

# CAHI MONTHLY NEWS



## Presidents Corner

It's been a hot and sweaty summer. I hope you all have kept busy and healthy. Summer is ending soon the nights will become cooler, kids will be back in school and our schedules will become less hectic.

Time has been flying by and so has this year as president of your association. My main goals have been to reduce costs where practical so that we can bring you better educational programs and keep membership dues steady. One change, the move to PayPal has cut our credit card processing costs in half. Meanwhile Scott stepped up our Continuing Education with a trip to Sturbridge and a full day of HVAC education at Entech Advanced Energy Training. Hats off to Scott for a job well done.

Come September the C.A.H.I. Board of Directors will meet and elect new officers. As with all BOD meetings, all members are invited to attend. The meeting will take place in September at the Best Western, 201 Washington Ave, North Haven, CT. The final time and date will be posted on our website.

Anyone interested in addressing the board or willing to help with managing our association is urged to contact me in advance of the meeting. I can be reached at [bill@ctinspectors.com](mailto:bill@ctinspectors.com) and would appreciate your input.

Bill

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### INSIDE THIS ISSUE

Presidents Corner .....	1
Tap Water Lead Contamination.....	2
Quality Control for Ductwork .....	4
How Pesticides Affect Honeybees..	10
Free Private Well Testing.....	12
Pool Safety Guide for Homeowners..	13
Q & A - Blower Door Test.....	16
Press Release - West Nile Virus.....	18

### Meeting Dates!

**No Meeting  
in  
August**

**September 26th  
Meeting**

TBD

### MONTHLY MEETINGS – Details & Info

CAHI's regular monthly meetings are held at the Best Western located at 201 Washington Ave (RT 5), North Haven. Meetings are free to members. Most meetings are on the fourth Wednesday of the month from 7-9pm. Guests are always welcome! Guests may attend 2 free monthly meetings to experience our presentations, meet our members, and receive a CE attendance certificate.

Joining CAHI may be done at anytime of the year through our Membership Page

# Revealing the Complicated Nature of Tap Water Lead Contamination: A Madison, Wisconsin, Case Study

Published July 30, 2018

In 1992, the City of Madison, Wisconsin, found concentrations of lead in their drinking water exceeding the 90th percentile action level of 0.015 mg/L set by EPA. Lead (Pb) is a naturally-occurring metal that was commonly used in household plumbing materials, such as lead service lines and leaded solder joints, before limits were set on its use in 1986.



However, in houses built before 1986, lead pipes can still be in use. Lead is rarely found in source water, but it can enter tap water as the water enters pipes with lead in older systems. Since some homes have lead service lines, the water coming into the house may be transported via lead pipes even though there are no lead pipes inside the home. Brass plumbing fixtures can also contain small amounts of lead.

The Madison Water Utility chose to implement full lead service line replacement from 2001 through 2011 to eliminate the most significant source of lead in its water system. In 2003, sixty home taps were monitored after full lead service line replacement. They found that lead levels in the first liter of water were still high at some sites where the lead service line pipes had mostly been replaced within the previous four years. This phenomenon had been seen in other water systems, which had puzzled drinking water practitioners as to why elevated lead levels could persist for so long.

Coincident to the Madison Water Utility studies before and after the lead service line replacement program, lead service lines had been harvested from the water system and sent to EPA scientists. The EPA had the instrumentation and unique expertise to search for clues of lead release in pipe scales. That is, the materials that build up on the inside of pipes display chemical characteristics that reflect the chemical processes occurring in the water system, including the release of lead.

The EPA conducted detailed analyses—color, texture, mineralogical and elemental composition on five lead service pipe samples excavated between 2001 and 2006 from two different Madison neighborhoods.

Before the lead service line replacement program, Madison's water was delivered by an estimated 8000 lead service lines, which had been in service for 75 years or longer. The city's drinking water originated from numerous wells. The first set of lead service lines studied by EPA revealed that a highly insoluble and protective lead oxide compound had formed on the pipe walls. If all lead pipe walls had this formation, high lead releases would not be expected in the water system.

However, the second set of lead service lines came from a different neighborhood in the city. This neighborhood was fed by wells that were rich in manganese and iron. Both manganese and iron can form scales and accumulate metals, such as lead, from upstream sources especially from upstream corroded lead pipes. EPA's results revealed that the accumulation of manganese and iron from the well water onto pipe walls had adsorbed lead and had the potential to crumble from the pipe walls and carry the lead to consumers' taps by means of the scale particulate matter entrained in the water. This finding corroborated with the results of the 2003 study where the higher lead concentration found at consumers' taps was mostly in particulate form. The presence of the manganese and iron scale on the pipe walls was the reason for high lead release in parts of the Madison water system, before and even after the lead pipes were removed.

As the 2003 residential study had shown, once the principal lead source was removed, it took more than four years in some cases for the accumulated lead to be released, which explains why lead levels remained high after the lead pipes had been replaced. Eventually, removing the source of lead did eliminate the significant lead concentration and achieved compliance with EPA's regulations.

Overall, this research showed that controlling lead exposure from water is more complicated than simply adding corrosion control chemicals to reduce the solubility of lead minerals. Buildup of manganese and iron scale in water pipes should also be considered as a source for accumulating and releasing lead, and other contaminants of concern, into water. What happened in Madison highlights the importance of analyzing pipe scales to understand how lead accumulates and releases into the water over time. This EPA research received both the 2015 American Water Works Association's Distribution & Plant Operations Division Best Paper Award and the overall Journal of the American Water Works Association's overall Best Paper Award.

