Many Medications Remain Safe and Effective Well Past Their Expiration Dates

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By Dr. Mercola

Now, as you know, I am not a big fan of using prescription drugs for just about any reason. I don't take them, nor do my parents who are 77 and 83. However, I realize that many reading this are in a transition phase or simply unwilling to get off of them at this time.

The information in this article can save you enormous amounts of money if you are throwing away your medications because you are following the inaccurately listed expirations dates on the prescription bottle.

Prescription drugs typically have an expiration date of one to five years, and if you're like most people, you would probably think twice before taking a medication past its expiration date. Medication turnover based on stated expiration dates also costs the medical industry, such as hospitals, pharmacies, and the US military, billions of dollars.

According to a new study1, prescription drugs can actually remain sufficiently potent well past their expiration date, as long as it's unopened. (It's important to remember that drugs need to be stored properly, as humidity, temperature and exposure to light can affect the drug's shelf life.)

Prescription Drugs Still Viable Up to 40 Years Past Their Expiration Date, Study Finds

The researchers analyzed eight prescription drugs that expired between 28 and 40 years ago, and found that most were just as potent as when they were made. The drugs included 14 active ingredients, including aspirin, codeine and hydrocodone, and in 86 percent of the cases, there was still at least 90 percent of the active ingredient left in the drug, which is within the limits allowed by the US Food and Drug Administration (FDA). Any given batch of a drug may contain anywhere between 90-110 percent of the amount of the active ingredient stated on the label.

As reported by CNN Health:2

"It's impossible to say from the study results alone whether the eight drugs would be effective if used today, but 'there's no reason to think that they're not,' says Lee Cantrell, the lead author of the study... Two of the tested ingredients, aspirin and amphetamine, consistently fell below the 90 percent threshold, as did one sample of the painkiller phenacetin...

'All [the expiration date] means from the manufacturers' standpoint is that they're willing to guarantee the potency and efficacy for the drug for that long,' he says. 'It has nothing to do with the actual shelf life.'
The fact that expiration dates appear to be somewhat arbitrary may mean that consumers and pharmacies alike are throwing away perfectly good medicine. And this has important implications for drug shortages and especially health care costs, the researchers say.

'We're spending billions and billions on medications and medication turnover,' Cantrell says. 'If a drug has expired, you've got to throw it away, it goes into a landfill, and you have to get a new prescription. This could potentially have a significant impact on cost.'

'Although consistently taking depleted prescription drugs could certainly cause complications, expired drugs are generally safe. In the medical literature there is only one example of an expired drug that became toxic, and that was an isolated incident, says Cantrell, the director of the San Diego division of the California Poison Control System.'

This supports previous findings by the US military, which found that 90 percent of the drugs tested were potent far past their original expiration date, at least one drug was still good after 15 years. There are exceptions of course. Nitroglycerin, insulin and liquid antibiotics are three drugs that do NOT tend to keep well past their expiration date. According to a report by The Wall Street Journal from 2000:

"...Francis Flaherty says he has concluded that expiration dates put on by manufacturers typically have no bearing on whether a drug is usable for longer. Mr. Flaherty notes that a drug maker is required to prove only that a drug is still good on whatever expiration date the company chooses to set. The expiration date doesn't mean, or even suggest, that the drug will stop being effective after that, nor that it will become harmful.

'Manufacturers put expiration dates on for marketing, rather than scientific, reasons,' says Mr. Flaherty, a pharmacist at the FDA until his retirement last year. 'It's not profitable for them to have products on a shelf for 10 years. They want turnover.'"

Cantrell again suggests expiration dating of drugs might need to be reevaluated, and it sounds like a good idea to me. The pharmaceutical industry can easily bilk extra money out of the medical system by stating a drug will expire after one year, when in fact it can safely last several years – perhaps several decades! Overall, it's a massive waste of money, but what's worse, unnecessary medication turnover also contributes to water contamination, which is becoming an increasingly troublesome concern.

