# Thriving in a Toxic World

## Protecting Our Health from Increasing Levels of Environmental Pollution

Recently a major chemical spill made national headlines. However, this spill is just one among many and incidents where toxic chemicals are accidently released into the environment are far more common than most people realize. In a study published by the CDC in 2015, a survey of nine states over a ten-year period from 1999 to 2008 found a total of 57,975 incidents involving "acute chemical incidents."[1] Remember that's just nine states, not the entire US!

If these chemicals were substances that broke down readily in the environment there would be less concern, but many of them are persistent organic pollutants (POPs) which means they will linger in the environment for decades, if not hundreds of years.

There are currently over 350,000 chemicals registered for use in industry, agriculture, and medicine. Only a small fraction of them have been adequately tested for safety, and their safety is tested individually, not collectively. While we do enjoy many benefits from the wonderful discoveries of modern chemistry, the growing use of these chemicals is causing increasingly detrimental effects on the health of plants, animals, and human beings.

## The Dangers of Chemical Exposure

Many of these compounds are fat soluble, which means they are not easily flushed out of the body. Instead, they lodge in fatty tissues. Their presence is one of the things that makes it difficult for people to lose weight, as the body stores these chemicals in fat to protect itself from them. Even worse, the brain and nerves are primarily composed of fat, so many of these chemicals adversely affect the nervous system, resulting in a wide variety of neurological problems, from depression and anxiety to autism and neurodegenerative diseases.

These chemicals are affecting the rising generation even while they are in the womb. One study found an average of 287 toxic chemicals in the umbilical cords of newborn infants.[2] Many of the chemicals that were present are known to be POPs. This is extremely alarming, especially given the ever increasing rates of neurological disorders in children. These neurological problems include autism spectrum disorder (which now affects about one in one hundred children), ADD, ADHD, Tourette's syndrome, stuttering, delayed speech development, dyslexia, and behavioral disorders.

Environmental toxins may also be contributing to adult neurological problems like anxiety, depression, insomnia, numbness, tingling, brain fog, sleep apnea, dementia, and mental illness.

Many of these chemicals are endocrine disrupters, which cause hormonal imbalances, especially in the reproductive system. In women, they may be contributing to premature breast development in girls, PMS, uterine fibroids, tender breasts, and heavy menstrual bleeding. Boys may experience undescended testicles, enlarged breasts, and delayed onset of puberty because of these endocrine disrupters. Adult men may experience infertility, prostate problems, and low testosterone levels.

These chemicals also adversely affect the immune system. They contribute to chronic inflammation, impaired immune function, autoimmune disorders, and cancer. They can also interfere with the function of other organs and glands like the liver and thyroid.

Understanding this raises the question, "What can we do to protect ourselves?" The answer to that question is addressed in this issue of *Sunshine Sharing*. On the pages that follow we provide a three step plan for not just surviving, but thriving in a toxic world.

***Continued on next page***

[1] https://www.cdc.gov/mmwr/preview/mmwrhtml/ss6402a1.htm
[2] https://www.ewg.org/research/body-burden-pollution-newborns

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### Important Notice

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## Step One: Reducing Chemical Exposure

It's impossible to avoid chemical exposure in modern society because these chemicals are found everywhere. But the good news is that your body has the ability to eliminate them. So, don't get obsessed over the problem, simply take steps to reduce your exposure. This reduces the load on your detoxification systems, which makes it easier for your body to eliminate the toxins you are exposed to. Here are five practical things you can do.

### 1. Avoid chemicals in your food

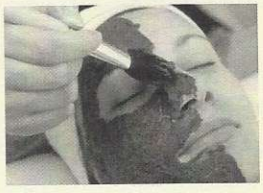

The average person consumes several pounds of chemical additives every year. These include artificial flavorings, preservatives, food colorings, and artificial sweeteners. But, you can greatly reduce the load on your eliminative systems by eating natural foods that don't contain these chemicals and avoiding processed foods that do. So, read labels carefully and if the ingredients don't sound like food, don't buy the product.