#### References:

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# HVAC



## Quality Control for Ductwork

### Making sure that the HVAC system performs as promised

BY TED CUSHMAN

A home's air conditioning system, Kristof Irwin, P.E., likes to say, is like the lungs of the building: As the home's air supply, the HVAC's proper functioning is vital. And while the air conditioner itself will likely be replaced in 15 or 20 years (and can certainly be repaired any time), the ductwork is different, Irwin points out: Buried in the ceilings and walls, many duct runs are inaccessible. Once installed, ductwork is what it is—and it may have to serve for the lifetime of the building. As Irwin puts it, "The ducts are infrastructure."

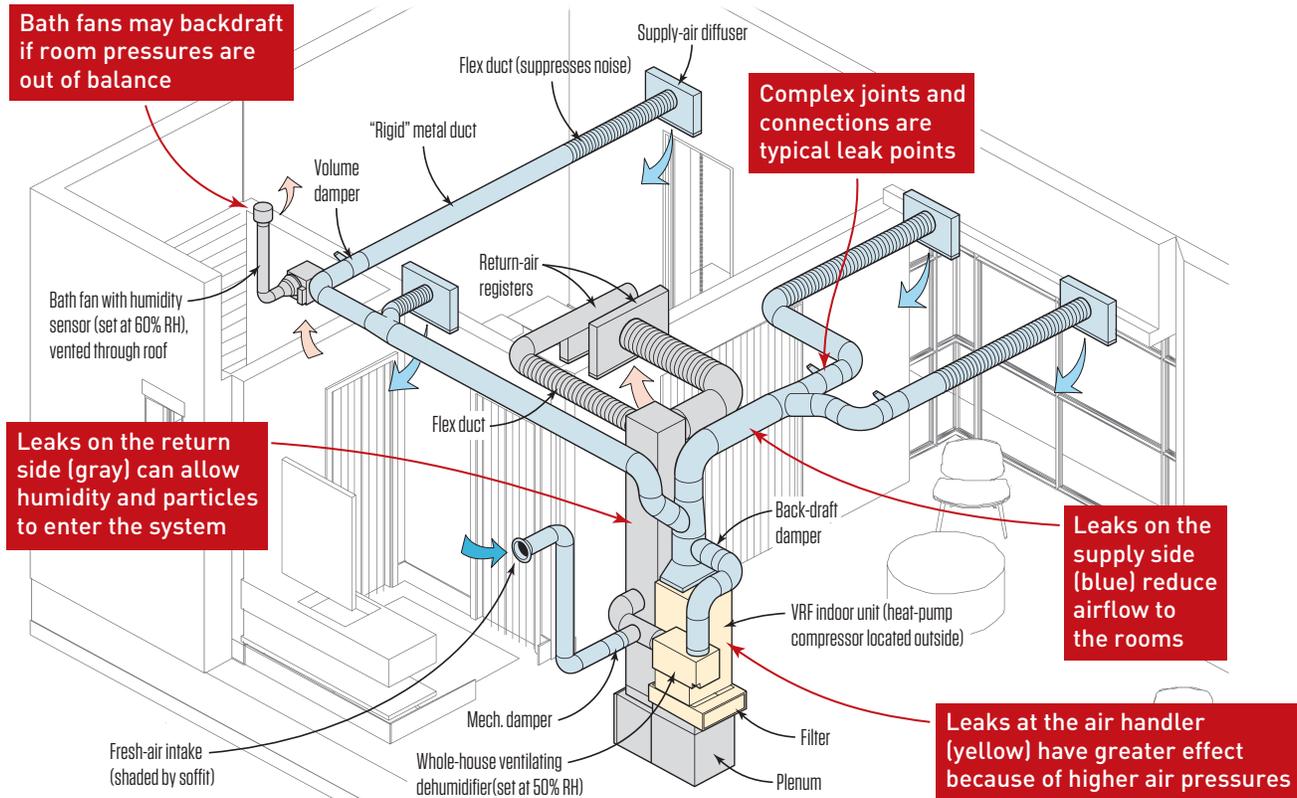
Irwin is the founder and principal of Positive Energy, in Austin, Texas. Along with providing other services, his company designs

high-performance HVAC systems, typically specifying high-efficiency variable-speed compressors and air handlers, paired with dedicated dehumidification and ventilation equipment. Irwin uses the industry standard ACCA Manual J to estimate heating and cooling loads; ACCA Manual D is used to specify the building's ductwork.

The designs are carefully done, but as Irwin says, "You don't live in the design. You live in the house." That's why Positive Energy also tests air-conditioning duct systems during construction to make sure they're performing as intended. On a recent trip to Austin, *JLC* went on site with Positive Energy's Sean Harris to see for ourselves how the company's duct testing works.

Photos by Ted Cushman and Joey Puterbaugh

## Duct System Trouble Spots



The drawing above, adapted from a Positive Energy design rendering, shows the anatomy of a typical duct system connected to a high-performance air conditioner. Positive Energy has specified dedicated dehumidifying equipment, a ducted fresh air supply, and bath exhaust fan details in addition to the air conditioner and its ducts. The design calls for metal ducts, except for short runs of flex duct at registers to reduce noise. If the design is correctly installed, testing should not reveal any trouble.

### WHY TEST DUCTWORK?

Building-science consultant Sean Harris is Positive Energy’s lead field inspector for ductwork and building envelopes. On the job we visited, Harris was measuring airflow and leakage of installed ducts in a home under construction by builder Risinger & Co.

