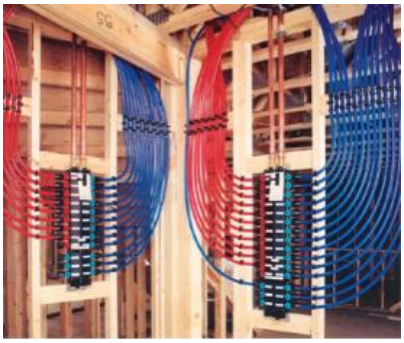
How Safe is PEX tubing?

Does this widely recommended type of plumbing contain hazardous materials?

POSTED ON DEC 13 2010 BY **SCOTT GIBSON**

Builders have climbed on the PEX bandwagon in droves. Cross-linked polyethylene tubing is increasingly taking the place of copper in residential plumbing systems for a variety of reasons: ease of installation, resistance to acidic water, and the virtual elimination of leak-prone fittings.



Hidden dangers in PEX?
Cross-linked polyethylene tubing is gaining ground in residential plumbing systems, but a poster wonders whether chemicals leach out of the material into drinking water.

It all adds up to a juggernaut for a building material that's only been available in the U.S. since the 1980s.

But Arlene DiMarino isn't sure about the safety of PEX.

"I am very concerned about using PEX tubing for water supply in my home," she writes in a Q&A post at Green Building Advisor. "I was told that this plastic was BPA [bisphenol A] -free but when I did some reading I found out that there have been some reports of MTBEs and some VOCs [volatile organic compounds] leaching from this plastic."

Her plumber is pushing for PEX. Should she go along?

The evidence either way seems slim

This forum specializes in the sometimes arcane world of wall assemblies, thermal boundaries and moisture management, not plastics, suggests J Chesnut.

"The effects of the many varieties of plastics is not a subject that GBA can offer much insight," he writes. "I think it is an important topic but haven't found a source for information or discourse I feel confident in.

"BPA seems better understood than many other aspects of plastics in that it does enter a body by leaching into water," he adds. "I recently worked on a house for a physician where we had these discussions. The physician decided to take his chances with the copper supply lines instead of PEX, accepting the premium in cost."

Steve El says evidence pointing to any hazards with PEX is "slim to none," but he adds the same could be said at one point of lead paint, radon, asbestos or the radium painted on watch dials to make them glow in the dark.

"I have no reason to think PEX is hazardous," he writes. "On the other hand, I have no reason to think it is not either. The experiment (purchase by end users) is only in its earliest stages. One can say the same about a long list of stuff, a lot of which is part of my daily life... for these reasons, I share your skepticism."

Weighing the pros and cons

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"As with most building materials today, it's not easy to determine the relative merits of copper and PEX for domestic water supply," writes Robert Riversong. "There are significant benefits and liabilities, including deleterious health impacts of both."

Here's a paraphrase of Riversong's advice: Copper should be soldered with lead-free solder, but soldering flux is not only toxic but also corrosive to copper. Copper is vulnerable to corrosion and pin hole leaks. Water turbulence in copper lines can increase the amount of dissolved lead and copper in the water, especially when the pH is less than 6.5.

When acidic or soft water sits in the line for more than six hours, the line should be flushed for up to 60 seconds before the water is used for drinking or cooking. And in these conditions, hot water should never be used for cooking or drinking.

PEX, on the other hand, is resistant to acids, better at resisting freezing damage, and doesn't scale or corrode. It's been used in Europe since the 1960s, and even "plastic-phobic" California embraced PEX.

One Achilles' heel with PEX, Riversong reports, it is chlorine resistance. "Even short-term exposure to sunlight can dramatically reduce the resistance of PEX to chlorine and result in premature rupture of the pipe," he writes. "Studies show just a one-week exposure to sunlight may reduce the chlorine resistance lifetime of some PEX pipes by half; with a two week exposure completely depleting PEX of any chlorine resistance.

"California's January 2009 approval of PEX relies upon the less-protective PEX chlorine resistance standard ASTM[i] F2023, instead of the much superior NSF P171 standard," he says. "ASTM F2023 only assures an adjusted lifetime of 25 years, while the NSF P171 standard assures a 40 year adjusted lifetime."

PEX can't be melted and resued, an environmental drawback, and it produces toxic smoke when it burns. More troubling, the California lawsuit alleged PEX could indeed leach certain chemicals, including methyl tertiary-butyl ether (the MTBE referred to in the original post) along with ETBE, a related chemical, Riversong says.

Or is this all overblown?

Both PEX and copper are used in the homes of friends and family, writes Steve El, adding, "I don't know anyone who has suffered from either one."

