

# Detox Pathways

## SKIN

Your skin is your largest organ and the barrier where many toxins enter the body. It reflects inner health, especially of your liver & gut.

## LUNGS

Do you think of "exhaling" as detoxing? Your respiratory system is actually a primary organ system for detox.

## LIVER

When people think "detox", they often think of the liver. It is where your body breaks down drugs & alcohol, centralizes most biochemical detoxification processes, and filters your blood.

## DIGESTIVE SYSTEM

Gut health should be prioritized first because it is the final path of elimination. If you are not regular or if your gut lining is compromised, the toxins dumped there may be reabsorbed instead of passed out.

## BRAIN

The glymphatic system is responsible for detoxing the brain tissue during sleep. Beyond this physiological process, mental health habits are essential for "detoxing" from stress.

## LYMPHATIC SYSTEM

Stimulating lymphatic flow is one of the best ways to support immune health & detoxification.

## BLOOD

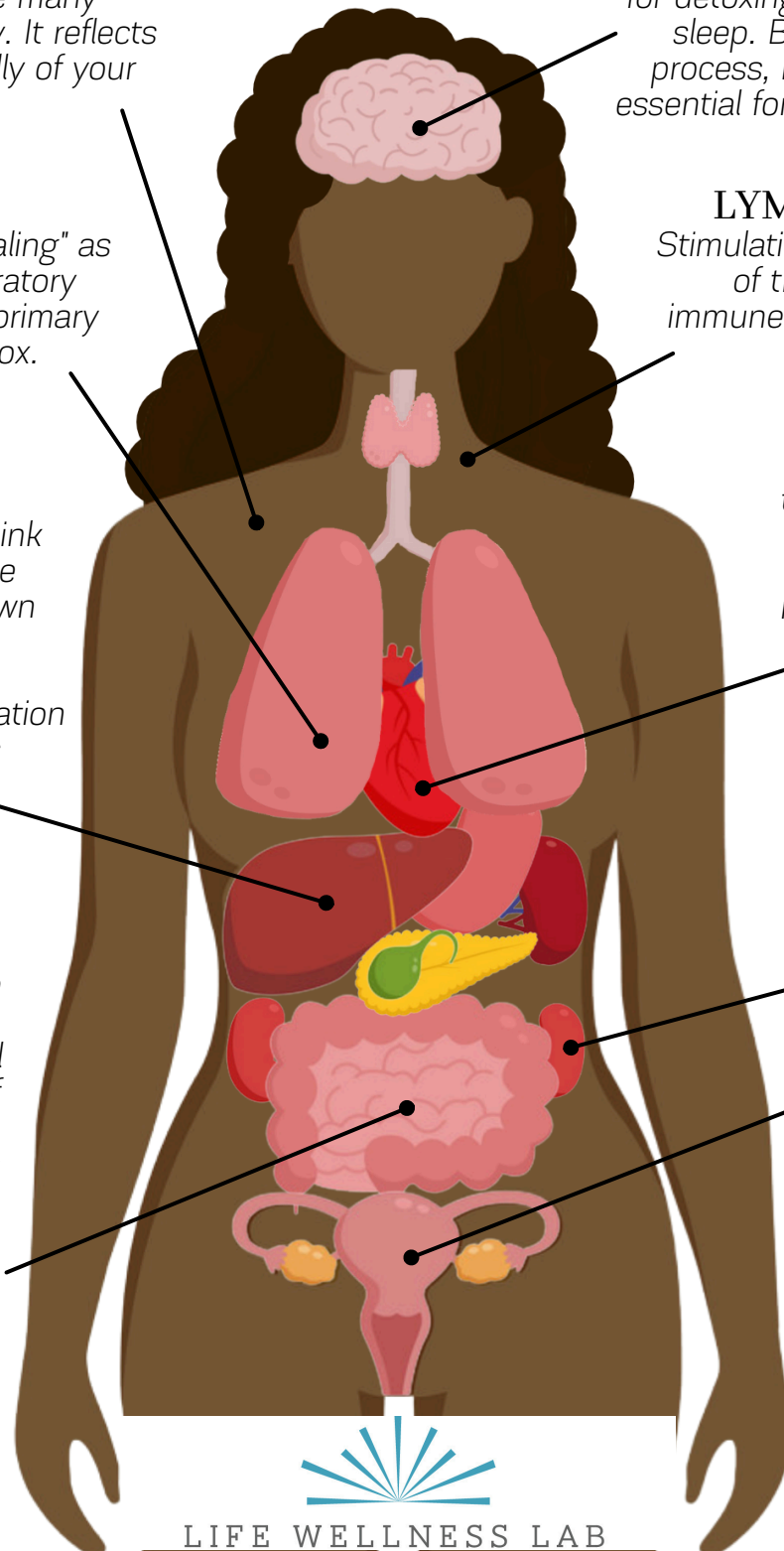
Your blood is the main transportation system in the body: not only does it deliver oxygen & nutrients, it carries away carbon dioxide and cellular waste.