Harris wasn’t expecting to find discrepancies on this job. Air Rite By Design, the HVAC contractor, is known for meticulous work, he says. Still, duct leakage testing is required by code; Austin adopted the requirement years ago, and the national model codes have also begun to require leakage testing.

It’s not just about compliance with the building code, however. There are significant performance reasons to care about duct leakage. “There are three main types of leaks,” Harris explains. “Supply-side duct leakage, equipment leakage, and return-side duct leakage.” Each type of leak can cause specific problems.

**Supply leakage.** Supply ducts and registers provide filtered, conditioned air to rooms in the house. If those ducts are leaky, says Harris, “you don’t get the airflow to the rooms.” But there’s a twist: Holes in a supply duct don’t necessarily blow—sometimes, they suck. “There’s a thing called the Venturi effect,” Harris says, “where air flowing past a hole in a positively pressurized duct can actually pull things like insulation dust into it.”

“Even when the system is not on,” Harris continues, “and there’s no fan blowing, a duct leak is still a building-envelope leak.” When he’s inspecting ducts, Harris says, sometimes he’ll notice a puff of air leaking out of a supply duct into an attic just because somebody downstairs has opened a door to the house.

And when the air-handler fan is running, supply leaks can depressurize the entire house. Harris often sees that in older existing homes: “27% of duct airflow is the average leakage here in Austin,”

Illustration: Tim Healey / Positive Energy



Ductwork installed in this high-end custom home under construction will be difficult to access after the ceilings are drywalled (1, 2). At this point in the job, however, the air handlers have not been installed. Instead, supply and return duct runs are capped with plastic wrap and tape in the mechanical room (3, 4). Positive Energy duct expert Sean Harris will test the duct system now, and then return later in the job to re-test the fully assembled system.

he says. “Let’s say it’s a 2.5-ton unit, with 1,000 cfm of airflow. That [27%] means 270 cfm—a quarter of the air—is leaking into the attic. Well, the unit wants to find that missing 270 cfm somewhere. That deficit is going to be made up from light switches, outlets, penetrations in the drywall, leaky windows, and things like that.”

Despite conventional wisdom, says Harris, supply-side leakage is a concern even if the ducts are technically in conditioned space. In one recent case, Harris answered a call from a homeowner who had mold growing on her bathroom ceiling. In that example, he explains, “the duct leakage was isolated to the spray-foamed attic space. There was a good ceiling-plane seal where the drywall was. The 200-cfm leakage into the attic was causing a 19-pascal depressurization on the house, and because the house was so tight, the pressure difference pulled from the exhaust fans in her bathrooms. All that heat and humidity was coming into the bathrooms from

outside, and she was getting mold on her bathroom ceilings. But the root cause was supply-side duct leakage.”

**Equipment leakage.** “Coil cabinets and furnace cabinets leak,” says Harris. “And they leak a lot. All those seams, and points where the refrigerant and drain lines go through—those things suck or blow air. And the closer you get to the fan, the more every hole contributes to leakage, because there’s a greater pressure difference across that hole. Smaller leaks count for more when you are closer to that fan. And of course, all those leaks cause the same kind of problem as I’ve already mentioned.”

**Return leakage.** Air leaks in a home’s return ductwork create their own brand of trouble, says Harris. “You’re pulling air straight in from wall cavities and attics, including unconditioned spaces. Now your coil has to deal with the higher latent load of that incoming humidity. The system won’t be able to take that moisture out



To prepare for pressure and airflow testing, Harris attaches the Minneapolis Duct Blaster's collar to the end of a supply duct, sealing the inside of the collar (5) and the outside with tape (6). Next, Harris inserts the end of the Duct Blaster manometer's pressure-sensing air tube into the taped-off end of the duct (7). When the fan is up to speed, the device's DG-700 pressure and flow gauge will calculate the duct run's air leakage.

in one pass—which means that you'll be cycling a lot more humidity through your house and your system."

Return leaks from unoccupied spaces such as attics are a problem, Harris emphasizes. "It's often a dirtier space, with a wider range of particle size. Your filter is not going to stop all of the particles from going through. But the main thing when you pull from an attic is the heat and humidity that you pull in. The filter doesn't filter either heat or humidity."

"Then there are particulates," Harris continues. "If the leak is before the filter, then the filter catches most of the particulates. But if you have leakage after the filter, material can build up on the coil. Eventually, that may impact airflow; but more importantly, the coil is the coldest surface in your house. It's designed to be at the dew point. It is supposed to stay wet, so that you can dehumidify. And if stuff builds up on it, you'll grow mold on the coil."

### FINDING THE FLAWS

In a brand-new home, Harris says, a by-the-book design should perform as intended—as long as it's installed correctly. Anybody can make a mistake, though, he notes—and in any case, last-minute changes that affect the ductwork are common. "Very rarely does a job go exactly as planned," Harris notes; for this project, Positive Energy had to modify the distribution systems for several zones after a preliminary walk-through, to adjust to changes in structural framing and truss configurations. And since the systems can't be easily modified once drywall is complete, it's important to verify the effect of the changes while ducts are still accessible.