You're Probably Drinking Someone Else's Drugs...
The federal government advises throwing most unused or expired medications into the trash rather than flushing them down the toilet, but water testing across the US shows that no matter how the drugs are disposed, they have a tendency to end up in water. For example, a 2008 Associated Press investigation found that the drinking water of at least 51 million Americans contained minute concentrations of a multitude of drugs:
• Philadelphia tested positive for 56 pharmaceuticals or byproducts in treated drinking water, including medicines for pain, infection, high cholesterol, asthma, epilepsy, mental illness and heart problems. The city's watersheds tested positive for 63 different medications or byproducts.
• Southern California drinking water had detectable levels of anti-epileptic and anti-anxiety medications
• A metabolized angina medicine and the mood-stabilizing carbamazepine was found in drinking water in Northern New Jersey, and
• San Francisco's drinking water was found to be laced with a sex hormone

Flushing expired medications down the toilet is not the only way these drugs enter the water supplies. When you take a drug, you also eliminate a fraction of it and/or its byproducts through your urine. Drugs have also been detected in the water at landfills, confirming suspicions that pharmaceuticals thrown into household trash still end up in our water supplies. Water that drains through landfills, known as leach rate, eventually ends up in rivers. And although not all states source drinking water from rivers, many do.

In addition to the chlorine, fluoride and disinfection byproducts (DBPs) this is yet another powerful reason to avoid drinking tap water unless it is filtered.

The federal government does not require water treatment plants to test for drugs, and there are no safety limits for drugs in water. Making matters worse, standard water treatment does NOT filter out drugs. It's also important to realize that bottled water is oftentimes nothing more than tap water, which may or may not have received additional treatment, and bottlers typically do not screen for pharmaceuticals in the water either. Many home filtration systems are similarly untested in terms of their ability to filter out drugs. According to a comprehensive survey of U.S. drinking water, 10 of the most frequently detected toxic pharmaceuticals overall were:

• Atenolol, a beta-blocker used to treat cardiovascular disease
• Atrazine, an organic herbicide banned in the European Union which has been implicated in the decline of fish stocks and in changes in animal behavior
• Carbamazepine, a mood-stabilizing drug used to treat bipolar disorder
• Estrone, an estrogen hormone secreted by the ovaries and blamed for causing gender changes in fish
• Gemfibrozil, an anti-cholesterol drug
• Meprobamate, a tranquilizer used in psychiatric treatment
• Naproxen, a painkiller and anti-inflammatory linked to increases in asthma incidence
• Phenytoin, an anticonvulsant used to treat epilepsy
• Sulfamethoxazole, an antibiotic
• TCEP, a reducing agent used in molecular biology
Water Quality Matters!
Contamination surveys such as those by the US Geological Survey (USGS), can help us realize just how intimately connected we are with our environment, and how everything we do (and don't do) impacts that environment and boomerangs right back at us... We literally live in a sea of chemicals these days, and it is certainly not doing your health any good.

Trace amounts of more than 150 different human and veterinary medicines have been detected in environments.

According to the USGS, 80 percent of the streams in the US, along with nearly 25 percent of the nation's groundwater is contaminated with a variety of pharmaceuticals. The drug industry, while admitting that pharmaceuticals are clearly contaminating water supplies, maintains that the levels are too low to cause any harm. Yet, it's known that drugs in waterways can harm fish and other aquatic species, and laboratory studies show human cells do not grow normally when exposed to even trace amounts of certain drugs.

Other potential concerns include:

- Some people are now exposed to traces of multiple drugs at one time, in addition to other harmful metals and chemicals in their water. Subsequently, people may be exposed to combinations of drugs that should not be combined
- Many drugs in the water supply are known to have dangerous side effects when taken in normal prescription doses
- Drugs that were only intended for external application will now be ingested and vice versa
- Some individuals are allergic to drugs found in the water supply
- Pregnant women are also being exposed to drugs that could potentially harm an unborn child

Besides the health risk to humans, drug-tainted water also has an ecological impact, contributing to mass bird die-offs and promoting antibiotic-resistant pathogens. A previous article in Environment360 describes just how devastating pharmaceutical contamination of the environment can be:

"The popular anti-inflammatory and arthritis drug, diclofenac... is used in both human and veterinary medicine. In India, farmers started dosing their cows and oxen with the drug in the early 1990s to relieve inflammation that could impair the animals' ability to provide milk or pull plows. Soon, about 10 percent of India's livestock harbored some 300 micrograms of diclofenac in their livers.

