

Toxins in the Home & Non-Toxic Alternatives

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The Problem: Chemicals in the Home

Addressing the issue of harmful chemicals in the home is a very important part of living a holistic lifestyle. Unfortunately, it's also an incredibly wide topic, which makes it very difficult to thoroughly explore. The fact is, our culture's drive for convenience has given rise to a whole host of health complications, some of which are only now coming to light after decades of exposure to chemicals that we "didn't know" were harmful. And of course, we don't know how many more unfortunate discoveries we're going to see in the future...

The most sensible way to approach the subject of toxicity in the home is from the angle of the "Precautionary Principle" as stated in the Seventh Generation guidebook *Naturally Clean*:

When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically.

It may seem rather commonsensical to people interested in natural and preventive health, but this is a revolutionary idea, especially when aimed at industry and the economy. Unfortunately, in the United States, we've got a long and deep history of doing whatever we please until someone proves that what we're doing is not healthy, not benign. This mindset has propelled us into the present day where there are 80,000 different chemical compounds now in use all around us with less than 10% of them tested for safety! And what is the result? Are we any safer or healthier than we were before all these chemicals made their way into our lives? Or, from a different angle, are we less safe and sicker than we used to be? Well, here is an interesting list of figures:

- 40% of all Americans will get some form of cancer during their lifetimes.
- Women who work in the home have a 55% higher risk of developing cancer and/or chronic respiratory disease than women working outside the home.
- In recent years, over two million household poisonings have been reported annually.
- The average sample of breast milk produced by women in the U.S. contains over 100 contaminants. Some 25% of the breast milk supply is now so laden with toxic foreign substances that if bottled and sold, it would violate federal food safety regulations!
- Between 1986 and 1995 the incidence of endocrine and chronic metabolic diseases like diabetes increased 20%.
- From 1980 to 1994 the number of people with asthma increased 75% and the number of children under four with the disease rose by 160%.

- Allergies are now causing Americans to make 17 million physician visits each year and spend approximately \$6 billion a year in allergy-related costs.
- In various surveys, 15-30% of American (44 to 88 million people) report unusual reactions – in the form of headaches, skin rashes, coughs, breathing difficulties, ringing ears, etc. – to common chemicals such as those found in detergents, perfumes, solvents, pesticides, medications and foods.

There's no doubt that the state of our health is declining, and rapidly. The sad fact is that we are surrounded by toxic chemicals and substances everywhere we turn from the most metropolitan home to the farmstead. It behooves all of us to increase our awareness of what makes for a non-toxic home. Let's walk through a list of some of our most common diseases and see how they are related to our use of chemicals in the home. Then, having swallowed that jagged little pill, we'll move toward what to do about it.

Household Chemicals & Cancer

Cancer of some form or another now strikes 1.3 million people each year and claims about 550,000 lives. According to *Naturally Clean*, 44% of all men and 39% of all women will confront cancer at some point in their lives. These numbers represent a 56% and 22% increase over the same statistics just a generation ago. More people are getting cancer today than in the past. In fact, overall, in the last 30 years, the national incidence of cancer has risen a huge 24%.

Some organizations claim that the “fight against cancer” is almost won and that cancer rates are declining, that we're actually seeing fewer and fewer cases. Well, we're seeing less smoking-related lung cancer (because fewer people are smoking today), and we've gotten better at screening and detecting cancer, which helps. But, what of other kinds of cancer? Within the last generation, we have seen:

- a 156% increase in the rate of malignant melanoma
- a 104% increase in liver cancer
- an 87% increase in non-Hodgkin's Lymphoma
- a 71% increase in thyroid cancer
- a 67% increase in testicular cancer
- a 51% increase in post-menopausal breast cancer
- a 28% increase in brain cancer
- a 16 percent increase in acute myeloid leukemia
- a 26% increase in childhood cancers

Those are increases, not decreases! We have more hospitals, doctors, health organizations, medications, surgeries and medical awareness than ever before in history and yet these numbers – and others related to other diseases – are *climbing*! Could exposure to chemicals be responsible for all this cancer? I think it's inappropriate to blame every non-smoking cancer on chemicals and environmental toxins, but I certainly think our chemical world has played a large part in this.

What's very interesting, as noted in *Naturally Clean*, is that if you put a chart detailing rising cancer incidences from 1940 onward over a chart illustrating our increasing use of chemicals over the same time period, you'd see a startling parallel.

