage participants to add to the handout anything of particular interest from the flipchart. (5 min)

Break (20 min)

Organize a fifteen-minute break for participants, with access to washrooms and a snack. Allow an extra five minutes to accommodate for any delays.

3.4 Building Your Effectiveness

The following three activities are included to build skills for three different goals: (a) improving teamwork, (b) identifying allies, and (c) finding your voice. These activities have been designed for use in one of the following ways:

- Implement the activity most appropriate for the action that participants are preparing to take.
- Use three facilitators to run all three activities simultaneously, allowing participants to choose the skill they wish to develop.
- Implement all activities consecutively to create a comprehensive full-day workshop (scheduling more breaks as appropriate).
Option A: Working Together

Objective: To guide participants in identifying the skills and traits needed to work effectively as a team.

1. Divide participants into groups of six (five participants and one observer). Extra people can serve as second observers in some groups. Provide each group a working space and five sealed envelopes, each containing a broken square (see “Broken Squares Template” on page 169). (5 min)

2. Explain that the observer’s role is to witness the interactions and ensure the group follows the ensuing guidelines: (5 min)
   - The goal of the activity is to create five perfect squares using the contents in the envelopes, with no leftover pieces.
   - The activity must be conducted in complete silence—no talking.
   - Each participant must work on their own square.
   - Participants cannot take pieces from other group members; the pieces have to be offered to them.

3. Invite clarifying questions from participants.

4. Begin the activity and wander through the room to ensure the observers are enforcing the rules. Proceed with the activity until all groups are finished, unless time is tight. (20 min)

   **TIP** To be successful, participants will have to give pieces to other group members, as well as trust that the pieces needed to complete their own square will also be given to them.

5. Gather participants back into the circle and debrief the activity using the following questions: (10 min)
   - Square builders, how did that exercise make you feel?
   - Observers, what did you notice as you watched your team complete their squares?
   - Everyone, what did this activity reveal about teamwork?

---

6. Ask participants to consider how their experience with this activity can guide them in the work ahead. Invite participants to share their ideas, while you write them on a sheet of flipchart paper at the front of the room. (10 min)

**TIP** Guide participants in identifying the following concepts if they do not do so themselves: trust, respect, persistence, surrender of control, and recognition that individual needs can hinder collective needs.

---

**Option B: Identifying Your Allies**

**Objective:** To guide participants in identifying potential allies for their action and the methods for engaging their interest and participation.

1. Distribute a piece of flipchart paper and a marker to each participant and invite participants to find a private space in the room for this activity. Ask participants to draw themselves, or to write their name, in the center of the paper (show an example). (5 min)

2. Instruct participants to think about those in their lives (individuals, groups of people, businesses, or institutions) who have some connection to the action they are planning to take. Explain that these are all potential allies—people and groups who could help in achieving the ultimate goal. (Example: If your organization is trying to create better access to local organic food, those included in this diagram might be a local farmer, a farmers’ market, a grocery story, your child’s cafeteria staff, your favorite restaurant, and your community garden.) (5 min)

**TIP** For workshops designed for generalized skill building (with no specific action in mind), introduce a hypothetical action idea for participants to use during this activity.

3. Ask participants to draw or write the names of these potential allies on their flipchart paper, placing each one at a distance from the center that reflects the participant’s relationship with them. Provide the example of a close colleague versus a politician they have never met. (5 min)

---

4. Invite participants to then draw a line from themselves to each of the others on their flipchart paper. Once all participants have finished, ask them to also draw a line between any potential allies who are connected to one another. (5 min)

5. Go around the circle and have each participant name one person or group in their diagram who might be a potential ally, with each participant giving a different answer. Encourage participants to identify their potential ally in a manner that all can relate to (e.g., “school board chair” rather than “my friend Susan”). (5 min)

6. Provide each participant with an index card and ask them to write at the top of that card the potential ally they just named (show an example). Explain that the group will do a brainstorming activity, as follows: (5 min)
   • Each participant will pass their card to the person on their left.
   • Everyone will then have twenty seconds to write down one thing you could say or do to inspire this ally’s participation.
   • The brainstorming will continue until all cards have traveled full circle, so contributions should be brief to leave room on the card. Additional index cards are available as needed.

7. Implement the activity as described. (10 min)

8. When the cards have traveled full circle, ask each participant to privately read their index card. Then invite each participant to share one idea from their card that they found particularly interesting. (10 min)

TIP If preparing for a team action, display the cards in a central location and then collect them at the end of the workshop for future use.
Option C: Finding Your Voice  

(50 min)

Objective: To provide the opportunity for participants to hone their communication skills using techniques modeled by Sandra Steingraber.

1. Explain to participants that the success of our public actions is often largely influenced by our ability to communicate in a manner that engages and inspires people. Explain that one of the best ways to build this skill is to model our style after a highly effective communicator.

2. Tell participants that the group will start this exercise by watching one of Sandra's speeches. Ask participants to pay close attention to what she is saying and how she is making her argument. Play scene 34, “Sandra Speaks about the Environmental Human Rights Movement,” from the single scene index. (10 min)

3. Invite participants to identify the techniques Sandra uses to make her argument. Write participants’ contributions on a sheet of flipchart paper. Guide participants in identifying the following: (5 min)
   - She tells a personal story.
   - She uses facts and evidence.
   - She clearly states her position.
   - She describes a specific change.
   - She appeals to a common value.

4. Debrief the scene using the following question: (5 min)
   - This speech was met with a positive reaction from the audience, but an earlier speech in the film was met with hostility. As presenters, how do we measure our success?

5. Ask participants to brainstorm additional techniques they may use, and add these to the flipchart from step 3. Possible answers include the following: (5 min)
   - Cite concerns that have previously been raised by your community.
   - Ask for a specific action to be taken.
• Explain why you have specific knowledge and/or concern about this issue.
• Keep it brief.
• Use visual aids if appropriate (film clips, PowerPoint presentations—or even a jar of breast milk, as in scene 23).

6. Ask participants to consider the types of communication that will be most influential in their future work (e.g., writing letters, giving formal speeches, initiating informal discussions, speaking at organized rallies).

7. Give each participant a paper and pen. Ask participants to take fifteen minutes to begin planning one act of communication for which they wish to prepare, using the ideas discussed. Explain that you will circulate to provide support. (15 min)

8. Reconvene the group and invite two volunteers to share their work (even if incomplete). For each volunteer, ask the rest of the group to identify first the strengths and then the opportunities for improvement. (10 min)

9. Thank the volunteers for their courage and openness. Finish by encouraging all participants to take their communications seriously, preparing their approach in advance and asking for feedback from others while making these preparations.

3.5 Preparing for Next Steps (40 min)

Objective: To ensure participants leave with a plan and a connection to the larger Living Downstream community.

1. Acknowledge that taking public action is a constant learning process and that a lot of knowledge and inspiration can come from the stories of others. Share one of the stories found on page 127. (5 min)

2. Explain to participants that their ability to build on the insights they gained today will depend on two things: (1) connecting to a like-minded community and (2) planning how they will use what they have learned.
3. Pass out “Living Downstream Online” and review it with the group. Indicate that in just a few minutes participants will be able to take turns on the internet-connected computers to join this online community, log their action of attending this workshop, and explore the online resources. (5 min)

**TIP** If you have only one computer for a large group, consider projecting the website onto a large screen and exploring the site together.

4. Give each participant a blank piece of paper. Explain that while they wait for their turn on the computers, their final task will be to identify ten intentions for using what they learned today to benefit their public action(s). Ask them to write their intentions in the form of action statements starting with “I will . . .” and to be as specific as possible.

5. Give participants twenty-five minutes to work on the computers and their action statements, and then gather their attention for final words. (25 min)

**TIP** If time allows, consider asking participants to complete a brief evaluation of the workshop. Their feedback will give you a greater understanding of what they have learned, what changes the workshop has inspired, and what you could do differently next time. See page 133 for a ready-made evaluation form.

6. Thank participants for their energy and engagement throughout the workshop. Ask each participant to share one word or phrase that describes the biggest feeling or idea they are taking away from the day. (5 min)
Creating a campaign is a strategic way to produce big results with limited resources. Well-planned campaigns can have national and international impact, while requiring only a bit more time, money, and energy than a single activity or event. Many organizations have found Living Downstream to be an excellent resource around which to build a campaign.

Implementing a campaign means that you train your staff to be campaign experts, and then work with them to roll out the campaign by repeating events and activities in different areas or for different audiences, improving the work as they go. A good campaign is like a snowball, growing as it builds on its own momentum.

**TIP** When considering implementing a campaign built around Living Downstream, feel free to contact us to discuss the possibilities. We are eager to work with organizations that are using the film in a comprehensive way and would be pleased to discuss partnership opportunities, customization of our resources, and bulk pricing of DVDs. Contact us at dvd@livingdownstream.com.

**CAMPAIGN IDEAS**

**Hosting a Series of Screenings**
Host several screenings of Living Downstream for different audiences or in different locations. Schedule the screenings to occur simultaneously to mark a significant date or implement the series over a period of time. You might choose to use them to call attention to a specific issue (such as a pending piece of legislation or an action your organization is engaged in) or as a way to raise awareness about the issue of environmental health with others in your community.
Training Screening Organizers and Workshop Facilitators
Rather than engaging people in a screening or workshop, train them to lead screenings or workshops in their schools, churches, community centers, and offices. For those interested, train them to train others to do the same. While the workshops are designed to be used by those with related expertise and experience, the right volunteers with the right basic skills and knowledge may need only minimal training from your staff to confidently and effectively take the lead.

Putting Tools into the Hands of Others
Share Living Downstream with as many other groups and individuals as possible. The most influential campaign for your organization may be one of sourcing, purchasing, and distributing tools, ensuring they end up in the hands of those eager to act. Do this by distributing copies of the Living Downstream Educational DVD to all of your chapters, partners, and/or affiliates to help them build their resource libraries or hold their own screenings. Encourage these groups to use the film in their organizational trainings, community outreach, fundraising, and political advocacy work. Collaborate with the Living Downstream producers to create accompanying screening and workshop resources specifically designed to share information relevant to your group's work.

Organizing for Political Change
Use Living Downstream as an advocacy tool in targeting national, regional, or local politicians about a specific legislative need in the area of environmental health. Organize special screenings for government representatives. Use the film to inspire your team and others to advocate to government. Show a scene from the film (or a mini doc) to your elected representative during a one-on-one meeting or present a copy of the film for their review.

Sponsoring House-Party Screenings
Organize volunteers and/or staff to hold house-party screenings of Living Downstream. Provide organizers with copies of the film and “Hold a Screening” (see page 23, or download it at www.livingdownstream.com/hold_screening). Create a handout for all attendees about how they can take action on the issues, offering information about your organization. Place information about the house parties on your website and in the media to further promote and encourage the trend.

Incorporating Film Screenings into an Existing Campaign
Add Living Downstream to one of your organization's current campaigns. Encourage your campaign partners and affiliates to host public screenings of the film as a way to participate in the campaign, and create campaign resources to accompany the film, such as a discussion guide focused on your specific campaign issues. Use the film as a springboard for discussion on women's health, chemicals regulation reform, cancer prevention, environmental protection, occupational health and safety, environmental justice, reproductive health, children's health, or the precautionary principle.
Becoming a Distributor
Sign up to sell Home Video DVDs of *Living Downstream* in your bricks-and-mortar or online store or at special fundraising events. The proceeds you earn can be used to finance your organization's operations or a special project. Alternatively, you can provide copies of *Living Downstream* as a thank-you gift to donors and sponsors or in gift bags at special events. You can also send them to your funders or potential funders as a primer on environmental health issues.
ADDITIONAL INFORMATION AND RESOURCES
The following contents are intended to give you some key information on environmental health. These pages have been formatted to enable their use as handouts in your education and outreach initiatives. Print or copy them for wide distribution, provided that full attribution is made to the Living Downstream film and this guide as the original source.

- Glossary of Terms
- Facts and Figures
- The Precautionary Principle
- Fossil Fuels and Cancer Prevention
- Learning from Europe
- Stories from the Movement
- Evaluation Form (optional, to be completed by screening audiences and workshop participants)
Glossary of Terms

abolition: A term often applied to the social movement of the 1800s that sought to abolish slavery in the United States. In the film, Sandra Steingraber, PhD, also uses the term to describe the present-day movement that seeks to abolish toxic chemicals. She refers to herself as a “carcinogen abolitionist.”

advocate: To publicly recommend or support. In this guide, this term is used to refer generally to political advocacy, meaning recommending changes in regulations, laws, and policy to elected government officials or those in the public service.

aldrin: An organochlorine insecticide that was widely used until the 1970s, when it was tightly restricted in the United States and Canada. It is considered a persistent organic pollutant and is now banned in most developed countries.

arsenic: A chemical element that occurs naturally in many minerals. Arsenic and its compounds are often used in pesticides and are carcinogenic to humans.

atrazine: A herbicide (weed killer) that works by destroying the weed’s chloroplasts and making it impossible for the plant to photosynthesize. In North America, atrazine is most often used on cornfields. It is water-soluble and can make its way into rivers, streams, and rain. It is banned for use in the European Union.

aquifer: A layer of rock (or gravel, sand, silt, or clay) that holds water.

audio commentary: A track of audio layered onto the Living Downstream feature-length film, featuring a conversation about the making of the film. There are two audio commentaries on the Living Downstream Educational DVD. For a detailed description of each, see page 17.

authorization process: A process by which a substance is authorized for use by an official body or agency. The European Union, for example, has a comprehensive authorization process for toxic chemicals and pesticides. For more information, see page 123.

ban: The official prohibition of a substance or an act. In this guide, the term generally refers to prohibiting the manufacture, use, and import of one or more toxic substances.

benzene: A chemical compound and a known carcinogen. It is used as an industrial solvent and in the manufacture of drugs, plastics, rubbers, and dyes.

bioaccumulation: When substances accumulate in the body of an organism at a faster rate than the body can expel these substances. This occurs with many organochlorines, including DDT and PCBs.
biological vulnerability: The vulnerability of an individual to a toxic chemical due to that individual's biological characteristics. This could be a vulnerability caused by genetics or by the individual's current stage of development.

biology: The study of the science of life.

biomagnification: When substances, such as organochlorine pesticides, concentrate as they move up the food chain. Animals that are higher on the food chain eat a greater number of animals below them, causing the accumulative chemicals to concentrate in a smaller amount of tissue: “Like a sauce simmering slowly, the poison concentrates.”1

biomonitoring: The practice of measuring the tissues and/or fluids in the body to determine the types and quantities of toxic substances contained therein.

bladder cancer: The kind of cancer Sandra Steingraber had. Environmental links to bladder cancer have been recognized since the 1800s.

body burden: The total amount of toxic chemicals found in the human body. Currently, the Centers for Disease Control and Prevention are engaged in an ongoing exposure assessment of the US population in which they test subjects for 212 different chemicals.

bonus features: A selection of additional video features available on the Living Downstream Educational DVD. See page 10 for more information.

breast cancer: The most common form of cancer in American women, with the exception of nonmelanoma skin cancer. One in eight women in the US will be diagnosed with breast cancer in her lifetime. Men can also suffer from the disease. Breast cancer activists have been instrumental in encouraging the scientific community to investigate the links between environment and cancer.

burden of proof: The obligation to prove. In science, the burden of proof is placed on the scientist. This means that a scientist must amass a great deal of evidence in order to make the claim of having proof. In the legal systems of many countries, including the US and Canada, the burden of proof is placed on the prosecutor to prove the defendant's guilt (“innocent until proven guilty”). In the case of synthetic chemicals, however, advocates of the precautionary principle feel that those entities who wish to introduce a synthetic chemical into the environment should be compelled to prove its safety, rather than the burden of proof falling on the public to prove that the chemical is harmful.

bylaw: A local (often municipal) law.

cadmium: A chemical element and heavy metal used in batteries and electroplating. The general public is exposed to cadmium most often through cigarette smoke and food. Cadmium is a known human carcinogen.

campaign: An ongoing outreach or public education project involving multiple events.

cancer: A class of diseases in which cells grow at an uncontrolled rate, forming a tumor and destroying the surrounding cells.

cancer patient: A term often used to describe an individual who is in active treatment for cancer.

cancer registry: A collection of data about the cancer incidence of a specific population. In 1935, Connecticut became the first US state to open a centralized registry. The United States does not have a national cancer registry. Instead, the Surveillance Epidemiology and End Results Program tracks cancer incidence in 28% of the US population. The Canadian Cancer Registry, administered by Statistics Canada, began in 1969. Since 1992, all the Canadian provinces and territories have reported all cancer diagnoses to the registry.

cancer survivor: A term often used to describe an individual who has had cancer in the past but who no longer has cancer. The Centers for Disease Control and Prevention, however, describe the term as referring to “all living persons who ever received a diagnosis of cancer.” And according to the National Cancer Survivors Day Foundation, a survivor is “anyone living with a history of cancer—from the moment of diagnosis through the remainder of life.” Survivors and patients have often reflected on the difficulties of language to adequately describe their unique situations. For more information on this, see Sandra Steingraber's essay “Life after Cancer—The Identity That Has No Name” at www.livingdownstream.com/essays/life_after_cancer.

carcinogen: A chemical or other substance that causes cancer. Traditionally, this term referred to an agent that caused DNA damage, resulting in cancer. However, scientists now know that there are multiple pathways to cancer and that agents can cause cancer—or contribute to its causation—in multiple ways. For example, in addition to damaging DNA, chemicals can disrupt hormones, suppress our immune system, or otherwise affect the systems in our body that promote or prevent cancer.

chemical: This term refers very broadly to any substance “having a specific molecular composition, obtained by or used in a chemical process.” In this guide and in the film, the term is typically used to refer to synthetic (manmade) substances.

---

**children's cancers:** Any cancer developed by a child. Some forms of cancer are more likely than others to occur in children, such as leukemia, lymphoma, and brain and bone cancers.

**chlorodane:** A chemical insecticide used on crops, lawns, and gardens until the 1980s, when it was banned in the United States. It may be associated with testicular cancer.

**chlorine:** A chemical element that is found in most life forms. It is also a key component of many synthetic chemicals, including atrazine and PCBs.

**chronic illness:** A long-lasting or recurring illness, such as asthma or epilepsy.

**citizen:** A term typically used to denote an individual who is a recognized national of a country. In the context of this guide, however, the term refers to a resident of a place who actively participates in its public life.

**coal:** A black rock and fossil fuel that, when burned, generates electricity and creates air pollution. Its combustion by-products—especially carbon dioxide—contribute to climate change. Other combustion by-products of coal—such as polycyclic aromatic hydrocarbons (PAHs)—cause cancer. Coal is fossilized plant matter. It is a nonrenewable resource that provides the material required to make some synthetic chemicals.

**community outreach:** An organized effort by nonprofit organizations and community groups to engage the general public in issues of importance to the community.

**community supported agriculture:** A model of agriculture, also known as community shared agriculture, in which a community of individuals purchases a share of a local farmer’s harvest. These individuals then regularly receive a box of fresh produce, and the farmer has a sustainable source of income.

**consumer:** Individuals who purchase goods and services. In the mini doc *What Can We Do?*, Sandra Steingraber says that “we are not only consumers, we are also citizens.” This means that although making thoughtful purchases in line with our values is an important personal act, we should also be working for systemic change at the public level.

