Spring 2019

AMERICAN GROUND WATER TRUST NEWSLETTER

Water issues programs and education since 1986

DRINKING WATER QUALITY AND PFAS CONTINUE TO DOMINATE THE NEWS THROUGHOUT THE US AND BEYOND

97% OF CITIZENS HAVE SOME LEVEL OF PFAS IN THEIR BLOOD!

Over 4,700 PFAS related compounds occur in the world today and many transform into highly persistent perfluorinated chemicals in the environment. The compounds are connected to several cancers, liver, kidney and reproductive disorders and other health effects. The more water testing and health research that occurs the more potential issues seem to arise. For example, on April 8th the Portland Press Herald featured the headline, *"Maine Med gets $2.2 million grant to study potential link between common chemicals and teenage obesity."* The research by the Maine Medical Center will look into possible relationships between childhood obesity and osteoporosis among children exposed to PFAS.

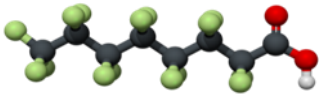
The American Ground Water Trust (AGWT) has convened six educational workshop programs on PFAS (per- and polyfluorinated alkyl substances) and related compounds in CA, OH, NJ, PA and MI. Additional programs are scheduled for Phoenix, AZ, (July 11); Albuquerque, NM, (July 24); Fresno and Bakersfield, CA (August 20 & 21) and also for Westford, MA, (Sept 18). The Westford program will focus on issues and solutions related to PFAS for all the New England states.

Our workshop programs provide objective information to facilitate water providers, elected officials, citizens and community leaders with policy, planning and management decisions. We cover chemistry background, sampling & testing protocols, treatment technologies, cost recovery options and the characteristics of environmental persistence of long-chain and short-chain chemicals in legacy PFAS compounds and some of their replacements, e.g., GenX and ADONA.

This Australian Department of Defence graphic illustrates some of the applications of PFAS compounds

PFAS chemicals have been extensively used in manufacturing because of their ability to repel water and oil. While fire-fighting foam containing PFAS compounds is a major culprit for contamination, concerns also result from manufacturing processes for products such as non-stick pans, ski-wax and carpets. Contamination can be spread by wind and more seriously from improper disposal. Recent attention has been given to the potential for biosolids application on hay crops resulting in PFAS contamination of milk.

Nation-wide, there are no clear regulatory standards and federal, state and local authorities are working to find ways to find solutions. From a water treatment perspective, there are several effective options to make drinking water safe. The challenge is to find the money to make that happen!



We will continue to develop informational and educational workshops on PFAS while these issues remains of concern to citizens and communities nation-wide.

2019 CALENDAR
Upcoming education events and programs

Source Water Protection Conference
Concord, NH
May 16

Teacher Institute
Nebraska City, NE
May 29-30

Aquifer Conference
Austin, TX
June 12-13

PFAS Issues Workshop
Phoenix, AZ
July 11

Groundwater Planning Conference
Albuquerque, NM
July 22-23

PFAS Issues Workshop
Albuquerque, NM
July 24

Central Valley Chemicals Workshops
Fresno, CA
August 20
Bakersfield, CA
August 21

PFAS - New England Workshop
Westford, MA
September 18

Aquifer Conference
Orlando, FL
Sept 30-Oct 1

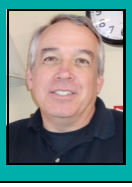
Groundwater Issues Conference
Denver, CO
November

To sponsor or exhibit at these programs call 800-423-7748

AGWT CORPORATE SUPPORTER CORNER Featuring Smith Pump

Smith Pump began business in 1936 in Wilmington, MA and was incorporated in New Hampshire in 1985. The company drills wells for domestic, industrial and municipal applications and installs pumps and plumbing for the same. Additional services include pump stations for community water systems, flow tests, hydro fracturing, well inspection/video recording and providing water sources for groundwater source heat systems throughout the New England region. Smith Pump Company is an annual supporter of the American Ground Water Trust's education mission.

"We have been annual supporters of the AGWT every year since 2000. We recognize their important work in communicating objective information about groundwater resources to well owners and local community leaders." says Steve Smith, CEO of the Smith Pump Company.



