



Q & A on Pharmaceuticals in Drinking Water

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Recent newspaper reports discussed the presence of pharmaceuticals in drinking water throughout the country.

1. Is our drinking water safe to drink?

Yes, absolutely. Our drinking water not only meets all federal and state regulations for clean and safe drinking water, but surpasses even those requirements. Philadelphia was one of the original participants in the Partnership for Safe Water, a voluntary, nationwide program ensuring the highest standards for water treatment plant performance. Through our Partnership efforts, advanced research and award-winning Source Water Assessment Program, we stay at the forefront of our field. Our primary goal is to ensure safe, clean drinking water for our customers.



2. Do we have any special concerns that caused us to sample for pharmaceuticals?

No. We have no special concerns. While there are no federal standards for pharmaceuticals, PWD began testing drinking water as a proactive step. PWD is a leader in Source Water Protection — we are committed to protecting the quality of our rivers and streams from which we obtain our drinking water. In that role, we had the opportunity to participate in some of the earliest national research studies on pharmaceuticals in source water and drinking water. We had already begun developing our own internal research program, and are continuing our advanced monitoring and research efforts.



As a leader in water quality nationally, we perform a number of tests on our water that are not required by law.

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3. How can pharmaceuticals get into drinking water?

The simple answer is people. People in Philadelphia, across the nation, and throughout the world now take more pharmaceuticals, both prescription and over the counter, than ever. Only a small portion of these pharmaceuticals are absorbed in our bodies. The rest is flushed, making its way into rivers and streams throughout our region and worldwide. These rivers and streams are the sources of our drinking water.



4. What pharmaceuticals did we find and how much did we find?

Only trace amounts of 17 compounds were actually detected from among the more than 70 we looked for during our four years of monitoring. We tested for every compound for which a test was available. Not surprisingly, we found pharmaceuticals that are in widespread use today, such as caffeine, acetaminophen (the active ingredient in pain relievers like Tylenol®), nicotine, and cough medicine. [Click here for a list of the substances for which we tested.](#)

We found three nanograms/liter (ng/l) of acetaminophen and 119 ng/l of caffeine.

To give an example of the trace amounts detected, imagine drinking eight glasses of water every day for over 40,200 years. That's how much of our water you would have to drink to take in the amount of acetaminophen in a single infant dose (80 milligrams).

If you're a coffee drinker, you'd have to drink eight glasses of water a day for more than 1,260 years to take in the amount of caffeine that is in a single cup of coffee (100 milligrams).

We were only able to see these compounds because we employed sophisticated new measurement technologies. These compounds are at such low concentrations that they cannot be detected unless the most advanced methods are used. Only a few specialized laboratories in the country have these capabilities, and we are working with them. Even when using the most sensitive measurement methods, we seldom find these compounds in our drinking water samples. However, we take a conservative approach to describing our findings: if a compound was detected even just once in dozens of samples, it is counted.

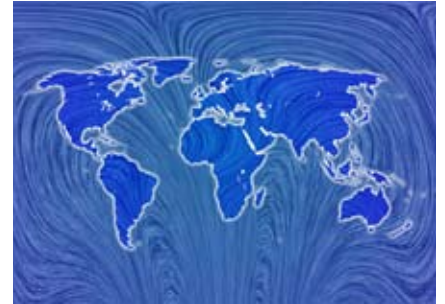
There is currently no indication that such extremely small concentrations pose any public health risk.

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5. Do other cities and towns have pharmaceuticals in their drinking water?

Yes. This issue of pharmaceuticals in drinking water exists throughout the country and the world. Wherever people or animals take pharmaceuticals, trace amounts of these substances will make it into the surrounding watershed. What is unique about Philadelphia is that we have chosen to participate actively in this new area of research, to ensure that our drinking water remains healthy and safe for generations to come.



6. What is PWD doing to ensure our drinking water remains safe?

We will continue monitoring pharmaceuticals in our water supplies. We will continue to conduct research to keep up on the latest issues like pharmaceuticals in our drinking water. Our Source Water Protection Program and our drinking water plants are operated to ensure the highest level of public health and safety. We have begun public education programs to answer questions and to let people know how they can help protect our rivers and streams. To learn more about this, please visit the Fairmount Water Works Interpretive Center. The web site is: www.fairmountwaterworks.org

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7. What is being done nationwide to address this issue?

The U.S. EPA (Environmental Protection Agency) evaluates the need for new drinking water contaminant regulations through a program called the Contaminant Candidate List (CCL). This program periodically identifies contaminants that may be present in public water supplies, and that may adversely impact public health.

The EPA and other organizations are conducting and/or supporting a large amount of research on this topic. Research areas include development and improvement of testing methods, monitoring water quality, evaluating the effectiveness of treatment processes for pharmaceutical removal, and potential environmental and human health impacts.

Once a contaminant is identified as being of national concern from the CCL list, the contaminant is placed under the Unregulated Contaminant Monitoring Rule (UCMR). At this point, PWD may be asked to test for the contaminant. The test results we do as part of this rule are reported to the EPA.



We also include these results in our annual Water Quality Report for that year of testing. This report is mailed to every PWD account. It is important for customers to check their Water Quality Report every year for new information.

To download the report in either English or Spanish, please go to our web site, http://www.phila.gov/water/Drinking_Water_Quali.html.

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8. What can I do to help?