"I don't know a soul with copper toxicity despite the long use of copper in those homes. We filter our drinking water at the tap. Supposedly the filter is good for copper. That's good enough for us."

An anonymous poster seems to agree: "No pipe made today will kill most of us before something else takes you off this planet," this person writes. "Find a new worry...Have you noticed any of your neighbors dropping like flies after living in a home with indoor plumbing? The stuff we waste time worrying about is nuts. "

And John Reimers adds this: "If the water service from the meter to the house is in PVC pipe, as well as the water main in many places, how is the importance of the internal house piping affected? Whether PEX or copper is used seems somewhat mute if the main service is already carried in one of the worst types of pipe."

There's so much we don't know

Then again, suggests J Chesnut, we'd do well to learn more about the effects of chemicals in the environment. He calls it an "extensive and daunting topic" that could use the attention of a regular blogger here at Green Building Advisor.

"I'd love to see that too," replies Steve El. "One MAJOR problem is that there is practically zero funding to study how synthetic chemicals interact with each other AFTER they have been 'disposed' of (often by dumping, flushing, pumping, injecting, burning etc) in the wild. The philosophic perspective used by our rule makers in defining 'safe' does not usually take this into account."

Doug writes that lack of information is a problem, yes, but that the Pharos Project of the Healthy Building Network might be a new source of information.

"Still, the likelihood of health effects will still be something of a guess, and will change due to any number of factors, so it's still a bit of a crap shoot. No harm learning more about what's in stuff and how toxic it's thought to be though."

Along those lines, Riversong tells of his uncle, a physician and professor of medicine, who had given up hope for a medical miracle as he lay dying of cancer. "The last thing he said to me -- a man who was one of the world's most dedicated medical doctors -- was, 'We just have no idea what we're doing,' " Riversong says. "And that's the simple and awful truth."

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Our expert's opinion

Here's what GBA technical director Peter Yost has to say:

> The question of how safe PEX tubing is has an inherent counterpart question which is, How safe are all the alternatives to PEX? And as others have made clear in this discussion, there is currently and to the best of our knowledge no clear winner. But a couple or so things to consider:
> There is a great *Environmental Building News* feature article entitled, "Piping in Perspective: Selecting Pipe for Plumbing in Buildings." In it, many of the issues discussed in this blog, and more, are covered.
> And in subsequent EBN content on the topic of PEX piping it should be noted that bisphenol-A (BPA), while clearly an issue for plastics such as polycarbonate, is not clearly connected to safety concerns with PEX. Probably the "winner" for domestic piping coming out of this feature article is a relatively unknown option, Fusitherm's polypropylene piping system .
> One GBAer mentioned the Pharos Project and how it might be researching and evaluating the issue of domestic water piping and PEX. So far, this is not an area of building materials that Pharos has addressed. But Pharos is becoming a bit more connected to GBA, at least indirectly, through the brand new partnership between Pharos and BuildingGreen's GreenSpec. And a new feature of GreenSpecPharos soon to be deployed is the ability of users/members to vote/weigh-in with the GreenSpecPharos researchers on which types of building products they should evaluate next.
> As a result of this GBA blog discussion, GreenSpec editors have rewritten the domestic water piping overview on GBA. It's nothing conclusive unfortunately, but it does suggest that since there is no clear winner for piping, your selection is likely to be driven by project-specific design and construction considerations. For example, I prefer piping that best accommodates structured plumbing design and efficient hot water flow; the ability and ease with which PEX permits large radius bends reduces turbulence and means more efficient plug flow of hot water.

TAGS: **BISPHENOL A**, **BPA**, **COPPER PIPE**, **COPPER TUBING**, **PEX**, **TUBING**

Image Credits:

Fine Homebuilding magazine

41 COMMENTS

1. MON, 12/13/2010 - 11:36

Why is it that individual
by Robert H

Helpful? 1 Sign in to vote

Why is it that individual lines to each tap are run from the manifold. It seems that this would promote water sitting in lines longer and having a longer chance of absorbing chemicals. My kids are not going to flush a line before drinking or brushing their teeth. I see the convenience of shutting off a leaking tap from a central, easily identifiable location.

Also if I just took a shower and that run is full of hot water and I move to the sink to shave I now have to purge the cold water from another line to get hot water. Now multiply that by 2-3-4 bathrooms.

2. MON, 12/13/2010 - 11:40

EDITED MON,

Response to Robert
by Martin Holladay, GBA Advisor

Helpful? 2 Sign in to

Robert,
Although many PEX plumbing systems use the central manifold,

12/13/2010 - 11:43.

vote

home-run approach, it's not a requirement. It's perfectly possible to use PEX with a traditional trunk-and-branch system if that's what you prefer.