Pressure testing to detect air leaks is the first step. "I like to test with as many pieces of the puzzle together as possible," says Harris, "because ducts don't leak in the middle—they leak at the connections. The more connections that are in place for me to test, the



After hooking up the Duct Blaster, Harris adjusts the fan controls to bring the pressure in the system to 20 pascals (8). By itself with no-air handling equipment hooked up, the duct run is remarkably airtight—so airtight that to get meaningful numbers, Harris has to insert a “Ring 4” flow restrictor into the fan assembly (9). With the flow restrictor in place, Harris recalibrates the pressure and flow gauge, and uses his smartphone to calculate the equivalent leakage rate.

better feedback I can give to the builder and the HVAC contractor.”

Air-handler equipment is typically installed late in the job sequence, however, to reduce the risk of theft or damage. And in this case, the sequence of trades was a factor: Plenums and equipment couldn't be installed until the wall of the equipment room was insulated and drywalled. So Harris had to test the ducts before they were hooked up to the air-handling equipment. He started by masking off the stubbed-up ends of duct trunks entering the mechanical room (see photos, page 29).

Next, Harris attached his Minneapolis Duct Blaster (energyconservatory.com) to the duct system. “When I hook up to the main source,” he says, “it’s important for me to look at the plans (see photo, page 27). I have to make sure that I haven’t missed anything that I need to seal off, and check that the locations on the plans match up with what is there in real life.”

In this case, after taping off all the duct registers, Harris connected the end of the Duct Blaster to the end of a trunk line in the ceiling of the mechanical room, then inserted the pressure-sensing air hose for the device’s manometer into a supply duct register (photos, facing page). Then he powered up the Duct Blaster for a pressure test (above).

As it happened, the leakage for this run of ducts was so low that Harris had to insert the smallest available flow-restricting ring (known as “Ring 4”) into the Duct Blaster, then use a lookup table on his smartphone to calculate the leakage rate based on the modified fan speed and pressure.

If the system shown in this story were complete, he notes, the calculated level of leakage (9 CFM25) would have been extraordinary. But only after the equipment was installed would he see final numbers for the whole system. “I’m not looking for just a pass or fail



The Alnor flow hood measures airflow through a supply register. Because he's testing the system with no drywall installed, Harris masks off the parts of the flow hood that would ordinarily be blocked by the drywall (11, 12). Then, with the Duct Blaster fan set to supply the design airflow for the system, he checks the output of every register in the rooms served by this duct run (13), to make sure that the actual flows match the design values for the system.

on duct leakage at this point," he explains. "I'm thinking about the big picture." This test did establish that the ducts would not need to be fixed before drywall.

With the leakage test complete, Harris moved on to the airflow test, using an Alnor LoFlo Balometer Capture Hood, manufactured by TSI (tsi.com). "I take down all the tape off the registers, and I turn up the fan, and I make sure that the fan is putting out roughly the amount of airflow that I should have through the duct system," he explains. "Then I can see how balanced the rooms are in relation to each other. If I find major imbalances, I need to figure out what is going on. Maybe we have to put some dampers on. Or maybe the installers used the wrong duct size, and one room has a duct that is too small." In one case, Harris actually detected a duct run that was completely blocked: "The trunk line never got cut in at the plenum. Once the duct was attached, you couldn't see

it, and nobody caught it until I was there to test."

On this house, Harris didn't find any deficiencies. That's not surprising, he says. "If the air-conditioning contractor follows our design to the T, they shouldn't have to balance anything. Sometimes I go in and measure, and I get the exact numbers that we designed for that space."

"In our industry," says Harris, "there are still some people who don't understand how duct design works. They think that a rule of thumb from the 1980s is still how it's done. But that's not the case. For airflows, fluid dynamics works, and there are simple software tools out there that accurately predict how much air you are going to get out of that duct. And when it is installed exactly as we design it, we actually get that delivered performance."

*Ted Cushman is a senior editor at JLC.*

# Understanding How Pesticide Exposure Affects Honeybee Colonies

Published July 30, 2018

A honey bee gathers pollen from showy milkweed flowers. Photo credit: Bonnie Smith. When bees aren't buzzing around picnic tables and the sweet-smelling drinks on your patio, they are hard at work pollinating flowers and crops, and making the honey and beeswax we enjoy. Honeybees play a vital role in crop production. In fact, honeybees' pollination contributes to over half the value of the United States' \$29 billion per year agriculture industry.



Despite their importance, honeybee colonies have declined in Europe and North America. Scientists have identified multiple factors influencing this decline, including diseases and pests, poor bee nutrition, lack of genetic diversity, bee management practices, and pesticides. In May 2018, an EPA research team published Sensitivity analyses for simulating pesticide impacts on honey bee colonies, which builds upon a recently-developed model to provide scientists with a clearer understanding of how pesticide exposure affects honeybees at the colony level.

## Accounting for pesticide exposure

Scientists first needed to answer two questions: “how are pesticides applied?” and, “how are honeybees exposed?” Researchers focused on three main application methods that are often used to treat crops: direct spray, which is often used around homes and gardens, and soil and seed applications, typically used in larger treatment systems.

Once they identified the pesticide application methods, scientists focused on two routes by which honeybees are exposed. Since bees fulfill their nutritional requirements through consuming a combination of nectar, honey, pollen and bee bread, which is stored pollen combined with nectar or honey, scientists identified direct contact and consumption of pollen or nectar as the two main exposure routes.

Seem straightforward? Actually, gaining an accurate understanding of honeybees' short-term exposure to pesticides is challenging on multiple fronts since there are many influential factors that might alter findings.

“The honeybee colony is essentially its own organism,” says Carmen Kuan, the study's lead author. Each bee has its own job. Forager, or worker, bees are typically the ones who pollinate crops and flowers, and bring nectar back to the hive, while queen bees lay eggs.