New Hampshire Department of Environmental Services and **American Ground Water Trust**

DRINKING WATER SOURCE PROTECTION

May 16, 2019 - Concord , NH

This annual New Hampshire Department of Environmental Services conference attracts over 200 participants. It provides an information-exchange opportunity for water supply professionals and town officials, boards and committees with responsibility for planning and delivery of safe drinking water. After the plenary session, the workshop options include: Surface and Groundwater, Land Conservation, Innovation and Resources, National Source Protection Priorities, and New England States Source Protection: State Priorities.

GROUNDWATER INSTITUTE FOR TEACHERS

(NE, IA, KS, MO) May 29th & 30th 2019

Today's students are tomorrow's citizens

This great learning, training and information-exchange opportunity for teachers is organized in cooperation with the Kregel Windmill Museum, Nebraska City and the Groundwater Foundation, Lincoln, NE. It is sponsored by the Kimmel Foundation and Wirth Foundation.

The AGWT has organized over 70 training programs for teachers in 17 states, attended by close to 2,000 teachers and educators. Our approach at Groundwater Institutes is to show teachers through class sessions, discussions, demonstrations and handouts; the importance of groundwater and how to integrate water topic subject matter into existing curricula and traditional subject areas.

AGWT's 26th GROUNDWATER PROGRAM IN TEXAS

"Everything Aquifers and Groundwater Management" June 12th & 13th, 2019

This annual AGWT program, co-sponsored by the Texas Water Development Board, brings together engineers, scientist, planners, water-resource managers, agency professionals and attorneys to share up to date information regarding the challenges, feasibility, regulatory concerns and the economic and environmental benefits of water management strategies for Texas. New topics for TX this year… Impact of Coal Ash on water quality and the role of groundwater in protecting ecological habitat. [8 of our 24 presenters in Austin are attorneys!]

The AGWT participated in the 2019 Annual New England Water Well Association Conference & Trade Show in Marlborough, MA in March. This annual event attracts well contractors, manufacturers and groundwater professionals from all the New England states, the Canadian Maritime Provinces and from New Jersey, New York and Pennsylvania. The show is a great opportunity to see the latest technical innovations and for professional networking. The photographs are of the next generation of groundwater professionals answering questions about water quality at the AGWT exhibit. Questions about groundwater were placed at booths throughout the trade show and children had to visit each one to find out the answers.

Pictured above are Peyton and Breanna from Sunco Pump & Well Drilling, Sabattus, ME, and to the right are Liliana and James from East West Drilling, Inc. from Mifflinburg, PA

www.agwt.org/events - **For program details, registration and sponsor & exhibit opportunities for all AGWT education/conference/workshop programs**

WATER - WHERE DID THE WORD COME FROM?

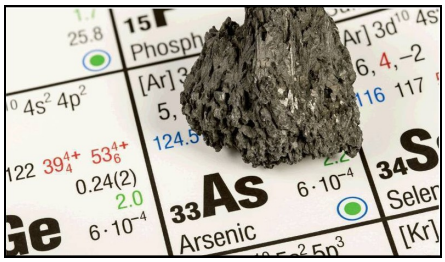
English is a member of the Indo-European family of languages that are thought to have evolved about 8,000 years ago. As different languages developed, words have been "borrowed" and transformed. Water is a word that has origins in the prehistoric Indo-European word *wodōr.* Related words are the Greek húdōúr (source of the English prefix hydro-), Russian voda (source of the English word, vodka) and Gaelic *uisge* (source of the English word whisky).

[John Ayto – Dictionary of Word Origins, Arcade Publishing, New York]

ANOTHER USE FOR YOUR CELL PHONE – TEST FOR ARSENIC IN DRINKING WATER

New research from the University of Edinburgh, Scotland, claims that a Smartphone device could help millions of people avoid drinking water contaminated by arsenic. Researchers have developed a biosensor that attaches to a phone and uses bacteria to detect unsafe arsenic levels by generating easy-to-interpret patterns, similar to volume-bars, which display the level of contamination. Researchers developed the biosensor by manipulating the genetic code of the bacteria Escherichia coli. They added genetic components to act as amplifiers when arsenic is detected.

