

# CAHI MONTHLY NEWS



## President's Corner

Happy New Year,

CAHI is starting off the year 2011 with a more positive attitude than usual, we were able to provide a great year of continuing education for our members, and I sincerely hope that you took full advantage of the seminars that were offered. Looking forward we have more great educational opportunities planned starting with the required three hour law seminar. Every year this seminar is our most attended, not because it is required, but because the material is always informative and current, thanks to Attorney Kent Mawhinney. There are members every year that are not sure if they need to attend or not, my answer is always of course you should attend. The requirement is for licensed home inspectors to take the course once during the 2 year license period, interns are not required to take the course. Most interns are starved for information about this industry and attend meetings on a more regular basis than most license holders, especially the law seminar. 2011 is a license renewal year, your license will expire on July first, and you must have all of your continuing education credits by then, there are no makeup courses.

This Association has always started off the year with a healthy treasury; we have never been in the red, not at the beginning of the year or any time during the year. We have never had to wonder how we were going to pay for a seminar, and this year is no different. This is a luxury that is not taken lightly; we have the privilege of having a strong and loyal membership base, have paid attention to the economic times and adjusted to the changes as needed. If the seminar is worth the cost and benefits the majority of our members, we do it. As always, we welcome suggestions from the membership as to what areas we need to focus on. This industry changes every year, not only in areas such as materials, but technology, statutory, legal, and equipment. It wasn't that long ago that tools used by home inspectors were borrowed from other industries, now we are a target market.

When things are slow, as they have been for some time now, this is the time to sharpen your tools, and get prepared; the most important tool is your knowledge. Your strongest competitor is probably the most informed, **BE** that competitor. Take care of the business end of your business, get your taxes done early, clean out the old files, do all the jobs that you were going to do when you get the time, that would be now.

Those of you that have college students, now or upcoming, keep in mind that we have a \$1000. Scholarship to be awarded by September 2011. The application is on our web site, the requirements are spelled out before you download the application. We will have a 50/50 raffle at the law seminar; the proceeds from this raffle will go into the scholarship fund.

We have several applicants for the vacant positions on the Board, so there is no doubt that there will be new faces, new ideas and progress in the Association. I am looking forward to the accomplishments that we have in our future. Work safe, and stay healthy.

Sincerely,

**Pete Petrino**

CAHI President

January 2011 Volume 3, Issue 1

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### Meeting Dates

**Jan 26** | Energy Seminar 1  
 By Dr Energy  
 Dinner Included  
 Seymour, CT

**Holiday Inn**  
**201 Washington Ave.**  
**North Haven, CT.**  
**(203) 239-6700**

## .....Education Reminder

All licensed Connecticut Home inspectors must complete Connecticut State approved Continuing Education every two (2) years to keep their license in Connecticut current. A Three hour Law Seminar is mandatory during the license cycle.

All Connecticut State approved Home Inspection licenses are due to expire as of 06/30/2011.

This means that if you have a Home Inspection license in Connecticut, to maintain your license past June 2011, you must be sure your license education requirements are current.

CAHI keeps attendance records, we do not keep a tally on individual CEU's, this is your responsibility.

To check your records, the telephone number for the Connecticut State Department of Consumer Protection, Occupational / Professional Licensing Division: (860) 713-6145

Please ask for Robert Kuzmich, R.A. ( License and application Specialist.)

**Trailer for Sale** ~~XXXXXX~~



**CAHI is selling this trailer to our highest bid. Sorry for the poor photo quality. They were taken during a heavy rain shower and I had to balance the angle used vice making sure camera did not get wet. My camera stayed nice and dry. Trailer was also available for inspection at our CT Law Seminar. If interested in buying this trailer, contact one of the Directors with your bid ASAP.**

# “CAHI Law Seminar Photos”

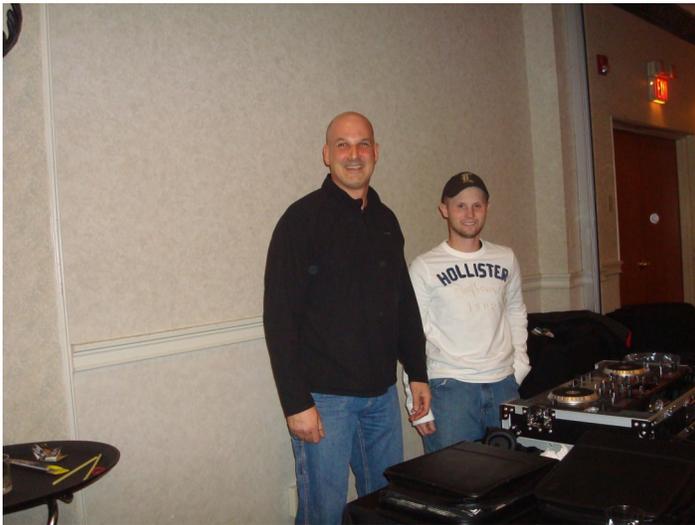
*Editors Comment: Turn out was great! In spite of second law seminar for this licensing cycle, many members were back. Was it the good food, the vendors, prizes and raffle, the DJ or the informative and engaging presentation. Based on initial feedback, your Board of Directors will continue to hold this event every year. And of course, additional feedback is always appreciated.*



Great Turnout!



Certificates, Raffle Tickets, Gift Bags, Door Prize Tickets and Other Duties as Assigned



It took a team of DJs to get grumpy home inspectors to relax



The Always Engaging ... Attorney Kent Mawhinney



Another Great Door Prize!



Is this number close enough???

# NEWS from CPSC

U.S. Consumer Product Safety Commission

Office of Information and Public Affairs

Washington, DC 20207

FOR IMMEDIATE RELEASE

December 16, 2010

Release #11-069

**Firm's Recall Hotline: (800) 925-6278**

CPSC Recall Hotline: (800) 638-2772

CPSC Media Contact: (301) 504-7908

## Wal-Mart Recalls Electric Heaters Due to Fire and Burn Hazard

WASHINGTON, D.C. - The U.S. Consumer Product Safety Commission, in cooperation with the firm named below, today announced a voluntary recall of the following consumer product. Consumers should stop using recalled products immediately unless otherwise instructed. It is illegal to resell or attempt to resell a recalled consumer product.