Conversely, it's also possible to design a central manifold home-run plumbing system using copper tubing -- although it's rarely done.

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3. MON, 12/13/2010 - 13:44

PEX approved for use in California as of August 18, 2010
by Katy Hollbacher

Helpful? 1 Sign in to vote

FYI, PEX actually IS currently allowed to be used in CA:
http://www.documents.dgs.ca.gov/bsc/pex/2010/Final-EIR/IB_10-01-PEX.pdf
"This information bulletin is being issued to highlight an action taken by the California Building Standards Commission (commission) on August 16, 2010, concerning cross-linked polyethylene flexible plastic pipe, commonly referred to as "PEX." The action taken removed the state's amendment that excluded the use PEX for water piping systems from the 2007 California Plumbing Code, and to amend the 2010 California Plumbing Code... The Commission's action allows the statewide use of PEX in hospitals, clinics, schools, residences and commercial structures. The effective date of this action is August 18, 2010 for the 2007 CPC and January 1, 2011 for the 2010 CPC. "

More details/documents:
http://www.bsc.ca.gov/pex.htm

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4. MON, 12/13/2010 - 17:59

Safety of Plumbing Materials
by Timmy O'Daniels

Helpful? 0 Sign in to vote

What are the particular pros and cons for stainless steel ?

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5. TUE, 12/14/2010 - 09:07

Great question.
by Lucas Durand - 7A

Helpful? 0 Sign in to vote

> What are the particular pros and cons for stainless steel ?

I'm considering the purchase of a stainless hot water tank.

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6. WED, 12/15/2010 - 15:21

Go tankless!?!
by Michael

Helpful? 1 Sign in to vote

Why would you get a water heater tank unless you have issues with the exhaust of a tankless. When you talk about water sitting in a location all I think about are HWH tanks.

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7. WED, 12/15/2010 - 15:58

Many reasons...
by Lucas Durand - 7A

Helpful? 2 Sign in to vote

> Why would you get a water heater tank unless you have issues with the exhaust of a tankless.

1. I don't have access to gas unless I want to install a propane tank and I don't want an electric unit.
2. I am on a well and I'm not so sure a tankless heater will like the water.
3. I need energy storage for solar thermal and wood stove thermosyphon.
4. I have a family and I'm not so sure that tankless heaters are any more

efficient given the number of users... standby heat loss from the tank is within the thermal envelope.

8. WED, 12/15/2010 - 16:13

Tankless Water Heater
by Doug on the Oregon Coast

Helpful? 2 Sign in to vote

I tried a tankless water heater several years ago with a well and had buildup problems. The only thing that showed up in the well water tests was excessive calcium, but the tankless was completely shot in 4 years. Unless your well water imitates city water without the fluorine, I would think twice about tankless.

9. WED, 12/15/2010 - 16:50

water heater discussion
by Bill Hanlon

Helpful? 0 Sign in to vote

I put a whole house sized water filter in front of a tankless heater a number of years ago and have had no problems since. You have to do the annual maintenance though.

10. WED, 12/15/2010 - 17:34

PEX and water quality
by Anonymous

Helpful? 0 Sign in to vote

http://www.healthyheating.com/Page%2055/Presentations/How%20Pex%20is%20m...

PEX pipe has been around for several decades and has been tested for compliance with NSF/ANSI Standard 61 Toxicological Evaluation for materials in contact with drinking water; health effects.

I'm surprised that GBA would publicize this kind of question and leave it as unresolved as you have. The research to discover this type of information would have been a light burden for the author and experts in this area are easily found.

PEX is safe for potable water so long as it is rated as such. There are some PEX types that are not. They are easy to distinguish from one another.

11. WED, 12/15/2010 - 19:00

Re: Sensitivity to BPA or Toxins
by Frank Hanlan

Helpful? 1 Sign in to vote

Thanks for the serious consideration of this issue and resulting great discussion.

We tend to generalize mainly based on our experience supplemented by research we have done or have read about. What we don't tend to pay attention to or recognize is that we are all different. We, therefore, often ignore and/or discount the very small percentage of people who are highly sensitive. ie only 1 - 5% of people maybe highly sensitive to emf radiation but due to its increasing prevalence it may be difficult to function.

