

## Are There Drugs in Our Water?



Medical drugs—from cold remedies sold over the counter to pharmaceuticals prescribed by our doctors to fight specific ailments—help millions of people every day. As the science progresses, more cures are found, more medicines developed, and more pills consumed. As we get older, some of us take 20 or more medications a day to help with everything from heart disease to depression.

What few realize is that drugs, once they serve their medical purpose, leave our bodies to enter septic systems or waste-treatment plants where they are processed and eventually released into aquifers, wetlands, and rivers. While this water is treated in various ways to remove harmful ingredients, many of the drugs remain bioactive. Upon re-entering the watersheds, they can affect organisms, from small invertebrates to fish and the animals that eat the fish, including humans.

Studies of water treated and released into rivers across the country have shown traces of more than 80 organic contaminants, many of them directly attributable to drugs taken by humans. What effect these

contaminants have on us is still not known. However, a study done on fish downstream from a public water-treatment plant in Colorado indicated a higher incidence of intersex changes, which scientists have attributed to the possible effects of estrogen and estrogen-like substances found in many pharmaceuticals. Estrogen, like many other hormones, is not designed to break down easily in water.

Scientists are actively studying the effects of drugs in our water. Here in the Pomperaug River, critical research is being conducted by environmental engineers from the University of Connecticut. As new drugs are developed, their active presence in our water is one major concern. A second concern is the interactive effect these drugs have upon each other and subsequently upon organisms that come in contact with them. When you add to the mix the effects of soaps and shampoos and other personal-care products, fertilizers for our lawns, and cleaning products for our homes, you have a potentially toxic stew.

Still, it is important to stress that scientists have not come to any hard and fast conclusions about the contaminants in our water and continue to research the subject, hoping to understand what is happening and to determine what can be done about any harmful effects.

As the scientists continue their work, people can do their part. One way that drugs enter the water is when old or unused pills are flushed down the toilet. Some communities have established pharmaceutical take-

back programs, which collect and dispose of pills in a safer way. On a grander and more expensive scale, it may be possible to improve the treatment technology for our water supply.

Until science better understands the problem and workable solutions can be put in place, the first thing we can do as members of a community is to be aware of these issues and try to be better guardians of this precious resource we all share. Think about what you put in the water, and in some small way change your behavior if what you are doing might cause some damage. Find out what your local community is doing about the problem of drugs in the water.

Change occurs one step at a time. One person doing one small thing isn't much. Thousands of people doing many small things begins to add up.

—Tom Hook



### Who Are These Guys?

**David Bjerklie, Piotr Parasiewicz, and Jeff Starn, are scientists who have studied the Pomperaug River. Read about two important new U.S. Geologic Survey studies on page 4.**

## Supporting the Coalition is Easy

Spring is the time for our Annual Appeal. As you may know, we only ask for contributions from members and friends twice a year—at the time of your membership renewal, and as part of our Annual Appeal in April. These two solicitations are the cornerstone of our annual funding and are crucial in helping us protect and preserve our local rivers and aquifer. Your gift to the annual appeal will allow us to:

- continue to develop new important river science
- run an annual Streamwalk Program and Macroinvertebrates (aquatic creatures) Program, both critical to water quality
- run an annual River Run Canoe/Kayak Day to bring in new people
- publish our very fine quarterly Watershed News, to promote environmental protection
- bring our environmental story to the town boards and commissions in the eight towns of the Pomperaug Watershed
- provide immediate environmental assistance where the health of the Watershed is threatened

You will soon receive an Annual Appeal contribution envelope. Please give generously to support our wonderful mission.

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## Call for Volunteers – Streamwalk and River Run

Here's your opportunity to be a part of two vital Coalition activities.

Our second annual River Run Day will be Sunday June 3. On that day we'll put 40 canoes and kayaks on selected reaches of the Pomperaug, where you will experience the beauty of the Watershed. Later there will be a luncheon speaker at the barn at Audubon Bent of River, and training in canoe/kayak techniques and construction. If you wish to help us plan this event or participate on June 3, call Patti Doyle at 203-267-1700.

Our Stream Committee, chaired by Donna Lesch, will kick off our fifth annual Streamwalk on Saturday June 9 with an introduction and training session at the barn. Streamwalk is the backbone of our water-quality program, letting you walk a reach of a stream or river and identify conditions we need to improve to protect the Watershed. If you wish to join us on June 9, call Patti at 203-267-1700.