When the International Agency for Research on Cancer suggests that 80% of all cancers are attributable to environmental influences, including the chemicals used in household cleaning products, you have to pay attention. Even the Environmental Protection Agency (EPA) released studies that showed that the populace is being exposed to surprisingly extreme levels of carcinogenic substances in their homes. Some of these cases were found to be 5 to 70 times higher than the highest outdoor levels.

Household Chemicals & Asthma

More people have asthma than ever before, especially children. In fact, today, asthma is the leading chronic illness of childhood affecting nearly 1 in every 13 children. This accounts for 14 million missed school days each year and \$3.2 billion in treatment expenses. Of course, adults are affected, as well. Some 7.5% of all adults have asthma, too. That's about 16 million people sick and \$9.5 billion in extra health care costs.

Where is this problem coming from? Car exhaust, factory emissions, mold, dust mites, cockroach wastes, tobacco smoke, even global warming, because apparently, "bad-air days" are increasing and some molds thrive and prosper because of them. Of course, chemicals play their part as well. *Naturally Clean* cites the following facts:

- An investigation of childhood asthma at Princess Margaret Hospital in Perth, Australia, found that exposure to certain common volatile organic compounds is linked to a higher incidence of asthma.
- A study of 4,521 women conducted at the Municipal Institute of Medical Research in Barcelona, Spain, found a strong correlation between asthma and employment as professional cleaners and attributed 25% of the reported cases of the disease to this work.
- A Michigan State University study of work-related asthma cases in 4 states discovered that 12 percent were strongly associated with exposure to cleaning products.
- Children with early persistent asthma are ten times more likely to have been exposed to herbicides during their first year of life than children without asthma.

Household Chemicals & Hormone Disruption

The connection between chemicals in household cleaners and hormones in the human body is a relatively new one. Scientists have discovered, according to a host of recent studies, that many common synthetic substances have the ability to mimic hormones in the body.

Why is this significant? Because hormones are the body's messengers. They tell the different systems, organs, and cells of the body what to do and when to do it. Hormones are also cell-

specific. Certain receptor sites of a cell can only be “unlocked” (if you will) by a specific hormone. Hormones are also very, very powerful substances usually measured in parts per trillion in the bloodstream. Hormones even have a thermostat-like ability to turn themselves off. This is a necessary thing; too much of any given hormone in the body could cause harmful effects.

Well, researchers have discovered that many chemicals in household cleaners and personal care products have molecular shapes that are very similar to the shape of some hormones. This means that these chemicals can fit into a hormone’s slot in a cell, and once in place, these hormone imposters can either prevent real hormones from attaching or they can actually deliver the wrong message to the cell, which can’t tell the chemical from the hormone. The result is that bodily functions that are supposed to happen, don’t, or they occur at the wrong times.

This is called hormone disruption or endocrine disruption. It isn’t, strictly speaking, a disease, but it is certainly an underlying cause of diseases like cancer, reproductive problems and developmental disorders. So, you probably won’t see numbers saying that endocrine disruption is rising or falling. Rather, we need to recognize that this is a condition lurking behind the scenes, so to speak, and that it’s important to read between the lines when looking for the cause of certain diseases.

Hormone disruption is also an extremely new area of medical study that only just surfaced in the last few years. For the most part, the scientific community hasn’t yet identified what precise effects hormone imposters are causing in humans. Instead, most of the available research to date has focused on which chemical compounds demonstrate an ability to pose as hormones and the effects that these substances have on animals. For example:

- The number of fish with both male and female characteristics is on the rise. Researchers cite sewage released into rivers as the culprit. The sludge contains alkyl phenol ethoxylate, a potent estrogen-like chemical commonly found in household detergents. Scientists have linked this chemical to the birth of fish that are half-male, half-female.
- That same surfactant, alkyl phenol ethoxylate, has been found to break down in the body into p-nonylphenol, an endocrine disruptor.
- Phthalates, a group of compounds used in PVC and other plastics, perfumes, hairsprays, lubricants, wood finishes, medical supplies, footwear, flooring, inks, product packaging, food wrap, and children’s products, have been found to interfere with the hormones estrogen and androgen.
- Malathion, a common insecticide used in public insect control programs, consumer pest-control products, and head lice treatments has been found to interfere with thyroid functioning.

