



NEW STUDY SHOWS HIGH POTENTIAL FOR GROUNDWATER TO BE CORROSIVE IN HALF OF U.S. STATES

Release Date: July 13, 2016 - An analysis of more than 20,000 wells nationwide shows 25 states have groundwater that has either high or very high potential to be corrosive...



This map shows the potential for groundwater corrosivity in groundwater wells in all 50 states. It is a combination of two indices, shown below.

A new U.S. Geological Survey assessment of more than 20,000 wells nationwide shows that untreated groundwater in 25 states has a high prevalence of being potentially corrosive. The states with the largest percentage of wells with potentially corrosive groundwater are located primarily in the Northeast, the Southeast, and the Northwest.

This report is <u>unrelated to the drinking water problems</u> experienced in Flint, Michigan. The problems in Flint were related to treated <u>surface-water</u> from the Flint River, whereas this report focuses on untreated groundwater nationwide.

Two indicators of potential corrosivity were combined to determine that corrosive groundwater occurs in all 50 states and the District of Columbia. Corrosive groundwater, if untreated, can dissolve lead and other metals from pipes and plumbing fixtures. *continued page 5*

Reprinted with permission from U.S. Geological Survey, Hyperlinks can be activated from the USGS article located on their website @ https://www.usgs.gov/news/new-study-shows-high-potential-groundwater-be-corrosive-half-us-states



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"The corrosivity of untreated groundwater is only one of several factors that may affect the quality of household drinking water at the tap," said Stephen Moulton II, chief, USGS National Water-Quality Program. "Nevertheless, it is an essential factor that should be carefully considered in testing for water quality in both public and private supplies nationwide."

Public water supplies are regulated by the U.S. EPA, but maintenance, testing and treatment of private water supplies are the sole responsibility of the homeowner. About 44 million people in the U.S. get their drinking water from private wells, yet surveys indicate many homeowners are unaware of some basic testing that should be done to help ensure safe drinking water in the home.

"Fortunately, in most areas of the country and with appropriate safeguards, the majority of homeowners can get good quality drinking water from private wells," said Moulton. "But this study is a good reminder that prudent, routine testing of the water, including its interaction with the water supply system, is an essential first step so homeowners and their families can confidently drink water from their faucets."



This map shows the Langelier Saturation Index for U.S. groundwater, one of the two indices combined for this study. It shows the degree of saturation of calcium carbonate in groundwater. If there is little calcium carbonate in the water, then it could be corrosive (shown in orange). If it is high in calcium carbonate (shown in blue), then it could deposit the excess calcium carbonate as scaling in pipes.

Naturally corrosive water is not dangerous to consume by itself, however it can cause health-related problems by reacting with pipes and plumbing fixtures in homes. If plumbing materials contain lead or copper, these metals may be leached into the water supply by corrosive water. Signs of corrosive water causing leaching of metals may include bluish-green stains in sinks, metallic taste to water, and small leaks in plumbing fixtures.

Potential sources of lead in homes include:

- lead pipes or fittings used in homes built prior to 1930
- lead solder used in copper fittings in homes built prior to the late 1980s
- "lead-free" brass components, which, in all states, except California, may have contained up to 8 percent lead, prior to 2014
- galvanized steel that contained 0.5 to 1.4 percent lead, prior to 2014

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GWMA PROPOSED FOR ESPA

In July Idaho Department of Water Resources (IDWR) announced that it is considering the creation of a ground water management area (GWMA) on the Eastern Snake Plain Aquifer (ESPA). Ten public meetings were scheduled across eastern Idaho in an area ranging from St. Anthony to Hagerman. Following the meetings, IDWR Director Gary Spackman says he will decide whether a GWMA should be created.

According to a press release IDWR issued on July 13th, the GWMA is being considered to "address declining water levels in the ESPA and water sources that are hydraulically connected to it. Water levels in the ESPA and the water supplies dependent upon the aquifer (spring discharge) have been declining since the 1950s, leading to multiple legal water calls by entities with senior water rights."

According to IDWR, the purpose of the meetings was to present technical and legal information from IDWR relating to its proposal and to gather public input from the ground water users who may be affected by the Director's decision.

