



**Cynthia Libert, M.D.**  
Functional Medicine for the  
Brain & Body

## **The Brain Protection Plan:**

### **Take Out the Trash**

How to Avoid Brain Toxins & Support Your Body's  
Natural Ability to Detoxify

# UNCOVER THE ROOT CAUSES OF BRAIN & BODY DYSFUNCTION



- Inflammatory
- Infectious
- Glycotoxic
- Atrophic
- **Toxic**
- Vascular
- Traumatic

# 7 Keys to Restoring Brain Health



- Optimize Nutrition
- Calm you Brainwaves
- Heal your Gut
- Restore Hormonal Balance
- Jumpstart Your Energy Systems
- Put out the Fire of Inflammation
- **Enhance Detoxification**

# Toxins and our Health



Throughout our daily life we are in constant contact with environmental toxins leading to health concerns in a variety of areas.

Where are these toxins coming from?



# Where are the toxins?



- Air (indoor and outdoor)
- Water
- Food (POPs, pesticides, antibiotics, microorganisms, GMOs, nanotech)
- Soil
- Light
- Noise
- EMF

# What are toxins?



- Heavy Metals
- Organic Pesticides
- Food Additives/Preservatives
- Drugs
- Industrial Materials
- Endocrine Disruptors
- Pesticides

# The Millennium Ecosystem Assessment (MA)



The Millennium Ecosystem Assessment (MA) was called for by the United Nations Secretary-General Kofi Annan in 2000. Initiated in 2001, the objective of the MA was to **assess the consequences of ecosystem change for human well-being** and the scientific basis for action needed to enhance the conservation and sustainable use of those systems and their contribution to human well-being. The MA has involved the work of more than **1,360 experts worldwide**. Their findings, contained in five technical volumes and six synthesis reports, provide a state-of-the-art scientific appraisal of the condition and trends in the world's ecosystems and the services they provide (such as **clean water, food, forest products, flood control, and natural resources**) and the options to restore, conserve or enhance the sustainable use of ecosystems.

# UN Millennium Assessment



“At the heart of this assessment is a stark warning. Human activity is putting such a strain on the natural functions of Earth that the ability of the planet’s ecosystems to sustain future generations can no longer be taken for granted.”



# Definition and Source of Toxic Burden



- Toxic burden is the total accumulation of toxins that the body is dealing with.
- These toxins come from a variety of sources but initial exposure actually begins while a baby is still in the womb!

# Chemicals, Pollutants & Pesticides in Umbilical Cord Blood - EWG 2005

- 287 chemicals detected in umbilical cord blood of newborns
  - Pesticides, consumer product ingredients, waste materials from burning coal, gasoline and garbage
    - Example: 8 perfluorochemicals used as stain and oil repellants in fast food packaging, clothes and textiles (including Teflon chemical PFOA)
    - Dozens of widely used brominated flame retardants
- 180 of the 287 chemicals found are known to cause cancer in humans or animal
- 217 are toxic to the brain & nervous system
- 208 shown to cause birth defects or abnormal development in animal tests

A benchmark investigation of industrial chemicals, pollutants and pesticides in umbilical cord blood  
*Environmental Working Group, July 14, 2005*

# A BENCHMARK INVESTIGATION OF INDUSTRIAL CHEMICALS, POLLUTANTS AND PESTICIDES IN UMBILICAL CORD BLOOD



- **Mercury (Hg)** - Pollutant from coal-fired power plants, mercury-containing products, and certain industrial processes. Accumulates in seafood. Harms brain development and function.
- **Polyaromatic hydrocarbons (PAHs)** - Pollutants from burning gasoline and garbage. Linked to cancer. Accumulates in food chain.
- **Polybrominated dibenzodioxins and furans (PBDD/F)** - Contaminants in brominated flame retardants. Pollutants and byproducts from plastic production and incineration. Accumulate in food chain. Toxic to developing endocrine (hormone) system
- **Perfluorinated chemicals (PFCs)** - Active ingredients or breakdown products of Teflon, Scotchgard, fabric and carpet protectors, food wrap coatings. Global contaminants. Accumulate in the environment and the food chain. Linked to cancer, birth defects, and more.
- **Polychlorinated dibenzodioxins and furans (PCDD/F)** - Pollutants, by-products of PVC production, industrial bleaching, and incineration. Cause cancer in humans. Persist for decades in the environment. Very toxic to developing endocrine (hormone) system.