**Name of Product:** Flow Pro, Airtech, Aloha Breeze & Comfort Essentials Heaters

**Units:** About 2.2 million

**Importer:** Wal-Mart Stores Inc., of Bentonville, Arkansas

**Hazard:** The heaters can malfunction resulting in overheating, smoking, burning, melting and fire.

**Incidents/Injuries:** Wal-Mart has received 21 reports of incidents, which included 11 reports of property damage beyond the heater. Injuries were reported in four incidents, three of which required medical attention for minor burns and smoke inhalation. The remaining incidents included smoke irritation, sparking or property damage beyond the heater.

**Description:** This recall involves Flow Pro, Airtech, Aloha Breeze and Comfort Essentials 1500 watt heaters. The heaters are grey with a metal handle on the top with vents and grey control knobs on the front. The model number is 1013 and can be found on a label on the lower left corner of the back panel of the heater.

**Sold Exclusively at:** Walmart stores nationwide from December 2001 through October 2009 for about \$18.

**Manufactured in:** China

**Remedy:** Consumers should immediately stop using the recalled heater and return the product to any Walmart store for a full refund.

**Consumer Contact:** For additional information, contact Wal-Mart toll-free at (800) 925-6278 between 7 a.m. and 9 p.m. CT Monday through Friday, or visit the firm's website at [www.walmart.com](http://www.walmart.com)



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CPSC is still interested in receiving incident or injury reports that are either directly related to this product recall or involve a different hazard with the same product. Please tell us about it by visiting <https://www.cpsc.gov/cgibin/incident.aspx>

# NEWS from CPSC

U.S. Consumer Product Safety Commission

FOR IMMEDIATE RELEASE

January 6, 2011  
Release #11-086

**Firm's Recall Hotline: (866) 325-4204**

CPSC Recall Hotline: (800) 638-2772

CPSC Media Contact: (301) 504-7908

Firm's Media Contact: (847) 460-8620

## ITT Water Technology Recalls Pumps Due to Electric Shock/Electrocution Hazard

WASHINGTON, D.C. - The U.S. Consumer Product Safety Commission, in cooperation with the firm named below, today announced a voluntary recall of the following consumer product. Consumers should stop using recalled products immediately unless otherwise instructed. It is illegal to resell or attempt to resell a recalled consumer product.

**Name of Product:** Sump Pumps and Effluent Pumps

**Units:** About 21,000

**Importer:** ITT Water Technology, Inc., of Seneca Falls, N.Y.

**Hazard:** Sump pumps installed without ground fault circuit interrupter (GFCI) protection can pose an electric shock or electrocution hazard if touched by the consumer. IF YOU SUSPECT THAT YOU HAVE ONE OF THE RECALLED PUMPS AND IT IS PLUGGED IN, DO NOT TOUCH IT, THE WATER AROUND IT OR THE SURROUNDING FLOOR AREA.

For additional information on GFCIs, see <http://www.cpsc.gov/cpsc/pub/pubs/099.pdf>

**Incidents/Injuries:** None reported

**Description:** The recall involves Goulds, Red Jacket and Bell & Gossett Pumps used in residential applications to pump wastewater and sewage. The pumps are sky blue or red and display the brand names Goulds, Red Jacket or Bell & Gossett. These pumps were installed in new construction or as replacement pumps between December 2009 and July 2010. The models are:

<b>Goulds</b>	ST, PE, PS, PV, GWP, SDSST
<b>Red Jacket</b>	RSC, REP, RWW, RVW, RWP, RSDSST
<b>Bell &amp; Gossett</b>	SC, 1EC, 2WC and 2VW, MWP and MSDS

**Sold through:** Goulds, Red Jacket and Bell & Gossett distributors nationwide from December 2009 to July 2010 for between \$280 to \$700.

**Manufactured in:** The pump is manufactured in the United States and the accompanying cord was manufactured in China.

**Remedy:** If you have purchased a sump pump between December 2009 and July 2010 and it is sky blue or red, you may have a recalled pump. DO NOT TOUCH THE PUMP, THE WATER AROUND THE PUMP OR THE FLOOR SURROUNDING THE PUMP. To verify if your pump is one affected by this recall, immediately contact ITT Water Technology on the toll-free number below. If your pump is affected, a technician will be sent to your home to replace or repair the pump.

**Consumer Contact:** For additional information, please contact ITT Water Technology toll-free at (866) 325-4204, or visit the firm's website at [www.goulds.com](http://www.goulds.com), or [www.redjacketwaterproducts.com](http://www.redjacketwaterproducts.com) or [www.bellgossett.com](http://www.bellgossett.com)



CPSC is still interested in receiving incident or injury reports that are either directly related to this product recall or involve a different hazard with the same product. Please tell us about it by visiting <https://www.cpsc.gov/cgibin/incident.aspx>

# Cisterns

Cisterns are tanks that store water for a variety of purposes, such as irrigation, fire suppression and drinking.

## Uses

- Potable water may be stored in cisterns for such purposes as drinking, bathing and dishwashing. Treated water may arrive from public water sources or filtered from rainwater in a catchment system.
- Non-potable water can be stored for uses such as irrigation and washing cars.

Many communities have invested in large cisterns for fire-suppression purposes, some of which can hold more than three times as much water as a typical fire truck. The town of Littleton, New Hampshire, for instance, approved funding for the purchase of 21 cisterns, each with a capacity of 10,000 gallons, at a cost of \$41,000 per tank.