**contamination:** The presence of a poisonous, polluting, or otherwise unwanted substance.

**conventional farming:** The typical agricultural system in North America today, in which farmers operate large monocultures dependent on chemical pesticides and fertilizers. This is the opposite of organic farming.

**cosmetic use of pesticides:** The use of pesticides for aesthetic purposes only, as in the application of weed killers to residential lawns. Also called the *nonessential use of pesticides*, this practice has been banned in four Canadian provinces.
cystoscope: An instrument inserted into the urethra to examine the bladder. Also used colloquially by bladder cancer patients to describe the medical procedure performed with the assistance of the instrument itself.

cytology: A branch of biology concerned with the study of cells.

deputation: A formal written or verbal presentation to register your views on a specific issue with elected representatives and government bodies.

detoxify: The elimination of toxic chemicals and other substances from a living thing.

dichlorodiphenyltrichloroethane (DDT): An organochlorine insecticide that was first synthesized in 1874 but was not recognized as a potent pesticide until 1939. It was put to use in World War II, fighting outbreaks of typhus and malaria. One of the chemicals of focus in Rachel Carson’s book, Silent Spring, DDT was banned in the US and Canada in 1972 because of health concerns. Scientists have since shown that DDT exposure at a specific point in a woman’s development greatly increases her risk for developing breast cancer later in life. DDT is classified as a persistent organic pollutant and is one of the chemicals restricted for use by the Stockholm Convention, which has been ratified by more than 170 parties to date.

dieldrin: An insecticide first produced in 1948 as an alternative to DDT. A persistent organic pollutant, dieldrin has been linked to Parkinson’s disease, breast cancer, and reproductive damage. It is banned in most of the developed world.

diethylstilbestrol (DES): A synthetic form of estrogen that was prescribed to pregnant women to prevent miscarriage. It was ineffective and had a range of confirmed health effects on the female fetuses exposed in utero, including increased risk for a rare form of vaginal cancer, reproductive tract abnormalities, and infertility. Suspected health effects include breast and cervical cancers and autoimmune and other disorders.

dioxin: A group of chemical compounds that are the by-products of industrial processes and waste incineration. Unlike many other synthetic chemicals, they have no practical use and have never been intentionally synthesized. They are highly toxic persistent organic pollutants that have been linked to breast cancer.

ecology: A field of study within biology concerned with organisms and their environment. Sandra Steingraber, PhD, and George Woodwell, PhD, are both ecologists.

ecosystem: A biological community, comprised of living organisms and their physical environment.

end-of-pipe: The traditional means of combating pollution whereby the creation and release of toxicants are not controlled, but attempts at control are made once contamination has occurred (e.g., an end-of-pipe solution).
endocrine disruption: The process by which foreign substances interfere with the hormonal (endocrine) system. Endocrine disruptors can mimic our hormones, cause the body to produce more or less of its own hormones, or otherwise disrupt our hormonal functions.

environmental health: A branch of public health concerned with all aspects of the natural and man-made environment that affect human health.

environmental human rights movement: A burgeoning movement that Sandra Steingraber describes at the end of Living Downstream. This movement works to protect the environment and our bodies from toxicants and to repair the environmental damage that has already occurred. Sandra believes we all have a role to play in this movement.

environmental justice movement: A movement that works to identify and correct the heavy environmental and health burden shouldered by visible and ethnic minorities and those of lower socioeconomic status.

enzyme: Substances (usually proteins) in living organisms that cause chemical reactions. For example, it is believed that atrazine affects an enzyme called aromatase, which is responsible for the conversion of testosterone into estrogen.

epidemiology: The study of patterns of illness within a specific population in order to identify potential causes.

estradiol: A form of estrogen.

estrogen: The primary female sex hormone.

estrogen-dependent: A term used to describe tumors that require estrogen to grow. Many breast cancer tumors are estrogen-dependent and, therefore, scientists believe that their growth can be caused by the presence of xenoestrogens (substances—including many synthetic chemicals—that mimic estrogen in the body).

facilitator: A workshop leader who guides participants through a shared process of learning. Unlike a traditional instructor who provides information to learners, a facilitator attempts to help learners discover and personalize information themselves.

feature-length film: Typically a film of 75 minutes or more. In this project, the term refers to the 85-minute version of Living Downstream. For more information, see page 9.

film trailer: A short video piece created to promote a longer film. The trailer for Living Downstream is four minutes long. For more information, see page 16.
**formaldehyde**: A chemical compound that takes the form of a colorless gas. Commercial solutions of formaldehyde in water were often used as disinfectants and for preserving human and animal bodies. While formaldehyde is naturally occurring, it is also synthesized in laboratories and has many uses, including as an adhesive in plywood and carpeting and as a common ingredient in nail polish. Formaldehyde is a known human carcinogen.

**fragrance**: A catchall term to describe a collection of ingredients combined to produce a pleasing smell. Fragrances are considered to be trade secrets in both the United States and Canada, and producers are therefore not required to disclose their contents. Fragrances often contain hormone disruptors and reproductive toxicants.

**functional female**: An animal that appears to have the bodily functions of a female. Specifically, in the UC Berkeley lab of Tyrone Hayes, PhD, some male frogs exposed to the herbicide atrazine became functional females.

**gene–environment interaction**: The interplay between our genes and the environment.

**global distillation**: The process by which volatile chemicals (those that evaporate easily) travel northward: rising into the air, moving north, condensing, and falling back to the earth in rain or snow, and then evaporating again and continuing this pattern until evaporation is no longer possible because it’s too cold. This is the process by which DDT and PCBs have migrated to the Arctic.

**green energy**: Energy that uses renewable resources, such as wind and solar power.

**groundwater**: Water below the surface of the ground that supplies wells and springs. Groundwater can become contaminated when chemicals that are applied to the soil seep through the earth and into the water.

**group process**: A learning process employed by workshop facilitators in which participants are guided through a specific experience, the product of which is largely dependent on the group itself.

**hazardous**: Risky or dangerous.

**heavy metals**: A metal of high density or high relative atomic weight, such as lead, mercury, or plutonium. Many heavy metals are toxic.

**herbicide**: A weed killer.

**hermaphrodite**: An animal with both male and female sex organs.

**hormone disruptor**: A substance that affects the hormonal system.
human rights: The inherent rights bestowed upon every person, just by the fact of their humanity. Accepted human rights include the right to freedom of speech, freedom from discrimination, freedom from violence, freedom to health, etc.

hypothesis: A tentative statement used in science as a starting point for experimentation and investigation.

immunotoxic: Toxic to the immune system.

incidence: The occurrence, rate, or frequency of something undesirable. In *Living Downstream*, the term generally refers to cancer incidence.

incinerate: To burn.

indication of harm: The level of proof that many advocates of the precautionary principle believe should be a trigger for action. Indication of harm suggests that a reasonable amount of credible scientific evidence should be enough to cause regulatory changes or bans of toxic chemicals.

industrial compound: A chemical substance consisting of two or more different chemical elements and used in industrial settings. PCBs are a well-known industrial compound—there are 209 different variations of PCBs.

International Agency for Research on Cancer (IARC): Part of the World Health Organization, IARC was founded “to coordinate and conduct research on the causes of human cancer, the mechanisms of carcinogenesis, and to develop scientific strategies for cancer prevention and control.” To date, IARC has evaluated the cancer-causing potential of about 950 substances. Many of the classifications of carcinogenesis of specific chemicals listed in this guide come directly from IARC’s assessments.

lead: A heavy metal that is toxic to humans. It is now known that even trace amounts of lead can affect brain development.

least toxic alternative: An environmental health principle that advocates the automatic use of the least toxic option available.

leukemia: Cancer of the blood. Pesticide exposure has been identified as one possible cause of this disease.

lindane: An insecticide, commonly used in lice shampoo. Lindane is one of the persistent organic pollutants named for international abolition in the Stockholm Convention.

mammary tissue: A group of cells located within the breast of a mammal.

---

**maximum contaminant level:** A term used by the US Environmental Protection Agency for their drinking water quality standards. It is the legal threshold of a substance allowed in public water systems.

**mercury:** A chemical element and heavy metal. Toxic to human health, mercury is used in industrial practices. While its use is being phased out slowly in many sectors (including the health-care sector, thanks in large part to Health Care Without Harm), it is being used increasingly in the manufacture of fluorescent lightbulbs.

**mini docs:** Five short documentaries found on the *Living Downstream* Educational DVD, in the bonus features section. Using new interviews, footage, and graphics, the mini docs explore select topics in greater depth. For more information, see page 16.

**mutagen:** A physical or chemical substance that alters genes. The traditional definition of a carcinogen was something that would cause a mutation. Scientists now understand that substances can contribute to the creation of cancer in multiple ways.

**naphthalene:** A polycyclic aromatic hydrocarbon (PAH) and possible carcinogen, naphthalene is the main ingredient in mothballs.

**National Pollutant Release Inventory (NPRI):** A public database containing information on pollutant releases in Canada. The NPRI is searchable by facility or postal code and is maintained by Environment Canada.

**natural gas:** A gas consisting primarily of methane. Natural gas is the vaporous fraction of petroleum. A current major source of energy, it is also a feedstock for creating synthetic fertilizers and PVC plastic. Its extraction involves poisoning massive quantities of water, using many toxic chemicals, and destroying valuable land. Its combustion contributes to global carbon dioxide emissions, and natural gas itself is a potent greenhouse gas.

**neurotoxic:** Toxic to the nervous system.

**non-Hodgkin lymphoma:** A cancer of the lymph system with causal links to organochlorines. The lymph system is the part of the immune system responsible for moving lymph (a clear liquid) through the body’s tissues and capturing potential health threats, such as infections, in the lymph nodes.

**occupational cancer:** A cancer generally believed to be caused by substances to which the individual was exposed at work. Individuals in over sixty different occupations are exposed to substances at work that have been classified as definite human carcinogens by the International Agency for Research on Cancer. Some of these individuals include farmers, pesticide applicators, hairdressers, radiologists, jewelers, and factory workers.
one-hour version: A term used in this project to refer to the 55-minute version of Living Downstream.

organic: A word with two oppositional meanings. In chemistry, organic refers to any chemical containing a carbon atom (as in persistent organic pollutants). In farming, organic refers to agriculture conducted without the use of chemical pesticides and fertilizers.

organization: An entity that has its own goals, structure, controls, and mandate. In this guide, the term is used to refer to a group of individuals who are working together for a common cause and to any kind of group using Living Downstream in their community.

organochlorine: A compound containing at least one carbon atom and one chlorine atom.

parts per billion: A unit of measurement for the burden of substances (such as toxic chemicals) in a large environment (air, water, soil, blood, etc.). One part per billion means 1/1,000,000,000. As Sandra Steingraber has said, “One part per billion is like a pinch of sugar in a ten-ton cup of tea.” While it seems as if one part per billion is an insignificant amount, it is not. Hormones, for example, produce effects at one part per billion, or even one part per trillion. Therefore, chemicals that disrupt our hormonal systems can cause an effect even in minute concentrations.

participant: An individual who participates in an event or activity. In this guide, the term is used most often to describe individuals who are participating in a workshop.

pathology: The study and diagnosis of disease.

perc: A synthetic chemical and probable human carcinogen used in some manufacturing processes, but most well-known for its use in dry cleaning. Among other forms of cancer, perc has been associated with bladder cancer and lymphoma. Perc goes by many names, including perchloroethene, perchloroethylene, PCE, tetrachloroethylene, and tetrachloroethene.

persistent organic pollutant (POP): Carbon-based compounds that persist in the environment, can travel large distances, biomagnify, and have serious health effects for humans. The Stockholm Convention seeks to institute a global ban on persistent organic pollutants.

personal action: An action taken by an individual on a personal level, such as buying organic food, cleaning with natural products, and choosing lawn care practices that do not rely on synthetic chemicals. Often, personal actions are focused on protecting the individuals and their families from toxic exposures.

pesticide: An umbrella term for any substance that kills a “pest.” A pest can be a weed, an insect, a fungus, or a rodent. Therefore, herbicides, insecticides, fungicides, and rodenticides are all pesticides.

petroleum: A mixture of carbon-based chemicals from fossilized animals, ranging from the heavy
asphalt to the lightweight butane and methane. It is processed to become a range of products, including gasoline, plastics, and pesticides. It is a fossil fuel, a nonrenewable resource, and, when combusted, a major contributor to climate change.

**placenta:** The only temporary organ produced by the human body. The placenta connects a pregnant mother to the fetus in her uterus. It allows for nutrient uptake, waste elimination, and gas exchange. The placenta is permeable and is not a reliable barrier for protecting the unborn child from toxic substances in the mother’s body or the external environment.

**plasticizer:** An additive used to increase the plasticity of a material. For example, phthalates, which are endocrine disruptors, are plasticizers commonly used in PVC.

**plenary:** A term used in this guide to refer to the portions of the workshops involving all participants (as opposed to small-group activities).

**polychlorinated biphenyls (PCBs):** Industrial compounds linked to non-Hodgkin lymphoma, breast cancer, immune suppression, and learning disabilities. There are 209 different configurations of PCBs, which were banned for manufacture in North America in the 1970s, but still remain in the environment and in our bodies.

**polycyclic aromatic hydrocarbons (PAHs):** A class of compounds produced by incomplete combustion and found in cigarette smoke, the emissions of aluminum smelters, automobile emissions, etc. Some of the more well-known PAHs include benzo(a)pyrene and naphthalene. Some PAHs are known to cause cancer or birth defects, and metabolites of some PAHs are known carcinogens.

**polyvinyl chloride (PVC):** A type of plastic used widely in construction (also known as vinyl). It is inexpensive and durable and is known to cause liver cancer in some exposed workers.

**precautionary principle:** A social principle that gained popularity in the 1970s. In the simplest of terms, this principle means “do no harm” and “better safe than sorry.” Applying the precautionary principle to environmental health means that the burden of proof should be on the chemical manufacturers to prove that the chemical is safe before it is registered for use. For more information, see “The Precautionary Principle” info sheet on page 117 and the mini doc What Is the Precautionary Principle? on the Educational DVD.

**prevention:** Actively working to stop harm before it can occur.

**public action:** An action taken to protect the wider community, such as working for increased community access to organic food, protesting the manufacture of toxic cleaning products, and advocating for bylaws that would ban the cosmetic use of pesticides.

**public health:** The science of preventing disease and promoting health through efforts that focus on
the community as a whole.

**Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) Regulation:** A new regulation implemented by the European Union (EU) to control chemicals. This regulation represents the movement of the EU toward a precautionary approach to synthetic chemicals. For more information, see page 123.

**ratify:** To formally consent. In international treaties, ratification represents the final and binding approval of a government body that has signed an international treaty. In order for a government to be bound by a treaty that it has signed, the treaty must first be ratified by government process.

**reproductive toxicant:** A chemical compound that has a negative effect on the reproductive system or on a fetus.

**right-to-know laws:** Laws created under the legal principle that the individual has the right to know what chemicals they are being exposed to.

**risk assessment:** Part of a risk management procedure in which a determination is made about whether the level of risk presented by a specific action—or lack of action—is acceptable.

**Rotterdam Convention:** An international treaty that requires an importing country’s consent before certain hazardous chemicals are brought into that country. This treaty also encourages its signatories to exchange information about these substances in order to promote more environmentally sound trade and use of chemicals. Chrysotile asbestos has been put forward as a substance to be covered by this treaty. To date, the Canadian government has blocked its inclusion from the list.

**Save the World Symphony:** A metaphoric orchestral piece that Sandra Steingraber refers to in the mini doc *What Can We Do?* In the final pages of *Living Downstream*, Sandra writes, “I believe we are musicians in a human orchestra. It is time now to play the Save the World Symphony. It is a vast orchestral piece, and you are but one musician. You are not required to play a solo. But you are required to figure out what instrument you hold and play it as well as you can.” Individuals who are inspired by *Living Downstream* are often able to find their role in the environmental human rights movement by thinking about what instrument they hold.

**scene compilation:** A thematic grouping of scenes from *Living Downstream*, found on the Educational DVD in the bonus features section. The scene compilations are most useful for specialized screenings. For more information, see page 15.

**scene selection:** A menu in the bonus features of the Educational DVD that allows viewers to navigate directly to a specific scene and continue playing to the end of the film.

---

screening: An event at which a film, or a portion of a film, is shown to an audience.

single scene index: A list of the scenes from the *Living Downstream* feature-length film, found in the bonus features of the Educational DVD. This index allows users to play a single scene during a presentation or discussion.

stakeholder: A person, group, organization, or institution with an interest in a specific project or issue.

Stockholm Convention: A global treaty to protect human health and the environment from persistent organic pollutants (inherently toxic chemicals that remain intact in the environment for a long time and travel far from their points of manufacture and use). Currently, over 170 parties have signed the Stockholm Convention, including both the United States and Canada; while Canada was the first country to ratify the treaty, as of this writing, the United States still has not and therefore is not yet legally bound by this agreement.

substance of very high concern: A specific classification of chemicals within REACH; it includes chemicals that cause cancer, change DNA, harm reproductive or fetal health, persist and increase in the environment, accumulate in our bodies, or present an equivalent concern (such as endocrine disruptors).

synthetic chemicals: Chemicals that are not naturally occurring, but are man-made by synthesis in a laboratory or, less commonly, by an unintended chemical reaction (as in the case of dioxins created by incineration or disinfection by-products created by the chlorination of drinking water).

testosterone: A male reproductive hormone.

toluene: A common and toxic solvent, used in paint thinners, rubber, printing ink, disinfectants, and glues.

toxic: Harmful to health.

Toxicant: A toxic substance that humans have inserted into the environment, either intentionally or unintentionally.

toxicology: The study of poisons, and specifically, the impact of toxic substances on living things.

Toxics Release Inventory (TRI): A public database containing information on toxic chemical releases and waste management activities in the United States. The TRI is searchable by zip code and is maintained by the US Environmental Protection Agency.

trichloroethylene: A chemical compound most commonly used as an industrial solvent. It is a probable human carcinogen.
tumor: A solid lesion formed by an abnormal growth of cells. Not all tumors are cancerous.

**US Environmental Protection Agency (EPA):** The US federal agency charged with protecting the health of humans and the environment. The EPA was created in 1970, partially in response to the public’s concern over pesticides as a result of Rachel Carson’s book *Silent Spring*.

**volatile organic compounds (VOCs):** Chemical compounds that evaporate readily. VOCs are found in high levels in indoor air.

**vulnerable populations:** Groups of individuals who are more vulnerable to toxic exposures because of their identity. These groups include (but are not limited to) visible and ethnic minorities, people of lower socioeconomic status, those with serious illnesses (including cancer patients), individuals working in an industry with toxic occupational exposures, and those at vulnerable stages of development (see **windows of vulnerability** below).

**watchful waiting:** A period in which a patient is not receiving active treatment but is undergoing medical surveillance, watching for clues as to whether a potential health concern is developing.

**water-soluble:** A substance that has the ability to dissolve in water. Chemicals that are water-soluble tend to make their way into the bodies of water in our environment and to pass through our own bodies relatively quickly.

**windows of vulnerability:** Specific stages of development during which an individual is more vulnerable to toxic exposures. Known windows of vulnerability include gestation, infancy, childhood, adolescence, and old age. (For more detailed information, see the *Who Is Most Vulnerable?* mini doc on the Educational DVD.)

**workshop:** An interactive session in which participants are led through a process intended to teach them something new.