# A BENCHMARK INVESTIGATION OF INDUSTRIAL CHEMICALS, POLLUTANTS AND PESTICIDES IN UMBILICAL CORD BLOOD



- **Organochlorine pesticides (OCs)** - DDT, chlordane and other pesticides. Largely banned in the U.S. Persist for decades in the environment. Accumulate up the food chain, to man. Cause cancer and numerous reproductive effects.
- **Polybrominated diphenyl ethers (PBDEs)** - Flame retardant in furniture foam, computers, and televisions. Accumulates in the food chain and human tissues. Adversely affects brain development and the thyroid.
- **Polychlorinated Naphthalenes (PCNs)** - Wood preservatives, varnishes, machine lubricating oils, waste incineration. Common PCB contaminant. Contaminate the food chain. Cause liver and kidney damage.
- **Polychlorinated biphenyls (PCBs)** - Industrial insulators and lubricants. Banned in the U.S. in 1976. Persist for decades in the environment. Accumulate up the food chain, to man. Cause cancer and nervous system problems.

# Exposure to Toxins

## CDC's Fourth National Report on Human Exposure to Environmental Chemicals

Tested 212 chemicals and found **ALL** to be in blood and urine of most Americans!



Six chemicals in particular, found in virtually every person, were identified by the CDC as probable health hazards!

Exposure to Toxins

## 6 Most Widespread Chemicals Found in Virtually All Americans

- 1. Polybrominated diphenyl ethers (PDE's) - used as flame retardant**
  - PDE's are known to build up in human fat tissue, causing damage to the nervous system, liver and kidneys.
  - Studies also implicate PDEs in causing sexual dysfunction, thyroid problems and brain disorders.





Exposure to Toxins

## 6 Most Widespread Chemicals Found in Virtually All Americans

### 2. Bisphenol A (BPA)

- Found in plastic products, can linings
- Primary human exposure through food packaging plastics
- More than 90% of people tested by CDC were found to have BPA in their bodies
- Because BPA is a reproductive, developmental, and systemic toxicant in animal studies and is weakly estrogenic, there are questions about its potential impact particularly on children's health and the environment.

Exposure to Toxins

## 6 Most Widespread Chemicals Found in Virtually All Americans

### 3. Perfluorooctanoic acid (PFOA)

- Used in non-stick cookware, stain-resistant clothing, certain food packaging and other heat-resistant products
- Studies verify that PFOA contributes to infertility and other reproductive problems.
- Liver and immune system dysfunction also associated with the use of PFOAs





Exposure to Toxins

## 6 Most Widespread Chemicals Found in Virtually All Americans

### 4. Acrylamide

- Chemical carcinogen formed when carbohydrate foods are cooked at high temperatures.
- French fries, fried chicken, coffee - all have high acrylamide content
- Also used in plastics, cosmetics and water treatment products
- Perpetual exposure linked to cancer and neurological dysfunction.



Exposure to Toxins

## 6 Most Widespread Chemicals Found in Virtually All Americans

### 5. Mercury

- Most common exposure route is seafood
- May cause permanent brain damage



Exposure to Toxins

## 6 Most Widespread Chemicals Found in Virtually All Americans

### 6. Methyl tert-butyl ether (MTBE)

- Gasoline additive
- Not currently in use today in US
- Current detection in most Americans' bodies
- Additional exposure from second hand cigarette smoke
- Causes neurological and reproductive problems



Keep in mind, this only describes  
6 toxic compounds....

the *CDC's Fourth National Report on Human Exposure to Environmental Chemicals* tested 212 chemicals and found ALL to be in blood and urine of most Americans!