## Materials

Cisterns must be made from sturdy materials to support an immense water weight. One gallon of water weighs 8.3 pounds (3.7 kg), and each cubic foot of water weighs 62.4 pounds (28.3 kg). Wind loads may also take a toll on exposed elevated tanks. Some common materials used in cistern construction include:

- reinforced concrete. Often the best investment, reinforced concrete is durable and may help neutralize water acidity.
- reinforced concrete block. These have a tendency to leak at their joints.
- metal. However, metal may corrode.
- fiberglass. Fiberglass may have strength problems when buried. If above ground, fiberglass cisterns should be located in shaded areas to reduce the damaging effects of ultraviolet radiation.

wood. Wooden cisterns are generally not satisfactory, particularly when they are used below ground, because they are difficult to keep sealed.

## Inspection

Cisterns, along with all their components and accessories, should undergo regular inspections. Replacement or repair of the unit as a whole, and any of its constituent parts and accessories, should subsequently be undertaken, if needed. The primary concern of a cistern inspection is to detect leaks, which can allow water to escape or contaminants to enter the tank. In addition, the following elements may be inspected:

- roof catchment, to ensure that no particulate matter or other parts of the roof are entering the gutter and downspout. Rainwater picks up dust, soot, bird droppings, leaves and other foreign materials that add objectionable organisms, color and odor to the water. For this reason, inspect to make sure that overhanging trees are not part of the catchment system.
- gutters and downspouts should be inspected to assure that no leaks or obstructions are occurring.
- runoff/overflow pipe, to check that overflow is draining in a non-erosive manner.
- any accessories, such as a rain diverter, soaker hose, linking kit or additional guttering.

cistern drains should not be interconnected with waste or sewer lines, as this may allow backflow contamination.

## Maintenance

Maintenance requirements for cisterns are relatively few if they supply non-potable water. Cisterns designed for the drinking water supply have much higher maintenance requirements, such as biannual testing for water quality and filtering systems. The following maintenance guidelines can be followed for most types of cisterns:

- Before a cistern is used, it should be cleaned and disinfected. After cleaning out any dirt and other debris accumulated during construction, scrub the interior with a bleach-water solution. Make sure that there is ample ventilation for the workers inside the cistern. After this treatment, hose down the interior until the chlorine odor disappears.



- A cistern needs to be cleaned at least every five years. This might be needed more often where blowing dust, leaves and fireplace or stove ash fall on the roof. Inspecting and cleaning the gutters, downspout and filter will help to keep the cistern cleaner.
- Keep manhole covers tight.

Repair leaks promptly with sealants. Portland cement paints and epoxy resins are available to seal cracks in concrete.

### Placement

Although usually located underground, cisterns may be placed at ground level or on elevated stands either outdoors or within buildings. For safety and efficiency considerations, cisterns should be placed:

- away from sewage lines or other sources of contamination;
  - as far away from trees as possible, as tree roots can crack cistern walls;
  - in areas that are sloped to drain surface water away from the cisterns;
  - near their catchments;
  - in firm ground to avoid settling, which can crack cistern walls; and
- away from sources of heat.

In summary, cisterns are water storage tanks that must be maintained and inspected, especially if they supply potable water.




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# Greywater Inspection

"Greywater" (also spelled graywater) is wastewater collected from household showers, sinks, tubs and washing machines that would otherwise be sent down the drain and into the sewage system. Greywater is not potable water, but it can be used for some household activities such as flushing toilets and, more commonly, for irrigation. Greywater differs from "blackwater," which is water that has come into contact with fecal matter or people who carry infectious diseases.

There are two main classifications for greywater:

- **Untreated greywater** is collected relatively cheaply and is always used immediately. It may be utilized for flushing toilets or for outdoor irrigation, where it is then purified by plant roots and soil life.

**Treated greywater** is collected using automated diversion, purification, and irrigation systems, which render greywater suitable for storage and for additional uses, such as for washing and laundry.

Adversaries of greywater usage cite concerns that greywater systems could harbor and spread disease. Proponents of greywater systems acknowledge that much household water usage does not actually require potable water, and that greywater systems, when implemented properly, provide an important secondary source of household water.

### Facts and Figures

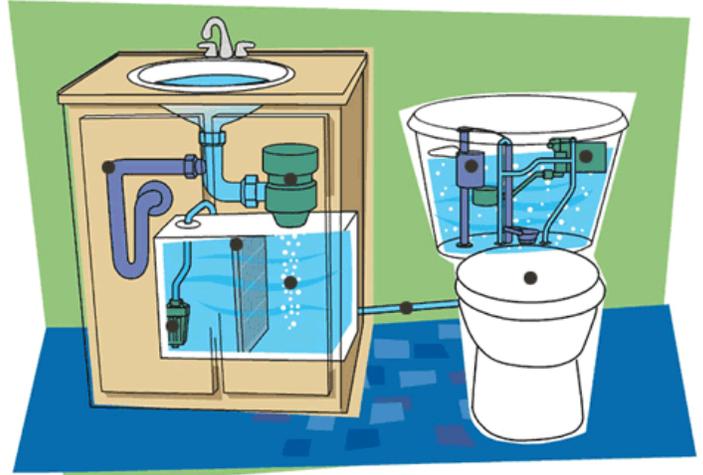
- According to Oasis Design, "The total number of households utilizing greywater is estimated to range from 660,000 to 1.77 million in California, and to reach 8 million in the United States." In 2009, Oregon passed a law that encourages the use of greywater.
- Although there is no comprehensive study on the public health risks of greywater, there have been no reported cases of illness from contact with greywater in the United States.

Greywater usage is common and often not regulated in many Third-World nations.

### Potential Hazards

- All greywater has the potential to harbor dangerous bacteria and viruses.