**zoology:** The branch of biology that is concerned with the study of animals.
Facts and Figures

CANCER

In 1962, one in four people in the United States and Canada could expect a cancer diagnosis in their lifetime.¹

In 2010, the lifetime risk for cancer had risen to almost one in two men and more than one in three women in the United States² and Canada.³ One in four people in Canada⁴ and nearly one in four in the United States⁵ now die from cancer.

The United States and Europe saw an increase in childhood cancers of 1% per year between the 1970s and the 1990s; Canada experienced a slightly smaller increase.⁶

About 1,500,000 Americans⁷ and 175,000 Canadians⁸ were newly diagnosed with cancer in 2010.⁹

Cancer is by far the leading cause of premature death in the United States¹⁰ and Canada,¹¹ well ahead of heart disease, stroke, and diabetes.

In 2008, the International Agency for Research on Cancer (IARC), part of the World Health Organization, predicted that cancer would be the leading cause of death worldwide by 2010.¹²

Between 1975 and 2000, the global number of cancer cases doubled; it is expected to double again by 2020 and to nearly triple by 2030.¹³

Workers in more than sixty occupations are exposed to substances that have been classified as definite human carcinogens by IARC, including farmers, chemists, factory workers, hairdressers, radiologists, photographers, and outdoor workers.¹⁴

Forty years ago, cancer was concentrated in the wealthy, industrialized countries. Now half of all cancers worldwide occur in the developing world, which is quickly becoming industrialized. Between 1973 and 1997, cancer incidence in China increased by 33%. Between 1983 and 1997, cancer incidence rose by 7% in India and 12% in Latin America.¹⁵

Breast cancer shortens its victims’ lives by twenty years, on average. This means that each year in the United States, nearly one million years of life are lost to breast cancer.¹⁶ In Canada, over 100,000 years are lost annually.¹⁷

In 2005, more than 200,000 men were diagnosed with prostate cancer in the United States; at that time, the average treatment cost was $42,570 over five years.¹⁸
Because bladder cancer has a very high recurrence rate (50% to 80%), patients need to be carefully monitored for the rest of their lives. This makes bladder cancer the most expensive cancer, per patient, to treat.\textsuperscript{19} A study of 208 patients between 1991 and 1999 found that, in 2005 US dollars, the average lifetime cost of treatment was $65,158 per patient.\textsuperscript{20}

**SYNTHETIC CHEMICALS**

An estimated 13 million synthetic chemical compounds have been synthesized in laboratories around the world,\textsuperscript{21} mostly since World War II.

Various studies have found a combined total of over 200 toxic chemicals in human breast milk samples from around the world.\textsuperscript{22}

To date, IARC has evaluated the cancer-causing potential of about 950 substances, 419 of which have been classified as known, probable, or possible carcinogens.\textsuperscript{23} The majority of these are synthetic chemicals.

In the United States, more than 80,000 industrial chemicals are inventoried under the US Toxic Substances Control Act (TSCA)\textsuperscript{24} and over 1,000 active ingredients used in pesticides are registered under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA).\textsuperscript{25} Yet, TSCA has been used to require toxicity testing for just 200 industrial chemicals\textsuperscript{26} and FIFRA allows pesticides to remain on the market—often for decades—until toxicity testing is complete.\textsuperscript{27}

In Canada, about 23,000 industrial chemicals are on the Domestic Substances List (DSL), created under the authority of the Canadian Environmental Protection Act to capture chemicals in use in the mid-1980s for which no pre-market “systematic assessment of their effects on human health and the environment” was required.\textsuperscript{28} Several thousand more substances have since come on the market after some degree of testing.\textsuperscript{29} As well, 572 active ingredients used in about 5,000 pesticide products are registered under the Pest Control Products Act.\textsuperscript{30} Preliminary evaluation of the DSL has designated 4,300 as priority chemicals needing further evaluation;\textsuperscript{31} many others have been categorized as medium or low priority, even though limited information about toxicity and exposure was available for this entire priority-setting exercise.

Every day, 42 billion pounds of chemicals are produced in or imported into the United States, and 90% of these are from nonrenewable fossil-fuel feedstocks. This is the equivalent of 623,000 gas tanker trucks carrying 8,000 US gallons each; placed end to end, they would reach from Washington, DC, to San Francisco and back.\textsuperscript{32}

Umbilical-cord blood samples taken from ten newborns in 2004 were found to contain an average of 200 pollutants, industrial compounds, and other chemicals, and a total of 287 chemicals. Of these substances, 180 cause cancer in humans or animals.\textsuperscript{33}
On average, each person in the industrialized world has a level of approximately 1 part per million of PCBs in their blood fat. By contrast, women who live in the eastern Arctic have about 7 parts per million, while people in western Greenland carry 14 parts per million. Babies born to mothers with just 1.25 parts per million in their blood fat will have neurological damage serious enough to be measured.34

In just twelve days, a baby born in smoggy Los Angeles will breathe enough air pollutants to exceed his or her lifetime acceptable risk for cancer.35

Lead in lipstick is not an urban legend. In 2009 the US Food and Drug Administration released a study on lead in lipstick. Every sample it tested had a level of lead between from 0.09 and 3.06 parts per million.36

Toxic chemicals that are known or suspected to cause health problems, including cancer, asthma, and reproductive harm, are found in nail products such as polish, polish remover, and artificial nails.37

North Americans, on average, use seventeen to twenty-one scented products every day. Of the 2,983 fragrance chemicals it evaluated in 1989, the US National Institute of Occupational Safety and Health classified 884 as toxic substances.38

---

9 These figures exclude the most common types of skin cancers, which strike more than one million additional Canadians and Americans each year (Canadian Cancer Society et al., *Canadian Cancer Statistics 2010*, p. 1; National Cancer Institute, Skin Cancer, n.d., retrieved from [www.cancer.gov/cancertopics/types/skin](http://www.cancer.gov/cancertopics/types/skin)).
13 Mulcahy, “Cancer to Become Leading Cause of Death Worldwide by 2010.”


The Precautionary Principle

“The Precautionary Principle does not tell us what we should do, but it does serve as a starting point for imagining a future where nontoxic alternatives . . . are embraced as the commonsense solution.”

~ Sandra Steingraber, Living Downstream

The idea of the precautionary principle has been expressed over time as “first, do no harm,” “better safe than sorry,” and “look before you leap.”

This idea became a formal principle of environmental policy in Germany in the 1970s when that country faced an ecological crisis. Rivers were heavily polluted, the Black Forest was dying, and marine mammals were disappearing from the North Sea. While toxic exposures seemed to be wreaking havoc on the natural world, it was hard to make clear causal links without decades of study. By the time cause-and-effect relationships could be scientifically proven, many species would be extinct and entire forests would be wiped out. The Germans used the Vorsorgeprinzip (literally “forecaring principle”) to take protective action while the science was still uncertain. Germany became an innovator in environmental technology and helped bring the precautionary principle into international agreements, such as the Second North Sea Treaty, the Convention on Biological Diversity, and the charter that formed the European Union.

In 1998, a group of scientists, philosophers, lawyers, and environmental activists met at Wingspread (headquarters of the Johnson Foundation) in Racine, Wisconsin, to discuss the precautionary principle—its meaning and its implementation. At the end of the conference, which was convened by the Science and Environmental Health Network, the following statement was written and signed by the participants. Sandra Steingraber, author of Living Downstream, was one of its signatories. The statement, reproduced in full below, has since helped to define the meaning of precaution to the environmental health movement.

THE WINGSPREAD CONSENSUS STATEMENT ON THE PRECAUTIONARY PRINCIPLE

The release and use of toxic substances, the exploitation of resources, and physical alterations of the environment have had substantial unintended consequences affecting human health and the environment. Some of these concerns are high rates of learning deficiencies, asthma,  

cancer, birth defects and species extinctions; along with global climate change, stratospheric ozone depletion and worldwide contamination with toxic substances and nuclear materials.

We believe existing environmental regulations and other decisions, particularly those based on risk assessment, have failed to protect adequately human health and the environment—the larger system of which humans are but a part.

We believe there is compelling evidence that damage to humans and the worldwide environment is of such magnitude and seriousness that new principles for conducting human activities are necessary.

While we realize that human activities may involve hazards, people must proceed more carefully than has been the case in recent history. Corporations, government entities, organizations, communities, scientists and other individuals must adopt a precautionary approach to all human endeavors.

Therefore, it is necessary to implement the Precautionary Principle: When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically.

In this context the proponent of an activity, rather than the public, should bear the burden of proof.

The process of applying the Precautionary Principle must be open, informed and democratic and must include potentially affected parties. It must also involve an examination of the full range of alternatives, including no action.

*This information has been drawn from the resources on the Science and Environmental Health Network’s website. For detailed information on the precautionary principle and its implementation, please visit:* [www.sehn.org](http://www.sehn.org).
Fossil Fuels and Cancer Prevention

“We are standing at a historic confluence, a place where two rivers meet: a stream of emerging knowledge about what the combustion of fossil fuels is doing to our planet is joining a stream of emerging knowledge about what synthetic chemicals derived from fossil fuels are doing to our bodies.”

~ Sandra Steingraber, Living Downstream

In the second edition of Living Downstream, ecologist and cancer survivor Sandra Steingraber, PhD, argues that the fight against climate change and the fight against toxic chemicals are deeply intertwined. This is true for the following reasons: (1) synthetic chemicals linked to cancer are often created from petroleum and coal, (2) one quarter of the toxic pollutants released in North America come from the US petroleum industry, and (3) coal burning and mining are other major sources of toxic chemical releases. Thus, according to Sandra, when we make an investment in green energy, we are also making an investment in cancer prevention.

In November 2011, Teresa Heinz and the Heinz Family Foundation presented Sandra with a prestigious Heinz Award for her work calling public attention to the effects of toxic chemicals on human health. The Heinz Awards celebrate individuals who have made a meaningful and enduring impact with their efforts to improve the lives of others. In the statement below, Sandra responds to this honor by recommitting herself to the ongoing struggle against fracking—a dangerous process of natural gas extraction that she believes is the environmental issue of our time. As Sandra describes it, fracking is a local, national, and international crisis with the potential to wreak untold damage on our health, our environment, and our climate.

THE HEINZ AWARD AND WHAT I PLAN TO DO WITH IT
By Sandra Steingraber

I’m thrilled to receive a Heinz Award in recognition of my research and writing on environmental health. This is work made possible by my residency as a scholar within the Department of Environmental Studies at Ithaca College. Many past and present Heinz Award winners are personal heroes of mine—and Teresa Heinz herself is a champion of women’s environmental health—so this recognition carries special meaning for me.

And it comes with a $100,000 unrestricted cash prize. Which is stunning.

As a bladder cancer survivor of 32 years, I’m intimately familiar with two kinds of uncertainty: the kind that comes while waiting for results from the pathology and radiology labs and the kind that is created by the medical insurance industry who decides whether or not to pay the pathology and radiology bills. Over the years, I’ve learned to analyze data and raise children while surrounded by medical and financial insecurities. It’s a high-wire act.

But as an ecologist, I’m aware of a much larger insecurity: the one created by our nation’s ruinous dependency on fossil fuels in all their forms. When we light them on fire, we fill the atmosphere with heat-trapping gases that are destabilizing the climate and acidifying the oceans (whose plankton stocks provide us half of the oxygen we breathe). When we use fossil fuels as feedstocks to make materials such as pesticides and solvents, we create toxic substances that trespass into our children’s bodies (where they raise risks for cancer, asthma, infertility, and learning disorders).

Emancipation from our terrible enslavement to fossil fuels is possible. The best science shows us that the United States could, within two decades, entirely run on green, renewable energy if we chose to dedicate ourselves to that course. But, right now, that is not the trail we are blazing.

Instead, ever more extreme and toxic methods are being deployed to blast fossilized carbon from the earth. We are blowing up mountains to get at coal, felling boreal forests to get at tar, and siphoning oil from the ocean deep. Most ominously, through the process called fracking, we are shattering the very bedrock of our nation to get at the petrified bubbles of methane trapped inside.

Fracking turns fresh water into poison. It fills our air with smog, our roadways with 18-wheelers hauling hazardous materials, and our fields and pastures with pipelines and toxic pits.

I am therefore announcing my intent to devote my Heinz Award to the fight against hydrofracking in upstate New York, where I live with my husband and our two children.

Some might look at my small house (with its mismatched furniture) or my small bank accounts (with their absence of a college fund or a retirement plan) and question my priorities. But the bodies of my children are the rearranged molecules of the air, water, and food streaming through them. As their mother, there is no more important investment that I could make right now than to support the fight for the integrity of the ecological system

---

that makes their lives possible. As legal scholar Joseph Guth reminds us, a functioning biosphere is worth everything we have.³

This summer I traveled through the western United States and saw firsthand the devastation that fracking creates. In drought-crippled Texas where crops withered in the fields, I read a hand-lettered sign in a front yard that said, “I NEED WATER. U HAUL. I PAY.” And still the fracking trucks rolled on, carrying water to the gas wells.

This is the logic of drug addicts, not science.

I also stood on the courthouse steps in Salt Lake City while climate activist Tim DeChristopher was sentenced to two years in federal prison for an act of civil disobedience that halted the leasing of public land for gas and oil drilling near Arches National Park. Before he was hauled away by federal marshals, Tim said, “This is what love looks like.”

After two months of travel, my children and I arrived home to the still unfractured state of New York. After stopping at a local farm stand to buy bread, tomatoes, cheese, and peaches for dinner, we celebrated our return along the vineyard-and-waterfall-lined shore of Cayuga Lake. I watched my son skip stones across its surface. Under his feet lay the aquifer that provides drinking water to our village.

This is what security looks like. Please join me in the struggle to defend the economy and ecology of upstate New York. Bring what you can.

Ecologist, author, and cancer survivor Sandra Steingraber, PhD, is an internationally recognized authority on the environmental links to cancer and human health. For more information on her work, visit http://steingraber.com. For more information about fracking in upstate New York, visit http://frackaction.com.

³ “The Earth’s biosphere seems almost magically suited to human beings, and indeed it is, for we evolved through eons of intimate immersion within it. Many of us are animated by moral and religious impulses to treasure and respect the creation that sustains us. We cannot live well without a functioning biosphere, and so it is worth everything we have.” Joseph H. Guth, “Law for the Ecological Age,” Vermont Journal of Environmental Law 9.
Learning from Europe

“REACH requires that producers and importers of chemicals disclose toxicity data in order for their products to enter or remain on the market. No data, no market.”

~ Sandra Steingraber, Living Downstream

It is not yet known exactly how many chemicals are on the market in Europe. The last official count occurred in 1981, at which time there were approximately 106,000 chemicals registered. Over the past forty years, in an effort to regulate these chemicals, a complex patchwork of laws has been developed by the European Union (EU) and its member countries. In response to rising concerns about the link between synthetic chemicals and human health—and to mounting evidence about the ineffectiveness of the existing laws—the European Commission is overhauling their chemicals policies. Two of the newest and most substantial pieces of legislation are discussed below. While these regulations aren't perfect, they represent the movement of a governmental body toward enshrining the precautionary principle in law and can be used to inform our conversations about the regulation of chemicals elsewhere in the world.

REACH (officially named the “Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation”)

The new EU legislation to control chemicals, the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) Regulation, came into effect in June 2007. According to the European Commission’s website, REACH’s aims are “to improve protection of human health and the environment from the risks of chemicals while enhancing the competitiveness of the EU chemicals industry.” REACH sets out to do three things: (1) obtain basic health and safety information for about 30,000 chemicals (those that are manufactured or imported in quantities greater than 1 metric ton per year); (2) identify the most harmful chemicals and set conditions for their use; and (3) foster the innovation of safer chemical products and processes.

2 The precautionary principle is a social principle that was first formalized in environmental policy in Germany in the 1970s when that country was facing ecological crisis. In the simplest of terms, this principle means “do no harm” and “better safe than sorry.” Applying the precautionary principle to environmental health means that the burden of proof should be on the chemical manufacturers to prove that the chemical is safe before it is registered for use.
Under REACH, the data collected will help to fill a thirty-year gap in public information about chemicals that are on the European market. Moreover, the burden of proof for the safety of chemicals is now being placed on the producers, as explained in a briefing produced by the Health and Environment Alliance (HEAL) and others:

One of the pillars of REACH is that it involves a shift in responsibilities. In the future, the chemical manufacturing industry itself must provide the data and assess its chemicals [to ensure they do not harm human health or the environment, and to manage the risks], with some checks being done by the Regulatory Authorities.4

In addition, a new system to identify and closely control the use of the most hazardous chemicals has been established. These are classed as *substances of very high concern* and include chemicals that do any of the following:

- cause cancer
- change DNA
- harm reproductive or fetal health
- persist and increase in the environment while being toxic
- accumulate in our bodies (are bioaccumulative)
- present an “equivalent level of concern”5 (such as those with endocrine disrupting properties)

Substances of very high concern can be subject either to REACH restrictions (bans) or to the REACH authorization process. In the authorization process, industry can seek permission for a chemical’s continued use in specific products or applications. Whether a substance of very high concern is authorized for use will depend on the type of substance. Persistent, bioaccumulative, and toxic substances can be authorized for use only if there are no safer alternatives and the socioeconomic benefits are judged to outweigh the risks. Some carcinogens, mutagens, reproductive toxicants, and chemicals of equivalent concern will be authorized if the industry proves that the risks can be adequately controlled, even if safer alternatives exist.

Many European scientists, health-care professionals, and environmental health advocates are in support of the new regulation. In North America, REACH is being held up as an example of a chemicals policy that takes a precautionary approach. However, many believe that the regulation could still be

---


strengthened to ensure greater protection of public health and the environment. For example, *chemicals of equivalent concern*, intended as a miscellaneous category for other harmful chemicals that did not fit the other definitions, must have demonstrated “scientific evidence of probable serious effects.” This stipulation has been a subject of debate, because “probable serious effects” strikes some as too high a burden of proof.

Also, while the authorization process will enable tighter control—and sometimes even elimination—of certain harmful chemicals, critics of the process point out that it may also enable potential long-term exposures to other chemicals, even if at very small levels. These exposures can be particularly harmful to those in developmental phases of biological vulnerability (e.g., unborn babies, infants, and adolescents during puberty). Additionally, REACH risk assessment is designed to evaluate one chemical at a time in isolation, rather than considering the real-world chemical mixtures to which we are exposed. Many are asking whether some chemicals might be unsafe at any level, since low levels of chemicals are known to combine and together create potentially negative impacts on human health.

The potential of REACH to truly enact the precautionary principle will depend in large part on how well it is implemented and improved upon over time. This fact reinforces the need for national governments, EU institutions, and public interest organizations, as well as chemicals manufacturers, product suppliers, and retailers, to continue these efforts well into the future.

**Pesticides Regulation (sometimes referred to as the “Plant Protection Products Program”)**

“Human health and the environment is a major concern for European Commission policy.” So begins the introduction to the pesticides section of the European Commission's food safety website.

The regulation of pesticides in the EU is based on a permission system. In 1993, the European Commission began a review of all the pesticides that were on the market at the time. By 2009, this review of approximately 1,000 substances was complete. Under the laws dating from 1991, a pesticide could be used only if the scientific review committee found all of the following to be true:

- The pesticide had no harmful effect on consumers, farmers, local residents, or passersby.
- The pesticide had no unacceptable effects on the environment.
- The pesticide was effective against pests.

Of those approximately 1,000 chemicals that were on the market in Europe in 1993, 26% passed the EU safety assessment and were approved for use in the EU, whereas 67% were eliminated due to the...
failure of industry to submit the necessary data, and 7% were reviewed and denied approval. As a result, only 250 pesticidal agents were declared legal for use in EU member states.