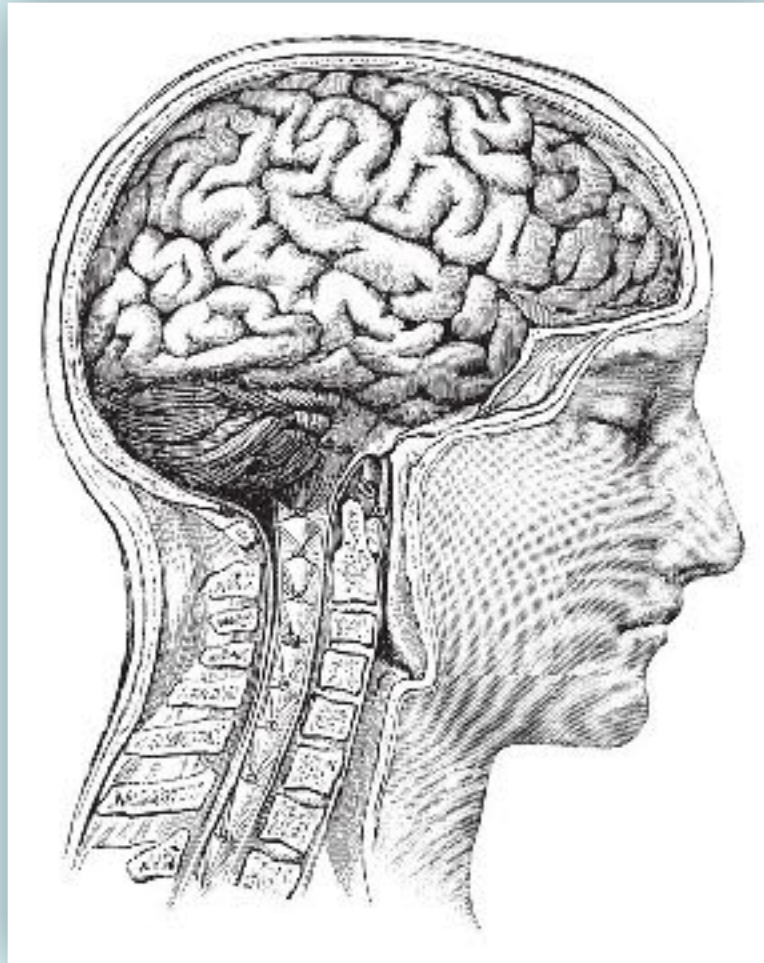


# The Toxic Substances Control Act, the 1976 federal law



Meant to ensure the safety of commercial chemicals, essentially deemed 63,000 existing chemicals "safe as used" the day the law was passed, through mandated, en masse approval for use with no safety scrutiny.

# 36+ Holes in Your Roof



# Symptoms of excessive toxic burden

Common symptoms you may be experiencing indicating excessive toxins:


- Fatigue
- Depression
- Headaches
- Cognitive problems: brain fog, memory problems
- Neurological issues: balance problems, tremors



# Clinical symptoms and conditions associated with environmental toxicity

<ul style="list-style-type: none"><li>• Atherosclerosis</li><li>• Birth defects/Fertility problems</li><li>• Cancer</li><li>• Diabetes</li><li>• Fibromyalgia/Joint Pains</li><li>• Memory Loss</li><li>• Muscle Pain/Weakness</li><li>• Parkinson's Disease</li><li>• Chronic Fatigue</li><li>• Headaches</li></ul>	<ul style="list-style-type: none"><li>• Obesity</li><li>• Immune system depression</li><li>• Fertility Problems</li><li>• Multiple Chemical Sensitivities</li><li>• Anxiety/Mood swings/Panic Attacks</li><li>• Mineral imbalances</li><li>• Learning disorders</li><li>• Unusual responses to medications</li></ul>





The link between exposure to a common toxin (dioxins) and type II diabetes is growing ever more evident.

### “Conclusions

Further research is needed to fully elucidate the precise mechanism through which **dioxin** promotes type 2 diabetes in humans.”

“We found definitive evidence indicating that a diabetogenic shift occurred in the biochemistry of adipose tissues from Vietnam veterans who were exposed to dioxin-containing Agent Orange herbicide preparations.”

*Dioxins are also present in farm raised fish, dairy products & beef*

## Bisphenol A and Risk of Metabolic Disorders

Frederick C. vom Saal, PhD

John Peterson Myers, PhD

Subsequent to an unexpected observation in 1997, numerous laboratory animal studies<sup>1</sup> have identified low-dose drug-like effects of BPA at levels less than the dose used for the US Food and Drug Administration (FDA) and the

Environmental Protection Agency to estimate the current human acceptable daily intake (ADI) derived solely for drinking water. These studies have shown effects of BPA at levels as low as 0.01 mg/kg body weight per day in animal studies and liver enzymes<sup>2</sup> in human urine in an occupational setting. These findings are consistent with the

epidemiologic data supported by animal studies that are mediated via receptor mechanisms present in humans. For example, when adult rats were fed a 0.2- $\mu$ g/kg per day dose of BPA for 1 month (a dose 750 times lower than the current ADI), BPA significantly decreased the activities of mitochondrial enzymes and increased lipid per-

oxidation in the liver. When the ADI, BPA stimulated pancreatic  $\beta$ -cells to release insulin. After administration of 100  $\mu$ g/kg per day of BPA via injection or feeding for 3 days, mice developed insulin resistance and postprandial hypercholesterolemia. Follow-up studies showed that stimulation of mouse  $\beta$ -cell insulin release has been shown to be mediated by