- It is never potable.
- Micro-organisms present in untreated greywater can cause damage to foliage.
- Untreated greywater should not be used for lawn sprinklers, as this could spread dangerous, airborne bacteria.
- Greywater that is not able to permeate down into the soil can create pools that may leach out and contaminate neighboring surface waters.
- Harsh detergents from laundry and washing water, such as dyes, bleaches and bath salts, may have a negative impact on vegetation.
- High levels of fats and food residue from kitchen waste may block plumbing.
- Accidental cross-contamination of pipes can lead to drinking-water contamination. Only a licensed plumber should implement changes to existing plumbing structures.
- Irrigating too close to a private well could lead to contamination of the drinking water supply.



Emptying untreated greywater into a toilet's tank may cause a foul odor; when flushing with greywater, pour it directly into the toilet bowl.

### Advantages to Greywater

- Implementing greywater systems may result in a substantial cost savings, both in fresh water and sewage costs.
- Using greywater lessens stress on municipal sewage systems and water supplies, which is especially important in times of drought or water rationing.
- Implementing greywater systems allows for abundant landscapes in locales where adequate water for irrigation is not readily available.
- Nutrients from kitchen wastewater, which would otherwise be wasted, are able to help replenish the fertility of soils.
- Greywater is easier to reclaim and treat than blackwater, and breaks down more quickly in the environment.
- Greywater systems can be implemented in new homes, and also retrofitted into older homes.
- Devices may be added to systems to capture and utilize heat from greywater, such as the hot water from showers.
- Some municipalities offer tax incentives for implementing greywater systems.

Many municipal golf courses and public parks use treated greywater in their watering systems, which saves money for the community.

### Disadvantages to Greywater

- Improper handling could impose serious health hazards.
- Some municipalities require expensive and complex permits and inspection to legally operate a greywater system.
- In some jurisdictions, indoor use of greywater may be prohibited.
- Implementing intricate filtration and treatment systems can be prohibitively expensive.
- Claims made by retailers of expensive greywater filtration systems may be inflated or incorrect.
- Greywater systems are poorly understood by many professionals compared with standard plumbing practices.

Greywater systems require regular maintenance and may require replacement of expensive parts.

### Inspection

Inspecting greywater systems lies beyond the scope of most home inspections but here are some tips that inspectors can use to

familiarizing themselves with them:

- Appropriate protective attire, such as gloves, should always be worn when handling greywater.
- Untreated greywater should not be stored longer than 24 hours.
- Irrigation should be implemented with drip hoses at the root level, or with sub-surface irrigation techniques. Greywater should not be applied to the surface of edible garden vegetables.
- Greywater should be applied intermittently in order to allow it to be properly absorbed by the soil.
- Greywater should not be used on exterior surfaces, such as patios or driveways.
- Only biodegradable detergents should be used for laundry.
- Pipes carrying greywater should be clearly labeled and should be kept separate from fresh-water and blackwater pipes.
- County guidelines should be followed when irrigating close to a drinking well.
- Systems should be set up such that excess greywater flows into the sewer system, and that sewage backup never causes greywater contamination.
- Only pipes with a diameter of 1½ to 2 inches should be used for greywater lines.
- In systems utilizing valves, only electric sewage valves should be used, as greywater may eventually corrode less expensive valves.
- U-shaped pipes should not be used for greywater, as particles may clog them.
- In order to determine the proper irrigation area, a percolation test should be used to determine the rate at which the soil will drain.
- Consult with local authorities to determine guidelines for greywater usage and necessary permit regulations.

In summary, greywater systems demand serious caution and proper handling to implement safely. But as water conservation becomes more important, especially in areas where resources are scarce, greywater systems are becoming an increasingly important option to augment traditional water supply systems.

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## Septic System Inspections

A septic system receives, treats and disposes of unwanted wastewater and solids from a building's plumbing system. Solids are partially broken down into sludge within a septic tank and are separated from effluent (water) and scum (fat, oil and grease). Effluent regularly exits the tank into a drainfield where it is naturally filtered by bacteria and reentered into the groundwater. Scum and sludge must be pumped periodically and should never enter the drainfield.

### When should a septic system be inspected?

- as soon as a house is put on the market. This will enhance the home's value and avoid any liability issues that might result from a malfunctioning system. It is in the interest of a prospective buyer to insist that the septic system be inspected before they purchase the home if it has not been done recently.
- once per year.

### How to locate the septic system:

Since they perform their essential functions underground and out of sight, it is not uncommon for a homeowner to not have any idea where the septic system is located. This is usually not an issue except for when it comes time to inspect or pump the tank!

The following suggestions can be used by inspectors to locate a septic tank if the homeowner does not already know where it is:

- An "as-built" drawing of the house should include the tank's location. These drawings are often held in local health and zoning agencies. Old systems might not have any such record.
- The previous homeowner can be contacted.
- Newer tanks contain risers that rise visibly above the ground surface.

- A thin metal rod can be inserted into the earth and used to probe a suspected area. It is important to do this gently and only in soft, wet soil to avoid damaging the tank and associated pipes. A shovel can also be used but it requires a bit more work.
- A metal detector can be used if enough tank components are metal.
- A small radio transmitter can be flushed down the toilet and followed with a receiver.
- The greenest grass in a yard is often directly above the septic tank. Snow also melts faster above the tank than the rest of the yard. While these are not foolproof location methods, they have been known to be helpful.

### What should septic inspectors look for?

- Find the date that the tank was last pumped. Ultimately, sludge level should determine whether a tank should be pumped, but knowledge of previous pumping dates can be a helpful reference.
- Check the sludge level with a “sludge judge” or a similar device. Sludge accumulates on the tank bottom and should not occupy more than 1/3 of the tank’s total volume or rise to the level of the baffles.
- The septic tank and drainfield should be far from wells and streams.
- Ensure that the system is large enough for the home that it serves. A four-bedroom home, for instance, typically requires a 1,200-gallon tank. The more occupants living in the home, the larger the tank that is required. Capacity in gallons can be calculated by tank dimensions. For rectangular tanks, length x width x depth in feet x 7.5 = capacity in gallons. For round tanks, 3.14 x radius squared x depth in feet x 7.5 = capacity in gallons.
- Check for liquid waste that has made its way to the ground surface. This condition is unsanitary and indicates that the system is overloaded. Make sure that the tank is watertight so that wastewater does not contaminate groundwater, and groundwater does not flow into the tank and cause it to overflow.
- If riser lids are present, they should be inspected for cracks and made sure they are secure.
- Make sure that the baffles are firmly connected to the tank’s inlet and outlet pipes.
- Drain lines should each receive the same amount of wastewater. They can be examined by opening the distribution box. If the box becomes tipped or clogged, it will disproportionately allocate effluent, and potentially flood sections of the drainfield.