When they died, their carcasses were sent to special dumps and picked clean by flocks of vultures. It was an efficient system, for unlike feral dogs and plague-infested rats, South Asia's abundant vulture population – estimated at more than 60 million in the early 1990s – carried no human pathogens and was resistant to livestock diseases such as anthrax. But vultures who fed on the treated carcasses accrued a
dose of diclofenac of around 100 micrograms per kilogram. A person with arthritis would need 10 times that amount to feel an effect, but it was enough to devastate the vultures.

Between 2000 and 2007, the South Asian vulture population declined by 40 percent every year; today [2010], 95 percent of India's Gyps vultures and 90 percent of Pakistan's are dead, due primarily to the diclofenac that scientists have found lurking in their tissues.

South Asian and British scientists who experimentally exposed captive vultures to diclofenac-dosed buffalo found that the birds went into renal failure – scientists still don't know why – and died within days of exposure. As the vulture population has declined, the feral dog population has boomed, and the Indian government's attempt to control the rabies they carry has started to flounder.”

Safer Ways to Dispose of Unused Drugs
In response to what has become an obvious problem, some states have introduced "take-back" programs, which are, not surprisingly, being opposed by the drug industries. You can learn more about local efforts on takebacknetwork.com. To give you an idea of just how many drugs are discarded, the fourth DEA-led National Prescription Drug Take-Back initiative held this past summer collected a staggering 276 tons of unwanted or expired medications! The four annual events have, in total, collected over 774 tons of drugs, which might otherwise have been flushed down the toilet or discarded into landfills, or been otherwise misused.

The FDA released new guidelines last year for "safely" disposing of drugs:

Follow any specific disposal instructions on the drug label or patient information that accompanies the medication. Do not flush prescription drugs down the toilet unless this information specifically instructs you to do so. [I would recommend never flushing ANY drug down the toilet, to protect your community’s water quality]

• Take advantage of community drug take-back programs that allow the public to bring unused drugs to a central location for proper disposal. Call your city or county government’s household trash and recycling service (see blue pages in phone book) to see if a take-back program is available in your community. The Drug Enforcement Administration, working with state and local law enforcement agencies, is sponsoring National Prescription Drug Take Back Days throughout the United States.

• If no instructions are given on the drug label and no take-back program is available in your area, throw the drugs in the household trash, but first:
  o Take them out of their original containers and mix them with an undesirable substance, such as used coffee grounds or kitty litter. The medication will be less appealing to children and pets, and unrecognizable to people who may intentionally go through your trash.
  o Put them in a sealable bag, empty can, or other container to prevent the medication from leaking or breaking out of a garbage bag.
• Remove and destroy any prescription labels before throwing away the containers.
• In some states, pharmacies can take back medications. When in doubt, you should ask your pharmacist for advice. Most are very well trained and educated professionals who will be glad to assist you in this area.

Of course, some of these suggestions merely move the environmental peril from one place to another – such as diluting medicines in water and mixing them in garbage that eventually ends up in a landfill near you anyway. The best way to reduce environmental drug pollution is also the simplest and most obvious – *Take Control of Your Health* by cutting down the number of drugs you take in the first place.

Of course, to curb the pollution problem drug use will also have to be greatly reduced among livestock and other animals in our food supply, so do your part by supporting organic agriculture, in which animals are not permitted to be treated with antibiotics and other drugs.

Also remember when you are drinking tap water you are consuming drugs that your community has been using in addition to chlorine and fluoride and disinfection by products. This is a very powerful reason to avoid drinking tap water unless it is filtered.

[+] Sources and References

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