It also helps to buy organically grown food whenever possible. This reduces your exposure to pesticides, herbicides, and other agricultural chemicals. When you can't do this, wash your produce in water with a scent-free castile soap or a fruit and vegetable wash. This is important because many of these chemicals are fat-soluble and can't just be rinsed off like dirt.

### 2. Drink the purest water you can find

If possible, you should purchase some type of water purification system, such as a reverse-osmosis system coupled with carbon filtration or a gravity fed filtration systems. At the very minimum, use a carbon filter and change the filter regularly or buy purified water from grocery or health food stores using reusable containers. Avoid bottled water, especially in soft plastic bottles, as the plastic leaches chemicals, and produces a lot of plastic waste in the environment.

### 3. Use non-toxic household products



Much of your exposure to chemicals takes place within your own home. So, you can greatly reduce your exposure to chemicals by finding the most natural, non-toxic products you can afford. Again, it's important to read labels carefully.

For starters, look for non-toxic household cleaning products. Many toxic household products can be replaced with simple things like baking soda, vinegar, natural soaps, and essential oils.

It's also important to look for non-toxic personal care products. Remember that anything you put on your skin can be absorbed into your body, so look for all natural, non-toxic toothpaste, shampoo, deodorants, lotions, and cosmetics. As with cleaning products, there are many natural substances that can be used for these purposes, such as olive oil, coconut oil, clay, essential oils, and herbs like aloe vera, calendula, witch hazel, and seaweeds.

Finally, you can also find non-toxic methods to control weeds and household pests. These methods include vinegar (20% or 30%), natural soaps, boric acid, and pheromone traps.

### 4. Purify your indoor air

Many people live in areas where there is a lot of outdoor air pollution, but much there is a lot of air pollution that comes from inside the home. Many building materials and household items like carpets, upholstery, paint, and treated lumber contain chemicals that outgas into the home. This is most noticeable after new construction or remolding. So, you want to take steps to purify your indoor air.

One of the easiest ways to do this is to grow houseplants. Research has shown that houseplants absorb air pollutants, while increasing the oxygen supply in your home. Some of the good plants for this purpose are: aloe vera, bamboo palm, Boston fern, Chinese evergreen, dwarf/pigmy date palm, English ivy, ficus, gerbera daisy, mums, peace lily, philodendron and snake plant.

You may even wish to invest in some type of air filtration system for your home. Do a little research to find the best system for your situation.

### 5. Follow chemical safety protocols

Many people do not think about the fact that they are routinely exposed to chemicals at work, but some examples of professions where there is chemical exposure include janitors, carpet cleaners, beauticians, hair dressers, house painters, dry cleaners, auto mechanics, print shop workers, builders, farmers, gardeners, and welders. If you do have to use chemicals, either at home or in your workplace, be sure to follow proper safety protocols to reduce your exposure and risk.

## Step Two: Nourish Detoxification Systems

Your body has a built in ability to get rid of toxic chemicals. The various systems that provide these detoxification functions include the liver, lymphatics, bowels, urinary system, skin, and lungs. By supporting the health of these systems with proper nutrition, you can enhance your body's ability to get rid of the chemicals you are exposed to.

Modern society faces a unique challenge because we are not only exposed to these chemicals, we are also surrounded by empty-calorie foods that do not contain the nutrients necessary to sustain the body's detoxification systems. Cleansing isn't just stimulating the bowels to move or the kidneys to produce more urine. It also involves internal organs and enzyme systems that require vitamins, minerals, antioxidants, and other phytochemicals to work properly.

With that understanding, here are four recommendations for keeping your body's detoxification systems in good working order through proper nutrition.

### 1. Eat vegetables that enhance detoxification

Certain types of vegetables greatly enhance the body's ability to detoxify. The first group of these are the cruciferous vegetables, which come from plants in the mustard family. They include kale, cabbage, broccoli, cauliflower, mustard greens, turnips, radishes, Brussels sprouts, and watercress.

These vegetables contain sulfur compounds that aid the body's ability to detoxify chemicals and fight infections. They have been shown, for example, to reduce one's risk of cancer, a disease caused primarily by chemicals. They also enhance phase one detoxification and sulfation, which are discussed under step three.