### What are baffles?

Baffles are septic tank components that slow wastewater entry sufficiently to ensure the distillation of solids, and prevent their release (as well as the release of scum) into the drainfield. In doing so, they protect the absorptive quality of the soil and prolong the life of the septic system as a whole. They are normally made from the same material as the septic tank -- either fiberglass, steel or concrete.

Inspectors should check baffles for the following:

- solids covering the baffle. This should be reported immediately, as it indicates overflow.
- erosion from chemicals and water flow.
- evidence of previous overflow.
- sewage level should be several inches below the baffle top. A lower level indicates leakage and a higher level indicates blockage.

### Maintenance Tips

Inspectors should know the following information so they can inform their clients about ways they can inadvertently damage their septic system:

- Only bath tissue can be flushed down the toilet. Tampons, paper towels, cigarette butts and diapers should be put in the trash. Household chemicals such as gasoline, paint, medication, antifreeze and pesticides can damage bacteria in the septic

system and should never be flushed or dumped down the sink. Detergents and bleach can enter the plumbing system in moderate amounts.

- Cars should not be driven on or near the drainfield. Their weight can unknowingly damage subterranean piping.
- Only grass should be planted above the septic tank and drainfield. Roots from trees and large shrubs can cause unseen damage.
- No one should ever dig or build on top of the drainfield.
- All water drainage from rainwater, sump pumps, or any surface water should be diverted away from the drainfield. An over-saturated drainfield can retard the water treatment process and cause plumbing fixtures to back up.
- An easy way to prolong a septic system's life and prevent a very costly replacement is to fix leaky faucets and toilets immediately. Any household water waste should be avoided. Taking shorter showers is a way to limit water use.

#### **Some Precautions:**

- Inspectors should not enter the septic tank to look for cracks. Tank interiors are very dirty and entrance should be avoided. If a crack is present, it will likely be at the level of the effluent, which will have drained from the tank through the crack. A strong sign that a crack is present is an effluent level significantly below the level of the tank outlet. A tank with cracks that allow effluent to leak into the surrounding earth is essentially a cesspool and needs to be replaced.
- Above-ground water indicates an overloaded septic system, if this water originates from the tank. Inspectors sometimes use a dye flushed down the toilet to confirm that the water originates from the house and not elsewhere. While this measure can be helpful, it is not an acceptable method to test septic system functionality. Flushed dye that appears in the puddle will confirm a faulty septic system, but dye that does not appear does not ensure a working system. Dye can take days to appear and may be too diluted to see clearly.
- Septic system inspection is outside the scope of general home inspection and requires special training. Laws vary by jurisdiction, and inspectors should know them well before performing this service. They should disclaim any part of the inspection of the septic system that they did not inspect.

#### **Septic System Dangers**

Septic systems are designed to handle dangerous waste and can pose serious health hazards to homeowners and inspectors. The following are a list of precautions:

- A professional septic tank pumping service, not an inspector, should remove solid waste.
- No one besides a licensed, equipped professional should enter a tank. Noxious fumes such as methane can cause rapid asphyxiation and death.
- If a septic tank shows signs of weakness, tread with caution! Collapse can be fatal. Beware of tanks with rusting metal, homemade lids, or anything else that appears unstable.

In summary, septic system inspections should be performed on an annual basis to ensure proper function. The septic tank is the most expensive household fixture and its lifespan will be shortened significantly if it is not maintained.

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# **Septic Systems for Homeowners**

Septic systems treat and disperse relatively small volumes of wastewater from individual and small numbers of homes and commercial buildings. Septic system regulation is usually a state and local responsibility. The EPA provides information to homeowners and assistance to state and local governments to improve the management of septic systems to prevent failures that could harm human health and water quality.

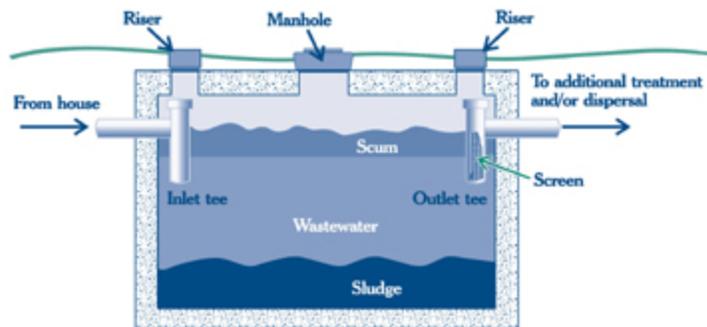
#### **Information for Homeowners**

If your septic tank failed, or you know someone whose did, you are not alone. As a homeowner, you are responsible for maintaining your septic system. Proper septic system maintenance will help keep your system from failing and will help maintain your investment in your home. Failing septic systems can contaminate the ground water that you and your neighbors drink and can pollute nearby rivers, lakes and coastal waters.