## KIDNEYS

Along with the liver, your kidneys filter your blood and help maintain fluid balance.

## FEMALE REPRODUCTIVE SYSTEM

You can consider menstruation to be an important detoxification & cleansing process for a woman's body.



# Detoxification Support

## 1 FUNCTIONALIZE



"activate it"

- **B vitamins** meat & fish, legumes, greens, nutritional yeast
- **BCAAs** animal proteins
- **glutathione/NAC** turmeric, Brazil nuts, avocado, asparagus, spinach, citrus, garlic, onions
- **phospholipids** soy, sunflower, eggs
- **healthy fats** fish oil, olive oil, coconut oil, walnuts
- **flavonoids** colorful plant foods
- **quercetin** apples, cherries, broccoli, onions, citrus
- **milk thistle**

## 2 CONJUGATE



"deactivate it"

- **amino acids** glutamine, glycine, taurine, methionine from protein
- **sulfur** meat, eggs, whey, onions, garlic, MSM
- **glutathione/NAC** turmeric, Brazil nuts, avocado, asparagus, spinach, citrus, garlic, onions
- **polyphenols** green tea, rooibos tea, turmeric, rosemary, crucifers, watercress, dark berries
- **chlorophyll** greens, cilantro, parsley, chlorella, spirulina, moringa
- **magnesium**

## 3 ELIMINATE



"get it out"



- **FAT-SOLUBLE: via bile into intestines, excreted in feces**
- **bile support** healthy fats, artichoke, beets, dandelion root, lemon water
- **gut support** fiber from variety of plant foods, psyllium husks
- **lifestyle** prioritize daily BM, hydration, movement, gallbladder function, microbiome health
- **WATER-SOLUBLE: via blood into kidneys, excreted in urine**
- **hydration** water with electrolytes
- **kidney support** burdock or dandelion tea

## INITIAL TOXINS

need to be removed

**ex:** hormones, microbial endotoxins, cellular waste, inhaled pollutants, drugs, alcohol, household chemicals, some supplements, pesticides, etc

## INTERMEDIATES

very inflammatory

**support with:** vitamins A, C, E, D3, selenium, zinc, copper, manganese, CoQ10, garlic, onions, crucifers, milk thistle, berries, greens, colorful veggies

Optimize detoxification "backwards": If phase 1 is up-regulated before 2 & 3 are open, the system can become backed up with inflammatory intermediates.

order of optimization

# FOODS TO SUPPORT *Glutathione*



TURMERIC

CRUCIFEROUS  
VEGGIES



AVOCADO



ASPARAGUS



SALMON



GREEN  
TEA



PAPAYA



GREEN  
BEANS

SPINACH



CUCUMBER



WHEY  
PROTEIN

# Safe Cookware Guide

Proper preparation is an important aspect of a nourishing diet. The cookware, oils, and methods used to prepare meals can impact levels of harmful compounds in your food. In general, cooking "low & slow" in quality cookware will minimize toxins and maximize nutrients.

AGEs (advanced glycation end products) form when protein or fat fuse with sugar during high heat cooking, causing inflammation & aging in the body.