In 2009, the EU also completed a major overhaul of the EU pesticides laws. The intention was to ensure that the legal framework was based on the latest scientific evidence regarding pesticide risks and hazards and that the laws prohibited pesticides with certain intrinsically hazardous properties. Pesticides that cause cancer, damage DNA, harm the reproductive system, and disrupt the hormonal system (endocrine disruptors) are now all banned.

While the new laws establish bans for the most harmful pesticides, exemptions from these bans are still possible in the case of a serious threat to plant health. Furthermore, the bans apply to new substances and to older pesticides only once they come up for reauthorization. This means that carcinogenic pesticides assessed and permitted under the old system will remain on the market for a long time (often until 2016), instead of being banned immediately. Nevertheless, the new rules will bring major health benefits—especially to farmers and their families, who disproportionately experience the health risks and other costs of chronic pesticide exposure.

The new pesticides laws also improve protection for children, pregnant women, and other vulnerable groups. They introduce a broad definition of such groups and state that risk assessment and authorization must be based upon the higher vulnerability of these groups. Pesticides with neurotoxic (and immunotoxic) effects on children will now be put on a list of candidates for substitution, meaning that they must be replaced as soon as safer alternatives exist. While this policy marks progress, a stronger signal would have been to severely restrict and even ban the use of such substances, as recommended by the world-renowned cancer research cooperative, the Ramazzini Institute.

Finally, beyond risk assessments and authorization, the new rules also establish requirements for how pesticides can be used. These requirements range from creating standards for the training of pesticide users to mandating that all EU member states develop and implement National Action Plans for pesticide reduction—including reduction targets—by 2012. EU member states are also obliged to ensure pesticide use is minimized or, in some cases, banned in certain public areas, such as parks, schools, playgrounds, hospital grounds, and other land close to residential areas. EU member states have taken very different approaches to creating these pesticide-free areas, with some countries—like Belgium, where many cities have gone pesticide free—leading the way. Going forward, the continuous engagement of citizens, the health-care community, and cancer patients and survivors, along with their elected representatives, will be required to effectively create toxics-free environments.

For more information on the EU’s approach to the regulation of toxic chemicals, please visit HEAL’s website at www.env-health.org.
Stories from the Movement

“Those who have made profound change have been successful largely thanks to their persistence. They each found their place in this environmental human rights movement and never gave up. They are heroes. What their stories tell us is that the rest of us can be heroes too.”

~ Sandra Steingraber

The short anecdotes that follow are hopeful and inspiring reminders of the power we all have to create change. The stories tell of individuals who—starting with their own interests and identities and working with others—created significant public change in the field of environmental health. Use one or more of these stories to inspire workshop participants, screening audiences, or members of your organization. Or use them as a model for creating your own stories that speak directly to your group’s specific area of work.

A LETTER TO THE EDITOR CHANGES FEDERAL POLICY

Olga Owens Huckins was an avid birdwatcher from Massachusetts. Little did she know that her love of birds would lead to a major shift in US federal policy. One summer in the late 1950s, she found them: fourteen dead songbirds strewn across her property. Their deaths occurred after an aerial spraying of pesticides—what was then a common practice for controlling mosquitoes. Olga was angered by the deaths of the beautiful birds; she would eventually describe their corpses in the following way: “Their bills were gaping open, and their splayed claws were drawn up to their breasts in agony.” But it was several months before she put these and other observations down on paper.

While flipping through the pages of the Boston Herald the following winter, Olga found an article claiming that the mosquito control spray—which contained mostly DDT—was “entirely harmless.” Outraged, she wrote a passionate letter to the editor. And she forwarded a copy of that letter to an acquaintance: biologist and writer Rachel Carson. This letter told of the songbirds and of Olga’s conviction that their deaths had been caused by DDT. It inspired Carson to investigate the true effects of chemical pesticides, and what she learned compelled her to write a book. Released in 1962, this book, Silent Spring, quickly became a best seller. It was the topic of an evening news special and even prompted several members of the US Congress to hold hearings on the issue. The public and political dialogue sparked by Silent Spring led to a ban on several harmful pesticides—including DDT—and prompted the creation of the US Environmental Protection Agency. Before this, no federal-level agency in the United States had been tasked with protecting the environment. It was Carson who argued for these reforms and it is Carson who is now credited with launching modern environmentalism, but it was Olga’s simple passion for bird-watching that started it all.
A MOTHER PROTECTS HER COMMUNITY FROM TOXIC WASTE

Lois Gibbs will never forget the day in 1978 when she read an article in her local paper stating that her children's school playground was built on a toxic waste site. She wondered if this might explain her son's epileptic seizures, frequent hospital visits, and rapidly declining health. Could it all be from chemicals that had been buried in the ground years earlier? When the authorities denied Lois' request to move her son to another school, she decided to go door-to-door with a petition asking authorities to close the school and move all the children to a safer location.

Petition in hand, Lois stood in the street, staring at the first house on her route. Terrified of sounding stupid or of being met with hostility, she forced herself to knock on the door. When there was no answer, she was unable to go to the next house. Lois went home, feeling defeated. But she tried again the next day, this time beginning at her friends' houses. Quickly it became clear to Lois that she was not the only one with concerns about this quaint neighborhood of Love Canal, New York. The more she learned about her neighbors' health problems, the more convinced she became that the neighborhood wasn't a safe place for anyone.

Over three years, without any formal environmental education, Lois and a dedicated group of neighbors worked to convince the state and federal governments to protect them from the chemicals in their backyards. They conducted their own research studies, garnered media attention, and demanded action from the politicians. Eventually, the federal government agreed to relocate the entire community. Lois' work also convinced the US government to create a law compelling responsible parties to pay for the cleanup of other toxic waste sites, and to create a fund for cleaning up those sites where the responsible parties could not be identified. After this incredible victory, thousands of people across the United States began asking Lois for help in making their own communities safer and healthier. To respond to these requests, she founded the Center for Health, Environment and Justice. To date, Lois and her organization have helped over 11,000 grassroots groups gain the information and skills they need to protect their communities.

A NURSE BECOMES A TEACHER OF ENVIRONMENTAL HEALTH

When Barbara Sattler, a registered nurse with a doctorate in public health, read a study by the Institute of Medicine (IOM), she didn't realize it would lead her to add yet another dimension to her professional life. The study revealed that physicians were poorly prepared for dealing with issues of environmental and occupational health. Upon reading this, Barbara felt a pang of recognition, suspecting that the same might be true of nurses. She and two other nurses approached the IOM and asked if a similar study could be done on the field of nursing. The study was conducted, deficiencies were found, and many useful recommendations were provided. But Barbara knew the limitations of a study. She realized that if nurses were going to truly understand these issues, they would need someone to teach them.
So Barbara took it upon herself to establish the first academic program in environmental health nursing, which she now directs at the University of Maryland. In this program, she takes students straight into the community to learn firsthand about the links between industrial pollution and human health. She has authored a textbook and numerous journal articles, organized several nursing conferences, spearheaded EnvirRN (a vast online resource for nurses concerned with environmental health), and developed a series of continuing education and online children’s environmental health courses. In 2010, the American Nurses Association pronounced that environmental health must be a part of every nurse’s practice. Barbara and her like-minded nursing colleagues from around the country have created the Alliance of Nurses for Healthy Environments, which is helping to integrate environmental health into basic nursing education, practice, research and policy/advocacy. Barbara credits their success to “the malady that most nurses suffer—if we see a problem, we need to fix it.”

**A CITY PLANNER IS MOTIVATED BY RELIGIOUS FAITH**

While in high school, Michael Abbaté had two life-changing experiences in the wilderness. First, he attended a Christian camp in the mountains, where he was deeply moved by the teachings on God’s love. Later, he took a summer biology course in the Mojave Desert, where he felt a strong connection to the natural world. Over time, these two aspects of Mike’s life became tightly intertwined, leading him to believe that his Christian calling was to be a caretaker of the environment—what he calls creation care.

After high school, Mike went on to study landscape architecture. He later became a partner in GreenWorks, an award-winning firm that focuses on environmentally sustainable site design. But at work, whenever he spoke about his faith, his comments were met with silence and discomfort. And at church, whenever he spoke about his environmentalism, the response was the same. This made Mike question whether his two core beliefs were in conflict. He began writing to clarify his argument for faith-driven environmentalism, and before long he realized he was writing a book. The result, *Gardening Eden*, has created an opening for conversation and reflection among Christians as well as environmentalists.

Having successfully laid out his argument for himself and others, Mike continued to follow his calling to design landscapes that honor the true interconnectivity of nature. He now oversees planning, design, and construction with the City of Portland’s Parks and Recreation bureau, helping to realize the community’s goal of creating the most environmentally sustainable park system in America, if not the world. For Mike, a thoughtfully designed parks network can become a migration corridor for birds and mammals, thrive with organic pest control methods, provide natural irrigation for storm water, and still have baseball diamonds and picnic areas—improving both the environment and human health while connecting a community. Now that’s creation care.
A MAN’S TRAVELS LEAD TO GLOBAL HEALTH CARE REFORM

Just out of college, Gary Cohen was uncertain about what to do with his life. So he decided to travel through India, where he fell in love with the country and its people. Upon returning to the US, still unsure of what career path to pursue, he began to work with the National Toxics Campaign and quickly became passionate about the issue of environmental health. It was during this time that a horrific tragedy occurred, bringing Gary’s mission sharply into focus. A Union Carbide chemical plant exploded in Bhopal, India, killing 5,000 people immediately and injuring hundreds of thousands more. The event affected Gary deeply. He began working with the survivors in India to obtain compensation from the company, and he began advocating for stricter regulations of the chemical industry at home in the US.

Several years later, as he continued to fight for chemical reform, Gary was shocked to learn that the chemical industry was not the only large-scale toxic polluter. The health-care sector (through its incineration of medical waste) was the largest producer of dioxin—a chemical by-product often described as the most toxic on earth. So Gary co-founded Health Care Without Harm (HCWH), a coalition that now boasts over 500 member organizations in more than fifty countries. To date, the coalition’s work has inspired the closure of over 95% of the medical waste incinerators in the US and the near-complete elimination of mercury-containing medical products from European and American hospitals. But Gary and HCWH aren’t stopping there. They are currently working to detoxify the supply chain of the health-care sector, reduce hospitals’ carbon pollution, and increase the amount of local and sustainably produced food available in medical facilities. The World Health Organization has even begun working in collaboration with HCWH to eradicate the use of mercury in the health-care industry across the globe and to address climate change as a public health crisis.

A FARMER’S SISTER SOWS THE SEEDS OF CHANGE

Terra Brockman was born into the fourth generation of a central Illinois farm family. Though it was a great place in which to grow up, as she got older, her hometown began to seem something of a backwater. So Terra eagerly left the Midwest and stayed away for decades. During her travels, she witnessed people in developing countries eating better than some in her home state. Their food was fresh, local, and unprocessed. But in Illinois, 95% of the food on dinner tables is imported, while farmland grows corn for livestock, ethanol, and processed foods. By the time Terra moved back to her hometown, she passionately believed that healthy, delicious foods should take root in the rich soils of Illinois.

Terra immediately set to work on her brother Henry’s organic farm. Day after day, she plunged her hands into the earth, which nourishes over 650 different varieties of vegetables. Then, in 2001, two neighboring farms went up for sale. A real estate developer expressed interest, and everyone knew it was only a matter of time before houses would sprout on that fertile land.
Terra saw an opportunity. She started an educational nonprofit called The Land Connection (TLC) and raised the funds to purchase the two farms. Next, she matched new farmers with the plots of land and trained them in organic, sustainable food production. So far, TLC, with Terra still at its helm, has trained 106 new farmers, converted 4,601 acres into sustainable farmland, and helped to bring countless tons of fresh, local, healthy food to Illinois dinner tables. Not bad for a woman who couldn't wait to leave home!

**A DOCTOR SEES PATTERNS OF ILLNESS AND WORKS FOR PREVENTION**

In 1984, a dermatologist named June Irwin began noticing many patients with inexplicable skin and health problems. By September of that year, one such patient was in crisis. The woman had come to see Dr. Irwin because of a rash on her feet. The rash became progressively worse, culminating in a two-month stay in hospital. So mysterious were this patient’s symptoms that Dr. Irwin decided to launch her own informal investigation: she talked with the woman about her previous chemical exposures; she collected blood and sent it away for testing. All the findings—including lab tests showing levels of herbicide in her blood—led back to the pesticides that the patient’s husband sprayed on their lawn.

When the doctor voiced her concerns at a town meeting, some people snickered. But she wasn't worried about being laughed at—she was worried about protecting her patients. For the next six years, Dr. Irwin attended every town meeting, each time presenting new information about pesticides and human health. She also wrote letters to the editor, organized rallies, and collected signatures on petitions.

By 1991, Dr. Irwin's campaign to change public and political opinion had worked. With strong community support, her town of Hudson, Quebec, passed a municipal bylaw that made the cosmetic use of pesticides illegal. It was the first law of its kind in North America, and two lawn-care companies challenged it. But Canada’s most powerful court upheld the small town's ban, paving the way for similar laws to be enacted in many other communities. There are now province-wide bans on the nonessential use of pesticides in Ontario, Quebec, New Brunswick, and Prince Edward Island—protecting 65% of Canadians from these toxic chemicals. Advocates of the bans include the Canadian Cancer Society, the Ontario College of Family Physicians, and of course, June Irwin.
## Evaluation Form

<p>| | | | | | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>I know more about the environmental links to cancer than I did yesterday.</td>
<td>1  2  3  4  5  6  7  8  9  10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I want to learn more about environmental health.</td>
<td>1  2  3  4  5  6  7  8  9  10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I want to share what I have learned with others.</td>
<td>1  2  3  4  5  6  7  8  9  10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I feel energized and hopeful.</td>
<td>1  2  3  4  5  6  7  8  9  10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am ready to take action.</td>
<td>1  2  3  4  5  6  7  8  9  10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I know what I want to do to help make change.</td>
<td>1  2  3  4  5  6  7  8  9  10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

What can we do to improve this event in the future?

Is there anything else you would like to share about your impressions of this event?

---

## Evaluation Form

<p>| | | | | | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>I know more about the environmental links to cancer than I did yesterday.</td>
<td>1  2  3  4  5  6  7  8  9  10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I want to learn more about environmental health.</td>
<td>1  2  3  4  5  6  7  8  9  10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I want to share what I have learned with others.</td>
<td>1  2  3  4  5  6  7  8  9  10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I feel energized and hopeful.</td>
<td>1  2  3  4  5  6  7  8  9  10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am ready to take action.</td>
<td>1  2  3  4  5  6  7  8  9  10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I know what I want to do to help make change.</td>
<td>1  2  3  4  5  6  7  8  9  10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

What can we do to improve this event in the future?

Is there anything else you would like to share about your impressions of this event?
These handouts were created to support the three workshops outlined in this guide. However, they are generic enough to be used for a range of other purposes: as resources for your other public education and outreach activities, as the basis for training sessions with staff and volunteers, or as informational pieces to be included with other literature about your organization and its issues of concern.

**Workshop 1**

- Myths about Cancer and Chemicals
- Chemical Exposures at Home
- Chemical Exposures in Our Institutions
- Chemical Exposures in Our Communities

**Workshop 2**

- Common Concerns about Toxics
- Assessing Challenges and Opportunities
- Building on Your Strengths

**Workshop 3**

- Chemicals Quiz
- Broken Squares Template
Myths about Cancer and Chemicals

Myth 1: All chemicals on the market have been tested for safety.

In both the United States and Canada, several laws and associated regulations govern the manufacture and use of synthetic chemicals. While these laws and regulations vary widely in their specifics, many experts believe that they are not adequate for protecting human health, particularly the health of vulnerable populations such as children, fetuses, ethnic minorities, and workers. And yet, at present, the US government has no plans to evaluate the toxicity of the vast majority of chemicals. Those that are slated for testing are often allowed to remain in use until the tests have been completed—sometimes decades later. While the Canadian government has identified thousands of priority chemicals requiring further evaluation, these risk assessments are not comprehensive; they do not require the assessment of all hazardous endpoints, do not require new testing data for specific toxicity, and do not take a precautionary approach when data are not present.

Myth 2: Chemicals that are proven harmful are taken out of commerce.

Very few chemicals have been taken out of commercial use. In the United States and Canada, the approach is most often an attempt to manage the environmental and health impact of toxic chemicals after they have been released into the environment and discovered to be harmful. Our current approach is a risk-based one, relying on determining the level of exposure to humans and the environment. If the government can show that these risks are higher than is considered “acceptable” or that the risk outweighs the economic benefits of a chemical, it is able to place certain restrictions on that chemical. A full ban on a chemical occurs very rarely.

Myth 3: Science hasn’t been able to prove that chemicals cause cancer, because they don’t.

The International Agency for Research on Cancer, a World Health Organization agency, has (so far) concluded that over 400 substances—the majority of which are synthetic chemicals—are known, probable, or possible human carcinogens.¹


www.livingdownstream.com
Myth 4: Chemicals cause cancer only in high doses.

There is no “safe” dose when it comes to toxic chemicals. This is because, as individuals, we all have different vulnerabilities, based on our genetics, our past chemical exposures, our lifestyle choices, and our stage of physical development at the time of exposure. Additionally, low levels of multiple chemicals can interact with one another, collaborating to harm our health.

Myth 5: The American Cancer Society is a leading advocate for prevention.

This agency does promote prevention by advocating healthy lifestyle choices such as eating fresh whole foods, getting regular exercise, and not smoking. But the American Cancer Society has consistently downplayed the role of environment in cancer risk. The Canadian Cancer Society, on the other hand, has recently begun to take a vocal stance on the environment’s contribution to cancer, including advocating for municipal and provincial bans on the cosmetic use of pesticides.

Myth 6: Everything causes cancer.

Deep down, we know this to be untrue. When we say that everything causes cancer, the implication is that there isn’t anything we can do about it. But this too is untrue. Cancer is a preventable disease. We can prevent exposure to carcinogens by abolishing them from manufacture.

Myth 7: Cancer is primarily caused by genetics.

While cancer is caused by a genetic mutation that initiates the growth of a cancerous tumor, the majority of cancers are not caused by faulty genes passed from one generation to the next. In other words, the genetic damage that leads to the development of cancer is more likely created by one or more toxic exposures than inherited.

Myth 8: If we want to prevent cancer, we should simply focus on cleaning up our lifestyles.

Healthy lifestyles—including eating well and not smoking—are important for cancer prevention and general health. But cancer is not caused simply by poor lifestyle choices. For example, farmers in the United States smoke and drink less and exercise more than the average American, and yet they die more often from multiple myeloma, melanoma, and prostate cancer. They also have higher rates of

---

non-Hodgkin lymphoma and brain cancer.³

Myth 9: Cancer is primarily an older person’s disease.

The Canadian Cancer Society’s annual publication Canadian Cancer Statistics estimates that in 2011, people seventy years of age or older will account for 42% of new cancer diagnoses.⁴ This means that the majority of cancers (58%) will occur in Canadians under the age of seventy. Between 1973 and 2000, childhood cancers in the United States rose in frequency by 22%.⁵

Myth 10: Cancer is a random tragedy.