Household Chemicals & Multiple Chemical Sensitivities

In the 1980s, the industrialized world produced a new medical condition called Multiple Chemical Sensitivities (MCS). Also known as “chemical sensitivities” or “environmental illness,” it has widely varying, usually extreme symptoms that make it hard to concretely associate with any

particular cause. In fact, MCS was so unusual, that in the beginning, many physicians dismissed it outright, thinking it was misdiagnosis or that the patient was simply a hypochondriac.

Today, enough people have stepped forward with this particular condition that it is no longer something that can be written off. It still isn't very well understood, but it has been more or less legitimized.

Typical symptoms include prolonged fatigue, memory difficulties, dizziness, lightheadedness, difficulty concentrating, depression, lethargy or grogginess, loss of motivation, feeling tense or nervous, shortness of breath, irritability, muscle aches, joint pain, headaches, head fullness or pressure, chest pains, difficulty focusing the eyes, and nausea.

There do seem to be two stages to MCS. The first is called the *onset stage* and this is when the disease is initiated by either a single high exposure to a certain chemical or by repeated low-level exposure to chemicals in everything from cleaners to carpets. The second phase, called the *chronic phase*, begins after these initiating exposures and the ongoing symptoms are then triggered by extremely *low* exposures to any number of chemicals that may or may not include the chemical that originally caused the condition.

Of course, not everyone exposed to chemicals ends up with MCS and researchers still don't know why some people respond to severely and others do not. An estimated 14.7 million people in the U.S. have been diagnosed by physicians as being especially sensitive to chemicals, but there may very well be more and this number may rise both with better screening and time.

The Plight of Children: Why They Have the Biggest Risk

You might think that children and grown-ups alike are exposed to the same amount of chemicals and toxins and that we bear an equal risk of negative consequences as a result of exposure. However, this is far from the truth. The National Academy of Sciences has estimated that 25% of developmental and neurological deficits in children can be traced to the interaction between synthetic chemicals and genetic factors and that 3% are triggered by chemicals alone.

Naturally Clean suggests 4 top reasons why the risk to children is greater than to adults.

1. **Children experience greater exposures to household toxins on a bodyweight basis.** Pound for pound, they drink more water, eat more food, and breathe more air (believe it or not) than the average adult. Whenever a home's water, food or air is contaminated by chemicals, the children living there will experience significantly greater exposures than the adults.
2. **Children live and play where much of the toxic action is and their instinctive behavior magnifies this risk.** The younger they are, the closer they are to the ground where many household pollutants tend to settle. Floors are like toxic sinks that concentrate chemical poisons. They collect vapors, dust, traces of cleaners, etc. Add to that the habit kids have of putting things in their mouths and there is a high risk of exposure to toxicity and contamination.

3. **Children are still growing.** Their bodies are constantly changing and developing at an often rapid pace. Such growth can be disrupted by exposure to common cleaning chemicals. Adding to this concern is the fact that children's detoxification and immune systems are also still developing and as a result, their bodies are neither able to process and remove toxins nor defend against them as effectively as adults.
4. **Children have more of their life ahead of them than adults.** This means that kids have more time than adults to acquire illness and disease as a result of exposure to toxic chemicals. Some such ailments can take decades to emerge; children have a much longer future ahead of them for cancer, hormonal disruption, asthma, mental dysfunction or other problems to take root.

Researchers studied 14,000 children from birth to age three and a half and found that children born into the top ten percent of families using the most cleaning products during pregnancy were more than twice as likely to suffer from wheezing as children born into those families who had used the fewest.

Specific Chemical Enemies

It's valuable to know how and why chemicals in the home can be so toxic to our health. But to translate this information into practical use, we need to explore some of the most common chemical "enemies" that surround us.

POPs: Let's start with POPs. POP is an acronym for Persistent Organic Pollutant. The United Nations uses this label, but the U.S. doesn't. Rather, it chooses to use the term PBT which means Persistent, Bioaccumulative and Toxic. These two titles – POP and PBT – are practically interchangeable and the same chemicals appear on both lists.

POPs include many pesticides, household and industrial chemicals and by-products of a variety of manufacturing and waste incineration processes. To "earn" designation as a POP, a chemical must:

- Persist in the environment
- Build up in body fat and accumulate in ever higher levels as it migrates up the food chain (also known as bioaccumulation)
- Travel efficiently in the atmosphere and global waters
- Be linked to serious hormonal, reproductive, neurological and immune disorders.