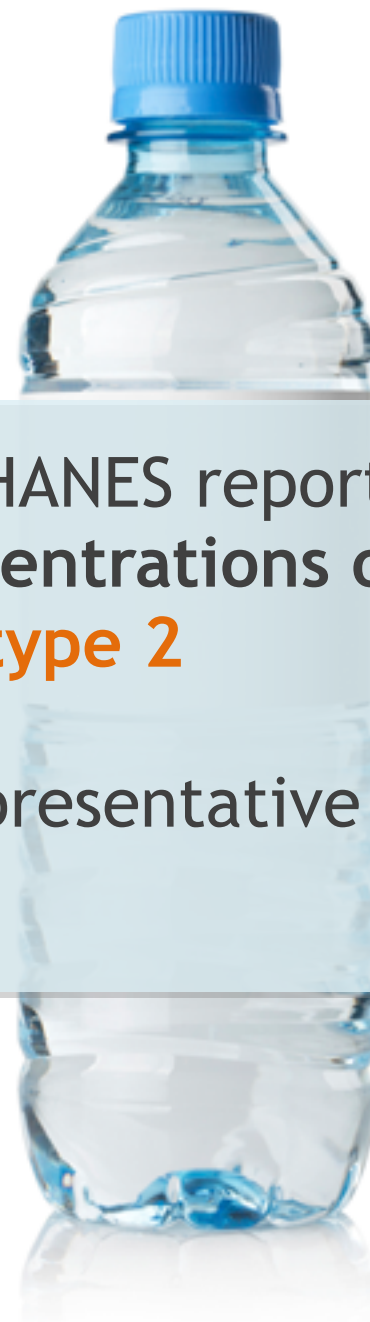
activation of the extracellular signal-related protein kinase 1/2 pathway by binding of BPA to estrogen receptor  $\alpha$  and that via this nonclassical estrogen-response mechanism, BPA and estradiol have equal potency and efficacy.<sup>3</sup> BPA and estradiol are also equipotent at inhibiting adiponectin release from human adipocytes at 1 nM, further implicating BPA at current human exposure levels in insulin resistance and the metabolic syndrome.<sup>4</sup>

**Author Affiliations:** Division of Biological Sciences, University of Missouri, Columbia, Missouri (Frederick C. vom Saal, PhD, St. Louis, Mo); Virginia DeMerchant Corresponding author: Frederick C. vom Saal, PhD, Division of Biological Sciences, 108 Life Sciences Hall, University of Missouri, Columbia, MO 65211 (e-mail: fsaal@missouri.edu).

See also p 1808.

“Based upon analysis of data from the NHANES report a **strong relationship between** urine concentrations of **Bisphenol A and the incidence of CVD, type 2 diabetes,** and **liver-enzyme abnormalities** in a representative sample of the adult US population.”

JAMA 2008; 300: 1353-54



Exposure to heavy metal toxicants is almost unavoidable in today's world.

The image displays three overlapping screenshots of the U.S. Environmental Protection Agency (EPA) website. The top screenshot shows the 'Mercury' page, featuring a search bar and navigation links. The middle screenshot shows the 'Ground Water & Drinking Water' page, with a search bar and a 'Technical Factsheet on: LEAD' link. The bottom screenshot shows the 'Consumer Factsheet on: CADMIUM' page, which includes text about Maximum Contaminant Levels (MCL) and National Primary Drinking Water Regulations. A semi-transparent white box with rounded corners is overlaid on the bottom two screenshots, containing the text: 'Patients are routinely exposed to heavy metal toxins through food, ground water, industrial waste and exposure to industrial environments.'

Patients are routinely exposed to heavy metal toxins through food, ground water, industrial waste and exposure to industrial environments.