#### **Ten simple steps you can take to keep your septic system working properly:**

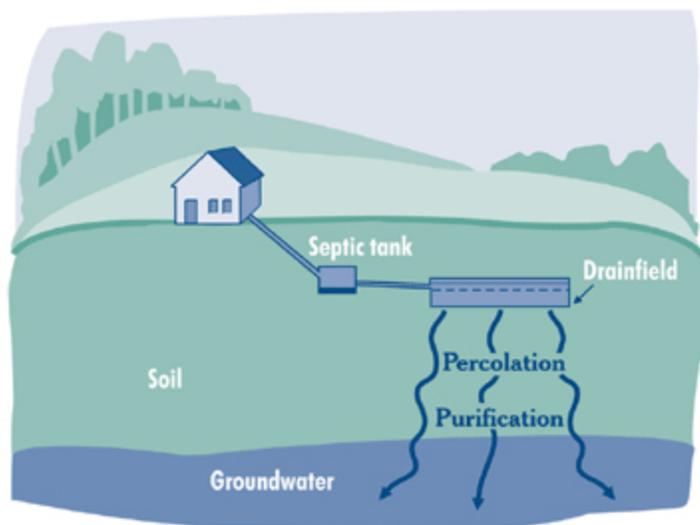
1. Locate your septic tank and drainfield. Keep a drawing of these locations in your records.

2. Have your septic system inspected at least every three years. Hire an inspector trained in septic inspections.
3. Pump your septic tank as needed (generally, every three to five years).
4. Don't dispose of household hazardous waste in sinks or toilets.
5. Keep other household items, such as dental floss, feminine hygiene products, condoms, diapers, and cat litter out of your system.
6. Use water efficiently.
7. Plant only grass over and near your septic system. Roots from nearby trees or shrubs might clog and damage the system. Also, do not apply manure or fertilizers over the drainfield.
8. Keep vehicles and livestock off your septic system. The weight can damage the pipes and tank, and your system may not drain properly under compacted soil.
9. Keep gutters and basement sump pumps from draining into or near your septic system.
10. Check with your local health department before using additives. Commercial septic tank additives do not eliminate the need for periodic pumping and can be harmful to your system.



### How does it work?

A typical septic system has four main components: a pipe from the home, a septic tank, a drainfield, and the soil. Microbes in the soil digest and remove most contaminants from wastewater before it eventually reaches groundwater. The septic tank is a buried, watertight container typically made of concrete, fiberglass, or polyethylene. It holds the wastewater long enough to allow solids to settle out (forming sludge), and oil and grease to float to the surface (as scum). It also allows partial decomposition of the solid materials. Compartments and a T-shaped outlet in the septic tank prevent the sludge and scum from leaving the tank and traveling into the drainfield area. Screens are also recommended to keep solids from entering the drainfield. The wastewater exits the septic tank and is discharged into the drainfield for further treatment by the soil. Micro-organisms in the soil provide final treatment by removing harmful bacteria, viruses and nutrients.



Your septic system is your responsibility!

Did you know that, as a homeowner, you're responsible for maintaining your septic system? Did you know that maintaining your septic system protects your investment in your home? Did you know that you should periodically inspect your system and pump out your septic tank? If properly designed, constructed and maintained, your septic system can provide long-term, effective treatment of household wastewater. If your septic system isn't maintained, you might need to replace it, costing you thousands of dollars. A malfunctioning system can contaminate groundwater that might be a source of drinking water. And if you sell your home, your septic system must be in good working order.

### Pump frequently...

You should have your septic system inspected at least every three years by a professional, and have your tank pumped as necessary (generally every three to five years).

### Use water efficiently...

Average indoor water use in the typical single-family home is almost 70 gallons per person per day. Dripping faucets can waste about 2,000 gallons of water each year. Leaky toilets can waste as much as 200 gallons each day. The more water a household conserves, the less water enters the septic system.

### Flush responsibly...

Dental floss, feminine hygiene products, condoms, diapers, cotton swabs, cigarette butts, coffee grounds, cat litter, paper towels,

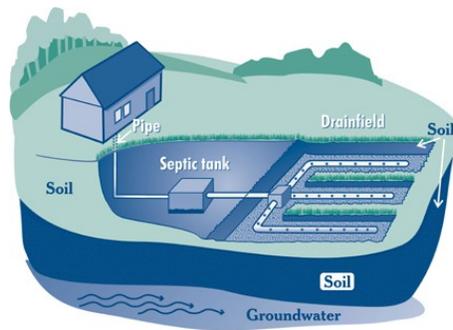
and other kitchen and bathroom waste can clog and potentially damage septic system components. Flushing household chemicals, gasoline, oil, pesticides, anti-freeze and paint can stress or destroy the biological treatment taking place in the system, as well as contaminate surface waters and groundwater.

### How do I maintain my septic system?

- Plant only grass over and near your septic system. Roots from nearby trees or shrubs might clog and damage the drainfield.
- Don't drive or park vehicles on any part of your septic system. Doing so can compact the soil in your drainfield or damage the pipes, the tank or other septic system components.
- Keep roof drains, basement sump pump drains, and other rainwater and surface water drainage systems away from the drainfield. Flooding the drainfield with excessive water slows down or stops treatment processes and can cause plumbing fixtures to back up.

### Why should I maintain my septic system?

A key reason to maintain your septic system is to save money! Failing septic systems are expensive to repair or replace, and poor maintenance is often the culprit. Having your septic system inspected (at least every three years) is a bargain when you consider the cost of replacing the entire system. Your system will need pumping every three to five years, depending on how many people live in the house and the size of the system. An unusable septic system or one in disrepair will lower your property's value and could pose a legal liability. Other good reasons for safe treatment of sewage include preventing the spread of infection and disease, and protecting water resources. Typical pollutants in household wastewater are nitrogen phosphorus, and disease-causing bacteria and viruses. Nitrogen and phosphorus are aquatic plant nutrients that can cause unsightly algae blooms. Excessive nitrate-nitrogen in drinking water can cause pregnancy complications, as well as methemoglobinemia (also known as "blue baby syndrome") in infancy. Pathogens can cause communicable diseases through direct or indirect body contact, or ingestion of contaminated water or shellfish. If a septic system is working properly, it will effectively remove most of these pollutants.