In seeking input from water users, IDWR said it wants to know if the water supply on the ESPA will become insufficient to meet existing water rights; and, if so, what the boundary of a GWMA should be.

continued on page 17

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UPDATE FROM THE IDAHO DEPARTMENT OF WATER RESOURCES

TOM NEACE P.G., MANAGER, GROUND WATER PROTECTION SECTION,

Heat-pump Injection Well Forms

The IDWR Underground Injection Control (UIC) program would like to remind the Idaho drilling community that there is a specific injection well application form to submit when drilling an injection well used for heat-pump return flows not exceeding 50 gallons per minute. The form can be found in two places on IDWR's web-page: the UIC deep injection well webpage or the Well Construction forms webpage. The form is entitled "Low-flow (\leq 50 GPM) Ground Source Heat Pump (5A7) Application". If the Ground Source Heat Pump injection rate exceeds 50 gallons per minute it is subject to the permitting process of a deep injection well.

For your convenience here is a direct link to the form: http://idwr.idaho.gov/files/wells/5A7 Rule Authorized App.pdf

Proposed West Ada Area of Drilling Concern (ADC)

As mentioned in the last newsletter, the City of Meridian (Meridian) has submitted a petition to the Department for the designation of an ADC in a portion of Western Ada County. A detailed hydrogeologic investigation was submitted with the ADC request which documents significant differences in the chemistry and pressure of different aquifer and specific production zones. Human caused and naturally occurring ground water contamination is present throughout the Treasure Valley at different depths. The ground water investigation identified elevated concentrations of Uranium beneath the Meridian area between approximately 200 and 300 feet below ground surface.

Wells which are drilled that have unsealed annular space can be a conduit for spread of ground water contamination from one aquifer or production zone to another. The City of Meridian proposes the ADC to protect the ground water resources by preventing the comingling of ground water from different aquifers and sub-aquifers (production zones). Meridian proposes specific drilling methods and additional sealing and to prevent commingling of different aquifers.

The Director is required to conduct a public hearing near the area to determine the public interest in the designation. The hearing was held on June 1, 2016 at the Mountain View High School Auditorium. Approximately 50 people attended the informational hearing. Tom Neace, IDWR Ground Water Protection Program manager, presented the regulatory process required to establish an ADC and the specific requirements proposed by Meridian. Kyle Radek, Assistant City Engineer in Meridian, presented information on the Meridian Public Water System and the importance of preventing comingling of different aquifers.

A number of participants testified at the hearing. IGWA took a position against the designation of an ADC and indicated that there were other ways of protecting the resource. Two local legislators also participated and felt that the issue needed more study before making an ADC designation.

The Department is still studying the issue and has not reached a decision. When a decision is made regarding the designation, the Department will provide an update.

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CORROSIVE GROUNDWATER SUGGEST ACTION BY CERTAIN WELL OWNERS TO CHECK POTENTIAL LEAD THREAT

(WESTERVILLE, OH — July 13, 2016) Since lead is harmful when consumed by both humans and animals, the National Ground Water Association urges residential water well users in regions where corrosive water levels have been detected to investigate and determine whether lead is present in their drinking water.

NGWA issued this important call to action to supplement the release of research results released by the U.S. Geological Survey on July 13, 2016.

While corrosive water does not represent a direct health risk to humans and animals in and of itself, the presence of lead-leaching components in a well system or household plumbing is a concern, especially in older houses and well systems.

Two factors affect how much lead may be leaching into your drinking water:

- The length of time water is in contact with lead before being used
- The corrosiveness of the water (due to either high pH or low pH).

Based on these two measures, parts of the United States may have residential water well systems yielding potentially corrosive groundwater, according to the USGS. Its research suggests if private well users are not aware their source water is corrosive, are not treating for it, and have lead-content pipes, plumbing fittings, or well system components, they may be at risk for having lead in their drinking water.

NGWA has been working proactively on this subject.