Because POPs tend to be both bioaccumulative and highly toxic, their presence in our bodies is one of the most important environmental health issues of our time. And it's important to remember that you won't look on a bottle of cleanser and see "POPs" as one of the ingredients. Any chemical ingredient that meets the four criteria mentioned above is concerned a POP.

Surfactants: A surfactant is a modern kind of soap. It's essentially a molecule with two ends that are often referred to as a head and a tail. The head is attracted to and dissolves in water and the tail is attracted to and dissolves in oils and fats. Surfactants literally make oil and water mix and this is why they are used so successfully and so often in cleaning products.

Most of the surfactants made today are derived from petroleum, and while these because they cheap to produce and leave very little film behind, they are terrible for the environment. They are very persistent which is a big problem because they also can cause hormonal disruption and other illnesses in animals and people. So, they stick around a long time and can cause a lot of damage because of it.

Vegetable-based surfactants are on the rise and are a step in the right direction, because they're made from biodegradable ingredients. However, most of them, according to *Naturally Clean*, use a small amount of petroleum material to increase their effectiveness.

Surfactants are in almost every kind of cleaning product because they're the primary ingredient responsible for doing the actual cleaning! These products include:

- Laundry detergents
- Dishwasher detergents
- Dishwashing liquids
- All-purpose and hard surface cleaners
- Window cleaners
- Toilet bowl cleaners
- Bath and shower cleaners
- Floor cleaners
- Carpet and upholstery cleaners

Solvents: Solvents are chemicals used to dissolve or disperse other materials, especially fats, oils and greases. They're often called degreasers because they can remove just about everything from sticky label residue to engine oil. There are hundreds of different kinds of solvents used in over 30,000 commercial combinations.

Most solvents evaporate easily, so they're added to household cleaning products to help speed drying time.

Solvents are among the most toxic components of a typical product formula. In addition to being severe eye, skin, and mucous membrane irritants, the majority of solvents can damage the neurological system, the liver, the blood, the lungs, and the kidneys. In general, exposure happens when people breathe in the vapors.

Unfortunately, solvents remain largely hidden in product formulas and their presence often cannot be directly confirmed by reading labels. However, the following types of cleaners often contain solvents:

- Oven cleaner
- Paint removers and strippers
- Degreasers
- All-purpose cleaners
- Furniture, floor and metal polishes

- Glass cleaners
- Spot removers
- Air fresheners and odor removers

Volatile Organic Compounds (VOCs): VOCs are carbon-based chemicals that form vapors at room temperature; they're very easily evaporated into the air in our homes. VOC fumes come from primarily two sources: from synthetic materials like foams and plastics (called off-gassing) and from the use of toxic cleaning products. There are hundreds of different VOCs capable of causing everything from neurological and organ damage to cancer.

As a general rule, if you're smelling something, you're smelling a VOC. Fragrances, for example, are always composed of VOCs whether they're natural or synthetic. Similarly, the strong scents that come from many glass and surface cleaners are VOCs escaping from their in the form of gasses.

Synthetic Dyes: These are used to give products a nice color. There are approximately 1,200 dyes used to color household products, the bulk of which are chemical derived from either petroleum or coal tars, which are carcinogenic. Coal tar colors can contain a variety of toxins, including benzene, xylene, naphthalene, phenol and creosol. Synthetic dyes are often irritants and many are resistant to biodegradation and are highly toxic to aquatic life.

Synthetic Fragrances: These are used to make things smell good; they're completely aesthetic and play no role in the actual function of the product. With the exception of natural cleaning products, virtually all scented household cleaners use artificial scents because they are cheap to produce.

A recent government report targeted synthetic fragrances as one of the six categories of chemicals that should be given the highest priority for neurotoxicity testing. Eighty-four percent of the ingredients used in fragrances have never been tested for human toxicity or have had only minimal testing. In a list of 2,983 chemicals used by the fragrance industry, the National Institute of Occupational Safety and Health reported that 884 toxic substances were identified as capable of causing breathing difficulty, allergic reactions, MCS and other serious problems, including neurological damage.

Optical Brighteners: These are chemicals added to laundry detergents to make fabrics seem brighter or whiter. In truth, the clothes aren't any cleaner. Rather, these chemicals are engineered to remain behind on your clothing and to then convert ultraviolet light into visible light. In this way, optical brighteners simply create an optical illusion. They coat the surface of the clothing with fluorescent particles that act like tiny mirrors and these reflect visible light outward. The result is that clothes appear more effectively cleaned even though they're not.

