

NIH News in Health

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Making a Healthier Home Cast Toxins From Your Living Space

Take a look around your home. Do you know what's in your household goods and products? Some chemicals can harm your health if too much gets into your body. Becoming aware of potentially harmful substances and clearing them out can help keep you and your family healthy.

"There's a range of chemicals that you can be exposed to in your home, generally at very low levels," says Dr. Andrew Rooney, a toxicology and risk expert at NIH. Possible toxic substances can be found in building materials, cookware, cleaning products, shower curtains, furniture, carpet, and other common items.

Not all chemicals are harmful. In fact, most substances in our environment are likely safe, explains Dr. Heather Patisaul, a neuroscience and toxicology expert at North Carolina State University. "Only a small subset is probably toxic," she says. "Although that's worrisome, there are many simple things you can do to help minimize your exposure."

Often, it's how much you're exposed to that can make a chemical harmful. The amount that's "safe" varies for each substance. NIH-funded researchers are working to learn more about how chemicals in the environment can affect our health, so we can better address any issues.

Sometimes it's obvious when a chemical is hazardous. You may get

a rash from spilling a household cleaner on your skin. Or you may start coughing when you breathe in irritating fumes. To avoid known health risks, be sure to read the instructions carefully on your household products, and follow any safety precautions.

Some toxic chemicals cause no immediate or clear symptoms. Lead, for example, is well known for its poisonous effects. Generally, the more lead you have in your body, the more likely you'll have health problems. Lead can cause high blood pressure, fertility problems, muscle and joint pain, and memory and concentration problems. As a result, lead is no longer allowed in paints, gasoline, and cans used for food. But lead can still be found in lead-based paint used in older homes, household dust, and drinking water pumped through leaded pipes.

"The best way to protect yourself from the health effects of lead is not by treatment but rather by preventing exposure," Rooney explains. If you live in an older home, check with your local health department about any lead that may be in the paint, dust, or drinking water. Local experts can guide you in steps you can take to prevent lead exposure.

Young children are more vulnerable to lead and many other chemicals. That's because their bodies and brains are still developing. Kids can also be exposed to toxins from nor-



mal childhood behaviors, like playing on the floor and putting their toys or hands in their mouths.

"Chemicals can come out of our products and end up in the air and dust in the home, where they can enter your body," says Dr. Ami Zota, an environmental and public health expert at George Washington University. Her team recently discovered 45 different chemicals that are commonly found in indoor dust. Many of the identified chemicals belong to a group called "endocrine disruptors."

When endocrine disruptors get into your body, they can mimic or block the natural **hormones** your body makes. Evidence suggests that endocrine disruptors might reduce fertility, raise the risk for some can-

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Definitions

Hormones

Molecules sent through the bloodstream to signal another part of the body to react a certain way.

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cers, or cause other harms. These chemicals may pose their greatest health risks when people are exposed in the womb or during their first few years of life, when hormones are guiding development of the body's organs and brain.

Substances thought to cause endocrine disruption include certain fragrances, pesticides, and stain-resistant coatings. NIH-funded researchers study the health effects of several types of chemical classes tied to hormone disruption, including phthalates (pronounced THAL-ates), PFCs (or perfluorinated chemicals), and flame retardants.



Wise Choices Keep Indoor Spaces Healthy

To reduce potentially toxic substances in your home:

- Clean with "Safer Choice" or non-toxic products.
- Dust using a damp rag.
- Use a wet mop to clean floors.
- Vacuum with a high-efficiency particulate air (HEPA) filter.
- Open a window or use a fan to improve air circulation when you're cleaning.
- Have and maintain a good ventilation system in your home.
- Wash your hands and your children's hands often.

Phthalates are a family of man-made chemicals used to make plastics, cleaners, and fragrances. The human health effects of phthalates are not yet fully known but are being studied by several government agencies, including NIH. In animals, phthalate exposure has been linked to many reproductive health and developmental problems. To reduce your exposure, read product labels and avoid using products that contain phthalates. Some—but not all—phthalate-containing products might be clearly labeled: "contains phthalates." But sometimes phthalates might be listed as a 3- or 4-letter abbreviation, such as BBP, DBP, or DEP. These phthalates must be listed among the ingredients on product labels, unless they are added as a part of the "fragrance."