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## Sewer Gases in the Home

Decomposing waste materials in public and private sewer and septic systems create sewer gases. Methane is the largest single constituent of sewer gas, which includes an assortment of toxic and non-toxic gases, such as hydrogen sulfide, carbon dioxide, ammonia, nitrogen oxides, and sulfur dioxide. Improperly disposed gasoline and mineral spirits may also contribute to sewer gases.

Sewer gases pose the following risks to building occupants:

- hydrogen sulfide poisoning. Hydrogen sulfide is an explosive and extremely toxic gas that can impair several different systems in the body at once, most notably the nervous system. So potent that it can be smelled at 0.47 parts per billion by half of human adults, the gas will begin to cause eye irritation at 10 parts per million (ppm) and eye damage at 50 ppm. Other low-level symptoms include nervousness, dizziness, nausea, headache and drowsiness. Exposure to higher concentrations can lead to pulmonary edema, and still higher levels (800 to 1,000 ppm) will cause almost immediate loss of consciousness and death;
- asphyxiation. When sewer gases diffuse into household air, they gradually displace oxygen and suffocate occupants. The effects of oxygen deficiency include headache, nausea, dizziness and unconsciousness. At very low oxygen concentrations (less than 12%), unconsciousness and death will occur quickly and without warning. Oxygen will be at its lowest concentrations in the basement, which is where heavy sewer gases, principally methane, are likely to collect;

- fire or explosion. Methane and hydrogen sulfide are explosive components of sewer gas. Vapors from improperly disposed fuel can further increase the risk of fire or explosion;
- odor. Hydrogen sulfide is responsible for sewer gas's characteristic rotten-egg smell, which can be overbearing even at extremely low concentrations. The gas's odor is a safeguard, however, because it alerts building occupants to the leak long before they're in any serious danger. It is important to note that at roughly 100 ppm, the olfactory nerve becomes paralyzed, removing the victim's sense of smell and, subsequently, their awareness of the danger. Another "warning smell" comes from ammonia, which will sear the nostrils and progressively irritate the mucous membranes and respiratory tract. This gas, unlike hydrogen sulfide, is sufficiently irritating that building occupants are likely to vacate before its concentration rises to toxic levels.



If you suspect that any odors might be caused by sewer gases, contact a qualified plumber. Be sure to mention the smell to an inspector if the home is being inspected.

The design of the plumbing system relies on a connection between household fixtures and the sewer system, which is why a great deal of effort is spent to ensure that waste products -- and the gases that result from their decay -- flow in one direction.

The following failures in the plumbing system may allow sewer gases to flow back into a building:

- dried-out piping and plumbing fixtures. In most cases, intruding sewer gases are caused by a loss of the water barrier where traps have gone dry. Especially in dry weather, infrequent use of a toilet, shower or floor drain can allow for rapid evaporation and entry of sewer gases into the living space. Particularly common culprits are floor drains placed in locations where they are likely to dry out, such as near water heaters or furnaces, as well as seldom-used drains, such as those in janitor's closets, workshop areas and mechanical rooms. Homeowners can maintain the water barriers by using the fixtures more often or by pouring water down the drains. Automatic drain-trap primers may also be installed so that a small amount of water is periodically delivered;
- cracks in the plumbing drain line or vent pipes. A water leak typically accompanies a crack in the drain line, but vent pipe cracks are more difficult to diagnose, and they can vent a large quantity of sewer gases into the home. Plumbers can locate these cracks by using a special machine that generates artificial smoke and pumps it into the plumbing drain system. The smoke pressurizes the system and exits through any cracks or loose fittings;
- diffusion from a leach field septic system;
- through cracks in a building's foundation; and plumbing vents installed too close to air intakes or windows in homes equipped with HVAC air handlers that admit outside air for ventilation. Wind and air flow around the building can allow for sewer gas to enter the building even where plumbing vents and air intakes are appropriately placed. Homeowners can add vent pipe filters or alter the height of vents to alleviate the problem.

In summary, the intrusion of sewer gases into the living space should be discovered and fixed before occupants suffer ill health.

## Rainwater Catchment Systems

Rooftop rainwater catchment is a system for gathering rainwater from residential or commercial roofs for direct use. This system is employed for a variety of reasons, foremost of which are: survival in a locale that lacks municipal water service; reducing the water bill; survival during drought; conservation of municipal water resources; and self-reliance. Common uses for rainwater catchment are consumption, crop irrigation, and household uses, such as flushing toilets and washing clothes.

### How They Work

Rainwater catchment systems vary, from the very simple, such as using a rooftop gutter that drains into a drum container, to the more complex, such as systems that use many tanks, pumps and control mechanisms. Large cisterns hold the captured water and prevent evaporation and contamination from external sources. Rainwater captured for drinking is usually filtered and then purified, while rainwater meant for irrigation and household use requires less intervention.

### Facts and Figures

- Rainwater collection from roofs dates back thousands of years.
- Rather than becoming spoiled as water sits in a cistern, rainwater actually becomes cleaner as bacteria and other pathogens

eventually die. Still, stored water must first be purified before it is safe for human consumption.

### Potential Hazards

Although reported illnesses resulting from drinking rainwater are rare, rainwater may carry with it such pollutants as animal excrement, sand, dust, algae, and dissolved gasses, such as CO<sub>2</sub>. Roofs treated with metallic paint or asbestos may be unsuitable for rainwater collection. It is better not to collect the first rain after a dry spell in order to minimize much of this risk. Also, avoid pulling rainwater from the bottom of a cistern, as that is where accumulated matter, if any, generally settles.

### Advantages of Rainwater Harvesting

- Collected rainwater becomes a more valuable resource as water becomes increasingly scarce in certain regions.
- Individuals can augment their public drinking water supply, thereby lessening their reliance on the municipal water system to deliver the necessities of life.
- It is relatively inexpensive to implement and maintain such systems.
- Individuals can maintain control of the additives in their drinking water.
- The environmental cost of transporting water is reduced.
- Consumers who harvest their own water have guaranteed access to water during power outages.
- There is reduced urban runoff and associated water pollution.
- Such systems may be used in both urban and rural areas.
- Harvesting systems are expandable; additional tanks may be added as needed for a given catchment area.