Also, says Kuan, “Environmental conditions can be influential on both the individual and colony levels. For example, pesticide exposure at the individual level might be lethal, sublethal or altering to the behavior of the bee. At the colony level, this exposure might impact an entire hive, species, or (eventually) crop yields.”

Considering all of this, the EPA team took what they knew about application methods and exposure routes and applied this knowledge to the VarroaPop + Pesticide model, which predicts the population growth and behavior of a honeybee colony infested by Varroa mites.

“This model is a modified version of BEEPOP, developed by Gloria DeGrandi-Hoffman at the USDA Carl Hayden Bee Research Center in Tucson, Arizona,” says Kuan. Scientists used VarroaPop + Pesticide to estimate pesticide consumption intake for individual bees by multiplying food intake rates by pesticide concentrations in pollen, nectar and jelly from the hive. They also calculated the mortality percentage of bees via the two exposure routes.

Using data from the VarroaPop + Pesticide model and Monte Carlo simulation, which is a method that distributes a wide range of possible outcomes, scientists simulated all combinations of pesticide application methods and routes of exposure. They used four different sets of Monte Carlo simulations: direct spray, soil application, seed treatment and a control simulation where pesticides were not applied.

**Total amounts included:**

- 20,000 simulations run; and
- 5,000 runs per pesticide application method (spray, soil, seed and control).

All simulations, which accounted for 10,000 adult worker bees, were run for a duration of three years from January 1, 1988 to December 31, 1990. These dates were chosen by the research group in order to incorporate historical records of meteorological data to the simulations.

**Results**

Researchers found that queen strength and forager lifespan are critical factors for colony survival, regardless of pesticide exposure. Additionally, honeybee colonies exposed to direct spray and soil application methods exhibited the least recovery, so these application methods have the strongest impact on colony dynamics.

Colonies exposed to pesticides via the seed application method showed little difference compared to the control scenario, where no pesticides were used.

Another important point is that sensitivity analysis also reveals that the relative importance of these parameters fluctuates throughout the simulation period depending on the pesticide application method and timing of exposure.

Now that scientists have developed the VarroaPop + Pesticide model to simulate pesticide exposure at the colony level, they can begin incorporating more pesticide data, such as application rates and honeybee toxicity information. This important work helps to ensure honeybees’ role in a vibrant and high-quality crop environment.



Press Releases  
07/30/2018

DPH to Offer Free Private Well Testing and Information at August 4th Cornwall Co-Op Farm Market  
The Connecticut Department of Public Health (DPH), in conjunction with the Torrington Area Health District, will be distributing educational information about private wells and free arsenic and uranium private well water test kits at the Cornwall Co-Op Farm Market on Saturday, August 4, 2018 from 9:00 a.m. to 12:30 p.m. The test kits will be made available to any Connecticut private well owner or user who is interested.

“Arsenic and uranium have no taste or odor, so the only way to know if either toxic metal is present is to have your well water tested,” said Ryan Tetreault, DPH’s Private Well Program supervisor. “Partnering with the Torrington Area Health District and the Cornwall Co-Op Farm Market provides a great opportunity for private well owners to find out more about the quality of their drinking water and to have their water tested.”

A recent report published by the U.S. Geological Survey, in cooperation with the Connecticut Department of Public Health revealed that water from some private wells across the state has registered high levels of arsenic and uranium. As part of the joint research project, it was determined that seven percent of the private well samples tested at levels higher than Maximum Contaminant Levels for arsenic or uranium

The outreach effort is part of a statewide project funded by the Center for Disease Control and Prevention (CDC) to educate private well owners and users about the need to regularly test private drinking water wells.

Sampling containers will be provided on a first come, first served basis. Well owners should not bring their own water sample to the Farm Market. Private well owners will be provided with arsenic and uranium test kits which include a specific collection bottle and instructions on how to properly collect the sample. Participants will have the opportunity to collect the sample and either return it that same day before 12:30 p.m. or within one week from the date of the event to a specified location.

Water samples will be analyzed by the State Public Health Laboratory in Rocky Hill. The DPH Private Well Program will provide a follow up report with an explanation of the test results to all participants. Private well owners can also bring a photo of their well cap and any private well records to have the professionals at the Farm Market look at them for possible evaluation.

Please visit us at the Cornwall Co-Op Farm Market on Pine St., in Cornwall, CT from 9:00 a.m. to 12:30 p.m. to learn more about private well water and to get a free arsenic and uranium test kit. For more information please contact the DPH Private Well Program at 860-509-8401 or the Torrington Health Department at (860) 489-0436.

# Pool Safety Guide for Homeowners

by HomeAdvisor



There is a type of pool for everyone, every space and every purpose. Thanks to advances in construction and more available materials, traditional in-ground pools can take on about any look. Whether you opt to DIY with an above-ground kit or hire a pool company to install an inground style, safety is key.

Unfortunately, this hub of fun family activity can be deadly if left unchecked and unguarded. That's why it's important for every owner to educate himself or herself about water safety and maintain a safe pool environment. Furthermore, owners need to ensure family, friends, neighbors, and guests not only know, but follow, pool rules.

According to the American Red Cross, there are a few rules that apply to every pool owner.

## How to Secure a Pool

In some regions, homeowners may be **legally required** to enclose or cover their pool for the safety of their neighbors.