## PRWC Apparently Needs to Learn Its ABCs!

The last Watershed newsletter had an article thanking all those who contributed to the Coalition in 2006, followed by a long list of donors. That list, we're chagrined to say, inadvertently omitted nearly everyone whose last name begins with A, B, or C, as well as a few other donors! So here you all are, with apologies:

Mr. Chris Allan, Mr. & Mrs. Peter Alpi, Holly Fitzsimmons & Mark Alvarez, Mr. & Mrs. William Anthony, Ms. Mary Arbachauskas, Mr. & Mrs. Alphonse Avitabile, Mrs. Margaret M. Baldrige, Mark J. Barrere, Mr. & Mrs. William Bassett, Dr. & Mrs. Charles Beaumont, Mr. & Mrs. John Benson, Mr. & Mrs. Reed Bertolette, Mr. & Mrs. Joseph W. Bette, Dr. Marianne Bette & Mr. Thom Waner, Ms. Helen Blanchard, Mr. & Mrs. Carter Booth, Mr. Bert Boyson, Mr. Hunter Brawley, Mr. & Mrs. Dermott Breen, Dr. & Mrs. Roy Breg, Mr. Rudolph E. Bremser, Ms. Sandy Breslin, Mary Ellen Olcott & Arthur Brieger, Mr. & Mrs. Donald Briggs, Dr. Kenneth Burke, Ms. Terri Burke, Mr. & Mrs. J. P. Campbell, Mr. & Mrs. Alfio A. Candido, Dr. Mark J. Cantin DDS, Mr. Arthur Carotenuto, Mr. & Mrs. Mitchell Chester, Marguerite Starr & Peter Clark Esq, Ms. Elizabeth Connolly, Ms. Sandra Cox, Mr. & Mrs. Richard Crane, Mr. Timothy Cremin, Mr. & Mrs. Thomas S. Crider, Mr. & Mrs. William Crutcher, Mr. Bill Cummings, Mr. & Mrs. Edward Currie, Mr. & Mrs. William C. Neil, Mr. John D. Nelson Jr., Ms. Elizabeth H. Nickerson.

## The Pomperaug Coalition Couldn't Exist Without Its Volunteers

Volunteers are the backbone of our organization. They conduct our annual Streamwalk to collect data and identify trouble spots on the river. They plan and carry out our springtime River Run Day. They staff our board, lead guided learning walks, and help plan and execute our marketing and publicity efforts. They help us with our website and our computer system. They take photos. They stuff envelopes. In fact, our volunteers make the Coalition an interesting and exciting place to work. Here's a closer look at three of them.



*Ingrid Davis*, an avid hiker and a member of Woodbury's Conservation Commission, came to the area 30 years ago. Living in Woodbury, she had been very concerned about contamination in some of the town wells. She says, "Water is an issue in my life!" Since she is a reference librarian, the Coalition board asked her "to take the piles of pamphlets and boxes of stuff and organize it into a library with a classification system". Now she keeps the PRWC website updated and heads up our important yearly Macroinvertebrate Survey.

*Ed Edelson* was drawn to the Coalition "because of its focus on building upon sound science and not just emotion. Science is the best approach, but it is not always easy and doesn't always give a simple answer to difficult questions." Ed started the PRWC Development Task Force and the Development Committee, then initiated and chaired the Modeling Committee. His varied earlier career included mathematical modeling, marketing, and public affairs. He now operates Cornucopia Bed & Breakfast with his wife Christine while teaching (micro-economics) and consulting. He is on Southbury's Inland Wetlands Commission and on the board of the NW CT Convention and Visitors Bureau.



*Dan Poor* learned about PRWC at the 2006 River Run Day. An experienced hiker and "novice kayaker," he says his "interest in outdoor recreation drives me to contribute to supporting the mission of environmentally focused non-profits like PRWC." Dan, who has a Ph.D. in Organizational Design, is a technology consultant for corporations and says that many of the issues he consults on with them also apply to small non-profits. "I've done non-profit consulting and volunteerism for years. I like to help out local groups wherever I live." Since that River Run last year, "I've documented and reconfigured the office computer

network, the critical software applications used by staff and volunteers. I've ensured that the important data created in the course of the scientific and administrative work is secure, easy to find, and reliably backed up. After we get this stabilized, I want to help with data mining and outreach efforts." Dan and his wife Mary Austin and son Austin spent 19 years in Manhattan, then relocated to Woodbury in 2003 for "something completely different. We enjoy the rural environment and the opportunity to be in a undeveloped environment within minutes. Austin and I are systematically hiking all the major national parks during his Spring breaks."