### Disadvantages of Rainwater Harvesting

- Rainfall is a limited resource, as well as unpredictable, in most regions.
- Rainwater may be sufficient only to supplement an individual's use of the public water supply, rather than replace it entirely.
- Unfiltered rainwater may cause damage to household appliances due to particles in the water.
- Rainwater catchment systems must be cleaned at least once a year, especially if drinking water is being captured.
- Laws governing catchment of rainwater differ by municipality. In many areas, such as the state of Colorado, it is illegal to collect rainwater, as it is considered a public resource belonging to the public water supply.

### Inspection

While inspection of catchment systems may exceed most standards of practice, some tips for inspectors to be aware of include the following. Homeowners considering harvesting their own rainwater can benefit from these tips, as well.

- Whenever possible, roofs should be far from overhanging trees so as to avoid animal droppings. Tree limbs that overhang structures should be trimmed back to minimize many potential hazards.
- Catchment components should be constructed from appropriate materials, especially in systems delivering potable water.
- Gutters should be clean and free of debris.
- Gutters should be in good condition and strong enough to contain water during peak rain periods.
- Cisterns should be sufficiently large to hold expelled water during peak rainfall.
- Cisterns should be airtight and free of cracks.
- Cisterns should be covered to protect against evaporation and insect breeding.

- Cisterns should be made from dark materials so as to avoid algae growth from light penetration.
- In systems equipped with pumps, pumps should be properly sized. Improper pump sizing leads to inefficiency and diminished life expectancy of the system.
- All components should be properly installed so as to minimize water loss.
- Excess water should be allowed to overflow in a manner that does not cause environmental damage or water contamination.

In summary, rooftop water catchment systems can provide a significant, free source of water for both human consumption and household use, if they are properly constructed and implemented.

## Ice Dams

An ice dam is a ridge of ice that forms at the edge of a roof and prevents melting snow from draining. As water backs up behind the dam, it can leak through the roof and cause damage to walls, ceilings, insulation and other areas.

### How do ice dams form?

Ice dams are formed by an interaction between snow cover, outside temperatures, and heat lost through the roof. Specifically, there must be snow on the roof, warm portions of the upper roof (warmer than 32° F), and cold portions of the lower roof (at freezing or below). Melted snow from the warmer areas will refreeze when it flows down to the colder portions, forming an ice dam.

Although the primary contributor to snow melting is heat loss from the building's interior, solar radiation can also provide sufficient heat to melt snow on a roof. For example, in southern Canada, enough sunlight can be transmitted through 6 inches (150 mm) of snow cover on a clear and sunny day to cause melting at the roof's surface even when the outside temperature is 14° F (-10° C), with an attic temperature of 23° F (-5° C).

Gutters do not cause ice dams to form, contrary to popular belief. Gutters do, however, help concentrate ice from the dam in a vulnerable area, where parts of the house can peel away under the weight of the ice and come crashing to the ground.

### Problems Associated with Ice Dams

Ice dams are problematic because they force water to leak from the roof into the building envelope. This may lead to:

- rotted roof decking, exterior and interior walls, and framing;
- respiratory illnesses (allergies, asthma, etc.) caused by mold growth;
- reduced effectiveness of insulation. Wet insulation doesn't work well, and chronically wet insulation will not decompress even when it dries. Without working insulation, even more heat will escape to the roof where more snow will melt, causing more ice dams which, in turn, will lead to leaks;
- peeling paint. Water from the leak will infiltrate wall cavities and cause paint to peel and blister. This may happen long after the ice dam has melted and thus not appear directly related to the ice dam.

### Prevention

- Keep the entire roof cold. This can be accomplished by implementing the following measures:
  - Install a metal roof. Ice formations may occur on metal roofs, but the design of the roof will not allow the melting water to penetrate the roof's surface. Also, snow and ice are more likely to slide off of a smooth, metal surface than asphalt shingles.
  - Seal all air leaks in the attic floor, such as those surrounding wire and plumbing penetrations, attic hatches, and ceiling light fixtures leading to the attic from the living space below.
  - Increase the thickness of insulation on the attic floor, ductwork, and chimneys that pass through the attic.
  - Move or elevate exhaust systems that terminate just above the roof, where they are likely to melt snow.



- A minimum of 3" air space is recommended between the top of insulation and roof sheathing in sloped ceilings.
- Remove snow from the roof. This can be accomplished safely using a roof rake from the ground. Be careful not to harm roofing materials or to dislodge dangerous icicles.

Create channels in the ice by hosing it with warm water. Because this process intentionally adds water to the roof, this should be done only in emergencies where a great deal of water is already flowing through the roof, and when temperatures are warm enough that the hose water can drain before it freezes.

#### **Prevention and Removal Methods to Avoid**

- electric heat cables. These rarely work, they require effort to install, they use electricity, and they can make shingles brittle.
- manual removal of the ice dam using shovels, hammers, ice picks, rakes, or whatever destructive items can be found in the shed. The roof can be easily damaged by these efforts, as can the homeowner, when they slip off of the icy roof.

In summary, ice dams are caused by inadequate attic insulation, but homeowners can take certain preventative measures to ensure that they are rare.



## **Newsletter Article or Guest Speaker**

**CAHI will pay \$25.00 to any member who provides us with a guest speaker for one of our monthly meetings or for any article that is submitted and used in the monthly newsletter.**

**Your guest speaker's name and contact number should be given to Woody Dawson (203) 272-7400 or Al Dingfelder (203) 284-1278 .**

**Articles must be e-mailed to [ading5@aol.com](mailto:ading5@aol.com) and should be a PDF or Word document. Articles should pertain to our industry.**

**We will review articles for content and reserve the right to edit, use and/or refuse them.**

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