- **TEFLON NON-STICK COOKWARE**  
*made with toxic PFTE, PFAS, or PFOA*
- **ALUMINUM COOKWARE**  
*can leach into food*
- **SCRATCHES & CHIPS**  
*coating ends up in food*
- **METAL & PLASTIC UTENSILS**  
*can scratch pan coating or melt into food*
- **HIGH HEAT COOKING**  
*increases AGE formation & chemical leaching*
- **MICROWAVING IN PLASTIC**  
*can leach into food*

- **CAST IRON COOKWARE**  
*source of dietary iron, be attentive if have high iron levels*
- **CEREMIC COATED COOKWARE**  
*ensure not scratched or chipping*
- **MEDIUM HEAT COOKING**  
*use solid fats or quality olive oil that can withstand moderate heat*
- **MICROWAVING IN GLASS**  
*safer alternative to plastic containers*

- **STAINLESS STEEL COOKWARE**  
*low risk of metal leaching*
- **GLASS OR STONE BAKEWARE**  
*low risk of chemical leaching*
- **WOODEN OR SILICON UTENSILS**  
*gentle on cookware*
- **COOKING WITH WATER**  
*minimizes AGE formation & retains nutrients*
- **LOW & SLOW COOKING**  
*minimizes AGE formation & protects cookware*
- **GARNISH WITH OIL**  
*after cooking*



# Glyphosate

## HERBICIDE & DESICCANT

Glyphosate is a broad-spectrum herbicide used for weed control on fields & lawns and to dry out grain crops before harvest.

## FOODS WITH GLYPHOSATE

The most common foods with residue include oats, corn, soybeans, canola, wheat, barley, beans, & lentils.

## THE SHIKIMATE PATHWAY

Glyphosate acts by inhibiting an enzyme in the shikimate pathway, preventing the synthesis of amino acids essential for plant growth.

*This chemical has been assumed safe for humans because we do not have this metabolic pathway. However, bacteria do, so glyphosate exposure can cause gut dysbiosis (which DOES have an significant impact on human health).*

## STATE OF THE RESEARCH

Evidence is not conclusive about the short & long term effects of glyphosate on human & environmental health. Some studies find it perfectly safe and others the opposite. Notably, much of the research is funded by industries with interest in certain study outcomes—on both sides of the issue.

**in vitro:** DNA damage, estrogen interference, increased oxidative stress, nutrient binding, inflammation, cancer, etc

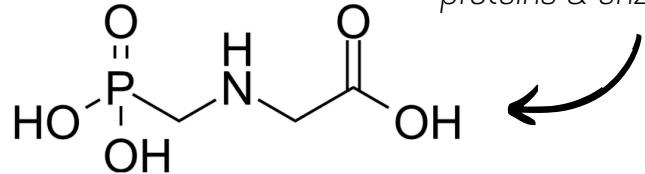
**in vivo:** impact on cardiovascular system, intestinal permeability, celiac disease, dysbiosis, nervous system development & function, fertility & reproduction, autism, etc

**epidemiological:** few effects overall, increased risk for non-Hodgkin's lymphomas in exposed farmers



## AMINO ACID ANALOGUE

Glyphosate has a similar chemical structure to glycine. If mistakenly substituted in polypeptide chains, it can distort or inactivate essential proteins & enzymes.



## CULPRIT OR SIDEKICK?

Although glyphosate is often the active ingredient in mixed herbicides, some hypothesize that added surfactants are more problematic. Hence, glyphosate-based herbicides (GBHs) are found more toxic than plain glyphosate.

## EXPERT DISAGREEMENT

To add confusion, 2 regulatory boards make opposite statements about glyphosate safety:

**IARC:** “probably carcinogenic to humans”  
*(considered plain glyphosate & GBHs, included in vitro & in vivo but few epidemiological studies)*

**EFSA:** “unlikely to represent a carcinogenic hazard for humans”  
*(considered plain glyphosate only, included human epidemiological studies only)*

## WHAT LEVEL IS SAFE?

This question is as philosophical as scientific (and very controversial). Currently, if food residue tests below “accepted levels”, it is considered safe. However, long-term exposure to very low levels has technically never been studied.