12. WED, 12/15/2010 - 22:00

BPA in PEX (potential risk)
by Anonymous

Helpful? 0 Sign in to vote

The strongest concerns about BPA center on its established action as a "endocrine mimic" -- that is to say, it's surface chemistry is close enough to that of estrogen that certain cellular receptors respond to the presence of BPA in a manner similar to the presence of estrogen. [Before you guys freak out; if you have fat on your body, that fat is already naturally producing low levels of estrogen.] The greatest concern is for developing embryos and pre-pubescent/pubescent children. I have

read no definitive medical or scientific opinion as to whether this quasi-endrocrine activity actually upsets or distorts normal developmental processes in humans. There is, however, a strong concern that we are using our children as defacto "lab rats" and the answers may only come twenty to forty years down the road. There are well documented cases of industrial chemicals causing reproductive problems and greater incidences of cancer in the children... and even in the grandchildren... of women exposed to those chemicals. So, as previously said, we're doing the experiment right now. [Stay tuned for the next fifty years to find out who was right.] In the mean time, for all potable water I'll stick with copper pipe and lead-free flux. Builders have been using copper pipes for at least three generations, and so far, so good. Also, copper is a natural trace element in our diets.

13. WED, 12/15/2010 - 22:17

objective information
by Joseph Ford

Helpful? -2 Sign in to vote

I just have to comment on the link provided by Anonymous at 12/15/2010 - 17:34 because I think it's hilarious. It's a PowerPoint presentation put together by the **Plastics Pipe Institute**, a plastic pipe trade association. I'm supposed to rest on the reassurances of the Plastics Pipe Institute? Really?

14. THU, 12/16/2010 - 11:47

material impacts
by J Chesnut

Helpful? 0 Sign in to vote

Impacts on occupant health is only one important aspect of weighing the pros and cons of material choices. Other issues include: what happens at the end of the products life cycle, what are the environmental and health consequences of the industry that produces the materials.

Also the industry that installs the materials have their own sets of health related issues.
I have plumbers in my family. Years of working with PVC piping and their associated adhesives and soldering copper piping have likely had consequences to their health to a greater extent than how an occupant might be affected by tainted water.

I once heard a talk by a former plastics chemist at 3M. I don't remember all the details but the impression I was left with is that their are people who understand the chemistry between materials in our environment and how they are introduced into biotic systems. However we don't have access to this expertise to explore the concerns we have and make intelligent decisions as we contribute to the built environment.

15. FRI, 12/17/2010 - 07:22

EDITED FRI, 12/17/2010 - 15:23.

Hi Scott
by John Brooks

Helpful? -1 Sign in to vote

Hi Scott,
I really enjoy your Blog.

edited due to rethinking

16. SAT, 12/18/2010 - 14:30

Clean Water
by Russell D

Helpful? 0 Sign in to vote

This is so all overblown, be glad you have clean water to drink. Most 3rd world countries are happy if they can find clean water. We all worry about the stupidiest things. Just live your life & find something to be thankful about.

17. SUN, 12/19/2010 - 23:20

PEX
by Anonymous

All of you are too untechnical

Helpful? -1 Sign in to vote

18. MON, 12/20/2010 - 15:43

PEX installation
by aj builder, Upstate NY Zone 6a

Helpful? 1 Sign in to vote

I have three systems for putting PEX together. Uponor is the best to me. But there are occasions where the Watts crimp is fast or even better yet, use the push on o-ring connectors such as when one has to repair something quick and or under extreme conditions, IE cold.

Cold PEX does not like being connected leak free. The plastic is harder and doesn't form perfect seals always. I have had Watts cold assembly weather leaks and the Uponor stretch to fit has issues with time before pressurizing and cold temps. If I use an Uponor fitting in cold weather, I need to heat it up a bit and also will put a hose clamp over the top that I leave on for a day if pressurizing right away. That gives the PEX time to shrink and make a good joint. I learned all this on the job as I went, would be nice if these little hints were printed up and placed with the fittings and tools at purchase. Hope this helps the next person learn ahead what I learned over my first two homes.

Oh and more, Uponor has integrated sprinkler system parts, and plastic fittings that are my choice also. There has been quite the issue with yellow brass fittings that are sold at the big boxes failing for various reasons.

I do not work for Uponor. Though I would love it if they sent me a ProPEX® 150 Battery Expander Tool.

19. TUE, 12/21/2010 - 03:20

PEX is great. Home runs are great. Use filters.
by Anonymous

Helpful? 1 Sign in to vote

Our house is converted to a PEX home-run from a manifold system. It works great. Pressure and flow equalize immediately without special valves to prevent scalding. There is no bi-metal galvanic action. The tubes withstand occasional freezing. I have had no leaks. Properly maintained reverse osmosis 5-stage filter provides high quality drinking water that tests very well. Aerators do not clog at all, and last. Several simple options are available to eliminate the hot-water lag. See Watts Premier for examples of filters and hot water recirculators.