It may seem as if cancer acts randomly—especially at the individual level, when someone you love is diagnosed—but there are patterns to be found in the cancer statistics. Where you live and what job you hold both affect whether you might develop cancer. For example, the closer a woman lives to a toxic waste site, the greater her risk of developing breast cancer. Also, employees in any of over sixty occupations—such as farmers, factory workers, and hairdressers—are exposed to definite human carcinogens at work.⁶

Myth 11: Cosmetics, personal care products, and home cleaners are safe.

You just have to look at the skull and crossbones on many everyday cleaning products to know this is untrue. Also, many cosmetics, personal care products, and home cleaners contain “trade secret” ingredients, meaning that manufacturers do not have to disclose some ingredients that may be, and often are, toxic.

Myth 12: Our laws will protect us from carcinogens and other harmful pollutants.

Through our laws we have tried—for the most part unsuccessfully—to manage, rather than eliminate, substances that have been discovered to be carcinogens, reproductive toxicants, or hormone disruptors. This management system is sometimes called an “end-of-pipe” solution and is difficult, expensive, and ineffective. Very few substances have been banned entirely from commercial use, but such a ban is the only way to ensure zero exposure to a harmful substance.

⁵ Sandra Steingraber, Living Downstream, 2nd ed., p. 45.
Myth 13: Our hospitals and schools are clean, safe refuges from harmful substances.

Although most schools and hospitals are becoming greener, there are many examples of toxic substances in these facilities. For example, toxic exposures arise from x-rays, chemotherapy drugs, and by-products of medical incineration in hospitals, and from school bus diesel exhaust, washroom disinfectants, and toxic art supplies in schools.

Myth 14: The human body is amazing—it can adapt to a few chemicals.

While our bodies are powerful, they are not well adapted to our new chemical world. Human exposure to synthetic chemicals has increased significantly since World War II. Exposures in early life and multiple exposures to similar chemicals are especially difficult to deal with. Sometimes our bodies do not recognize these substances as invaders and allow them to participate in—and tamper with—our biological processes. Or our bodies might recognize the chemicals as toxic but be unable to safely detoxify them. At other times our bodies expend so much effort in attempting to expel the chemicals that our immune systems become compromised.

Myth 15: The problem is too big.

When learning about cancer and synthetic chemicals, it is easy to get discouraged and to want to give up. But it is often when we are facing the greatest challenges that we are at our best. When confronted with fascism in Europe, the Allies went to war to stop Hitler and Mussolini. When facing the moral injustice of slavery, abolitionists worked for the legal recognition of the humanity of slaves. When struggling with a cancer diagnosis, patients bring all their energy to eliminating the tumors from their bodies. We can bring the same spirit, energy, persistence, and inventiveness to the problem of cancer and chemicals. It is not a problem that is too big to solve.
Chemical Exposures at Home

*Living Downstream* is inspiring many people to take action to reduce or eliminate our dependency on toxic chemicals. Below are some facts about the toxic chemicals we are exposed to in our homes and some suggestions for actions you can take.

Remember, you don’t have to do it all. Pick one thing at a time and do it as well as you can.

<table>
<thead>
<tr>
<th>PROBLEM</th>
<th>Many conventionally grown foods contain detectible levels of potentially harmful pesticides.</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOLUTION</td>
<td>Eating organic food and encouraging more sustainable agricultural practices will reduce the levels of pesticides in all our bodies.¹</td>
</tr>
<tr>
<td>PREPARE FOR ACTION</td>
<td>Learn about some of the pesticides used on your food, their potential health effects, and the campaigns to ban them at Pesticide Action Network North America’s website, <a href="http://www.panna.org">www.panna.org</a>. Join a local organization working to make fresh, local organic food available for all the members of your community. Share what you have learned by hosting a fun cooking class or visiting a local farmers’ market with friends.</td>
</tr>
</tbody>
</table>
| TAKE ACTION | **Act personally** by buying fresh, local, organic food for your family whenever possible.  
**Act publicly** by asking your elected representatives to reform your municipal, state, or federal pesticide regulations. |

| PROBLEM | Fragrances—like those found in your cosmetics, personal care products, and cleaners—often contain chemicals that are neurotoxics or hormone disruptors,² but because fragrances are considered trade secrets, the manufacturer doesn’t have to reveal their contents. |
| SOLUTION | Changing the corporate practice of using toxic chemicals in cosmetics, personal care products, and cleaners will reduce our exposure to potentially harmful substances. |

PREPARE FOR ACTION

TAKE ACTION
Act personally by buying products without added fragrances or other potential toxicants.

Act publicly by writing letters to the cosmetics companies, demanding that they stop using toxic chemicals in their products.

PROBLEM
A ten-minute shower or a thirty-minute bath exposes us to as many volatile organic compounds as drinking half a gallon of tap water.3

SOLUTION
Valuing and protecting our water sources will reduce the contaminants in our tap water.

PREPARE FOR ACTION
Learn what your exposures might be by contacting your water utility and asking what they test for, what the levels have been in the past, and what the community can do to protect the water and improve its safety. Join a group that works to protect and/or restore local water resources, such as Clean Water Action, www.cleanwateraction.org, or the Council of Canadians, www.canadians.org. Share what you have learned with your neighbors by leading a cleanup day at your local lake, river, or stream.

TAKE ACTION
Act personally by choosing not to buy bottled water—it is not as carefully monitored as tap water, and bottling and shipping water is environmentally unsustainable.

Act publicly by contacting your elected representatives to ask for stricter water safety regulations, including lower maximum contaminant levels for toxic chemicals.

---

PROBLEM
Many studies have found links between home and lawn pesticides and childhood cancers.

SOLUTION
Community bans on pesticides will reduce our children’s exposure to these poisons.

PREPARE FOR ACTION
Learn about the pesticide bylaws that some municipalities and provinces in Canada have put into place at the Canadian Association of Physicians for the Environment’s “Pesticides” page, www.cape.ca/toxics/pesticides.html. Join or start a group that is working toward similar reform in your community. Share what you have learned about pesticide-free communities by holding a town-hall meeting.

TAKE ACTION
Act personally by practicing nontoxic, organic pest control methods on your lawn, garden, or home.

Act publicly by campaigning to have the use of pesticides banned in your community. Write letters to your elected representatives, collect signatures on a petition, and request meetings with government officials.

PROBLEM
Various studies have found a total of over 200 toxic chemicals in breast milk samples.4

SOLUTION
Reducing the amount of toxics in our environment will reduce the number of toxics in human breast milk and increase its nutritional value.

PREPARE FOR ACTION

TAKE ACTION
Act personally by feeding your baby breast milk. Breast milk is the best food for your baby.

Act publicly by advocating for pro-breastfeeding laws and policies and for a ban on the toxic chemicals that have been found in mother’s milk.

Chemical Exposures in Our Institutions

*Living Downstream* is inspiring many people to take action to reduce or eliminate our dependency on toxic chemicals. Below are some facts about the toxic chemicals we are exposed to in our institutions and some suggestions for actions you can take.

Remember, you don’t have to do it all. Pick one thing at a time, and do it as well as you can.

**PROBLEM**  
People in at least sixty different occupations are exposed to definite human carcinogens at work.¹

**SOLUTION**  
Eliminating and reducing toxic exposures in the workplace will reduce workers’ risk.

**PREPARE FOR ACTION**  
Learn who is at risk and why at the Occupational Cancer Research Centre’s website [www.occupationalcancer.ca](http://www.occupationalcancer.ca). Join a health and safety working group within your union or professional association to advocate for yourself and your coworkers, or join a national advocacy organization like the BlueGreen Alliance (US), [www.bluegreenalliance.org](http://www.bluegreenalliance.org) or BlueGreen Canada, [www.bluegreencanada.ca](http://www.bluegreencanada.ca). Share what you have learned with others—especially those who might be at risk—by hosting a workshop or seminar.

**TAKE ACTION**  
Act personally by purchasing goods and services from companies that have created safe working environments.

Act publicly by asking your union, professional association, employer, or elected representative for more research, stricter laws, and fewer toxics in your workplace. If you are not at risk, act for those who are by asking your elected representative to support stricter workplace regulations.

**PROBLEM**  
The art supplies at your child’s school, as well as the cleaning products, carpeting, and lawn care products, might be toxic.

**SOLUTION**  
Eliminating the toxic chemicals used in our schools will make them safer environments for everyone.

---

PREPARE FOR ACTION
Learn about the potential health hazards at your child’s school resulting from exposure to toxic chemicals at the Healthy Schools Network (US) website, www.healthy schools.org, and the Canadians for a Safe Learning Environment website, www.casle.ca. Join an organization like the Healthy Schools Network (US) or Canadians for a Safe Learning Environment, which are working to make our schools safer for everyone. Share what you have learned with other parents, teachers, and school administrators by calling an open meeting.

TAKE ACTION
Act personally if your child is frequently feeling unwell (e.g., headaches, asthma attacks, nausea) and explore potential connections between your child’s health and spaces in the school that may be linked to toxic exposures.

Act publicly and register a hazards complaint with the teacher and the principal. Follow up on the complaint and work with the teachers, administrators, and the school board to find solutions to the problems that may be affecting the health of all children in the school.

PROBLEM
While working to heal members of your community, your local hospital may be making others sick.

SOLUTION
Reducing or eliminating the hospital practices of using toxic materials, creating large amounts of medical waste, and incinerating garbage will ensure that the healing mission of our health-care facilities is reflected in their everyday practices.

PREPARE FOR ACTION
Learn about the work being done in the healthy hospitals movement at Health Care Without Harm, www.noharm.org. Join an organization like Health Care Without Harm. Share what you have learned by speaking informally with colleagues, friends, and family.

TAKE ACTION
Act personally by speaking to your doctor and asking for information on your health-care facility’s toxics policy.

Act publicly by bringing your concerns to the administration of your local hospital. If you are an employee of the hospital, you will be most effective by working through your union representative or other official channels. Bring in outside experts to help you navigate this work.
PROBLEM Often, the institutions in our communities provide fatty, processed, and chemically produced foods. These foods contribute to obesity, Type 2 diabetes, and heart disease.

SOLUTION Encouraging cafeterias in our workplaces, schools, and hospitals to carry fresh, local, organic food will make us all healthier.

PREPARE FOR ACTION Learn about the work being done to bring good food into our schools, hospitals, and workplaces at the Community Food Security Coalition’s “National Farm to School Program” page, www.foodsecurity.org/farm_to_school.html. Join an organization like Slow Food, www.slowfood.com. Share what you have learned by holding a farm tour or a tasting evening and introducing local farmers to the institutional community.

TAKE ACTION Act personally by selecting the freshest, healthiest meals available in your cafeteria. Ask cafeteria staff about the food’s origins and nutritional value. Ask for ingredients lists and for more healthy options.

Act publicly by talking with the institution’s administration and cafeteria management about purchasing local organic food, bringing a farmers’ market to the institution’s front lawn on a weekly basis, or starting an organic garden on the grounds to supplement the cafeteria’s needs.

PROBLEM Indoor air is more polluted than outdoor air. Everything that is in the outside air eventually makes its way inside, and the products in our institutions, including building supplies, paint, and carpeting, off-gas many toxic chemicals.

SOLUTION Insisting on public buildings that are free of toxics will help to clean up our indoor air.

PREPARE FOR ACTION Learn about the most common indoor air-quality issues at the US Environmental Protection Agency’s “Indoor Air Quality” page, www.epa.gov/iaq/index.html. Join a group like the Healthy Building Network, www.healthybuilding.net. Share what you have learned with your coworkers and neighbors by setting up a display of nontoxic building products at your workplace (with permission) or at your local community fair.
TAKE ACTION

**Act personally** by making a note of indoor air-quality issues in your workplace or other institutional environments. Avoid areas of concern within the building, such as rooms affected by the fumes of new paint, new outdoor asphalt, or car exhaust from a busy street.

**Act publicly** when an institution in your community (church, school, hospital, library, community center, etc.) is considering renovations. Advocate for creating a healthy building, free of toxic materials.
Chemical Exposures in Our Communities

*Living Downstream* is inspiring many people to take action to reduce or eliminate our dependency on toxic chemicals. Below are some facts about the toxic chemicals we are exposed to in our larger communities and some suggestions for actions you can take.

Remember, you don’t have to do it all. Pick one thing at a time, and do it as well as you can.

**PROBLEM**

Living close to a hazardous-waste site might increase your risk of death from breast, lung, bladder, rectum, or stomach cancer.\(^1\) Living close to trash incinerators increases your risk for many different types of cancer, including childhood leukemia, non-Hodgkin lymphoma, and lung cancer.\(^2,3\)

**SOLUTION**

Eliminating both the need for hazardous-waste disposal and the practice of waste incineration will eliminate the increased risks associated with them.

**PREPARE FOR ACTION**

Learn about your community’s policy toward hazardous waste and incineration. Join an organization that works to help people protest the dumping and burning of toxics in their communities, like the Center for Health, Environment and Justice, [http://chej.org](http://chej.org). Share what you have learned by holding a workshop on the potential health effects of these practices.

**TAKE ACTION**

*Act personally* if you live close to a toxic waste site by testing your tap water for dangerous chemicals. Toxicants seeping into drinking water are the greatest threat presented by hazardous-waste sites. If you live close to an incinerator, test your air for toxicants.

*Act publicly* by leading a march and rally to express your community’s concerns about the toxic landfills and incinerators in your area.

---

PROBLEM  Exposure to diesel exhaust decreases sperm count and increases the risk of lung cancer in men and increases the risk of ovarian cancer in women.4

SOLUTION  Reducing the diesel exhaust and general air pollution in our communities will reduce these health risks as well as others, such as asthma.

PREPARE FOR ACTION  Learn what’s in your community’s air by becoming a citizen scientist and testing the air quality in your community; see how at the Global Community Monitor’s “Bucket Brigade” webpage, www.gcmonitor.org/article.php?list-type&type=134. Join a local group that is actively working to reduce air pollution in your city or town, like Canada’s Clean Air Partnership, www.cleanairpartnership.org. Share what you have learned by holding a press conference, creating a pamphlet, or talking with your friends and neighbors about what’s in your air.

TAKE ACTION  Act personally by riding your bike, taking public transit, or walking whenever possible.

Act publicly by lobbying your government for stricter emissions standards and more investment in alternative fuel research.

PROBLEM  In many communities, drinking water is contaminated with pesticides from farmers’ fields.

SOLUTION  Reducing our agricultural system’s dependency on chemicals would reduce the chemical burden on our water.

PREPARE FOR ACTION  Learn about the pesticides used in your community and their possible health effects at the National Sustainable Agriculture Coalition’s website, www.sustainableagriculture.net. Join a group working to increase support of sustainable agricultural practices, like The Land Connection in central Illinois, www.thelandconnection.org, or the Canadian Organic Growers, www.cog.ca. Share what you have learned by creating a Facebook page, inviting your friends to join, and updating it regularly with links to new research and newspaper articles.

TAKE ACTION  Act personally by supporting local farmers and joining a community supported agriculture program.

---

Act publicly to encourage others to support sustainable agriculture through their grocery shopping. This could take the form of working with your local supermarket to offer in-store presentations, talks with organic farmers, and new signage promoting organically produced foods.

**PROBLEM**

Every year, industries in the United States and Canada release billions of pounds of toxic chemicals.5,6

**SOLUTION**

Stricter regulations will reduce the amount of toxic chemicals released into our environment by industry

**PREPARE FOR ACTION**

Learn about the chemicals released by industry into your community at the US Environmental Protection Agency’s Toxics Release Inventory website, www.epa.gov/tri, or Environment Canada’s National Pollutant Release Inventory, www.ec.gc.ca/inrp-npri/default.asp?lang=en. Join forces with an organization like Toxics Action Center, www.toxicsaction.org, to work to protect your community from harmful polluters. Share what you have learned by taking friends, family, and neighbors on a toxics tour of some of the more polluted sites in your community or by creating a virtual tour with a map or photomontage.

**TAKE ACTION**

Act personally by refraining from purchasing products and services that make use of the most toxic chemicals, including polyvinyl chloride (vinyl in floors, siding, toys, shower curtains, etc.), formaldehyde (in permanent-press fabrics, plywood, and nail polish) and perc (used in dry cleaning).

Act publicly by writing regularly to your elected officials, demanding more stringent and straightforward regulations for toxic chemicals.

---

5 In 2008, 3.86 billion pounds of toxic chemical releases were reported to the US Environmental Protection Agency, excluding recycling totals. US Environmental Protection Agency, 2008 TRI National Analysis, December 8, 2009, retrieved from www.epa.gov/tri/tridata/tri08/national_analysis/index.htm.

PROBLEM  People are often exposed to the toxic substances mined and manufactured on the other side of the world—in some cases even decades later.7

SOLUTION  By signing, ratifying, and upholding the terms of international treaties on toxic substances like the Stockholm and Rotterdam conventions, countries will decrease the volume and number of toxicants in the global environment in the coming years.

PREPARE FOR ACTION  Learn more about your country’s stance on the Stockholm Convention, http://chm.pops.int/default.aspx, which seeks a global ban on these harmful chemicals, and the Rotterdam Convention, www.pic.int, which, among other things, mandates proper labeling of hazardous chemicals (such as safety instructions and information on restrictions and bans). Join an organization committed to protecting all of the world’s population from environmental problems, like the Environmental Justice Foundation, www.ejfoundation.org. Share what you have learned by sending out brief, informative email alerts.

TAKE ACTION  Act personally by reducing the amount of food you consume that is high in animal fat and by limiting your fish intake.

Act publicly by writing and calling your elected representatives and expressing your support for these treaties. If your country has not signed or ratified these international agreements, ask your representatives to encourage the government to do so.

Common Concerns about Toxics

Architects, builders, and construction workers: Many building products contain dangerous chemicals, such as formaldehyde, polyvinyl chloride, and VOCs (volatile organic compounds).

Cancer patients: Once you have had cancer, you are more likely to develop cancer again. You are also more susceptible to toxic chemicals during and after treatment.

Computer lovers: Your computer contains heavy metals like lead and other toxic substances. Often, when we discard computers and electronics, they become e-waste and are sent to the developing world for “recycling” (which includes such practices as incineration), thus creating additional health and environmental problems in the poorest of nations.

Cooks: Conventionally grown food often contains detectible levels of pesticide residue.

Cosmetics wearers: Many cosmetics contain potentially harmful chemicals, including carcinogens, reproductive toxicants, and neurotoxicants.

Fashion lovers: Conventional dry cleaners and many fabric manufacturers use a very carcinogenic chemical called perc.

Factory workers: Many factory workers have elevated cancer rates due to the chemicals they use in manufacturing processes.

Farmers: Conventionally grown crops rely on chemical fertilizers and pesticides. Not only do these products contaminate our soil and water, but they also put farmers and their families at greater risk of developing certain kinds of cancer.

Fishers: Fish in most North American rivers are contaminated with mercury, PCBs, and DDT to the point where certain sectors of the population (women of childbearing age and children) are advised to refrain from eating them, and others are advised to limit their consumption.

Gardeners: The pesticides and fertilizers we use in our gardens can make their way into the food we grow, the water we drink, and the air we breathe.

Golfers: Golf greens are typically maintained using toxic pesticides and chemical fertilizers that are then carried in the air and water to other regions.

Hairdressers: This is another group of workers who have elevated cancer rates, thought to be caused by toxic hair products, such as hairsprays and dyes.
Health-care professionals: Chemotherapy nurses, radiation technicians, and dentists are all at increased risk of developing cancer due to occupational exposures. Also, medical waste incineration creates a significant amount of dioxin in the air of our communities.