You can look for the presence of these particles by seeing if your clothing glows under a black light.

Many optical brighteners are derived from benzene, a highly toxic compound. They don't readily biodegrade and they're toxic to fish and wildlife. In addition, they can cause allergic reactions when they come into contact with skin that is then exposed to sunlight.

Inerts: These are the "other" ingredients listed on most household chemicals. This classification is highly misleading, however, because these so-called inerts are quite often anything but. They're labeled "inert" not because they're harmless, but simply because they're not considered chemically active in the intended function of the product. Inert ingredients are added to products as buffering agents, solvents, preservatives, dispersal agents and carriers, wetting agents, fillers, and to stabilize, dispense and increase the potency, effectiveness and ease-of-use of the product.

Once the inerts get into the human body, they become quite active. Of the approximately 1,400 chemicals the EPA allows manufacturers to call "inert," 40 are known carcinogens and/or neurotoxins and 64 are believed to have the potential to cause these and other health effects. That may seem like a small number until you realize that the vast majority of inerts have never been studied; we simply don't know whether they're hazardous to our health or not.

Perfluorchemicals: You know these better as Teflon and Scotchgard – non-stick materials based on a class of compounds called perfluorochemicals or PFCs. PFCs are truly unique. They're resistant to chemicals and heat, virtually nothing sticks to them, and they don't absorb anything. They are, therefore, perfect for cookware, upholstery, food packaging, appliances, clothing and lots of other products from shampoo to floor wax.

Of course, the problem with the chemicals in this class is that they are nonbiodegradable. In fact, scientists think that they may be the most persistent manmade chemical ever created. They may very well last forever.

Fifteen PFC-related chemicals have been detected in human blood and tissues. That's every single PFC for which researchers have so far tested, meaning, all of the PFCs they've looked for in human blood, they have found. This contamination is so widespread that it appears to be nearly universal. A study conducted by Scotchgard maker 3M, for example, checked the blood of 598 children from 23 states and the District of Columbia and found a PFC-related chemical in 96% of the tested samples! Scientists estimate that 90% of the American population has some level of PFC contamination.

Now, evidence suggests that PFCs have a half-life of 4.4 years in the human body, meaning that after 4.4 years, the amount of PFCs in the blood and body tissues should be reduced by 50%. After another 4.4 years, the remaining 50% should be reduced by half again, etc. But this assumes that there's no additional exposures to PFCs which is incredibly unlikely. Therefore, there's apparently no way to be PFC-free!

A large problem with PFCs is that they are entirely unregulated. Approximately 660 tons of a chief PFC called PFOA are produced every year in the U.S. And yet, the chemical has been linked to testicular, pancreatic, breast, liver and bladder cancer. It's also a known hormonal disruptor and can damage the thyroid gland, disrupt the immune system and can cause reproductive and developmental problems like low birth weight, decreased growth and birth defects.

Phthalates: This is actually a group of compounds which researchers are pegging as at least partially responsible for a variety of serious childhood ailments. Phthalates are widely used in a variety of common products. About 7.6 billion pounds are produced throughout the world each year. The largest of these chemicals is PVC used in soft plastic products including many children's toys. Phthalates are also used as solvents and are an ideal additive in things like cosmetics, personal care products, perfumes, inks, lotions and insect repellants.

Unfortunately, phthalates are also easily converted into vapor. They enter the human body through the lungs. (For example, the "new car smell" that we all like is largely the result of phthalate vapors from vinyl dashboards and other parts evaporating into the air.) When these chemicals enter the body they can cause reproductive and developmental disorders, cancer, organ damage and childhood asthma and diseases.

Organotins: These are a new kind of toxic made by chemically combining the metal tin with carbon compounds. They're added to many different products including polyurethane, polyester, silicones, and PVC. They're actually all around us from the vinyl siding of houses and window frames to toys and clear food and beverage containers and even air fresheners and disposable diapers!

Unfortunately, organotins migrate out of the materials that contain them and enter both the environment and people, where they are suspected of bioaccumulating. They are capable of disrupting hormonal functions and damaging the immune system by attacking white blood cells. Unfortunately, they're so new that very little research has been conducted on them. We don't know how toxic these new substances are...

Labels Are Insufficient

This is a lot of bad news, I know. Essentially, I've just provided you evidence of something you already know: that we live in a very toxic world. Well, before we finally get into what kinds of changes we can make to minimize our exposure, let me just touch on why you can't really count on labels to keep you informed and safe.