- A campaign to encourage well owners to get their water well systems and household plumbing inspected has been launched on <u>WellOwner.org</u>, NGWA's online resource for private well owners, and will also be a focal component of the Association's social media messaging.
- Thanks to a U.S. Environmental Protection Agency grant, NGWA will be releasing an online education session to further explain its concern and encourage water well system and household plumbing inspections as part of its public awareness effort.
- A lead-related best suggested practice for water well system professionals was released by NGWA.
- The Association has also prepared an <u>information brief</u> on the topic for residential well owners, the media, and other interested parties.
- NGWA members can expect additional coverage in the Association's member newsletter, *NGWA Toolkit*, that will be released July 18, 2016.

The Association urges residential water well users in regions where corrosive water levels have been detected to call upon a water well system professional to audit your water system for any components that may have lead content.

NGWA, the leading worldwide advocate for professionals teaming to provide, protect, manage, and remediate groundwater, conveniently and promptly delivers an extensive range of resources contributing to member success through relationships, leading edge and emerging practices, and credible new ideas and solutions.

Hyperlinks can be activated from the NGWA article located on their website @ http://www.ngwa.org/Media-Center/press/2016/Pages/2016-07-13-lead.aspx





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MARCH 10, 2017: Nampa, Holiday Inn Express, 4104 Flamingo Ave

April 28, 2017: Moscow, Best Western Plus/University Inn, 1516 Pullman Rd

Membership Makes A Difference: IGWA's membership year starts October 1, 2016 and runs through September 30, 2017. Watch for your CEC postcard in the mail. Be sure to renew your membership when you register for CEC workshops or annual convention.

IGWA Welcomes a new advertiser in this edition:

Shakti Pumps, USA LLC headquartered in Longwood, FL-

SAFETY TIPS: A new feature.- page 13—dedicated to workplace safety. We would like to thank Mike Lewis & Scott Weaver who provided the article and tips for our first feature.

MAKE PLANS TO ATTEND IGWA'S ANNUAL CONVENTION: JANUARY 25-26, 2017, Nampa Civic Center, 311 Third Street South

Room Blocks will be held through January 10th at the

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REAPING THE SHALE NATURAL GAS BOUNTY:





July 15, 2016 North America is now eight years into a shale gas boom made possible through advances in technology, boosting natural gas supplies, and keeping prices low.

It came at a critical time for consumers recovering from the Great Recession and high unemployment. Commercial businesses and industrial plants also benefited from the low prices, helping to keep additional cash in consumers' wallets.

Most associate the jump in natural gas production to advances in "<u>fracking</u>" – hydraulic fracturing of shale to dislodge gas from the rock below. However, technological advancements in horizontal drilling and seismic imaging were also extremely important to the shale boom.

The increase in domestic natural gas drilling and pro-

duction has meant that less gas is imported from countries like Canada to meet demand. In addition, exports of U.S. sourced supply are rapidly picking up, with natural gas heading from Texas down to Mexico via pipeline and liquefied natural gas shipping to world markets from export facilities in the gulf. In fact, the U.S. is expected to soon reach a milestone by becoming a net exporter of natural gas.

Some of the most striking changes have occurred in the power generation sector. Efficient natural gas-fired power generating technologies, such as combined-cycle combustion turbines, have become cheaper than coal plant

generation and aging coal plants are retiring across the country. In the Northwest, our existing natural gas infrastructure, along with wind, solar, and energy efficiency, will allow for the <u>planned retirements of coal plants</u> here.

As for carbon dioxide, natural gas is a significantly cleaner fuel to burn than coal. In fact, according to <u>the EIA</u>, carbon dioxide emissions from electricity generation in 2015 were the lowest since 1993 due to less coal-fired power and more natural gas and renewable power generation.

But drilling for natural gas isn't without controversy, particularly in regions experiencing the fracking boom. Concerns about water consumption and contamination, and other pollution with oil and gas drilling, have erupted in communities in Colorado, and even Texas. And though natural gas is much cleaner than coal in terms of carbon dioxide, there are significant concerns over increases in methane leakage (raw natural gas) to the atmosphere as a result of increased gas use since methane is a powerful heat-trapping greenhouse gas.

The Northwest is not a shale-drilling region; our natural gas is brought in by pipeline from the U.S. Rockies and imported via pipeline from the Canadian Provinces of British Columbia and Alberta.