Hunters: Many game animals are too toxic to consume safely, and their population numbers are being greatly reduced by environmental degradation.

Minorities: Lead poisoning is most common in minority children, as they are more likely to be at a socioeconomic disadvantage and living in homes containing more exposed lead paint.

Nail salon estheticians and customers: Toxic chemicals in nail polish and other nail care products create serious indoor air quality problems in nail salons.

Painters: House paint and artists’ paints often contain volatile organic compounds and have been linked to many forms of cancer, including childhood leukemia, bladder cancer, and lung cancer.

Parents: Many children’s toys (about one third of those tested in one study) contain one or more dangerous heavy metals, such as lead, cadmium, arsenic, and mercury.¹

Photographers: Traditional photofinishing uses many highly toxic chemicals, while digital printing toner, carbon black, has been labeled as a possible carcinogen by the International Agency for Research on Cancer.

Pregnant women: Exposure of a mother-to-be to paint fumes before conception or during pregnancy increases her child’s risk of developing childhood leukemia.

Readers: Many books are still printed on virgin paper and bleached with chlorine.

Seamstresses: Many fabrics are treated with carcinogenic chemicals like formaldehyde, and some synthetic fabrics are made from a number of toxic chemicals.

Sports enthusiasts: Many playing fields are treated with pesticides and synthetic fertilizers, making them dangerous for human health.

Swimmers: Your pool is most likely treated with chlorine, which combines with carbon-based material in the water to create over 600 known chemicals.² Long-term exposure to chlorinated water has been linked to bladder cancer.

Teachers: You and your students are potentially being exposed to many toxicants through your classroom’s art supplies, lab chemicals, cleaning products, and building materials. Some of these have been linked to lower IQs and learning disabilities.
Assessing Challenges and Opportunities

The purpose of this worksheet is to take an activity or role that is of great importance to you and to explore its connection to toxic chemicals. Answer the following questions to the best of your ability. The goal isn't to have all the answers, but to identify what you know and what more you need to know. When you do not have answers, write down any questions that come to mind.

THE STARTING POINT

For which activity or role in your life would you like to explore the connection to toxic chemicals?

THE CHALLENGES

What do you already know about the toxic concerns related to this activity or role?

What information would you like to know or confirm?
THE OPPORTUNITIES

What changes would you like to see?

What are some necessary steps for creating these changes?

Who are the people with the ability and/or authority to make these changes happen?

Is there anyone else in the community working for similar changes? If so, is there an opportunity to share knowledge or join efforts with them?
Building on Your Strengths

“I believe we are musicians in a human orchestra. It is time now to play the Save the World Symphony. It is a vast orchestral piece, and you are but one musician. You are not required to play a solo. But you are required to figure out what instrument you hold and play it as well as you can.”

~ Sandra Steingraber, Living Downstream

We all have skills and talents to contribute to the environmental human rights movement. Sandra Steingraber is a poet, cancer survivor, and scientist. Thus, she is well suited to her work of delivering both a personal and a scientific message about the links between cancer and chemicals.

What are your strengths? Look for them below and explore the corresponding ways to inspire change. These ideas are just a starting point. Use them to determine your personal approach to inspiring change in your community.

<table>
<thead>
<tr>
<th>IDENTIFYING YOUR STRENGTHS</th>
<th>WAYS TO INSPIRE CHANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>I am a good writer.</td>
<td>Write letters to the editor of your local newspaper. Write letters to your elected representatives. Write action alerts to spark collective action on an issue. Write a blog. Write a pamphlet for public distribution. Create and regularly update a Facebook page.</td>
</tr>
<tr>
<td>I am a good conversationalist.</td>
<td>Meet with a politician about your concerns. Participate in call-in radio shows. Talk with friends and family to inspire them to act.</td>
</tr>
<tr>
<td>I am a good public speaker.</td>
<td>Hold a screening of Living Downstream and then lead a discussion with the audience. Make a public deputation to your elected representative. Locate forums in which to share your concerns and ideas (e.g., town-hall meetings, faith-group services, local PTA meetings). Plan and hold a press conference.</td>
</tr>
<tr>
<td>I am a good host.</td>
<td>Hold a party that incorporates information on the issues. Organize a house-party screening of Living Downstream. Host a meeting in your home to brainstorm community action. Hold a community eco fair or environmental block party.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IDENTIFYING YOUR STRENGTHS</th>
<th>WAYS TO INSPIRE CHANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>I am a strong team player.</td>
<td>Volunteer for a group already working on the issues. Build a network of individuals and organizations with concerns similar to yours.</td>
</tr>
<tr>
<td>I am a strong leader.</td>
<td>Coordinate the organization of a large event. Help a local organization implement an ongoing campaign. Lead a community effort to address a local issue.</td>
</tr>
<tr>
<td>I am good at motivating and inspiring others.</td>
<td>Hold a screening of <em>Living Downstream</em>. Recruit volunteers for a local environmental organization. Begin or contribute to a community working group.</td>
</tr>
<tr>
<td>I am a good researcher.</td>
<td>Prepare briefing documents for others to use in their work. Contact your elected representative and advocate for regulatory changes based on the research you have done. Collect information to inform the letter-writing campaigns of others. Prepare fact sheets of lesser-known information for use by local organizations. If you notice a high incidence of illness in your community, collect information to share with your public health department.</td>
</tr>
<tr>
<td>I have a large network of coworkers, friends, and relatives.</td>
<td>Promote local events and action alerts to your network. Share new knowledge through social networking tools. Raise funds for a local environmental organization.</td>
</tr>
<tr>
<td>I am empathetic.</td>
<td>Learn and share others' stories (with permission). Work with cancer patients who are interested in cancer prevention.</td>
</tr>
<tr>
<td>I am a good salesperson.</td>
<td>Raise funds for a local environmental organization. Advocate on the issues to industry and government.</td>
</tr>
<tr>
<td>I am a designer or artist.</td>
<td>Create a public service announcement for a local organization. Create a short educational video and upload it to YouTube.</td>
</tr>
<tr>
<td>I am a filmmaker.</td>
<td>Design an educational website. Design an informative pamphlet. Create a poster and flyer for an organization's upcoming event.</td>
</tr>
<tr>
<td>I am a health-care professional.</td>
<td>Promote disease prevention. Talk with your patients about their potential toxic exposures. Advocate for a rapid-response team to look at suspected cancer clusters in your community. Encourage your state/provincial cancer registry to begin tracking information that would help link diagnoses to exposures.</td>
</tr>
<tr>
<td>I am a musician.</td>
<td>Volunteer to perform at an educational or fundraising event. Write and perform a song to accompany an informative slideshow or to be used on the website of a local organization. Donate your albums for fundraising (e.g., in a raffle or silent auction). Hold a fundraising concert for a local environmental organization.</td>
</tr>
<tr>
<td>IDENTIFYING YOUR STRENGTHS</td>
<td>WAYS TO INSPIRE CHANGE</td>
</tr>
<tr>
<td>------------------------------------</td>
<td>----------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>I am computer-savvy.</td>
<td>Help your neighbors navigate the EPA’s Toxics Release Inventory or the Canadian National Pollutant Release Inventory by holding an informal training session. Volunteer your technical services to a local organization in need of support.</td>
</tr>
<tr>
<td>I am a creative problem solver.</td>
<td>Hold a brainstorming session with your neighbors to find solutions to a local problem. Join the board of a local nonprofit organization. Propose innovative solutions to industry and government.</td>
</tr>
<tr>
<td>I am a good actor.</td>
<td>Create a captivating skit to be performed at an organization’s event. Record and upload an informative performance to YouTube.</td>
</tr>
<tr>
<td>I am highly organized.</td>
<td>Volunteer at a local organization to help them manage their filing system or database. Offer to take minutes at project or campaign meetings.</td>
</tr>
<tr>
<td>I am good with finances.</td>
<td>Raise funds for a local environmental organization. Help create the budget for a community initiative. Volunteer as treasurer on the board of a nonprofit organization.</td>
</tr>
<tr>
<td>I am an avid reader.</td>
<td>Start an environmental book club. Post reviews of your favorite environmental health books on bookseller or community websites, listservs, and blogs.</td>
</tr>
<tr>
<td>I am a good educator.</td>
<td>Plan a public education event. Lead a community workshop or training session. Design tools for other educators to use.</td>
</tr>
</tbody>
</table>
Chemicals Quiz

ARE THESE STATEMENTS TRUE OR FALSE?

Q Industrial chemicals are thoroughly tested for toxicity before they are registered for manufacture and sale.

A False

There are more than 80,000 industrial chemicals registered for use in the United States under the Toxic Substances Control Act (the active ingredients in pesticides are regulated separately and somewhat more stringently). To date, this law has been used to compel testing of only 200 chemicals. And while manufacturers must submit toxicity information if it exists, 80 to 90% of new chemicals go to market in the US with no required health testing at all.¹ In Canada there are approximately 23,000 industrial chemicals on the Domestic Substances List (DSL), a list created to capture chemicals in use in the mid-1980s “without a systematic assessment of their effects on human health and the environment.”² Since the creation of the DSL, several thousand additional substances have come onto the market after some degree of testing. Of the DSL chemicals, 4,300 have been identified as priority chemicals requiring further evaluation. The Canadian government is now close to completing the assessment of the 200 highest priority chemicals. The approach taken by both countries inadequately considers the synergistic or cumulative impacts of chemicals or all hazardous endpoints. The Coming Clean coalition tells us that “even when testing is done, each chemical is tested individually rather than in the combinations that one is exposed to in the real world. In reality, no one is ever exposed to a single chemical, but to a chemical soup, the ingredients of which may interact to cause unpredictable health effects.”³

Q Chemicals that are proven harmful are taken out of commerce.

A False

Very few chemicals have been banned in the United States and Canada. Instead, we try to manage the environmental impact of tens of thousands of chemicals once these chemicals have been produced. This leads to a complicated patchwork of national, state/provincial, and municipal laws, regulations,

and policies. For example, in a report prepared by the Canadian Environmental Law Association and the Lowell Center for Sustainable Production, the authors said, “Our research efforts identified 237 currently enacted statutes, policies and programs that address chemicals of emerging concern in the Great Lakes Region. . . . The database demonstrates a large number of often uncoordinated policies that could address chemicals of emerging concern.”

---

Q Many chemicals can mimic our hormones or tinker with our body’s hormonal pathways.

A True

The National Institute of Environmental Health Sciences defines endocrine disruptors as “chemicals that may interfere with the body’s endocrine [hormonal] system and produce adverse developmental, reproductive, neurological, and immune effects in both humans and wildlife. A wide range of substances, both natural and man-made, are thought to cause endocrine disruption.” These man-made substances can be found in many consumer products, including children’s toys, fabrics, cosmetics, plastic food storage containers, cleaning products, pesticides, and metal food cans.

---

Q Indoor air is more polluted than outdoor air.

A True

In the section of its website devoted to indoor air quality, the US Environmental Protection Agency states the following: “In the last several years, a growing body of scientific evidence has indicated that the air within homes and other buildings can be more seriously polluted than the outdoor air in even the largest and most industrialized cities. Other research indicates that people in the United States spend approximately 90 percent of their time indoors. Thus, for many people, the risks to health may be greater due to exposure to air pollution indoors than outdoors.

“In addition, people who may be exposed to indoor air pollutants for the longest periods of time are often those most susceptible to the effects of indoor air pollution. Such groups include the young, the elderly, and the chronically ill, especially those suffering from respiratory or cardiovascular disease.”

---

Q  Most new chemicals are made from fossil fuels.
A  True

According to California’s Green Chemistry initiative, “Each day, a total of 42 billion pounds of chemical substances are produced or imported in the US for commercial and industrial uses, 90% of which rely on fossil fuel feedstocks. An additional 1,000 new chemicals are introduced into commerce each year.”

Q  A pregnant woman’s placenta is a barrier against toxic chemicals, keeping the fetus safe.
A  False

In April 2009, Theo Colborn, founder and president of The Endocrine Disruption Exchange, published an article in Scientific American in which she states the following: “Since the early 1990s, independent scientists in academic laboratories around the world have published hundreds of articles demonstrating how a broad selection of chemicals can interfere with the normal development of a baby at extremely low levels of exposure—in fact, levels similar to those experienced every day by people worldwide. These studies were done with the knowledge that the embryo and fetus develop under the control of hormones at parts per billion and parts per trillion, and that as the baby matures hormone concentrations are regulated by sensitive, thermostat-like, feedback control systems in the brain. These pioneering scientists discovered effects for some widely used chemicals at concentrations thousands of times less than government ‘safe’ levels of exposure derived through traditional toxicological tests.”

Q  Drinking bottled water will keep you safe from harmful chemicals.
A  False

In both the United States and Canada, bottled water undergoes less rigorous and less frequent testing than municipal tap water. In 1999, the National Resources Defense Council tested more than 1,000 bottles of 103 brands of bottled water. The research report states that “about one third of the bottled waters tested contained significant contamination (i.e., levels of chemical or bacterial contaminants
exceeding those allowed under a state or industry standard or guideline) in at least one test.”

Additionally, the plastic most commonly used to make the bottles, polyethylene terephthalate (PET), is derived from crude oil. According to a study conducted by the Berkeley Ecology Center, “Manufacturing PET resin generates more toxic emissions (nickel, ethylbenzene, ethylene oxide, benzene) than manufacturing glass. Producing a 16 oz. PET bottle generates more than 100 times the toxic emissions to air and water than making the same size bottle out of glass.”

Q  Chemicals used in St. Louis can be measured in the breast milk of women in the Arctic.
A  True

For example, the organochlorine lindane is an insecticide previously used in agriculture in North America. It is a neurotoxin and has been found in the breast milk of Inuit women in the Arctic. Now banned in many countries, lindane can still be used as a treatment for head lice in the United States and Canada. The US Environmental Protection Agency says that “due to its persistence, residues of lindane may remain in the environment for some time. Lindane has been detected in air, surface water, groundwater, sediment, soil, ice, snowpack, fish, wildlife, and humans. It has been detected in ambient air, precipitation, and surface water throughout North America, and also has been detected in areas of non-use (for example, the Arctic).”

Q  My body contains chemicals that have not been used or manufactured in North America for more than thirty years.
A  True

Some persistent organic pollutants, such as DDT and PCBs, can remain in the environment and the human body for decades. “Whether chemicals are quickly passing through or are stored in our bodies,” says the Coming Clean body burden website, “body burden testing can reveal to us an individual's unique chemical load and can highlight the kinds of chemicals we are exposed to as we live out each day of our lives. Of the approximately 80,000 chemicals that are commercially used in the United States, we do not know how many can become a part of our chemical body burden, but we do know that several hundred of these chemicals have been measured in people’s bodies around the world.”

12  Coming Clean, What Is Body Burden?
Q  If a pollutant or hormone-disrupting chemical is present only in very small amounts, it can’t hurt.

A  False

Hormones function by eliciting dramatic effects at very low levels. Frederick vom Saal, PhD, of the University of Missouri is a pioneer in the research of hormone-disrupting chemicals. About the effects of infinitesimally small amounts of hormones on health, Dr. vom Saal says the following: “What you have is the entire field of toxicology thinking of a millionth of a gram of a hormone or a chemical as being this staggeringly tiny amount, and to most people if I said there’s only a millionth of a gram of it here you’d say, ‘How can it do anything?’ A millionth of a gram of estradiol in blood is toxic. The natural hormone is actually operating at something like a hundred million times lower than that.”

Q  Breast milk is the best food for babies.

A  True

Sandra Steingraber—authority not only on the environmental links to cancer, but also on the environmental links to reproductive health—is a strong proponent of breastfeeding. She nursed her own children for a cumulative total of seven years. In an article for The Ribbon, the newsletter of Cornell University’s Program on Breast Cancer and Environmental Risk Factors, she writes the following: “Yes, it’s true that mother’s milk is, almost always, a superior food source for infants than its inferior pretender, infant formula. Breastfed infants have fewer respiratory infections, diarrhea, middle-ear infections and die less often from Sudden Infant Death Syndrome. Breastfed infants grow into children who suffer less than their bottle-fed counterparts from juvenile diabetes, rheumatoid arthritis, obesity, dental malocclusions, and some leukemias. They respond more vigorously to vaccinations. They have better hearing and visual acuity. They develop balance and gross motor coordination more quickly.

“It’s also true that breast milk commonly violates [the US] Food and Drug Administration action levels for poisonous substances in food. Were it regulated like infant formula, the breast milk of many US mothers would not be able to be legally sold on supermarket shelves.” Sandra’s response to this information is to demand an end to chemicals that are inherently toxic and are known to accumulate in mother’s milk.

Q  Children are more vulnerable to toxic chemicals than adults.
A  True

According to the Children's Environmental Health Network, “Children are often more vulnerable than adults to the harmful effects of chemical pollutants because they are growing and developing rapidly. In addition, children's behavior, including increased hand to mouth activity, a tendency to crawl and play in spaces that could be contaminated, and a lack of awareness about proper safety and sanitary habits, all put children at a higher risk. In some cases, childhood exposure to toxics can cause serious health damage to an individual later on in life.”  

Q  Fragrances in personal products are always natural and benign.
A  False

The *Pittsburgh Post-Gazette* reported the following in August 2010: “Two recent reports . . . detail the harmful effects of chemicals not printed on the ingredients label in cosmetics and cleaning products. . . . Some of those chemicals, legally included in a product under the catch-all ‘fragrance,’ can cause health problems ranging from skin irritation to increased risk of breast cancer to reproductive and developmental harm, according to the reports. In short, they indicate that some chemicals may be doing a whole lot more than smelling nice.” In Canada as well, fragrances are considered trade secrets and can therefore be kept confidential.

Q  Conventional dry cleaners make use of known and suspected carcinogens.
A  True

Dry cleaning is a chemically intensive process that uses carcinogens like benzene, formaldehyde, and trichloroethylene; possible carcinogens like tetrochloroethylene (perchloroethylene) and naphthalene; and neurotoxins like toluene and xylene. According to the Environmental Health Association of Nova Scotia’s *Guide to Less Toxic Products*, “Conventional dry cleaning fluids contain highly toxic chemicals. . . . Many of these substances are also known to cause liver and kidney damage. The US Environmental Protection Agency has noted that fumes from slightly damp dry cleaned clothing are a common indoor air pollutant.”

---

Broken Squares Template¹

A complete set of squares consists of five envelopes containing pieces of construction paper which have been cut into different patterns. When properly assembled, the set of squares will form five squares of equal size. Create one set of squares for each group.

To make a set, cut out five cardboard squares of equal size (about six by six inches). Mark the squares as shown below.

Square Set Template 1
For groups of five participants

Note: The lines should be drawn so that all pieces with the same shape will be exactly the same size. After drawing the lines, cut each square into the smaller pieces that make up the puzzle. Mark five envelopes with the letters A, B, C, D, and E. Place the puzzle pieces in the corresponding envelopes.

Square Set Template 2
For groups of four participants

Note: Follow the instructions above, using four envelopes (A, B, C, and D) rather than five.

¹ Activity, including instructions and template, adapted from Alternatives to Violence Project Educational Committee, Manual: Basic Course, Alternatives to Violence Project, 2002.
Recommended Reading and Viewing

After viewing *Living Downstream*, many people want to know where they can go to learn more about cancer prevention, environmental protection, and environmental health. What follows is a comprehensive list of resources that will help you as you search for more information on these topics of interest. Use these lists to create an adapted version for your workshops, screenings, or other outreach activities. Or encourage others to download this full list from www.livingdownstream.com/links.