Contrary to popular belief, full disclosure of chemical ingredients that cleaning products contain and all the potential health problems they might create is simply not required by federal law. There are a few "signal words" that manufacturers do have to use and these are:

- **Danger** or **Poison**, which means that a few drops to one teaspoon of the product, if ingested, can be life threatening; and
- **Warning** or **Caution**, which means ingesting one teaspoon to one cup can be life-threatening

Technically, products with these words *are* warning us about chronic dangers, but these dangers are vague and usually refer to acute poisonings. An even bigger loophole is that a manufacturer can use a substance known to be chronically hazardous but omit all warnings or references to it by claiming that any exposure to that substance resulting from the product's use would not be large enough to trigger a toxic effect! Manufacturers are allowed to make their own estimates of how much a chemical you are likely to absorb by using how much of their product how many times per week for how much of your life. If this estimate falls below a threshold needed to trigger toxic effects, the manufacturer is once again legally off the hook and a product that contains a known chronic hazard can be declared safe and free of the need to address the hazard on the label. Okay, one last nail for this coffin: In a recent study of household products, the National Environmental Trust found that 85% of those tested contained such hidden hazardous ingredients.

What this means is that you really can't trust labels. Period.

Some Good News...Finally

Okay, so, we've waded through the dark and dismal waters of toxic truth. Let's talk about some good news, some things that are going to make for a brighter future.

Before the big chemical boom that has landed us in such a toxic world, people relied on naturally-occurring materials and substances to help them with their housework. Not only did homemade cleaners work well, they had the additional advantages of being inexpensive to make and completely non-toxic to use.

Naturally Clean reports that the biggest surprise people have then they decide to make their own cleaners is how many they can make from so few ingredients. An almost endless variety of safe homemade substitutes for toxic chemical cleaning supplies of all kinds can be easily prepared from just a handful of common materials.

An excellent source for "recipes" of this sort is the book *Better Basics for the Home* by Annie Berthold-Bond. Here's a list of core ingredients that every household should have for creating non-toxic cleansers:

- Baking Soda: deodorizer, non-abrasive scouring powder
- Beeswax: floor and furniture wax
- Borax: deodorizer, non-abrasive scouring powder, all-purpose cleaner, mold inhibitor, rust stain remover
- Carnuba wax: wood floor and furniture wax
- Citrus fruits like orange, lemon and lime: grease cutters, deodorizers, flea repellent
- Eucalyptus oil: Insect repellent

- Essential oils: Air freshening
- Hydrogen peroxide: bleaching agent and antibacterial
- Jojoba oil: wood polisher
- Lavender oil: disinfectant, deodorizer
- Natural vegetable-based liquid soap (like Dr. Bronner's): general detergent product substitute
- Neem tree oil: Insect repellent
- Olive oil: wood polisher
- Washing soda (sodium carbonate): grease and grime cutter, wax remover, deodorizer
- White distilled vinegar: dissolves hard water mineral scale and greasy build up, removes tarnish, cleans wood and glass
- Tea tree oil: antibacterial, antifungal, antiviral, deodorizer
- Toothpaste: metal polish

So, let's look a little closer at some common place where toxic cleansing products are often used and some alternatives to the standard chemical cocktail.

Oven & Counters: Typical oven cleaners are often the most toxic cleaning products found in the typical home. They leave chemical residues on surfaces and often expose people to hazardous fumes. Here's a recipe for an oven cleaner that really works:

Safe Oven Cleaner: Baking soda and water. Just sprinkle baking soda in the bottom of the oven until it completely covers all offending matter. Spray it with water until very damp, re-wet occasionally, and then let it sit overnight. In the morning, grease and grime will be easily wiped away.

Safe All-Purpose Counter Cleaner

- 2 teaspoons washing soda
- 2 teaspoons borax
- ½ teaspoon natural liquid soap
- 1 cup hot water

Mix ingredients together in a spray bottle, shake well, and spray. Surfaces must be wiped thoroughly or a safe but unsightly whitish residue will be left behind by the washing soda. This formula will keep indefinitely.

Dishwasher: Fifty-one percent of American households have automatic dishwashers and yet these are one of the most toxic appliances in the home! In fact, the EPA suggests that dishwashers are a leading cause of indoor air pollution. This is because they can reach 100% efficiency when it comes to transferring water pollutants and detergent chemicals into the air. They generate so much heat and chemical vapors are carried quickly and easily out of the dishwasher's vents, which means that the entire time they're running, they're continuously releasing water-borne toxins through each operating cycle. Even worse, the air pollution created by the venting is often exceeded by the single large burst of contaminated steam that's released whenever a dishwasher is opened before it's had a chance to cool. Bet you didn't know that!