20. TUE, 12/21/2010 - 06:22

No more Pex for me
by Henry

Helpful? -1 Sign in to vote

I recently built a home using Pex and had a mouse chew five holes in various places through the piping. Thousands of dollars worth of water damage was caused and now it is a constant worry that it may happen again. I have gone back to using copper.

21. TUE, 12/21/2010 - 07:00

Like the previous commenter
by Max

Helpful? -1 Sign in to vote

Like the previous commenter said, why not put a high quality RO system before your drinking water tap and be done with it? Seems like much ado about nothing.

22.

History

TUE, 12/21/2010 - 08:26

by Phil H

Helpful? 0 Sign in to vote

When it comes to plastics, we really don't know "what we don't know". We are finding out every day new risks and adverse reactions due to plastics. The north Pacific Gyre is only now at the beginning stages of study. Ultra-violet degradation is not fully understood and plasticizers like BPA are only the tip of the iceberg. When talking about adverse health effects, there are many that are not at all obvious..
Cancer is an obvious effect because we can "see" the results, ie death. What we don't see are much more subtle biological consequences of the use of plastics. Some things are not understood, or even addressed except in obscure medical and scientific journals. Things such as fertility, hormone imitating, cecadian clock disruption, etc. But not just in us, but in the whole ecosystem of which we are only a part.
When it comes to "new" products we introduce into our environment we rarely look at all the long term effect possibilities, just the ones that are obvious.
As a remodeling contractor, I cannot, in good conscience, recommend PEX for potable water, although it is practical for space heating.

Phil

23.
TUE, 12/21/2010 - 09:26

PEX and "chemicals"
by DoubleDonn

Helpful? 1 Sign in to vote

Every time I see the statement, usually made with horror or in disapproval, that something contains chemicals, I can't help but wonder if the maker of the statement is aware that every material object in the entire universe is made entirely of chemicals. Name one material that is not a chemical. Relative to toxicity, it all depends on the context. Sodium (the element) is highly dangerous to ingest. Chlorine (also an element) is poisonous to inhale. Chlorine is a key constituent of many poison gases. Yet without the proper mix of Sodium and Chlorine ions in our blood, life is impossible. Go figure. Most "natural" foods contain sodium and chlorine as well as a host of other "chemicals" almost all of which have regions of toxicity. You need oxygen for minute to minute life, yet too much oxygen at certain times of fetal development is highly unhealthy. Without body regulation of copper, a terrible disease (Wilson's disease) results. The list goes on and on. The point is the word chemical has been allowed to become pejorative rather than descriptive and an unwarranted shorthand for dangerous. As far as the leachables from PEX or other forms of polyethylene, I personally don't worry as I have dozens of years of successful experience using PE and PVC in medical applications but I am counting on the products being as stated by the manufacturer insofar as proper formulation is concerned. Just as with lead solder and copper pipe. Remember the gypsum board from China; it wasn't the gypsum it was what else had been added.

24.
TUE, 12/21/2010 - 09:59

'Chemicals'
by Jack

Helpful? 1 Sign in to vote

As Dow used to advertise 'Chemicals for Life'. Chemicals like DoubleDonn said are 'natural', how we use them is up to us, and many of us (most1) don't understand the implications of long term exposure. ... The Romans ran lead pipes as the latest technology to the homes of the rich. The rich turned crazy from lead poisoning and they had no way of knowing. ... I think we are the same way about using ANY pipes or containers for our food and beverages. ... Ok, to the point... I think we should be cautious, but don't do the 'chicken little' thing and call 'the sky is falling' just because there is a newer technology. ... If we wanted to be 'real safe', currently non-sodium glass pipe or pure virgin polyethylene seems to be the way to go. Now most of us can't afford it, and it will take special maintenance and environmental considerations, so it is just not 'practical'. Copper has a current cost issue, PVC has a 'chemicals' issue, and PEX (appropriately rated) is pretty good.

No system is 'permanent'. A hundred years or so, and any system we have

installed needs to be replaced (whether thermal, environmental, support systems, etc, etc) some several times.

What is the right thing to do, IMHO, it is make a good 'reasonable' guess with todays technology and go on, realizing we will guess wrong on occasion.

What would I do today in a house for me and my family? PEX probably.