The second group of vegetables that are helpful for increasing the body's ability to eliminate toxins are dark, green leafy vegetables. These include Swiss chard, beet greens, leafy forms of lettuce, and dandelion greens, along with several cruciferous vegetables (e.g. kale, mustard greens, and watercress). Although you can get nutritional benefit from these greens when they are cooked, you will get better results with detoxification if you eat them raw. So, add them to salads, juice with them, or blend them into a smoothie with the antioxidant berries and fruits discussed next.

For convenience, you can also take a ***Whole Food Green Drink*** containing ingredients like kale, broccoli, spirulina, chlorella, artichoke, asparagus, and alfalfa. Another option is a ***Green Food Protein Powder*** that contains plant proteins along with similar vegetable and herb powders.

### 2. Eat berries and other antioxidant fruits

In traditional Chinese medicine, sour foods are said to tonify the liver, which is the major organ of internal detoxification. Sour fruits are typically loaded with antioxidant nutrients which help protect the liver and other tissues from the oxidative damage caused by various chemical irritants and the detoxification process.

Examples of berries and sour foods that aid detoxification include blueberries, raspberries, organic strawberries (regular strawberries are heavily sprayed), blackberries, sour cherries, sea buckthorn, acai berries, lycium or wolfberry, and lemon juice. A great way to gently detox your liver is to combine the berries and greens in a smoothie. Again, for convenience, you could take an ***Antioxidant Mangosteen and Berry Drink*** containing mangosteen, blueberry fruit, red raspberry, lycium, açaí, pomegranate, and sea buckthorn to fortify your antioxidant intake.

### 3. Take bitter and hepatoprotective herbs

A class of herbs called simple bitters have long been used to stimulate digestion and improve liver function. These bitter herbs help to activate digestive secretions and the enzymes involved in phase one detoxication. The slight bitterness of the dark green vegetables mentioned earlier helps here, but there are also herbal bitters like dandelion leaf and root, blessed thistle, gentian, artichoke leaf, red clover, and chicory that can be taken to help the body detoxify more efficiently.

Many of these remedies were traditionally believed to help clean up the blood to clear up morbid conditions like skin diseases, cysts, abscesses, and even cancer. They appear to support the body's detoxification processes in a gentle, but effective manner. If you're exposed to chemicals, you can take them regularly as part of a ***Detoxifying Formula*** or an ***Herbal Bitters Formula***.

There are also herbs that have documented hepatoprotective effects. These herbs help protect the liver from toxic chemicals while it's doing its job of neutralizing them. The most famous of these herbs is milk thistle, but other hepatoprotective herbs include schizandra, dandelion root, lycium, and turmeric. If you work around chemicals on a regular basis or live in a heavily polluted area of the country you should consider taking a ***Hepatoprotective Formula*** daily, which contains hepatoprotective herbs and nutrients like vitamin C, alpha lipoic acid, and n-acetyl-cysteine.

### 4. Keep your eliminative channels open

Once the body has processed toxins for elimination they have to be removed from the body via one of the body's eliminative systems. The primary ways these toxins are expelled is through the colon and kidneys.

Drinking at least six to eight glasses of water daily helps all eliminative systems. To keep the colon working properly, you need to make sure you have adequate fiber in your diet to bind toxins in the stool so they can't be reabsorbed. If you don't consume a high fiber diet, you may wish to take a ***Fiber Blend*** regularly.

If your bowels move less than once a day and/or your stools are hard and difficult to pass, you may also want to take a cascara sagrada or a ***Stimulant Laxative Formula***. It's also helpful to do an annual or semi-annual cleansing program, such as ***Ivy Bridge's Cleansing Program*** or the ***Chinese Balanced Cleansing Program***.

## Step Three: Enhance Your Body's Detoxification Pathways

In addition to these general aids to detoxification, there are specific nutrients and herbs that can help to eliminate specific types of toxins. To use these supplements effectively it helps to understand how the internal detoxification process works.

Processing toxins for elimination is a two phase operation. In phase one, enzymes put an electrical charge on the toxin by adding or removing electrons. In phase two, the electrically charged toxin is joined to another substance, a process called conjugation. This makes the toxin water soluble so it can be flushed out through the colon and kidneys. This process takes place primarily in the liver. Here is a more detailed explanation of the detoxification process.