## OTHER CONSIDERATIONS

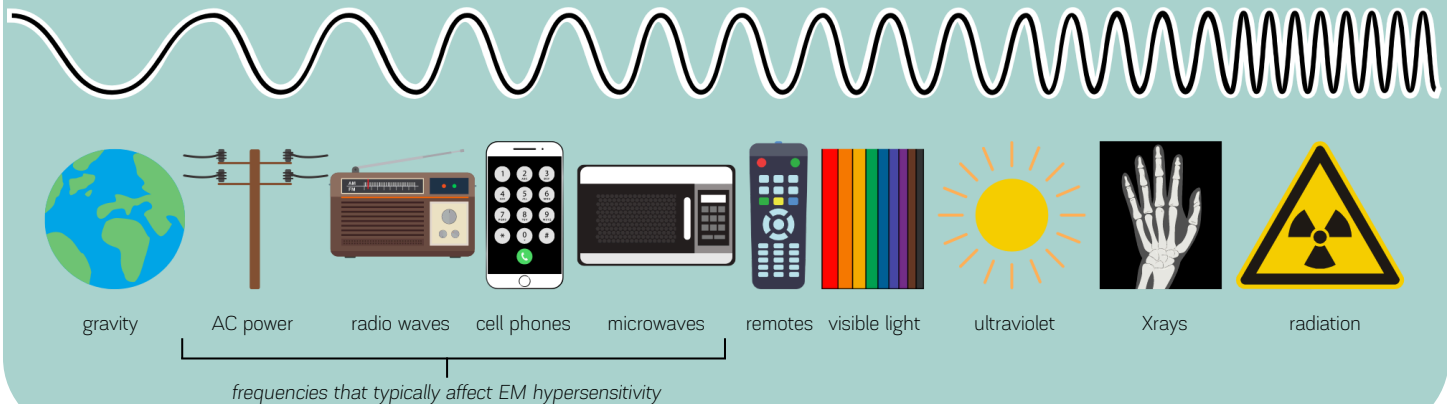
Beyond human health, there are concerns about glyphosate build-up in soil & water, wildlife impacts, and herbicide-resistant weeds.



# EMF Exposure

Electromagnetic frequencies (EMFs) are the energetic waves of the universe. Your cells also function electrically (cell membranes, nerve signals, muscle contractions, etc), so exposure to external frequencies can impact the health of your body.

## THE ELECTROMAGNETIC SPECTRUM



## WHAT IS EMH?

Certain individuals with electromagnetic hypersensitivity (EMH) are more sensitive to radio-frequency EMFs. Symptoms can include headaches, concentration difficulties, sleep issues, lethargy, and fatigue. This may be because EMFs increase oxidative stress in cells. For individuals with genetic predisposition, history of trauma, or an overloaded detoxification system, increased oxidative stress can exacerbate symptoms of existing inflammation or toxic burden.

### Should I be worried about EMFs?

*In short, it is hard to know. Some sources claim EMFs cause cancer while others say they are harmless. While increased oxidative stress is exacerbating in EMH, it actually may be a beneficial stressor in some cases (like exercise, fasting, or certain polyphenols are). The jury is still out about the health impacts of EMFs, and we live in a world where they are impossible to completely avoid. The best course of action is to improve what is in your control and to release what is not.*

## REDUCE EXPOSURE

*\*especially in bedroom*

- avoid keeping phone in pockets
- keep phone calls short, use speaker or hands-free, put on airplane mode
- avoid electrical or bluetooth versions of devices when possible
- disconnect wifi router at night

## LIFESTYLE SUPPORT

- antioxidants in food
- supplemental vitamin D
- adequate water, sleep, & movement
- sunlight exposure
- grounding
- address other sources of stress & inflammation (gut health, detox, etc)

## DO NOT STRESS

- stress about EMFs can be more detrimental than the exposure itself

# Mold Exposure

## IS MOLD DANGEROUS?

Everyone is exposed to a relatively harmless level of mold in food and the environment. However, in some individuals, certain mycotoxins trigger adverse symptoms. Mycotoxin exposure can disrupt the microbiome, deplete glutathione, irritate epithelial tissues, and increase liver burden.

## ALLERGY VS TOXICITY

A *mold allergy* is when mycotoxins trigger an immune hypersensitivity reaction, causing asthma or allergy symptoms like sneezing, post-nasal drip, watery eyes, etc. *Mold toxicity* or “toxic mold syndrome” is theorized to be a systemic inflammatory response to mycotoxins (esp to black mold—*Stachybotrys chartarum*). Reported symptoms include lethargy, emotional & memory impairments, migraines, sleep disturbances, vertigo, histamine intolerance, IBS, intestinal hyperpermeability, chronic fatigue, etc.