So, unless you want to stop using this appliance, you'd be best to adopt some stricter measures on its use, including:

- Use only a chlorine-free dishwasher detergent.
- Ventilate your kitchen during and after dishwasher operation.
- If you can, filter the water that goes to the dishwasher. This will remove toxins before they become released via steam.
- Keep the dishwasher closed and sealed for at least an hour following a completed cleaning cycle.
- If you have a "no heat dry" option on the dishwasher, use it.
- Only run the dishwasher when it's completely full. At the very least, this helps you reduce the number of times you release toxins into the air.
- Make sure your detergent is phosphate-free.

Soap Scum: can be removed with vinegar. Simply soak the affected areas and wash clean. For tough scum problems combine one teaspoon of borax with half a teaspoon of liquid soap and two cups of hot water. Spray and sponge clean.

Toilets: can be cleaned with either vinegar or baking soda, depending on what the problem is. Vinegar will work well on mineral build-up. Baking soda will handle common soils. Apply them separately for maximum effect. For deodorizing, perform a final scrub with peppermint or another essential oil after the cleaners have been flushed away. For sanitation, spray with hydrogen peroxide or use a combination of 2 tablespoons of tea tree oil in two cups of water. Add some of this to the bowl, scrub, let it sit for a few minutes, and flush.

Rust stains: will disappear when subjected to a solution consisting of one tablespoon of cream of tartar and enough hydrogen peroxide to make a paste. Cover the stain with this mixture and let it sit for several hours.

Mold & Mildew: can be wiped out with a simple solution of 2 tablespoons of tea tree oil in two cups of water. Spray this on the affected area, let it sit for half an hour and then wipe clean. This formula also kills bacteria. Another idea is to spray the affected area with vinegar following immediately with a spray of hydrogen peroxide.

Window & Glass Cleaners: are surprisingly toxic to people and the environment. They typically contain solvents capable of doing neurological, respiratory and organ damage; highly corrosive chemicals like phosphoric acid or ammonia; and synthetic dyes or perfumes, primarily derived from petroleum and toxic coal tars. What's worse is that these products are sprayed when used, and spraying disperses the toxins over a wider area beyond the window itself.

Here are some suggestions for cleaning windows and other glass surfaces:

- Invest in a good spray bottle and squeegee. Fill the bottle with a mixture of two cups of water and one quarter cup of distilled vinegar.
- The first time or two you clean your windows, add a half teaspoon of natural liquid soap to the homemade window cleaners. This will help cut the wax that is found in common window cleaners that gets left behind when they're used.

- Apply the spray, scrub the window with the squeegee scrubber and then squeegee the liquid over and down to a single corner.
- Use a lint-free chamois cloth to polish streaks away
- **Note:** *Naturally Clean* does not suggest using newspaper to clean windows, because it spreads ink everywhere and makes the newspaper non-recyclable.

Floor Cleaners: are just another mixture of different chemicals from synthetic detergents and fragrances to dispersal and suspension agents and solvents. Products meant to shine and polish floors are deliberately designed to leave residues behind. They typically contain a strong acid or solvent to dissolve the previous washing's wax and allow dirt to be lifted. But here's a secret: you can clean most of the floors you'll find in a home with just two things: old-fashioned soap and hot water. The drying time will be increased, as water dries slower than most cleaning products, but the non-toxic benefits are perfect. Other suggestions include:

- Making a floor cleaner by combining $\frac{1}{4}$ cup of natural liquid soap with half a cup of distilled vinegar and two gallons of hot water. Add a few drops of an essential oil to add a fresh scent.
- For wood floors, substitute a teaspoon of glycerin for the vinegar.
- For tough soils or greasy problem areas, replace the vinegar with $\frac{1}{4}$ cup of washing soda. (This will remove wax, however, so be sure you want to use it on a floor before you do.)
- Polish wood floors with jojoba or boiled linseed oil.
- For carpet cleaning, rent a steam cleaner and fill it with a formula of $\frac{1}{8}$ cup liquid soap and two gallons of hot water. Add $\frac{1}{2}$ teaspoon of borax or washing soda per quart of water for dirtier carpets.

Resources

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