### Phase One: Liver Enzymes

The body uses about 50 different enzymes in phase one detoxification to electrically charge toxins. An electrically-charged toxin is called an intermediate metabolite. These electrically charged toxins are free radicals which is why antioxidants are so important in the detoxification process.

Signs that you have problems with phase one detoxification include feeling sluggish and groggy when you wake up in the morning, having a stuffy feeling under your right rib cage, and feeling bad with no specific cause. It will also take a long time for the effects of medications, alcohol, caffeine, or any other substance (natural or otherwise) to wear off. You may also feel irritable or anxious for no specific reason.

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You can enhance phase one detoxification using herbal bitters. Phase one detoxification is also enhanced by B-complex vitamins and vitamin C; minerals like magnesium, manganese, and zinc; and essential fatty acids.

## Phase Two: Conjugation

The intermediate metabolites have to be quickly neutralized by phase two enzymes, which conjugate (join or attach) the toxin to another molecule. If this doesn't happen, you'll feel sick as you detoxify, something traditionally called a "healing crisis." Symptoms of sluggish phase two detoxification include headaches, stomach pain, nausea, fatigue, dizziness and brain fog. These may occur when you start nourishing your detoxification systems as described in step two, or when you are fasting or trying to lose weight. Toxemia during pregnancy and being very sensitive to chemical exposure are also indications of sluggish phase two detoxification.

There are six detox pathways in phase two. The three most important ones for chemical detoxification are as follows.

### Glutathione Conjugation

Glutathione is one of the most important antioxidants in the body. It is also used to conjugate and eliminate heavy metals and many fat soluble toxins including compounds from plastics like vinyl chloride. Glutathione is a protein that will be broken down by the digestive tract if you take it orally. It can be absorbed via rectal injection or in a liposomal form.

Supplements that enhance glutathione production include n-acetyl-cystine, alpha-lipoic acid, and the amino acids glutamine and methionine. Vitamins C and E help replenish glutathione so it works more effectively and it is also enhanced by eating cruciferous vegetables.

### Methylation

Methylation occurs in every cell of the body and is important for detoxifying the body of excess neurotransmitters and hormones. Methylation protects the body from carcinogenic compounds, alcoholic liver damage, sensitively to environmental chemicals, and compounds that damage genes. It specifically breaks down estrogen, epinephrine, histamine, arsenic, and phenols.

The amino acid methionine is specifically used in methylation, but any substance that acts as a methyl donor is also helpful. Helpful supplements include methylfolate (a form of folic acid), methylated B12 (methylcobalamine), SAM-e, and choline. Magnesium and zinc also support methylation.

### Sulfation

The sulfation pathway is important for getting rid of a variety of environmental toxins, including xenoestrogens, BPA from plastics, and the preservative BHT. It also breaks down excess hormones and neurotransmitters. Sulfation requires sulphate, a sulfur compound. Sulfur-rich foods, including garlic, onions, cruciferous vegetables, and eggs aid sulfation. Supplements that aid sulfation include MSM and indole-3-carbinol. Vitamins B1 and B2 and magnesium are also critical to sulfation. You can also increase sulfation by taking Epsom salt (magnesium sulfate) baths.

### Other Phase Two Pathways

There are three other detoxification pathways. Acylation attaches toxins to amino acids, acetylation uses acetyl co-A to get rid of allergy causing histamines and a number of drugs and chemical toxins, and glucuronidation is a backup pathway to sulfation or acylation and utilizes glucuronic acid, a metabolite of glucose. Adequate intake of amino acids, vitamins, and minerals also aids these detoxification pathways.

## Additional Help and Information

To get further assistance and information about how to protect your body from chemicals and enhance your ability to detoxify from exposure to them contact the person who gave you this newsletter. You can also consult the following resources:

*Strategies for Health* by Steven Horne
*Your Body's Environmental Chemical Burden* by Cindy Klement
*Natural Detoxification* by Jacqueline Krohn, MD, and Frances Taylor, MA
*Detoxification and Healing* by Sidney MacDonald Baker, MD