What might unfold over the next eight years? Will the U.S. continue to ramp up natural gas exports to compete in the world market? Will demand for natural gas-fired power level off as cleaner resources like solar and wind power, electricity storage, and energy efficiency advance? Will natural gas begin to replace oil as a transportation fuel? Will prices remain low?

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DRESS FOR SUCCESS.; DRESS TO RETURN HOME MIKE LEWIS, EMT

Friends,

When I was a kid, there was a song that we sang at school entitled: My Bonny Lies Over the Ocean. Now that I am older, I don't remember the real words of the song, but I do remember a version that we would sing to make the teacher mad. It goes like this:

"My body lies over the gas tank, The contents below it to see. I lit a match for assistance, Oh, bring back my body to me."

While we thought it was funny, safety is and should be a real concern for all of us in the workplace. When I shared with you pictures and stories about safety at the last convention, I started my slide show with the phrase: **Dress for success**.

Dressing for success would include making sure you have what you need to accomplish all that is asked of you, safely. We will have the opportunity to talk more about specific dress codes in future issues of Safety Corner, but for now let's just dwell on the basic principle of why we dress the way we do.

As an employee we need to understand that if we look and feel confident in the way we dress, we will look and act as a professional. We would be well to ask ourselves, "If I was interviewing for this job dressed like this, would I get this job?"

Whatever the environment is that we are working in, our clothes are often considered a clue to our job performance. Someone that does not appear to care about safety and the way they dress, might not care for your equipment or your business.

When we dress in ratty unkempt clothes, we not only look unprofessional, we are unsafe. The saying: **dress for success** might need to be changed to, **dress to return home**. That is in reality what we hope for each of our employees at the end of each day.

Remember your appearance might not only impact your career, it might impact your life.

Do we need a dress code? Stay tuned...... Mike



NEW FEATURE

From Scott Weaver, Norco

<u>New ANSI standard for first aid kits effective June 2016</u> Employers now may need to provide two levels of first aid kits to protect their workers and be compliant with OSHA standards. Major changes include the amount and types of eyewash and protective gloves. A copy of ANSI Z308.1-2015 can be purchased from the ANSI website or contact your local safety or first aid professional for prefilled compliant kits and re-stock information.

In the News | OSHA Supports New ANSI Standard Recent Update for First Aid in the Workplace The Occupational Safety and Health Administration's (OSHA's) medical services and first aid regulation requires adequate first aid supplies to be readily available in the workplace, and OSHA refers to the American National Standards Institute (ANSI) Z308.1-2015 standard as a starting point to prepare your business in meeting those regulations. The most recent update to the <u>ANSI standard</u> goes into effect June of this year. (From First Aid Only website www.firstaidonly.com)

ANSI makes available numerous standards related to workplace safety in its directory of safety standards, including the recently updated American National Standard (ANS) ANSI/ISEA Z308.1-2015, Workplace First Aid Kits and Supplies, which introduces two classes of first aid kits. The Class A kits include contents designed for the most common types of workplace injuries, while Class B kits include a broader range and quantity of supplies to deal with injuries in more complex or high-risk environments. By expanding the items on the basic first aid kit, employees have greater access to items needed to treat common workplace injuries. ANSI/ISEA Z308.1-2015 was developed by ANSI member and accredited standards developer the International Safety Equipment Association (ISEA). (From ANSI website www.ansi.org/ news publications/news story.aspx? menuid=7&articleid=b4472a01-f4ac-4466-afd5-77559633a5f8)



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GWMA FOR ESPA: continued from page 6

An estimated 600 people attended these public meetings. Most wanted to know how IDWR justifies the need to create the largest GWMA ever proposed in Idaho and what criteria it would use to decide the boundary. Those opposed said the GWMA should be delayed until an agreement between ground and surface water users on the ESPA is fully implemented. The agreement, negotiated last year, seeks to improve aquifer levels through demand reduction and recharge. Another concern was that creating a GWMA could be the first step in establishing a critical ground water area (CGWA). While ground water pumping is allowed within a GWMA with some restrictions, water rights in a CGWA can be curtailed and a moratorium on developing new ground water rights put in place.