## MOLD DETOX DIET

*While not addressing the root cause, a low-mold elimination diet can temporarily decrease fungal load in the body, improve symptoms, & support detoxification.*

### DECREASE

- dried fruit
- nuts (esp peanuts & cashews)
- aged meats & cheeses
- coffee
- alcohol (esp beer & wine)
- sugar & baked goods (feed yeast in gut)
- grains & dairy (occasionally an issue)

### INCREASE

- garlic & onions
- oregano, thyme, & rosemary
- turmeric
- coconut oil
- raw honey
- cruciferous veggies
- leafy greens
- berries
- green, dandelion, & milk thistle tea

## MITIGATING MOLD

- **ADDRESS THE SOURCE**  
*identify source (often damp buildings), repair leaks, remove/kill mold, control humidity, improve ventilation*
- **SUPPORT NATURAL DETOX**  
*gentle movement, sleep, dry brushing, hydration, massage, fiber consumption*
- **SUPPLEMENTAL NUTRIENTS**  
*vitamins A, Bs, C, D3, E, K, probiotics, quercetin, glutathione, NAC, CoQ10, binders (activated charcoal, chlorella)*

*While mold allergy is a defined & diagnosable condition, mold toxicity is very bioindividual—making it difficult to research, test, & diagnose.*

### What about fermented foods?

*While often high in histamine, they also provide pro-, pre-, & post-biotics that support gut health; include if tolerated.*



# Heavy Metals

## 101

Lead, arsenic, mercury, cadmium, and aluminum are the heavy metals of most concern to human health. Even very small amounts can cause serious consequences. They compete with other essential minerals, leading to nutrient deficiencies, gut dysbiosis, decreased bone density, anemia, enzyme & hormone dysfunction, DNA & mitochondria damage, impaired nerve signaling, and cell death. Chronic exposure or impaired detoxification of heavy metals can result in a build-up in the liver, heart, and brain. Each individual has a different capacity to store and detoxify these minerals before they become problematic. At that point, toxicity can manifest as nausea, headaches, gut issues, joint pain, muscle weakness, or conditions like dementia, diabetes, autoimmunity, cardiovascular disease, and cancer. You can support healthy mineral balance by decreasing heavy metal exposure, supporting regular detoxification, and maximizing your dietary intake of antioxidants & minerals.

*Fish, seafood, & crops grown in contaminated soil are primary dietary sources of heavy metals.*

### SOURCES

*food, water, air*

- industrial waste
- fertilizers
- metal pipes
- old paint
- IUDs
- dental fillings
- vaccines
- deodorant
- supplements
- cookware
- occupational exposure

*Most exposure to these sources is "below the tolerable limit", meaning it will not result in acute toxicity. However, each one can contribute to cumulative levels in the body.*

### SUPPORT METAL DETOX

- **KEEP THINGS MOVING**  
*with proper hydration, rest, exercise, sauna, and daily BMs*
- **EAT A DETOXIFYING DIET**  
*full of colorful plant foods, fiber, and quality protein*
- **NUTRITIONAL CHELATION**  
*with activated charcoal, Lactobacillus probiotics, and botanicals like parsley, spirulina, chlorella, garlic, turmeric, black cumin, & coriander*



### *What about chelation therapy?*

*Chelation involves administration of a chemical agent to bind heavy metal ions, which "deactivates" and allows them to be eliminated. This procedure is best used to treat acute toxicity. Some use chemical chelation for chronic toxicity, but it has risks. Chelation therapy should be used with caution, as it can displace other minerals and/or aggravate symptoms, especially if the liver & gut cannot handle the flood of released metals.*



# Alcohol

## BIOINDIVIDUAL FACTORS

- sex & body composition
- ethnicity & genetics
- yeast & histamine sensitivity
- gut health & absorption rate
- blood sugar health (can exacerbate hypoglycemia)
- hydration & nutrient status
- total liver burden

## A TOXIN

*the liver can usually handle small, occasional amounts but will become stressed if consumption is chronic*

## IMMEDIATE ENERGY

*because alcohol energy cannot be stored like fats & carbs, it has to be burned first (excess food energy is stored)*

## NEGATIVE NET NUTRIENTS

*besides being an empty source of micronutrients, alcohol also blocks mineral absorption and requires use of B vitamin stores*

## AN ADDICTIVE DEPRESSANT

*alcohol triggers brain reward centers & blocks feelings of anxiety*

## GUT IRRITANT

*consider eliminating if experiencing gut symptoms, food allergies, or autoimmune issues*

## POSSIBLY PROTECTIVE

*1-2 drinks per day (if tolerated) seems to support cardiovascular health*

## RARELY ALONE

*alcoholic drinks can also contain sugar, gluten, silicon, yeast, histamine, sulfites, artificial colors & flavors, etc*