- *Living Downstream* Online
- Cancer and Environmental Health Websites
- Film and Social Change Websites
- Books and Reports
- Films and Videos
- Other Publications by Sandra Steingraber
- More *Living Downstream* Resources
The *Living Downstream* website, www.livingdownstream.com, connects you with others who are concerned about the issue of environmental health. The website enables you to extend the reach of your activities, forge new relationships and alliances, and access a wealth of inspiration from the experiences of others. Our growing online community is a unique gathering place for people and ideas, with the power to propel meaningful social change.

The website is designed to be comprehensive and, at the same time, fun, fast, and easy to explore. Below are three links for getting started, followed by a summary of the contents of the two main menus.

**Become a member** | www.livingdownstream.com/member/register
Create a profile so that you can share resources, join discussions, and communicate with other members. Your profile will be searchable by other members and will link to all of your contributions on the site.

**Join the mailing list** | www.livingdownstream.com/mailing-list
Receive monthly emails that will keep you up to date on the film, the website, and Sandra's work.

**Read the news** | www.livingdownstream.com/news
Learn the latest *Living Downstream* news, as it happens. This page will point you to the most recently added material on the site, including our monthly newsletters.

**Order the DVD** | www.livingdownstream.com/dvd
The *Living Downstream* Educational DVD is available for use by educators, organizations, community groups, and professionals. Purchase it online today.

**Living Downstream | The Film**

This section of the website contains everything you ever wanted to know about the film itself. Read all about the film, the book that inspired the film, and the upcoming screenings. You can also access trailers, video clips, reviews, and publicity stills.

**About the Film** | www.livingdownstream.com/about-film
Read a synopsis of the film and get production details at a glance.

**Reactions to the Film** | www.livingdownstream.com/reactions
Read what others have said about the film. This page contains brief quotes from the media and from audience members, including educators and activists.
Screenings and Events | www.livingdownstream.com/screenings
Living Downstream is screening internationally—at art house theaters, in film festivals, at conferences, and at special events. This page contains a comprehensive list of public screenings by date.

Trailer and Video Clips | www.livingdownstream.com/trailer
Watch the trailer and selected video clips from the film. New clips are posted periodically. All clips can be embedded on your website.

About the Team | www.livingdownstream.com/about-team
Read the bios of the experts featured in the documentary and of the film crew responsible for the documentary’s creation.

About the Book | www.livingdownstream.com/about-book
Read a synopsis of the second edition of the book Living Downstream.

For the Media | www.livingdownstream.com/for-media
Find a large selection of resources, including press releases, images from the film poster and book cover, and a variety of production stills.

Walking Upstream | The Movement
This section of the website is focused on building the environmental human rights movement. It is a resource for individuals and groups who are using the film as a tool for education, community engagement, and creating social change. In this section you can log your actions, learn how to hold a screening, join discussions, read blogs, share resources, and more.

The strength of this section stems directly from the passion and participation of our members. Each contribution inspires many others. Your ideas, experiences, and resources will help build collective momentum that energizes everyone’s efforts.

About the Movement | www.livingdownstream.com/about-movement
Read information about the environmental human rights movement Sandra describes, including a list of links to help you engage with the issue of environmental health. Whether you are an educator, an activist, or a concerned citizen, there is a role for you to play.

Log Your Action | www.livingdownstream.com/logyouraction
Record the actions you have taken on the issue of environmental health. Big or small, every step toward change is worthy of recognition. Whether you’ve attended a workshop or run a national campaign, logging your action will help us track the numbers of individuals reached and provide us with valuable information on how the film is being used.
Hold a Screening | www.livingdownstream.com/hold_screening
Find step-by-step instructions and resources for holding a screening of Living Downstream in your community. This section also includes the option to post information about your screening on our website.

Use the Guides | www.livingdownstream.com/use_guides
Read descriptions of the three guides that have been created to help you use Living Downstream in your life and work: Living Downstream ~ In the Community, Living Downstream ~ In the Classroom, and Living Downstream ~ At Home.

Sandra's Weekly Essays | www.livingdownstream.com/essays
Explore with Sandra the ways in which the environment is within us. All these essays are available for re-publication free of charge by your organization's newsletter, website, city paper, community flyers, etc.

Member List | www.livingdownstream.com/member/memberlist
Browse or search members of the online community. Here you can see where members live, how they are connected to the issue of environmental health, and what they have contributed to the website. Connect with others, build networks, and brainstorm ideas together.

Sharing Resources | www.livingdownstream.com/resources
Have you created resources for use with Living Downstream? Are you looking for a resource to support your activities? Whether it’s a poster or a flyer, a petition or a lesson plan, upload your resources and download what others have shared.

Discussion Forums | www.livingdownstream.com/forums
Add your voice to the online discussion. Share your personal experiences with cancer, give and get updates on the latest scientific research, brainstorm opportunities for action, learn how others are using the film to educate and inspire, or suggest your own topic for discussion.

Blogs from the Field | www.livingdownstream.com/blogs
Follow our bloggers as they engage in issues related to environmental health. Both personal and professional, these blogs capture the successes, challenges, and learnings that come with doing this groundbreaking work.

Recommended Links | www.livingdownstream.com/links
Check out our comprehensive list of websites, including organizations doing work related to environmental and occupational health and those using film in education and for social change. Join a group that’s right for you.
Cancer and Environmental Health Websites

The descriptions in this section include wording that has been drawn in large part from the organizations’ websites.

350.org | www.350.org
A global, cutting-edge movement that aims to solve the climate crisis by inspiring individuals and groups to engage in large-scale grassroots activism. The movement has helped lead many fights to reduce our dependency on fossil fuels, which are dangerous to the climate, the environment, and human health.

Beyond Pesticides | www.beyondpesticides.org
A nonprofit organization that has historically taken a two-pronged approach to the pesticide problem by identifying the risks of conventional pest management practices and promoting nonchemical and least-hazardous management alternatives.

Bladder Cancer Advocacy Network | www.bcan.org
The first national advocacy organization dedicated to increasing public awareness about bladder cancer, to advancing bladder cancer research, and to providing educational and support services for the bladder cancer community.

BlueGreen Alliance | www.bluegreenalliance.org
A national strategic partnership between labor unions and environmental organizations dedicated to expanding the number and quality of jobs in the green economy.

BlueGreen Canada | www.bluegreencanada.ca
An alliance that advocates for working people and the environment in key areas of global trade, the use of toxic chemicals, the creation of green manufacturing jobs, and the development of strategies to address climate change.

Breast Cancer Action | www.bcaction.org
A membership-based organization that works to end the breast cancer epidemic by providing information, organizing people, and advocating for policy changes directed at achieving true prevention through understanding and eliminating the causes of breast cancer.

Breast Cancer Action Montreal | www.bcam.qc.ca
A nonprofit group directed by women who have been sensitized to the trauma of breast cancer and who are committed—long-term—to erasing the disease.
Breast Cancer Fund | www.breastcancerfund.org
A prevention-based organization that responds to the public health crisis of breast cancer by identifying—and advocating for the elimination of—the environmental and other preventable causes of the disease.

Campaign for Safe Cosmetics | www.safecosmetics.org
A coalition that works with over 100 organizations, 1,300 companies, and thousands of grassroots supporters in seeking to secure the corporate, regulatory, and legislative reforms necessary to eliminate dangerous chemicals from cosmetics and personal care products.

Canadian Cancer Society | www.cancer.ca
A national organization whose mission is the eradication of cancer and the enhancement of the quality of life of people living with cancer. The society calls for a ban on the use and sale of cosmetic pesticides, believes that substances that cause cancer should be replaced with safer alternatives, and supports individuals' right to know about the carcinogens to which they have been exposed.

Canadian Partnership for Children's Health and Environment | www.healthyenvironmentforkids.ca
An affiliation of groups with overlapping missions to improve children’s environmental health in Canada.

Canadian Association of Physicians for the Environment | www.cape.ca
A membership organization for health professionals that works to protect the environment in order to protect human health.

Canadian Organic Growers | www.cog.ca
A national charitable organization with members in all regions of Canada whose mission is to lead local and national communities toward sustainable organic stewardship of land, food, and fiber while respecting nature, upholding social justice, and protecting natural resources.

Canadians for a Safe Learning Environment | www.casle.ca
A registered charity that works to improve the condition of school buildings and the products and practices used in schools.

Center for Health, Environment and Justice | http://chej.org
An organization that aims to prevent harm to human health by providing technical and organizing support to individuals and communities facing a toxic hazard.

CHE Toxicant and Disease Database | www.database.healthandenvironment.org
A database maintained by the Collaborative on Health and the Environment that summarizes links between chemical contaminants and 180 human diseases.
Clean Air Partnership | www.cleanairpartnership.org
A registered Canadian charity whose mission is to work with partners to achieve clean air, facilitate the exchange of ideas, advance change, and promote and coordinate implementation of actions that improve local air quality.

Clean Water Action | www.cleanwateraction.org
An organization of 1.2 million members empowering people to protect America’s waters, to build healthy communities, and to make democracy work for all of us.

Collaborative on Health and the Environment | www.healthandenvironment.org
An international partnership of over 4,000 individuals and organizations working to advance knowledge and effective action to address growing concerns about the links between human health and environmental factors.

Community Food Security Coalition | www.foodsecurity.org
A North American coalition of almost 300 organizations working from the local to international levels to build community food security.

Community Tool Box | http://ctb.ku.edu
A free online resource containing information on skills for building healthy communities. The tool box contains over 7,000 pages of practical guidance for creating change. It is a service of the Work Group for Community Health and Development at the University of Kansas.

Council of Canadians | www.canadians.org
Canada’s largest citizens’ organization, working to promote progressive policies on fair trade, clean water, energy security, public health care, and other issues of social and economic concern to Canadians.

The Endocrine Disruption Exchange | www.endocrinedisruption.com
A nonprofit organization that compiles and disseminates the scientific evidence on the health and environmental problems caused by exposure to endocrine disruptors (chemicals that interfere with development and function).

Environmental Justice Foundation | www.ejfoundation.org
A registered charity based in London, England, that provides film and advocacy training to individuals and grassroots organizations in the global south who suffer most from environmental abuses, helping them to find peaceful ways to create long-term solutions. The foundation also campaigns internationally to raise awareness of the issues.

EnviRN Knowledge Network | http://envrn.org
An online learning network for nurses concerned about environmental health.
Environmental Health News | www.environmentalhealthnews.org
A free syndication service whose mission is to advance the public’s understanding of environmental health issues by publishing its own journalism and by providing access to worldwide news on subjects related to the environment and the health of humans, wildlife, and ecosystems.

Environmental Working Group | www.ewg.org
A nonprofit research organization that uses the power of public information to protect public health and the environment. This organization’s research brings to light facts about which the public has the right to know.

EWG’s Skin Deep Cosmetics Database | www.cosmeticsdatabase.org
A searchable database created by the Environmental Working Group, providing information and online safety assessments for almost 70,000 personal care products.

Frack Action | www.frackaction.com
A grassroots group that began as an emergency response and is now engaged in a long-term campaign to protect our water, air, and public health from the dangerous practice of hydraulic fracturing.

Food & Water Watch | www.foodandwaterwatch.org
Food & Water Watch is a nonprofit organization that advocates for common sense policies that will result in healthy, safe food and access to safe and affordable drinking water. This group believes that as everyone is dependent on these shared resources, it’s essential that they be regulated in the public interest rather than for private gain.

Health and Environment Alliance | www.env-health.org
A European coalition of over 65 international and national organizations addressing how the environment affects health in the European Union.

Health Care Without Harm | www.noharm.org
An international organization working to implement ecologically sound and healthy alternatives to health-care practices that pollute the environment and contribute to disease.

Healthy Building Network | www.healthybuilding.net
A national network dedicated to transforming the market for building materials to advance the best environmental, health, and social principles. The network’s projects have directly resulted in the introduction of new, healthier building materials, shifting over $4 billion in materials purchases from toxic materials to healthier alternatives.

Healthy Child Healthy World | www.healthychild.org
An organization working to inspire parents to protect young children from harmful chemicals.
Healthy Schools Network | www.healthyschools.org
An award-winning not-for-profit environmental health organization based in New York State that launched the national healthy schools movement with comprehensive state policies and a model coalition.

An agency of the World Health Organization founded to coordinate and conduct research on the causes of human cancer and the mechanisms of carcinogenesis, and to develop scientific strategies for cancer prevention and control.

International Chemical Secretariat | www.chemsec.org
A nonprofit organization in Sweden that works to highlight the risks of hazardous substances and the urgent need to phase them out while monitoring the progress of legislative processes in the European Union. This group’s ambitious goal is a toxic-free environment by 2020.

The Land Connection | www.thelandconnection.org
An Illinois-based educational nonprofit organization that works to preserve and protect the state’s agricultural heritage by educating farmers and the public about the value of farmland and the need for more local food production and consumption.

La Leche League International | www.llli.org
An international organization helping mothers worldwide to breastfeed through mother-to-mother support, encouragement, information and education. La Leche League also promotes a better understanding of breastfeeding as an important element in the healthy development of baby and mother.

The Life and Legacy of Rachel Carson | www.rachelcarson.org
A website dedicated to Rachel Carson, the biologist and author of Silent Spring, written by her biographer, Linda Lear.

Louisville Charter for Safer Chemicals | www.louisvillecharter.org
A platform developed by a coalition of individuals and groups in Louisville, Kentucky, in 2004, outlining six fundamental reforms to chemicals policies that are required in order to protect human health and the environment.

Lowell Center for Sustainable Production | www.sustainableproduction.org
An organization that helps build healthy work environments, thriving communities, and viable businesses that support a more sustainable world. Part of the University of Massachusetts.

Luminary Project | www.theluminaryproject.org
A website that captures the illuminating stories of nurses’ activities to improve human health by improving the health of the environment.
Canada's publicly accessible inventory of pollutant releases to air, water, and land.

Natural Resources Defense Council | [www.nrdc.org](http://www.nrdc.org)
An environmental action organization that works with the support of members and online activists.

Peaceful Uprising | [www.peacefuluprising.org](http://www.peacefuluprising.org)
A nonprofit collective committed to combatting the climate crisis and building a just, healthy world. This grassroots group seeks to inspire citizens to recognize themselves as agents of change and to build communities that empower and enable each of us to take effective, necessary nonviolent action.

Pesticide Action Network North America | [www.panna.org](http://www.panna.org)
A nonprofit organization that works to replace the use of hazardous pesticides with ecologically sound and socially just alternatives. The organization also maintains the PAN Pesticide Database, a one-stop location for toxicity and regulatory information for pesticides.

Physicians for Social Responsibility | [www.psr.org](http://www.psr.org)
A medical and public health voice that works to prevent the use or spread of nuclear weapons and to slow, stop, and reverse global warming and the toxic degradation of the environment.

Planned Parenthood Federation of America | [www.plannedparenthood.org](http://www.plannedparenthood.org)
A women's health-care provider that promotes respect for each individual's right to make informed, independent decisions about health, sex, and family planning. Because of this focus, Planned Parenthood is an advocate for women's protection from reproductive toxicants.

Prevent Cancer Now | [www.preventcancernow.ca](http://www.preventcancernow.ca)
A Canadian organization working to eliminate the preventable causes of cancer through promoting legislative and policy reforms and conducting public education initiatives.

Ramazzini Institute | [www.ramazzini.it](http://www.ramazzini.it)
A nonprofit organization with over 20,000 members whose mission is to contribute to the decrease in cancer incidence through the promotion of scientific research, the early diagnosis of tumors, and the dissemination of information.

Rotterdam Convention | [www.pic.int](http://www.pic.int)
An international treaty that creates legally binding obligations for the implementation of the Prior Informed Consent procedure, meaning that certain hazardous chemicals may be exported only with the importer's prior consent. It aims at promoting shared responsibility and cooperative efforts among parties in the international trade of these chemicals in order to protect human health and the environment, and to contribute to the environmentally sound use of those chemicals by facilitating information exchange about their characteristics and providing for a national decision-making process on their import and export.
Safer Chemicals, Healthy Families | www.saferchemicals.org
A US-wide effort to pass smart federal policies that protect us from toxic chemicals.

Sandra Steingraber | www.steingraber.com
Official website of biologist and author Sandra Steingraber, PhD. Here you will find information about Sandra's writing projects, upcoming speaking engagements, and more.

Scorecard | www.scorecard.org
The web's most popular resource for information about pollution problems and toxic chemicals. Any US resident can enter their zip code on this website and get an in-depth pollution report for their county, covering air, water, chemicals, and more.

Science and Environmental Health Network | www.sehn.org
The leading proponent in the United States of the precautionary principle as a new basis for environmental and public health policy.

Second Nature | www.secondnature.org
An organization that works to accelerate movement toward a sustainable future by serving and supporting senior college and university leaders in making healthy, just, and sustainable living the foundation of all learning and practice in higher education.

Stockholm Convention on Persistent Organic Pollutants | www.pops.int
A global treaty to protect human health and the environment from chemicals that remain intact in the environment for long periods, become widely distributed geographically, accumulate in the fatty tissue of humans and wildlife, and have adverse effects on human health or the environment.

Shaleshock Action Alliance | http://shaleshock.org
A movement that works toward protecting our communities and environment from exploitative gas drilling in the Marcellus Shale region.

Silent Spring Institute | www.silentspring.org
A partnership of scientists, physicians, public health advocates, and community activists that works to identify the links between the environment and women's health, especially breast cancer. The Silent Spring Institute provides a database on the 216 different chemicals shown to cause mammary gland cancer in animals.

Slow Food | www.slowfood.com
A global grassroots organization with supporters in 150 countries, who are linking the pleasure of good food with a commitment to their community and the environment.

The Story of Stuff Project | www.storyofstuff.com
A project created to extend the impact of The Story of Stuff, a twenty-minute film about the lifecycle
of material goods that works to promote sustainability. The project includes several short films, downloadable resources, and an ongoing blog.

The premier source for cancer statistics in the United States. This program of the National Cancer Institute collects information on incidence, prevalence, and survival from geographic areas representing 28% of the US population, plus cancer mortality data for the entire country.

**Toxic Free Canada | [www.toxicfreecanada.ca](http://www.toxicfreecanada.ca)**
An organization that brings workers and environmentalists together in cooperative projects for toxics reduction and a green economy.

**Toxics Action Center | [www.toxicsaction.org](http://www.toxicsaction.org)**
A nonprofit organization based in New England whose mission is to work side-by-side with communities, providing the skills and resources needed to prevent or clean up pollution at the local level.

**Toxics Release Inventory | [www.epa.gov/tri](http://www.epa.gov/tri)**
A database administered by the US Environmental Protection Agency and containing data on disposal or other releases of nearly 650 toxic chemicals. The database can be searched by chemical, facility, or ZIP code.

**Toxipedia | [www.toxipedia.org](http://www.toxipedia.org)**
A wiki-website offering more than a thousand pages of information on toxic chemicals, ethical considerations, laws and regulations, the history of toxicology, green chemistry, and much more.

A global network of organizations and individuals who believe breastfeeding is the right of all children and mothers and who dedicate themselves to protect, promote, and support this right. WABA works in close liaison with UNICEF.

**Women in Europe for a Common Future | [www.wecf.eu](http://www.wecf.eu)**
An international network of over 100 women's, environmental, and health organizations implementing projects in forty countries and advocating globally for a healthy environment for all.