You can help to keep unused pharmaceuticals out of the water supply. Pay attention to how you dispose of unused medications. Look for take-back programs, either through pharmacies, or through household hazardous waste collection programs. Generally speaking, pharmaceuticals should not be flushed down the toilet or poured down the drain. Specific disposal instructions are provided by the Office of National Drug Control Policy and the U.S. Fish and Wildlife service at the following links:

http://www.whitehousedrugpolicy.gov/publications/pdf/prescrip_disposal.pdf

<http://www.fws.gov/southeast/news/2007/r07-050.html>



9. Should I be buying bottled water or filtering my water?

No. Our water is healthy and safe.

However, if you do choose to use bottled water or a water filter, please be aware that these products vary considerably with respect to water source, water quality and cost. Customers should shop for bottled water and water filters wisely and store bottled water properly.

Internet sites that can help customers become more knowledgeable about bottled waters include:

- NSF International at www.nsf.org/consumer
- the International Bottled Water Association (IBWA) at www.bottledwater.org
- the US Food and Drug Administration (FDA) at www.cfsan.fda.gov/~lrd/bot-h2o.html.

If you choose to use water filters, be sure to use the filters according to the manufacturer's instructions. More information is available on the EPA's web site: <http://www.epa.gov/safewater/faq/faq.html#hwtu>.

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10. Where can I go for additional information?

Additional information can be found at the following websites:

U.S. Environmental Protection Agency

<http://www.epa.gov/ppcp/>

<http://www.epa.gov/safewater/ccl/>

<http://www.epa.gov/safewater/ucmr/index.html>

Awwa Research Foundation

<http://www.awwarf.org/research/TopicsAndProjects/topicSnapshot.aspx?topic=EDCS>

American Water Works Association

<http://www.drinktap.org/consumerdnn/Home/WaterInformation/WaterQuality/PharmaceuticalsPPCPs/tabid/73/Default.aspx>

U.S. Geological Survey

<http://toxics.usgs.gov/highlights/whatsin.html>

U.S. Food and Drug Administration

<http://www.fda.gov/cder/drug/default.htm>

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2004-2007 PWD Drinking Water Testing for Pharmaceutical Compounds

PWD is participating in two research projects to examine:

- Occurrence and removal of pharmaceuticals in drinking water (2002 to 2006)
- Toxicological relevance in drinking water (2004 to current - final report in late 2008)
- PWD also conducts additional monitoring with its own laboratories

FOUND AT LEAST ONCE IN PARTS PER TRILLION (ng/L)

COMPOUND NAME	COMPOUND CATEGORY
1 Acetaminophen	analgesic
2 Aspirin (acetyl salicylic acid)	analgesic
3 Atenolol	beta blocker
4 Caffeine	stimulant
5 Carbamazepine	anticonvulsant
6 Cotinine	breakdown product
7 Diazepam	muscle relaxant
8 Dilantin	anticonvulsant
9 Fluoxetine (prozac)	antidepressant
10 Gemfibrozil	lipid regulator
11 Ibuprofen	analgesic
12 Iopromide	x-ray contrast media
13 Meprobamate	antianxiety
14 Nicotine	tobacco ingredient
15 Progesterone	hormone
16 Risperidone	antipsychotic
17 Theobromine	bronchodilator



2004-2007 PWD Drinking Water Testing for Pharmaceutical Compounds

TESTED FOR, BUT NEVER FOUND

COMPOUND NAME COMPOUND CATEGORY

1	Amoxicillin	antibiotic
2	Androstenedione	hormone
3	Antipyrine	analgesic
4	Atorvastatin	cholesterol regulator
5	Azithromycin	antibiotic
6	Bacitracin	antibiotic
7	Bezafibrate	lipid regulator
8	Carbadox	antibiotic
9	Chloroamphenicol	antibiotic
10	Chlorotetracycline	antibiotic
11	Ciprofloxacin	antibiotic
12	Clofibric Acid	lipid regulator
13	DES (diethylstilbestrol)	hormone
14	Diclofenac	analgesic
15	Diltiazem	antihypertensive
16	Doxycycline	antibiotic
17	Enalapril	antihypertensive
18	Enrofloxacin	antibiotic
19	Erythromycin	antibiotic
20	Estradiol (including 17-alpha and 17-beta)	hormone
21	Estriol	hormone
22	Estrone	hormone
23	Ethinylestradiol (including 17-alpha)	hormone
24	Hydrocodone	pain medication
25	Lasalocid	antibiotic
26	Lincomycin	antibiotic
27	Monensin	hormone
28	Naproxem	analgesic
29	Narasin	antibiotic

COMPOUND NAME COMPOUND CATEGORY

30	Norfluoxetine	breakdown product
31	Oleandomycin	antibiotic
32	Ortho hydroxy atorvastatin	breakdown product
33	Oxybenzone	sunscreen
34	Oxytetracycline	antibiotic
35	Para hydroxy atorvastatin	breakdown product
36	Penicillin G	antibiotic
37	Penicillin V	antibiotic
38	Pentoxifylline	vasodilator
39	Prednisone	hormone
40	Roxithromycin	antibiotic
41	Salinomycin	antibiotic
42	Simvastatin	lipid regulator
43	Simvastatin Hydroxy Acid	breakdown product
44	Sulfachloropyridazine	antibiotic
45	Sulfadiazine	antibiotic
46	Sulfadimethoxine	antibiotic
47	Sulfamerazine	antibiotic
48	Sulfamethazine	antibiotic
49	Sulfamethizole	antibiotic
50	Sulfamethoxazole	antibiotic
51	Sulfathiazole	antibiotic
52	Synthroid (Levothyroxine)	hormone
53	Testosterone (including cis and trans)	hormone
54	Theophylline	bronchodilator
55	Triclosan	antimicrobial agent
56	Trimethoprim	antibiotic
57	Tylosin	antibiotic
58	Virginiamycin M1	antibiotic