UNICEF reports that arsenic contaminated drinking water is consumed by more than 140 million people worldwide. In resource-limited countries, there is a lack of sufficiently skilled personnel and healthcare facilities to test water for contamination. Researchers say new devices could replace existing tests, which are difficult to use and need specialist laboratory equipment.



The lead author of the research, published in *Nature Chemical Biology* (March, 2019) is Dr. Baojun Wang. If you want some bed-time reading, the paper title is *"Cascaded amplifying circuits enable ultrasensitive cellular sensors for toxic metals."*

PHOTO GALLERY: Chemicals from the air

Different decades, different targets, different chemicals, different benefits, different risks?

Picture: https://qz.com/1381593

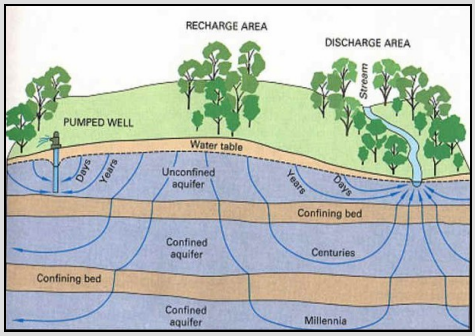
Dosing sheep in Australia with DDT

Picture: *David McNew, GettyImages*

Dropping fire retardant, Santa Rosa, CA

DID YOU KNOW?

The total groundwater volume in the upper 2 km of continental crust is approximately 22.6 million km^3, of which 0.1–5.0 million km^3 is less than 50 years old. Although modern groundwater represents a small percentage of the total groundwater on Earth, the volume of modern groundwater is equivalent to a body of water with a depth of about 3 m (9 feet) spread over the continents. This water resource dwarfs all other components of the active hydrologic cycle. (Source: Nature Geoscience)



Graphic: US Geological Survey

AMERICAN GROUND WATER TRUST

The AGWT mission is to increase awareness about water resources issues, particularly those that involve groundwater

By convening and organizing conferences, workshops and focused training programs, the AGWT:

- Promotes efficient and effective groundwater management
- Showcases groundwater science and technology solutions
- Increases citizen, community and decision-maker awareness
- Facilitates stakeholder participation in water resource decisions
- Communicates the environmental and economic value of groundwater
- Provides a safe haven to discuss "difficult" issues

WAYS TO SUPPORT GROUNDWATER EDUCATION

AGWT has been providing objective information about groundwater and water resources for over 30 years. Because it is a hidden resource, groundwater is often misunderstood and undervalued. The AGWT mantra is "science as the basis for policy." In local, state and national issues regarding water policy, allocation authority and protection regulations there can sometimes be an atmosphere of exaggeration and spin from vested interests. In framing the issues for our education programs and in inviting presenters, the AGWT strives to maintain balance and inclusion of all points of view.

Some of our educational outreach is grant funded, but in order to meet our mission and provide an independent voice over groundwater issues, we also rely on the generosity of individuals and companies. You can help increase our educational impact in several different ways.

- Becoming an individual or corporate member
- Sponsoring and exhibiting at an AGWT event
- Hosting a program for teachers (We have trained over 2,000)
- Sponsoring a scholarship in the name of your company/organization
- Underwriting specific direct costs such as computers, web-site maintenance, printing, travel etc.

THE AMERICAN GROUND WATER TRUST'S 2019 SCHOLARSHIP

We encourage entry level college students intending to pursue a career in the field of groundwater, to apply for one of the American Ground Water Trust's corporate funded Scholarships.
Application forms and the criteria for the awards are listed on the AGWT web-site: https://agwt.org/content/scholarship-opportunities

Application Deadline is June 1, 2019

If you are interested in funding a scholarship in the name of your company or organization we will be pleased to hear from you. The AGWT manages all aspects of scholarship administration with 100% pass-through of corporate funding. Thank you to our current scholarship sponsors:

Printing and distribution of this issue of the American Ground Water Trust Newsletter has been sponsored by Roscoe Moss Company, Los Angeles, CA. Supporting American Ground Water Trust's mission since 1986.

INVEST IN THE AMERICAN GROUND WATER TRUST

A 501(c)(3) non-profit education organization

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