- Install a fence that is at least four feet high, and ensure it has a self-closing, self-latching gate.
- Cover your pool or other water feature when you're not using it.
- Remove access stairs or ladders when everyone is out of the pool.
- Add a pool alarm that alerts you whenever someone enters.

## Supervision

While smart home alarms can help keep an eye on activity in the pool, it is no substitute for adult supervision.

- Never let anyone swim alone.
- Actively supervise children at all times.
- Non-swimmers should not enter the water without a responsible party, and should always be kept within arm's reach.
- When required, use a US Coast Guard-approved life jacket.

## Pool Maintenance

Clean and test water regularly to ensure proper filtration, circulation, and chemical levels. Broken ladders, chipped concrete, non-functioning gates, missing drain covers, and other common problems should be repaired immediately. Required safety equipment should always be easy to access and in working order.

## Water Safety

Anyone who lives in the home or visits frequently, like grandchildren or other extended family members, should be taught how to swim at an age-appropriate pace. Rules related to pool behavior and access should be taught, posted, and enforced.

Everyone in the home should know how to respond in the event of a water emergency. Teach kids **how to call 911**. Consider taking and training everyone **how to administer CPR**.

Of course, those recommendations are just the basics when it comes to pool safety. There are some circumstances that require even more discernment. Parents of young children, pet owners, seniors, and people with disabilities should take extra care and attention to ensure their household stays safe.

## For Parents

Drowning is the leading cause of unintentional death in **children ages one to four**, according to PoolSafely.gov.

Parents and caregivers should also pay special attention to drains. Children's hair, small limbs, jewelry, and bathing suits can get stuck in drains and suction openings, trapping them under the surface of the water.

To reduce the risk of this happening to your child, you should check drains prior to entering. Don't use a pool or hot tub with a broken, loose, or missing drain cover. For hot tubs, find the emergency shut-off switch before getting in the water.

## For Pet Owners

Cats are not the only pets that hate water. Contrary to popular belief, not all dogs are natural-born swimmers, either. No matter the breed or species, you must take special care to ensure your four-legged friends' safety in and around your pool.

Not surprisingly, pets are like children. You should teach your pet to swim. Use an approved life vest, and build a fence around the pool's perimeter.

For pets who can and do love to swim, there are some pretty handy safety gadgets that can make it easier for them. Specially-designed ramps not only make it easier for your pet to enter the pool, but they also provide an exit for pets who fall in accidentally. A ramp can also help prevent small, wild animals like squirrels, raccoons, or opossums from drowning in the water.

## **For Seniors**

Pools can be both fun and therapeutic for senior citizens and the elderly, offering a cool, low-impact way to exercise joints and maintain muscle tone. However, as you get older, your abilities change. Like with other areas of your life, you must begin paying attention to accessibility.

Equip your pool with securely-attached rails to assist with entering and exiting, or install a pool lift. You should also be sure to keep the deck clean and free of debris that could cause you to trip and fall.

If it's been a while since you used it, or you are just starting to need assistance, many pool companies will perform a safety and accessibility check for you. Finally, like anyone else, you should never swim alone.

## **For People with Disabilities**

According to one expert at the University of Utah, part of the challenge with swimming with developmentally-disabled children and adults is that they don't always understand the risks associated with not following pool safety rules. From inappropriate horseplay to removing their flotation devices due to sensory issues, it's important to watch these individuals more closely to ensure they are not putting themselves or others in danger.

When it comes to physical disabilities, **all public pools** must adhere to guidelines set by the Americans with Disabilities Act. Examples of the requirements include swimming pool lifts, sloped entries, transfer walls with grab bars, and accessible stairs. For homeowners with disabilities or disabled family members, including as many of these same features as possible can make your pool safer and easier to use.

No matter what style, size, or shape of pool you end up with, you should always consult a few local pool installers to ensure it is well-built and properly-maintained. That's step one in pool safety.

## Why does it make sense to do a blower-door test before installing the windows?

**A** Jake Bruton, owner of Aarow Building, in Columbia, Mo. and co-author of “Air-Sealing That Works” (Apr/18), responds: Testing a house multiple times may seem at first like a waste of time and money, but I see it as a wise investment as my company tries to build better homes. Here’s why.

When we do a blower-door test before the windows are installed, we’re able to test the airtightness of the building envelope alone. This initial test gives us the opportunity to check for errors or air leaks before introducing additional opportunities for leaks in the form of the windows. Testing prior to window installation allows us to first quantify and address any leakage in the shell itself. Once we get the shell as tight as we can, we are then able to quantify with a second blower-door test any leakage that might be caused by the installation of the windows. This second test also allows us to compare different window packages over different projects and pos-

sibly compare the effectiveness of different installation methods. Knowledge in the building industry is everything, and blower-door testing is the way to provide knowledge about air-sealing.

It is true that blower-door testing means lost production time. The testing effectively shuts down production for an entire day each time we test. However, we look at each of these lost days as contributing toward our understanding of how to build better homes and how to provide a better product for our clients.

We do have our own blower door and conduct our own independent tests. However, the municipality requires us to have someone else do our certification test (for obvious reasons). But we still run all three tests ourselves—before windows, after windows, and a final test—before we pay for the certification test. This lets me check my numbers against the final numbers from the HERS rater.

For the record, the numbers for this house (which we covered in our April article) came in at .31 for just the envelope, .91 for the envelope with windows, and .95 at final. I’m pretty sure that the jump between the last two tests came from an entry door that was installed for the final test, but not at the time of the window test.