25.
TUE, 12/21/2010
- 10:36

PEX and brass fittings
by Anonymous

Helpful?
1
Sign in to vote

Our water supply is treated with chloramine salts rather than chlorine. Significant leaks can occur where PEX piping is used with brass fittings with this kind of sanitation chemical. The chemical interaction produced between the PEX, brass and chloramine salts eats away at the brass with corrosion occurring, small leaks turn into big problems over a short period of time. Caution should be taken to find out how your water supply is made safe. Within 6 months from finishing our new home, you could easily see the corrosion inside the brass. This fix was an additional pre-treatment filtration system at $6K. All copper would have been far less expensive.

26.
TUE, 12/21/2010
- 10:51

PEX/copper???
by David

Helpful?
1
Sign in to vote

Face it people if man makes it, there is always a potential for harm. Quit over analyzing everything. Use what you can afford or are comfortable with and enjoy life!!!!!!!!

27.
TUE, 12/21/2010
- 11:05

PEX
by Anonymous

Helpful?
-1
Sign in to vote

The suppy lines underground are increasingly becoming plastic because transite pipe is hazardous to handle and easily damaged. The laterals off the main are often polyethylene, are we creating a monster, or are the new products impact on the labor market more worrisome? The medical community is not my first choice for reference. The AMA and FDA are constantly removing approved medications and products from the market that extended some peoples lives and may have harmed or killed other people, yet were administered by competent, educated professionals with good intent resulting in expensive litigation. Mabey the legal community can get more involved and make plumbing like our health care, unaffordable. We are living longer due to the quality of life many plastic products deliver. The news carried a report that the water source in Las Vegas has been found to contain concerning levels of hormonal drugs that cannot be fitered out, they have been reintroduced into Lake Mead from water treatment plants, that would worry me more.

28.
TUE, 12/21/2010
- 14:01

Follow the money trail for this one.
by Anonymous

Helpful?
0
Sign in to vote

a few additional points:
Never use water from the hot lines for internal consumption for a far more important reason: the hot water tank is at a perfect temperature to multiply all kinds of organisms we don't need or want in our systems. Of course, I don't really consider any tap water to be "safe" for drinking except possibly limited quantities in an emergency.

PEX's chlorine resistance [and fluorides] is purely because there is some kind of organic sacrificial compound mixed in with the polyethylene to be preferentially consumed. When that is gone the game is over. That consumable material has to be some sort of organic material, any of which

also makes for less than healthful compounds in the water as a result.

Out of the blue they are saying PVC pipe is worse with no indication as why they would say such a likely erroneous thing.

No mention whatsoever of CPVC which has been used for over 40 years with no known deleterious effects or degradation in millions of installations.

I consider a nominal 20-40 year life expectancy for the plumbing to be even worse than galvanized pipe [nominal 40 year life expectancy] when homes are expected [erroneously] by the public to last far longer than that. Are we ready to abandon our houses because they are beyond the design life expectancy [15 years]? I don't think so.

The suggestion of polypropylene as an alternative is humorous on the face of it as that material is at least as sensitive to oxidation as polyethylene.

The insertion of the European use of PEX fails to mention that they don't typically put oxidizers like Cl & F in their water, so no such usage comparison is valid.

The author also conveniently ignores the polybutylene plumbing fiasco in years past, and the several statewide law suits already under way and ending of warranty payments because of serious PEX malfunctions.

As a home inspector, I have never seen it installed properly [according to instructions].
All in all the article looks like an attempt to whitewash PEX concerns with no evidence and lots of misdirection.

30.
TUE, 12/21/2010
- 14:22

Response to Anonymous
by Martin Holladay, GBA Advisor

Helpful?
1
Sign in to vote

Anonymous,
You wrote, "I don't really consider any tap water to be "safe" for drinking except possibly limited quantities in an emergency."

What country do you live in? I've lived in countries like that.

However, in the U.S. and Canada, tap water is safe to drink.

31.
TUE, 12/21/2010
- 15:53

PEX hazards -
by dorr tippens

Helpful?
-1
Sign in to vote

SHAME on the editors. The suit referenced was dismissed due to ridiculous claims including the comparison of MTBE release from unrelated plastics to PEX, improper installations &c. This type of yellow journalism might sell copy but misinforms and misguides the public. I am SHOCKED at the disservice done by this article and how the editors didn't vet the content. This causes me alarm now in not trusting anything (certainly not at face value) that I read within the Taunton Press family.

32.
TUE, 12/21/2010
- 16:07

Response to Dorr Tippens
by Martin Holladay, GBA Advisor

Helpful?
1
Sign in to vote

Dorr Tippens,
While litigation delayed the implementation of regulations designed to permit the use of PEX in California, the litigating parties have agreed to a settlement. More information is here:

http://www.documents.dgs.ca.gov/bsc/pex/2010/Settlement/PEXSettlement08-...