**Women's Healthy Environments Network | [www.womenshealthyenvironments.ca](http://www.womenshealthyenvironments.ca)**
A Canadian nonprofit organization whose mission is to connect women to the vital information and tools necessary for taking preventative action.

**Women’s Voices for the Earth | [www.womensvoices.org](http://www.womensvoices.org)**
A national organization that works to eliminate toxic chemicals that impact women's health by changing consumer behaviors, corporate practices, and government policies.
FILM AND SOCIAL CHANGE WEBSITES

The descriptions in this section include wording that has been drawn in large part from the organizations’ websites.

CITIZENShift | http://citizenshift.org
A multimedia platform dedicated to media for social change. Their ever-growing network engages people from all backgrounds to explore and debate contemporary issues, contribute their own material, and use media to make a difference. See Living Downstream filmmaker Chanda Chevannes’ blog, Adventures in Outreach, at http://citizenshift.org/blogs/Adventures-in-Outreach.

The Fledgling Fund | www.thefledglingfund.org
A film funder that makes strategic grants and investments in creative media projects that have the potential to ignite social change. The fund’s website contains information on many compelling films, as well as a range of papers and other resources on the power of social-issue creative media. The Fledgling Fund is a funder of the Living Downstream outreach project.

Good Pitch | http://britdoc.org/real_good/pitch
A one-day live event bringing together specially selected foundations, NGOs, social entrepreneurs, broadcasters, and potential corporate and brand partners to form powerful alliances around groundbreaking films.

Green Screen | www.greenscreentoronto.com
An initiative that provides guidance for the film and television industries on how to reduce their environmental footprint.

McNabb Connolly | www.mcabbconnolly.ca
A Canadian educational distribution company representing over 150 independent Canadian producers. McNabb Connolly is the educational distributor of Living Downstream in Canada.

Participant Media | www.participantmedia.com
A production and distribution company committed to telling good stories that can make a difference in how we see the world. Some of their films include An Inconvenient Truth, The Kite Runner, Syriana, and Food, Inc.

The People’s Picture Company | www.theppcinc.com
An independent Canadian production company specializing in the creation of documentary projects that compel thought, encourage discussion, and inspire action. The PPC is the producer of Living Downstream.
Working Films | www.workingfilms.org
An organization committed to the use of documentary for social change. They offer consultation, strategic planning for alternative distribution, website and social media development, and complete campaign management services to filmmakers, all to ensure the content of nonfiction media truly meets the intention for change.
Books and Reports

The Body Toxic: How the Hazardous Chemistry of Everyday Things Threatens Our Health and Well-Being
By Nena Baker | North Point Press | 2009

This book is an investigation into the factors that have created a world dependent on chemicals and a population of people each with their own unique chemical load, known to scientists as “body burden.”

Cancer: 101 Solutions to a Preventable Epidemic
By Liz Armstrong, Guy Dauncey, and Anne Wordsworth | New Society Publishers | 2007

This book provides evidence that many cancers are preventable because they are caused by the contamination of our bodies. It contains practical advice and success stories intended to motivate the reader to take action for cancer prevention.

The Cancer Journals

This memoir explores the political dimensions of breast cancer through the author’s own experience of the disease. A blend of journal entries, prose, and poetry, this book declares Lorde’s distinct opinions and perspective as a black lesbian feminist.

Courage for the Earth: Writers, Scientists, and Activists Celebrate the Life and Writing of Rachel Carson
Edited by Peter Matthiessen | Houghton Mifflin | 2007

This collection of a dozen essays, published 100 years after her birth, pays tribute to Rachel Carson. Included are essays by Al Gore, Linda Lear, and Terry Tempest Williams. Also included is an essay by Sandra Steingraber, titled “Silent Spring: A Father-Daughter Dance.”

Gardening Eden: How Creation Care Will Change Your Faith, Your Life, and Our World
By Michael Abbaté | WaterBrook Press | 2009

This book is written by an expert in green development who is also a Christian. Abbaté argues that the Christian faith supports environmentalism and he provides religious people with ideas about how to begin practicing what he terms “creation care.”
**Not Just a Pretty Face: The Ugly Side of the Beauty Industry**  
By Stacy Malkan | New Society Publishers | 2007

This book reveals the dramatic and frightening facts about the unregulated cosmetics industry and the toxic ingredients contained in their products.

**Our Stolen Future: Are We Threatening Our Fertility, Intelligence, And Survival?—A Scientific Detective Story**  
By Theo Colborn, Dianne Dumanoski, and John Peterson Myers | Plume | 1995

This book provides an overview of fifty years of research into endocrine disruptors (chemicals that disrupt the hormonal system), revealing the vulnerability of our biological processes to the effects of synthetic chemicals.

**Patient No More: The Politics of Breast Cancer**  
By Sharon Batt | Gynergy | 2002

This book is an examination of the politics of breast cancer, interwoven with the author’s personal experience as a breast cancer patient. From treatments to charities and from medical coverage to political activism, Batt’s book covers a lot of ground.

**Pink Ribbons, Inc: Breast Cancer and the Politics of Philanthropy**  
By Samantha King | University of Minnesota Press | 2006

This book tracks the history of breast cancer from a disease of shame and silence to one that is used as a marketing ploy. It examines the breast cancer movement and its commercialization.

**Precautionary Tools for Reshaping Environmental Policy**  
Edited by Nancy Myers and Carolyn Raffensperger | MIT Press | 2006

This book focuses on the precautionary principle, from its ethical grounding to practical ideas for its implementation. Complete with case studies and hands-on materials, this publication is a useful guide for citizens and policymakers alike.
Rachel Carson: Witness for Nature
By Linda Lear | Mariner Books | 2009 (Paperback Edition)

This comprehensive biography tells the story of Rachel Carson’s creation of *Silent Spring*: how Carson researched and wrote the book, how she defended it against industry critics, and how she died of breast cancer shortly thereafter.

Reducing Environmental Cancer Risk: What We Can Do Now
By Susan H. Reuben for the President’s Cancer Panel | US Department of Health and Human Services | April 2010

This report outlines the findings of the President’s Cancer Panel meetings held during 2008 and 2009. The panel heard testimonies from forty-five experts, including Sandra Steingraber and Tyrone Hayes (two experts featured in *Living Downstream*). In a letter to President Obama included with the report, the panel members said, “The true burden of environmentally induced cancers has been grossly underestimated.” Available at [http://deainfo.nci.nih.gov/advisory/pcp/annualReports/pcp08-09rpt/PCP_Report_08-09_508.pdf](http://deainfo.nci.nih.gov/advisory/pcp/annualReports/pcp08-09rpt/PCP_Report_08-09_508.pdf)

Refuge: An Unnatural History of Family and Place
By Terry Tempest Williams | Pantheon Books | 1991

This book interweaves memoir and natural history. The author recounts her mother’s diagnosis with ovarian cancer along with the concurrent flooding of the Bear River Migratory Bird Refuge, a place special to Williams since childhood.

Slow Death by Rubber Duck: The Secret Danger of Everyday Things
By Rick Smith and Bruce Lourie | Counterpoint | 2010

This book tells the story of two Canadian environmentalists who began exposing themselves to “a host of things that surround us every day.” The authors test the pollution in their bodies before and after their exposures, revealing surprising facts about seven common chemicals.

The Seasons on Henry’s Farm: A Year of Food and Life on a Sustainable Farm
By Terra Brockman | Agate | 2009

This book tells the story of the Brockman family and their life on a sustainable organic farm in central Illinois. This year-long memoir, complete with recipes, takes readers through each of the fifty-two seasons of life on the farm.
The Secret History of the War on Cancer
By Devra Lee Davis | Basic Books | 2009 (Paperback Edition)

This book is an exposé of the war on cancer, written by an acclaimed cancer epidemiologist and author. It outlines the reasons for the war on cancer’s strong focus on treatment, its minimizing of prevention, and its failure to make tangible progress.

Silent Spring
By Rachel Carson | Houghton Mifflin | 1962

This seminal and groundbreaking book has been credited with inspiring the creation of the US Environmental Protection Agency, leading to the ban of harmful pesticides like DDT, and launching the modern environmental movement. Written by biologist and nature writer Rachel Carson, it presents a careful scientific investigation into the dangers of pesticide use in the United States.

When Smoke Ran Like Water: Tales of Environmental Deception and the Battle against Pollution
By Devra Lee Davis | Basic Books | 2003 (Paperback Edition)

This book confronts the author’s public triumphs and private failures in her lifelong battle against environmental pollution. Davis, an epidemiologist, begins by describing the 1948 smog emergency in her hometown of Donora, Pennsylvania, and then goes on to examine other dramatic environmental crises.
Films and Videos

Blue Vinyl
Director Judith Helfand and co-director Daniel B. Gold | Blue Vinyl Toxic Comedy Pictures | 2002 | 98 min

This funny documentary film begins as filmmaker Judith Helfand’s parents decide to install blue vinyl siding on their home. This decision bothers Helfand and sends her on an investigation into the health effects of polyvinyl chloride (PVC).

Chasing the Cancer Answer
Producer Michael Gruzuk | CBC Marketplace | 2006 | 44 min

Canadian broadcast journalist Wendy Mesley was diagnosed with breast cancer even though she lived a healthy lifestyle. This documentary details her investigation into the lack of attention being paid to cancer prevention, including preventing environmental exposures to known and possible carcinogens. Available at www.cbc.ca/marketplace/pre-2007/files/health/cancer.

A Chemical Reaction
Director Brett Plymale | PFZ Media | 2009 | 70 min

This documentary film follows environmental health activist Paul Tukey as he learns how Hudson, Quebec, became the first town in North America to ban chemical pesticides.

Exposure: Environmental Links to Breast Cancer
Director Francine Zuckerman | Butterfield and Zuckerman Productions | 2000 | 53 min

This documentary, hosted by breast cancer survivor Olivia Newton-John, explores the connections between breast cancer and toxic substances in our environment.

The Falls
Director Kevin McMahon | Primitive Entertainment (formerly Primitive Features) | 1991 | 89 min

This documentary film presents a history of mankind’s interactions with Niagara Falls, from initial awe to the harnessing of the falls’ power, leading to the destruction of nearby areas such as Love Canal.
**Flow: For Love of Water**  
Director Irena Salina | Steven Starr | 2008 | 84 min

A sweeping and informative documentary film about the world water crisis. This film covers such water-related issues as chemical contamination, privatization, and the positioning of access to clean water as a human right.

**Food, Inc.**  
Director Robert Kenner | Participant Media | 2008 | 94 min

This documentary film works to expose the US food industry, whose goal is often profit first. It explores the sacrifices that have been made in the areas of health, farming, safety, and the environment and features interviews with renowned experts like Eric Schlosser, Michael Pollan, and Gary Hirshberg.

**Gasland**  
Director Josh Fox | International Wow Company | 2010 | 104 min

This documentary follows filmmaker Josh Fox as he investigates the natural-gas drilling practice of “fracking,” which is increasing in popularity across the United States.

**A Healthy Baby Girl**  
Director Judith Helfand | ITVS | 1996 | 57 min

This personal documentary introduces the viewers to filmmaker Judith Helfand. In 1963, Helfand's mother was prescribed diethylstilbestrol (DES)—a pharmaceutical hormone intended to prevent miscarriage. But when she was twenty-five, Helfand was diagnosed with DES-related cervical cancer. She made this touching film after her radical hysterectomy as a way to explore the impact of this carcinogen on her life.

**Kids and Chemicals**  
Producer Gail Ablow and co-producer Gregory Henry | Public Affairs Television | 2002 | 58 min

This investigative report in the *NOW with Bill Moyers* series looks at the link between synthetic chemicals and children’s illnesses such as asthma, cancer, and learning disabilities.
Manufactured Landscapes
Director Jennifer Baichwal | Mercury Films, Foundry Films, and the National Film Board of Canada | 2006 | 90 min

This documentary follows acclaimed Canadian photographer Edward Burtynsky as he travels to China to photograph representations of that country’s industrial revolution.

A Sense of Wonder
Director Christopher Monger | Sense of Wonder Productions | 2008 | 55 min

This film is about the last year of Rachel Carson’s life, adapted from the stage play of the same name. Kaiulani Lee, who plays Carson, also wrote the stage play and screenplay and was the executive producer of the film.

The Story of Stuff
Director Louis Fox | Free Range Productions | 2007 | 20 min

This animated documentary, featuring author and activist Annie Leonard, explains the lifecycle of products, taking a critical view of consumerism and encouraging a more sustainable approach to our purchasing decisions. Available online at www.storyofstuff.com.

Trade Secrets: A Moyers Report
Producer Sherry Jones | Public Affairs Television | 2001 | 120 min

This video, hosted by Bill Moyers, reveals what industry, government, and science know about the health effects of chemicals.

Toxic Trespass
Director Barri Cohen | If You Love Our Children Productions and National Film Board of Canada | 2007 | 81 min

When filmmaker Barri Cohen learns that her young daughter’s blood contains carcinogens like benzene and DDT, she travels to cities that are known for their chemical contamination to learn more about the health effects being suffered by the residents there.
**Waterlife**  
Director Kevin McMahon | Primitive Entertainment and the National Film Board of Canada | 2009 | 109 min

This cinematic documentary film tells the story of the Great Lakes, from their immense beauty to their frightening toxicity.

**Water on the Table**  
Director Liz Marshall | LizMars Productions | 2010 | 79 min

This film follows Canadian activist Maude Barlow as she fights to protect water from privatization. It asks the questions *Is water a commercial good like running shoes or Coca-Cola? Or, is water a human right like air?*
OTHER PUBLICATIONS
BY SANDRA STEINGRABER

*Raising Elijah: Protecting Our Children in an Age of Environmental Crisis*
By Sandra Steingraber | Da Capo Press | 2011

In her newest book, Sandra Steingraber writes from the perspective of a scientist mother of two young children, enjoying and celebrating their lives while searching for ways to protect them—and all children—from the toxic, climate-threatened world they inhabit. Each chapter of this engaging and unique book focuses on one inevitable ingredient of childhood—from pizza to laundry to homework to the “Big Talk”—and explores the underlying social, political, and ecological forces behind it. Through these everyday moments, Steingraber demonstrates how closely the private, intimate world of parenting connects to the public world of policymaking and how the ongoing environmental crisis is, fundamentally, a crisis of family life.

For single copies: 1-800-343-4499
For bulk orders in the US: 1-800-810-4145, ext. 5000 or special.markets@perseusbooks.com
For bulk orders in Canada: 1-800-747-8147 or customerservice@raincoast.com

*Having Faith: An Ecologist’s Journey to Motherhood*
By Sandra Steingraber | Berkley Publishing Group | 2001

Full of beauty and mystery, this month-by-month story of the author’s pregnancy and childbirth weaves into its telling new discoveries about genetics, the intimate unfolding of embryonic organs, the architecture of the fetal brain, and the astonishing transformation of the mother’s body as it prepares to nourish and protect the new life. At the same time, Steingraber reveals the alarming extent to which environmental hazards—from industrial poisons found in amniotic fluid to the toxic contamination of breast milk—now threaten each crucial stage of infant development.

For single copies: http://us.penguin.com
For bulk orders: ecommerce@us.penguin.com

*Post-Diagnosis*
By Sandra Steingraber | Firebrand Books | 1995

Moving from the intimate space of a cancer patient’s hospital bed to the national sacrifice zones of atomic bomb test sites, this collection of poetry sets out to find Ground Zero in order to tell “the whole story of what happened.”

For all orders: 1-800-343-4499 or www.firebrandbooks.com
**More Living Downstream Resources**

Individuals and groups across North America are using *Living Downstream* as an educational and outreach tool. They are using the film to raise awareness about the links between environmental contamination and cancer incidence, to encourage critical thinking among students, and to inspire deeper environmental engagement and action.

To help you make full use of *Living Downstream* in your life and work, we have produced the following collection of *Living Downstream* resources.

**Living Downstream DVDs**

*Living Downstream* Educational DVD

For educational, community, nonprofit, and professional use

Purchasing this DVD gives your group the right to screen the film publicly for educational or nonprofit purposes. The *Living Downstream* Educational DVD includes the following contents:

- **Feature-Length Film (85 minutes)**
- **One-Hour Version (55 minutes)**
- **Single Scene Index**
  For playing a single scene during a presentation or discussion.
- **Scene Compilations**
  Scenes grouped thematically for specialized screenings.
- **Mini Docs**
  Short documentaries using new interviews, footage, and graphics to explore select topics in greater depth.
- **Commentary Tracks**
  Featuring author Sandra Steingraber, director Chanda Chevannes, editor Nathan Shields, and director of photography Benjamin Gervais.
- **English Subtitles**
Living Downstream Home Video DVD
For individual and family use

This Home Video disc does not yet have a release date. To be notified when the discs are available for order, please email dvd@livingdownstream.com.

Living Downstream Guides

Living Downstream ~ In the Community
For community, nonprofit, and professional use
Available electronically or in print with purchase of the Educational DVD

A guide for organizations, community groups, activists, and professionals seeking to engage others in the issue of environmental health. Designed to help individuals and organizations raise awareness and inspire action, this guide includes screening tips, workshop outlines, info sheets, and action ideas. This guide was produced in collaboration with staff and volunteers of nonprofit organizations and a range of other professionals. Available for download in PDF format at www.livingdownstream.com/guides.

Living Downstream ~ In the Classroom
For educational use
Available electronically or in print with purchase of the Educational DVD

A guide for high school and postsecondary educators seeking to teach their students about cancer, synthetic chemicals, and environmental health. Designed to encourage critical thinking and community engagement, this guide includes lesson plans, discussion questions, student handouts, and a range of assignments. It was produced in collaboration with teachers and their students. Available for download in PDF format at www.livingdownstream.com/guides.

Living Downstream ~ At Home
For individual and family use
Included with purchase of the Home Video DVD (release date TBA)

This quick reference guide equips individuals and families with ways to make changes in their homes, workplaces, and communities.
At The People’s Picture Company, we are conscious that everything we create has an impact on the environment. As such, we have been working to lessen the environmental impacts of our production processes. Our strategy has been to work with local suppliers and manufacturers committed to making their processes as sustainable as possible, and to purchase environmentally friendly supplies at every opportunity.

Some highlights of our efforts include the following:

- When filming, we used local equipment suppliers and crew members whenever possible to reduce the impact of our travel. We ate local, organic food when it was available to us. While filming in central Illinois, we were especially fortunate to have our food provided by Henry Brockman of Henry’s Farm (www.henrysfarm.com) and cooked for us by Joel Smith, the Midwest Regional Governor for Slow Food.

- All publicity materials have been made available for download for paperless dissemination. Hard copies of select materials have been printed using vegetable-based inks on FSC-certified recycled paper.

- We chose an alternative DVD case, called a *digipak*, made of 100% unbleached, recycled cardboard. The plastic trays are made from 100% recycled plastic and are designed to hold discs firmly in place in high-volume-use environments such as libraries and resource centers. The printing was done using vegetable-based inks, and the boxes have not been shrink-wrapped.

- The guides are available for electronic download in PDF format to all purchasers of the Educational DVD. We are actively encouraging electronic use of the guides to reduce the impact created by the printing and shipping of the written guides. For those purchasers who require a hard copy, the guides are printed on FSC-certified paper that has been manufactured from 100% recycled material and without the use of chlorine.
Produced by

With the generous support of

We welcome your feedback on the film and the guides. Please email us at dvd@livingdownstream.com.