**Testing before and after windows.** A first blower-door test (above left) tests the building envelope alone. Sheathing is installed with taped seams, but the openings for the windows are not cut out. This test lets the author identify and address any air leaks in the shell. A second test (above right) is performed after the house is insulated and the windows and doors have been installed. Comparing the numbers from the two tests quantifies how much air leakage is due to the windows, separate from the shell.

Photos by Jake Bruton

**Q Are drywall screws acceptable for installing kitchen cabinets? If not, what screws should I use?**

**A** Doug Horgan, vice president of best practices at BOWA, a design/build remodeling company in McLean and Middlebury, Va., responds: When I started out in the remodeling business (back in the dark ages), I almost always installed kitchen cabinets with drywall screws. And maybe due to blind luck, I never saw a failure. But those kitchens are not a big sample size, and I have snapped enough drywall screws since to understand that I was taking a risk by using them.

First, I should point out that in this discussion, we are most concerned with wall cabinets that depend on attachment screws to support their weight—literally hanging from the wall. If an installation screw fails on a base cabinet, it's not going to fall and possibly hurt someone or do damage. With that in mind, drywall screws start out with a couple of strikes against them.

The first drawback is the bugle-shaped head. Although it makes drywall screws a good choice for drywall, it makes them a poor choice for hanging cabinets. The tapered shape of the bugle head tends to bury itself in any material it's screwed into, so that shape is not nearly as good at drawing a cabinet to the wall and keeping it

there as is the washer head on screws that are designed specifically for attaching cabinets.

The next drawback to drywall screws is the Phillips-head drive, which requires you to apply pressure to avoid cam-out. Applying adequate pressure isn't always easy when hanging a wall cabinet from below.

Most cabinet screws have Torx-drive or star-drive heads that keep the driver bit engaged with the screw with much less effort. These specialty screws are readily available at most building supply stores. GRK is one brand that's now common at the big box stores; McFeely's is also a good source that is sometimes even less expensive than the big box stores, if you don't mind ordering online. Specialty cabinet-hanging screws add only \$5 or \$10 to the cost of a kitchen, so using them is a no-brainer.

Just as important as the screw type is the material you are driving the screws through and into. Stock cabinets are often made from low-grade material that can have trouble standing up to any kind of fastener. If the cabinet material is of questionable strength, reinforcing the cabinets with 1-by cleats inside or along the top back edge is cheap insurance. Then make sure that the screws hit the framing behind the cabinets. I try to use screws that will have at least 1 inch of thread going into the framing. I also try to drive screws into every framing member behind each cabinet.

# The Office of Governor Dannel P. Malloy

Press Releases



STATE OF CONNECTICUT  
GOVERNOR DANIEL P. MALLOY

08/02/2018

## Gov. Malloy and Public Health Officials Advise Residents of Increased West Nile Virus Activity This Season

(HARTFORD, CT) – Governor Dannel P. Malloy and state public health officials are advising Connecticut residents to be aware of a rapid build-up of West Nile virus (WNV) activity within the state as recent tests show that infected mosquitoes are rising at levels higher than normal for this time of year. The Connecticut Agricultural Experiment Station (CAES) has detected WNV-infected mosquitoes in 19 municipalities this year, including Bethany, Bridgeport, Darien, East Haven, Easton, Franklin, Greenwich, Hartford, Madison, Manchester, Meriden, New Canaan, New Haven, Stamford, Stratford, Waterbury, Waterford, West Haven, and Weston.

“Based on the data we have so far this season, we know that cases of infected mosquitoes are rising at levels that are higher than normal, and that’s why it is essential for people to take extra precautions,” **Governor Malloy said**. “If you need to be outside – and especially if you work outside – take action to protect yourself and your family.”

“We are detecting more West Nile virus-infected mosquitoes, including those that readily feed on humans, than is typical for this time of year,” **Dr. Philip Armstrong, Medical Entomologist at the CAES, said**. “These conditions lead to an increased risk of human infection that will likely continue from now until the end of September.”

“We fully anticipate further build-up of the virus in the coming weeks and expansion into other areas of the state,” **Dr. Theodore Andreadis, Director of CAES, said**. “The current warm weather and high humidity are providing ideal conditions for mosquitoes and intensification of West Nile virus. Historically, August and September are the months of greatest risk for acquiring West Nile virus infection.”

“We are very concerned by the amount of West Nile virus we are seeing at this point in the summer season, and we urge the people of Connecticut to take the threat posed by mosquitoes that carry the virus seriously,” **Department of Public Health Commissioner Dr. Raul Pino said**. “In addition to wearing long clothes, using mosquito repellent and taking other precautions to avoid mosquito bites, everyone can help to control our mosquito populations by eliminating standing water around your

home and in your neighborhoods. It takes only a small amount of standing water – in a bird bath, in an old car tire, in overturned lids, in empty pots, anywhere – to provide a breeding ground for mosquitoes.”

“Connecticut has some great natural spaces, from state parks, to state forests and wildlife management areas,” **Department of Energy and Environmental Protection Commissioner Rob Klee said.** “We urge those who are recreating outdoors to take common sense steps to prevent bug bites, including the use of mosquito repellents, along with wearing long pants and long-sleeved shirts.”

No human or horse cases have been reported with WNV-associated illnesses acquired in Connecticut this season. One hundred thirty four human cases of WNV, including three fatalities, have been diagnosed in Connecticut residents since 2000.