33.
TUE, 12/21/2010
- 17:11

Stainless Steel
by Anonymous

Helpful? 1 Sign in to vote

Timmy O'Daniels asked about the pros and cons of stainless.

My first and foremost concern with anything stainless these days would be quality control. There are many different alloy formulas, and lots of ways for shoddy makers to cheat. So much of what is supposedly stainless now eventually shows red rust marks.

Cutting and fitting would be the next big issue. Ask a room full of machinists what their least favorite material is, and the shout in unison will be "Stainless!" Most grades of stainless work harden. You can't cut it with a wheel cutter like copper, PVC, or ABS. It dulls saws quickly. You might best use an angle grinder. In that mode, you'd have to braze the fittings. It's like soldering copper, only much hotter, which means an oxyacetylene torch and more fire danger, etc. There are free machining grades of stainless, but they're expensive, and not all that easy to cut. Another approach might be to use NPT threads, but plumbers would have to stock two types, pre-threaded long lengths, and free machining for the stuff that they cut and fit. Because you need to plan and have room for things to turn, threaded work is more labor intensive. Compression fittings would work, but code doesn't allow them inside walls.

Stainless tubing is a low volume product today, but given similar economies of scale to copper, it would ultimately be cheaper.

We already use some stainless parts, mostly on the ends of those braided tubes for water heaters. In that application, it holds up just fine. Electrochemically, it plays nice with copper, brass, and galvanized, which is why it's good there.

That just scratches the surface, it's a big subject.

-- J.S.

34.
TUE, 12/21/2010
- 17:23

Big Box Yellow Brass Fittings
by Anonymous

Helpful? 2 Sign in to vote

AJ Builder has had some trouble with them: "There has been quite the issue with yellow brass fittings that are sold at the big boxes failing for various reasons."

So have I, two really hellish kitchen faucet jobs. The problem turns out to be with 1/2 NPT male threads on brass stuff made in China. The crests of the threads are cut away, leaving a long narrow spiral path when assembled through which you get a slow leak. No matter how much tape or compound you use, or how hard you tighten it, in a few days it'll leak.

-- J.S.

35.
TUE, 12/21/2010
- 18:39

Copper pipe self disinfecting properties
by Andy Betteridge

Helpful? 0 Sign in to vote

I am over in the UK and over here there are considered to be benefits to copper be naturally self disinfecting, here are a couple of examples.

With water being stored after heating with for example an air source heat pump the water temperature is not sufficiently raised to prevent bacterial growth, however if stored in a copper cylinder rather than a stainless steel one the risk is reduced, generally though an electric water heater is employed to add extra heating on a periodic basis to kill in any bacterial growth.

A hospital in Birmingham UK is replacing plastic waste pipe lines and traps with copper to see if the self disinfecting property of copper can assist in reducing MSRA infections.

I generally work on existing systems and use copper pipe and lead free soldered fittings, but if the existing system is plastic then I add to it in plastic rather than making the change to copper, partly due to electrical earthing

requirements.

Andy

36.
TUE, 12/21/2010
- 18:41

Pex is OK
by kaymc

Helpful?
-1
Sign in to vote

As a residential contractor and home-moaner :-) and a recent convert to PEX from copper, a critical point would be the installer themselves.
On the previous customer project the plumber in his infinite wisdom, ran 6"pvc as a conduit for both the hot and cold lines thru the crawlspace from hot water boiler to bath sinks and tub, a run of around 20 feet. Needless to mention that a hot water pipe in contact with a cold water pipe becomes less capable of delivering hot water.
I would think that commuting daily on the road thru rush hour, just by itself allows us to ingest multiple chemicals which are themselves inherently more toxic than copper or PEX.
On the " cry wolf " itinerary from some who have read unsubstantiated reports, it truly becomes a waste of time to read their concerns.
Any new application always needs an assessment period to work out the bugs, I believe PEX has been around long enough for me to consider and install a full system in my own home and also to recommend it to clients.