"Many hundreds of chemicals can be classified as fragrance," Patisaul explains. "So when you use a cleaner with a scent, it probably has some phthalates in it—even though the label doesn't specifically say phthalates." You can look for "fragrance-free" products. The U.S. Environmental Protection Agency (EPA) also provides the "Safer Choice" label, which is used on products made with ingredients that are safer for human health and the environment.

PFCs are widely used to make everyday products more resistant to stains, grease, and water. They can be found in nonstick cookware, stain-resistant sofas and carpets, and water-proofed clothing and mattresses. In animal studies, some PFCs disrupt



Web Links

For more about reducing toxins at home, click the "Links" tab at:
newsinhealth.nih.gov/issue/Dec2016/Feature1

normal hormone activity, reduce immune system function, or cause developmental problems. Some evidence suggests that certain PFCs may also affect human health, with possible ties to low birth weight, obesity, and testicular and kidney cancers.

Certain PFCs, like those used to make Teflon, are being phased out of use in the U.S. But some older household items, like nonstick pans, may still contain them. If you have an older nonstick pan that is dinged and worn out, try to replace it.

Flame retardants are added or applied to materials to slow or prevent a fire. But a growing body of evidence links many of these chemicals to negative health effects in animals and humans. Flame retardants can be found in foam, upholstery, mattresses, carpets, curtains, and fabric blinds. Flame retardant use has been declining in recent years. But these chemicals are still found in some products. When buying new items, especially for children, try to purchase furnishings filled with cotton, polyester, or wool, instead of polyurethane foam.

"The best thing is to become aware that there are chemicals in your environment, and there are very simple things that you can do to lower your exposure," Patisaul says.

Chemicals are everywhere, and most are harmless. Limiting the potentially toxic ones in your day-to-day life can help you create a safer, healthier home.

Learn what's in the products you purchase, and make informed decisions. You can also take steps to get rid of risky chemicals by keeping the dust down in your house. See the Wise Choices box for some useful tips. ■

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Tai Chi and Your Health

A Modern Take on an Ancient Practice

You may have seen the flowing postures and gentle movements of tai chi and wondered what it's all about. Tai chi is an ancient mind and body practice. While more research is needed, studies suggest that it may have many health benefits.

Tai chi is sometimes referred to as "moving meditation." There are many types of tai chi. They typically combine slow movements with breathing patterns and mental focus and relaxation. Movements may be done while walking, standing, or sitting.

"At its root, tai chi is about treating the whole person and enhancing the balance and crosstalk between the body's systems," says Dr. Peter Wayne, a longtime tai chi researcher at Harvard Medical School. "It's a promising intervention for preserving and improving many areas of health, especially in older adults."

Several studies have found evidence that tai chi can increase balance and stability in older people and reduce the risk and fear of falls. Each year, more than 1 in 4 older adults falls, and 1 out of 5 of these falls causes a serious injury such as broken bones or a head injury.

"Trying to be careful can make you more prone to falls," Wayne says. "Tai chi may help you move more confidently and safely again." Some NIH-funded research suggests that tai chi may also improve balance and prevent falls in people with mild-to-moderate Parkinson's disease.

Research suggests that practicing tai chi might help improve posture and confidence, how you think and manage emotions, and your quality of life. Studies have found that it may help people with fibromyalgia sleep better and cope with pain, fatigue, and depression. Regular practice may also improve quality of life and mood in people with chronic heart failure or cancer. Older adults may find that tai chi can help improve sleep quality and protect learning, memory, and other mental functions.

Further study will be needed to fully evaluate and confirm the potential benefits of tai chi. But since the practice involves moving slowly and mindfully, there's little chance of harm when done correctly.

"Whether you're interested in trying tai chi to help with a chronic health issue or the stresses of everyday life, tai chi—if taught properly—can be a great complement to other ways of healthy living and rehabilitation," Wayne says. "I think we're all looking for tools to help us live productive, long lives with a little more grace and ease."



There are different styles and ways to practice tai chi, Wayne says. If you're interested in trying it, you can start simply. For instance, try standing behind and holding onto a sturdy chair for support, then mindfully rock back and forth to build awareness of all the parts of your body and their connections. Eventually, you might move on to practice more complex movements or sequences.