### **Tips for reducing mosquitoes around homes**

Mosquitoes require water for reproduction. The following are measures that can help reduce mosquitoes:

- Elimination of standing water suitable for mosquitoes Dispose of water-holding containers, such as ceramic pots, used tires, and tire swings.
- Drill holes in the bottom of containers such as those used for recycling.
- Clean clogged roof gutters.
- Turn over objects that may trap water when not in use, such as wading pools and wheelbarrows.
- Change water in bird baths on a weekly basis.
- Clean and chlorinate swimming pools. When pools are not in use, use pool covers and drain when necessary.

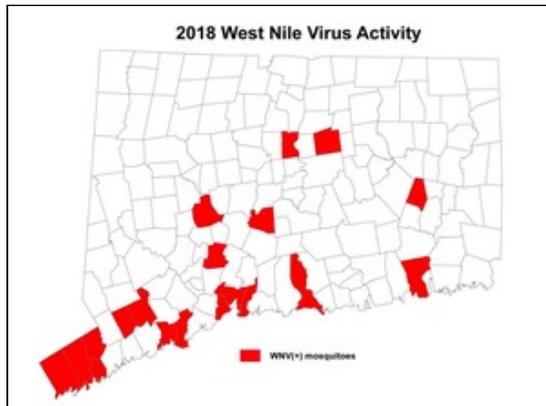
### **Tips for avoiding mosquito bites when outdoors**

Mosquitoes require a blood meal for reproduction. The following are measures that can help reduce bites from mosquitoes that feed on people:

- Be particularly careful at dusk and dawn when mosquitoes are most active.
- Wear shoes, socks, long pants, and long-sleeved shirts. Clothing material should be tightly woven.
- Use mosquito netting when sleeping outdoors.
- Consider the use of CDC- recommended mosquito repellents, containing DEET, picaridin, oil of lemon eucalyptus, IR3535, or 2-undecanone, and apply according to directions, when it is necessary to be outdoors.

- When using DEET, use the lowest concentration effective for the time spent outdoors (for example, 6 percent lasts approximately two hours and 20 percent for four hours) and wash treated skin when returning indoors. Do not apply under clothing, to wounds or irritated skin, the hands of children, or to infants less than two months old.
- Also, be sure door and window screens are tight fitting and in good repair to avoid mosquito bites when indoors.

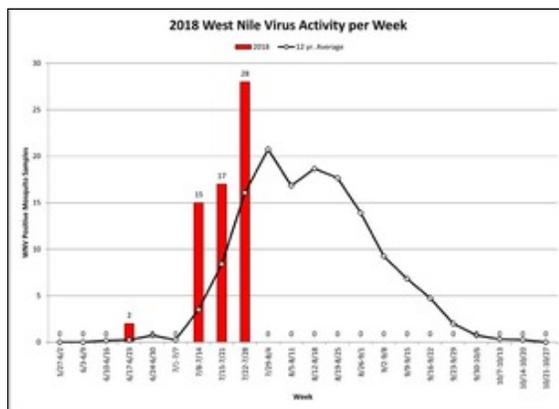
**Figure 1. Connecticut towns in which WNV-infected mosquitoes have been detected in 2018**



(<https://flic.kr/p/28DHvss>)

*Click to enlarge*

**Figure 2. Weekly number of WNV-positive mosquito pools detected in 2018 compared to 12-year average**



(<https://flic.kr/p/29EHyd1>)

*Click to enlarge*

The State of Connecticut Mosquito Management Program is a collaborative effort involving the Department of Energy and Environmental Protection, the Connecticut Agricultural Experiment Station, the Department of Public Health, the Department of Agriculture, and the University of Connecticut Department of Pathobiology and Veterinary Science. These agencies are responsible for monitoring the potential public health threat of mosquito-borne diseases.

The CAES maintains a network of 91 mosquito-trapping stations in 72 municipalities throughout the state. Mosquito traps are set Monday to Thursday nights at each site every ten days on a rotating basis. Mosquitoes are grouped (pooled) for testing according to species, collection site, and date. Positive findings are reported to local health departments and on the CAES website at <http://www.ct.gov/caes/mosquitotesting> (<http://www.ct.gov/caes/mosquitotesting>).

For information on West Nile and eastern equine encephalitis viruses and how to prevent mosquito bites, visit the Connecticut Mosquito Management Program Web site at [www.ct.gov/mosquito](http://www.ct.gov/mosquito) (<http://www.ct.gov/mosquito>).

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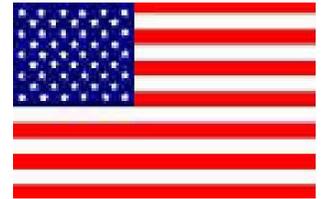
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Contact CAHI c/o  
**Bill Kievit**  
 27 Cope Farms Rd.  
 Farmington, CT 06032

Email: [info@ctinspectors.com](mailto:info@ctinspectors.com)

Web: [www.ctinspectors.com](http://www.ctinspectors.com)

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		Joseph Pelliccio	<p><i><b>The Licensing Board meetings are held at 9:30 am</b></i>  <i><b>Dept of Consumer Protection</b></i>  <i><b>165 Capitol Avenue. Hartford</b></i>  <b>The public is always welcome.</b></p>	
		Pete Petrino		
		Dwight Uffer		
		They have served as our primary leaders and in other capacities since 1992.		
		Please thank them for their service when you have a chance.		

**Published by:** Larry Ruddy  
[Larryhp@cox.net](mailto:Larryhp@cox.net)