Here is a list of all our wonderful volunteers:

Administrative: Sandy Cox, Ingrid Davis, Ethel Follett, Holly Gillette, Joyce Hornbecker, Beth Martin, Judy Massicotte  
Development: Eileen Denver, Elizabeth Donnolly, Ed Edelson, Diane Fountas, Karen Hughes Public Relations/Marketing: Ingrid Davis, Eileen Denver, Tom Hook, Karen Hughes, Duncan Stephens IT: Ingrid Davis, Cindy Hunt-Stowell, Dan Poor  
Computer Modeling: Lee Dunbar, Ed Edelson, Laurie Giannotti, Virginia Mason, Larry Pond Land Use: Deloris Curtis, Jean Donegan, Sister Emmanuelle, Karen Huber, Kathy Johnson, Dick Leavenworth, Virginia Mason, Arthur Milnor, Jack Nelson, Susan Peterson, Chris Wood Environmental: Tom Keilty, Dick Leavenworth, Mieke Schuyler Water Quality: Dick Leavenworth, Donna Lesch, Larry Pond, Mark & Linda Schocken, Mieke Schuyler PRWC/Land Trust Collaboration: David Bjerklie, Karen Huber, Donna Lesch, Virginia Mason Streamwalk: Ann Astarita, Ingrid Davis, Bob Dubois, Kat Favoccia, Ethel Follett, Doris & Herb Garber, Don Giroux, Tom Hook, Bill & Lauren Kimball, Ron & Terrilyn Krampetz, Donna Lesch, Sarah Martin, Shirley Presti, Susan Schofield, Mieke Schuyler, Adele Taylor Macroinvertebrates Day: David Bjerklie, Bob Dubois, Dom Falcone, Kat Favoccia, Sharon Feeley, Ethel Follett, Holly Gillette, Michael Kaklamanos, Donna Lesch, Ann Lilley, Rebecca McMackin, Dan Sherr, Adele Taylor, Claudette Volage, Brenda Weir Fishing Appreciation Day: Ed Albrecht, Jeff Bassett, Dan Beyer, Bob Biondi, Don Blakeman, Peter Clark, Taylor D'Alexander, Peter Dorgan, George Franklin, Michael Kaklamanos, Dan Kenny, Brian Labowski, Dave Liedlich, Mel Lundy, Bob Mitchell, Marty Peterson, John Shamansky, C.K. Siemon, Albin Weber 2006 River Run Canoe/Kayak Day: Mark Alvarez, Bill & Martha Bless, Mitch Chester, Sandy Cox, David Gable, Barry Gorfain, Rick Koehler, Ed & Becky Nagy, Esther Nichols, Betsy Nickerson, George Nybakken, Curtis Read, Bruce Ross, Duncan Sellars, David Sinish, Bill Tingley, Jean Trapani, John Wick

—Eileen Denver (photos by Duncan Stephens)

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## **Two USGS Studies Will Help Determine Health of Pomperaug Watershed**

On February 2, scientists from the United States Geologic Survey gave a presentation at the Water Science Center in East Hartford about how water enters, moves through, and leaves the Pomperaug River Watershed. The USGS has developed models that continuously monitor both surface-water runoff and groundwater movement. The models, which use data collected over the past 30 years, can help determine the health of the Pomperaug by assessing its condition at a given time or place, providing possible solutions to problems that might occur, whether from natural or human causes.

David Bjerklie of the USGS presented the findings from the Precipitation Runoff Model for the Watershed. The PRMS provides a simulation of runoff for the long-term. The model, which falls within a margin of error of approximately 5 percent, allows for close estimations of future runoff in the Pomperaug Watershed and their effect on streamflow and the replenishing and discharging of groundwater. It provides estimates for such scenarios as: a pristine condition, the imagined state of the river before any human impact occurred; the condition of the river system as it exists today; and potential new development in the Watershed, up to a point of full build-out. The Pomperaug study can be projected to other watersheds, thus giving the USGS a useful benchmark for the study of similar rivers in the region.

Jeff Starn, also of the USGS, followed with a study of the Computer Based Ground Water Flow Model for the Watershed (MODFLOW). A critical part of this model is the ability to determine underground water flow at various times of year through geologic conditions such as bedrock, stratified drift, slope, and soil type. The effects of land use are factored in as well. The scenarios used in the runoff model were used here for determining water flow, whether by volume, location, or rate of movement. The MODFLOW provides crucial information about wells in the Watershed, helping the USGS determine where to place wells, how much can be pumped from them, and the effects of pollution spills.

The objective of both these studies is to understand how quickly water is replenished in the Watershed, where in the Watershed the recharging occurs, and how best to protect the sources of water from being compromised by overuse during times of low flow or by an environmental hazard.

For more information about these useful studies, phone us at 203-267-1700, or visit us at [www.pomperaug.org](http://www.pomperaug.org).

—Tom Hook