On a related note, IDWR also issued an order requiring the installation of measuring devices on both irrigation and non-irrigation ground water diversions (with some exceptions) on the ESPA by 2018. The measurement devices are expected to help establish the accuracy of the power coefficient calculation (PCC) as well as monitoring the demand reduction established in the ground and surface water user settlement.

The ESPA is not the only aquifer in Idaho experiencing challenges that affect current and future uses. In 2016 the Governor and legislature appropriated approximately \$23 million over three (3) years to address water supply and water quality issues affecting aquifers across the state. These challenges and the proposed solutions will impact the drilling industry.

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SUSTAINABILITY OF IDAHO'S WATER RESOURCES:

In 2012, at Governor Otter's request, the Idaho Water Resource Board (IWRB) embarked on a four year effort to develop a Sustainability Policy. This year the Governor reinforced his commitment to this process in his State of the State and Budget Address where he said, "Sustainability is a central value throughout Idaho, from the Treasure Valley to the Rathdrum Prairie and from Bear Lake to Hells Canyon.... Preserving and protecting Idaho's water is crucial to our continued economic growth and increased prosperity."

This May IWRB adopted a draft Sustainability Policy that recognizes "Water is the foundation of Idaho's economy and culture; the lives and livelihoods of Idahoans depend on a reliable supply of water." IWRB's Sustainability Policy focuses on "active stewardship of Idaho's water resources" for current and future use and includes implementation strategies and milestones intended to guide the Board in its water planning and management duties.

Seven (7) public meetings are being held across Idaho, beginning on June 7th in Boise and ending on September 14th in Chubbuck. Meetings were held in the Magic Valley and north Idaho in July and August. You may view the draft on IDWR's website at http://www.idwr.idaho.gov/waterboard/WaterPlanning/StatePlanning.htm.

Written comments are being accepted via email or standard mail through September 16th. Later this fall, after the public comments have been reviewed, the IWRB is expected to consider and adopt a final Sustainability Policy. That policy, in turn, will be submitted to the Idaho Legislature in January 2017 and is eventually expected to be incorporated into Idaho's current Comprehensive State Water Plan as Section 8.





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"USGS has consistently monitored the water quality of the Nation's groundwater for over three decades by analyzing representative water samples," said Moulton. "Recent public health and water quality issues underscore the responsibility for us to report the possibility that regional geologic characteristics of groundwater could potentially affect household water systems resulting in significant implications for public health."



This map shows the second index included in the study. It demonstrates which wells have groundwater that have potential to cause galvanic corrosion, which happens when two or more metals come into contact with an electrolyte and one of the metals is dissolved.

For concerns about potential health effects of household drinking water, the USGS looks to federal and state agencies to provide an indication of the potential scope of the problem.

For example, Virginia and Pennsylvania are states where private water sources, such as wells, springs, or cisterns, are especially common. Private water systems are used by about 1.7 million people in Virginia and about 3 million people in Pennsylvania.

In these states, the Virginia Household Water Quality Program and the Pennsylvania Master Well Owner Network provide practical information to homeowners about maintaining, testing, and protecting private water systems. University researchers at Virginia Tech and Penn State work with these specialized programs to monitor the quality of drinking water supplied by private water systems and to provide testing and advice to identify and remediate water-quality problems caused by contaminated or corrosive groundwater.

"Between 2012 and 2014, we found that 19 percent of the 2,144 private water systems sampled in Virginia exceeded the EPA lead action level," said Dr. Kelsey Pieper, USDA-NIFA Postdoctoral Fellow at Virginia Tech. "We also observed that 'lead-free' plumbing components released lead when exposed to more corrosive ground-water supplies."

"In Pennsylvania, corrosive water is usually associated with certain types of bedrock geology but can be found across the entire state," said Bryan Swistock, a water resources specialist with Penn State Extension. "Lead levels exceeded the EPA action level in 12 percent of the 251 drinking water systems monitored in Pennsylvania in 2007."

The USGS report, "Assessing the Potential Corrosivity of U.S. Groundwater" can be found online. Additional information on groundwater quality monitoring and modeling is available on the USGS National Water-Quality Assessment project website. A new USGS online mapper provides a decadal look at groundwater quality

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