Want to learn more? Read the Wise Choices box to consider whether tai chi might be right for you. And watch NIH's online tai chi videos at nccih.nih.gov/video/taichidvd-full. ■



Web Links

For more information about tai chi, click the "Links" tab at: newsinhealth.nih.gov/issue/Dec2016/Feature2



Wise Choices Is Tai Chi Right for Me?

- Talk with your health care provider about your physical activity and limits. Ask whether tai chi might be a good option for you.
- Look for classes based on your age and health. Some classes may be geared toward college students and stress management; others may be designed for folks over age 60 with particular medical conditions.
- Observe several teachers and classes to find a fit for you. There are different teaching styles, levels, and ways to practice tai chi.
- Don't be discouraged if you can't do all the movements. Think about the potential health benefits, and try to be patient with yourself. Everyone has to start somewhere!



Health Capsules

For links to more information, see these stories online:
newsinhealth.nih.gov/issue/Dec2016/Capsule1

Oxygen Therapy for Patients with COPD

Certain people with the lung disease known as COPD will not benefit from long-term oxygen therapy, a new study reports. The finding will help doctors and patients choose among different treatment options for this common condition, which makes it hard to breathe.

COPD, or chronic obstructive pulmonary disease, is the third-leading cause of death in the U.S. The disease damages the lung's airways, so less air can be breathed in and out. As a result, less oxygen can pass through the lungs and into the blood, and blood oxygen levels drop.

COPD symptoms—like coughing, wheezing, and breathlessness—get

worse over time. Treatment options include lifestyle changes, such as quitting smoking, and medicines that help open the airways.

Long-term oxygen therapy has been shown to help COPD patients who have severely low blood oxygen. This therapy involves breathing in oxygen through a nasal tube or mask.

NIH-funded scientists set out to determine if this same treatment would also help COPD patients who had moderately low blood oxygen. More than 700 such patients enrolled in the study. They were randomly divided into 2 groups: one received the oxygen treatment; the other didn't.

Participants were followed for 1

to 6 years. The researchers saw no differences between the treated and untreated groups in terms of their survival, symptoms, or quality of life.

"These results provide insight into a long-standing question about oxygen use in patients with COPD and moderately low levels of blood oxygen," says Dr. James Kiley, a lung disease expert at NIH. "For the most part, this treatment did not improve or prolong life in study participants."

People with COPD should speak with their health care providers about treatment options. ■

When Clinical Research Is in the News

Have you ever heard that something, like a gene or toxin, can cause disease? Or that a drug can prevent illness? How about a behavior, like too much sitting, that's "linked" to health problems? Such news reports are often based on some type of clinical research, which is the study of health and illness in people.

There are many types of clinical studies. Each has its own strengths and weaknesses. Knowing more about the different types can help you think critically about the health and research news you see and hear.

NIH has developed a new one-page guide, *Why Do Researchers Do Different Kinds of Clinical Studies?*, that outlines different types of clinical studies and explains why scientists

might use them. The guide notes that a study's strength depends on its size, methods, and design.

The ideal way to prove that a treatment works is through a well-designed "randomized controlled trial." In such trials, people are randomly assigned to either a "treatment" or a "control" group for comparison.

Other clinical studies involve observing people to find associations or links. For instance, a "cohort study" may follow many people over time to learn how a disease arises and find possible risk factors. These observational studies can find "links" but can't prove the cause of disease.

See the one-page clinical research guide, in both English and Spanish, at newsinhealth.nih.gov/issue/Dec2016/Capsule2. ■

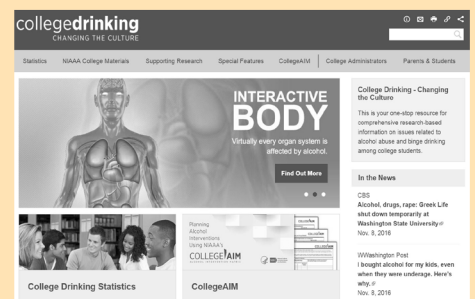


Featured Website

College Drinking:
Changing the Culture

www.collegedrinkingprevention.gov

Want to help prevent student drinking? Get research-based information related to alcohol abuse and binge drinking among college students. This updated website offers resources for students, parents, teachers, and college administrators about alcohol myths, its effects on the body, and getting help for problem drinking.



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