37.
TUE, 12/21/2010
- 23:49

pex vs. copper
by Anonymous

Helpful?
0
Sign in to vote

I work in the plastic processing industry & without going into long detailed studies, these are some of the realities:
PE, PP (& PEX) are porous and can harbor bacteria, mold or fungus. I use PEX for underfloor heating, but prefer copper for potable water.
CPVC ("C" is clorinated PVC) and can be used for hot or cold water, and although less porous than PE or PEX will allow the formation of mold, mildew, fungus, etc.
Copper & galvanized pipe are not porous and will conduct enough static electricity to subdue mold & mildew. There are other problems that can develop due to electrolysis such as lime deposits, corrosion, etc.
I purchased a dozen polycarbonate (bis-A) water bottles after BPA got bad publicity. Don't boil in polycarb or store acidic foods in them. Drinking water, cold liquids or alcohol can be stored or carried in polycarb. Most people with traces of bis-A in their tissue probably got it from the epoxy liner that was used to prevent botulism in tin cans.
More than 50% of the residences in the city of Chicago have lead pipe feeder lines running into their homes. Lead is an actual threat to your health.
The best thing to do is to have the water analyzed after the system has been running for a year.

38.
TUE, 01/04/2011
- 01:42

Filters
by Anonymous

Helpful?
0
Sign in to vote

Someone else mentioned it briefly but is there any issue with using a good filter, replaced a couple times a year, at the point of use to eliminate lead and the other nasties? Aquasana makes the point that clorine keeps bacteria from growing in the pipes in the distribution system yet drinking bleach is not a good thing :). So, while I'm a bit suspicious of taking advice from someone selling water filters, eliminating clorine, lead and etc at the point of consumption would seem to make sense since it is after all the pipes which *could* add lead, bacteria and various other harmful materials.

Showers are a bit more difficult to filter because carbon filters don't work well with hot water but there are filters that remove a significant amount of the clorine and other chemicals. Does anyone have a better solution for them?

39.
TUE, 01/04/2011 - 16:05

Filters
by DonAtlGa

Helpful? 0 Sign in to vote

I have been involved in residential and commercial plumbing as a licensed plumber since 1978.

My current preference is to install a 20" canister 5 micron filter followed by a whole house (loose media)granulated carbon filter at the service entry point. This catches any scale coming from the city mains, then removes most of the chlorine (etc) that the county adds for purification. As a bonus, the carbon also catches many of the trace chemicals that we have managed to add to our water supply. The larger filters boost efficency and reduce maintenence requirements dramatically. Total retail with the plumbing included is usually in the low $2000's depending, of course, on system size.
. Over the years I have had to sanitize a couple of hot water systems to kill off bacteria growing in water heaters (none had filters, but most if not all had been sitting unused for some period of time). I would side with the previous posters who recommend not drinking or cooking with the hot water in your home

40.
TUE, 01/04/2011 - 16:25

Pipes
by DonAtlGa

Helpful? 0 Sign in to vote

Sorry - missed your point of use point. Point of use are lots better than nothing - but you are correct in that they won't help with your showers. I haven't found a hot water chlorine filter - sediment only , as far as I know.
FYI -you should use a seperate tap (or two handled kitchen faucet) in the kitchen, as single handled mixing valves will almost always mix a bit of unfiltered water in with the filtered.

41.
SUN, 01/16/2011 - 20:17

Pick your poison
by Dr Juan

Helpful? 1 Sign in to vote

PVC: contains several percent phthalate plasticiser that will forever be leaching from the pipe walls along with very minute traces of VCM (vinyl chloride monomer), a liver carcinogen.

Copper: heavy metal contamination from lead solder and brass fittings - now avoided using lead free solder and brass.

PEX: Actually there are several versions, chemical crosslinked and radiation crosslinked. The radiation crosslinked versions are relatively clean and worry free. In fact the radiation treatment is similar to that used on some artificial hip sockets to extend wear life and has been deemed implant worthy by FDA. To the contrary, chemical crosslinked versions are of real concern since the brew needed to create the crossinking reaction in the extrusion line is pretty dangerous stuff. I would avoid it myself.

Barrier PEX: Barrier layers of special plastics or aluminum foil are used to keep oxygen from diffusing into the water within the pipe and corroding boilers. This is useful for radiant hot water and baseboard heating but is not needed for potable water home plumbing. But the Aluminum layer might give better UV life if the product is approved for potable water. Unfortunately, last time I looked, most of the foil wrapped versions are chemical crosslinked. But the scene changes yearly so do your homework and your own investigations. These barriers are useful with underground feeders for drinking water that must traverse badly contaminated land. The barrier can significantly reduce leaching of ag chemicals into the water line.

42.
SUN,
03/04/2012 -
22:21

New paper published
by John Morris

Here is an interesting paper published late 2011 on leaching from various plastics:
http://ehp03.niehs.nih.gov/article/info%3Adoi%2F10.1289%2Fehp.1003220

Could do with a more independent (not funded by a plastics company) study to confirm the results.

Helpful?
0
Sign in to vote