- Reduce Exposures
- Support your body's natural detoxification systems



**What can you do about it?**

## Reduce Your Exposure To Toxins: Environment

- Use chemical free products in your home (soap, detergents, cleaning products, dryer sheets, natural insect and weed killers, etc).
- Take off your shoes before entering the house to avoid tracking in chemicals from outside.
- Reduce chlorine exposure by attaching filters to your shower heads (*Chloroform is released when chlorinated water is heated.*)
- Avoid personal products with pthalates, paraben, 4-MBC



# Environmental Working Group COVID-19 Cleaning Product Recommendations



<https://www.ewg.org/news-and-analysis/2020/03/16-effective-and-safe-products-guard-against-coronavirus>

## **Avoid These Active Ingredients**

**Sodium hypochlorite**, which is linked to harm to the skin and respiratory system and the environment. When improperly mixed with other cleaners or acids, sodium hypochlorite can be fatally poisonous. Sodium hypochlorite is also found in chlorine bleach.

**Quaternary ammonium compounds**, also known as quats, which are linked to asthma and suspected of causing reproductive toxicity and birth defects in humans. Quats also persist in the environment.

# Important Tips for Cleaning Safely



- Read labels thoroughly, including all directions and warnings.
- **Wear gloves** and other personal protective equipment as directed.
- **Ventilate** the area while cleaning.
- **Never mix cleaning products or disinfectants together.**
- Clean visibly dirty or greasy areas with soap and water before applying any disinfectant or sanitizer.
- Focus on surfaces you come in frequent contact with, like doorknobs, handrails, faucets and light switches.
- Don't apply more or less of the product than directed.
- Leave the product in contact with the surface as directed before rinsing or wiping dry.



## Reduce Your Exposure To Toxins: **Food & Drink**

- 90% of our toxin exposure to certain chemicals such as PCB's and dioxins actually come from the food we eat.
- 35% of all the foods we purchase in the U.S. supermarkets have measurable pesticide residues which make their way into our body.
- One or more pesticides on 70.3 percent of fruit and vegetable samples tested.
- Between 5 and 13 different pesticide residues tainted one of every 10 fruit or vegetable samples.
- To reduce your exposure via pesticides and herbicides on your food, avoid eating fruits and vegetables on the Dirty Dozen List, choose organic substitutes for these foods.

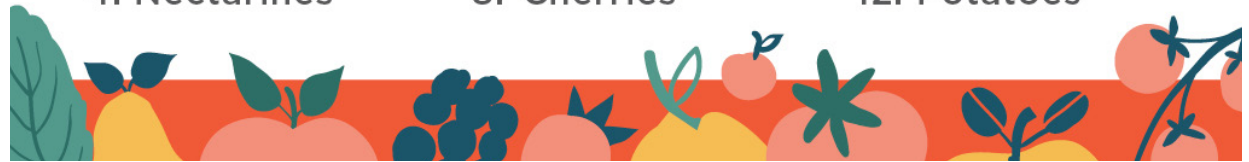




# EWG'S 2020 DIRTY 12™



- |                 |             |              |
|-----------------|-------------|--------------|
| 1. Strawberries | 5. Apples   | 9. Pears     |
| 2. Spinach      | 6. Grapes   | 10. Tomatoes |
| 3. Kale         | 7. Peaches  | 11. Celery   |
| 4. Nectarines   | 8. Cherries | 12. Potatoes |



## The Dirty Dozen



# EWG'S 2020 CLEAN 15™



1. Avocados
2. Sweet Corn
3. Pineapple
4. Onions
5. Papaya
6. Sweet Peas (Frozen)
7. Eggplant
8. Asparagus
9. Cauliflower
10. Cantaloupe
11. Broccoli
12. Mushrooms
13. Cabbage
14. Honeydew Melon
15. Kiwi



## The Clean Fifteen



## Detoxification of Stored Toxins Involves 3 Stages

- Liver Function Phase I:  
Bioactivation
- Liver Function Phase II:  
Conjugation
- Phase III: Transport  
and Excretion



**Your Body Can Remove Toxins**



- Decrease exposure to toxins
- Optimize healthy digestion and excretion
- Add nutritional support for energy production, biotransformation and conjugation reactions.
- Promote methylation pathways
- Support optimal antioxidant function

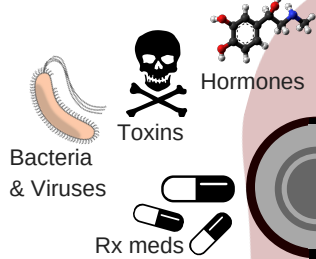


## Ways to Support Biotransformation

# Alcohol: the Ultimate Body Bully

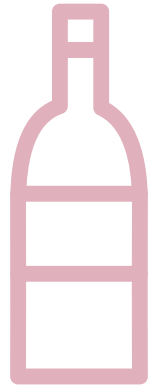
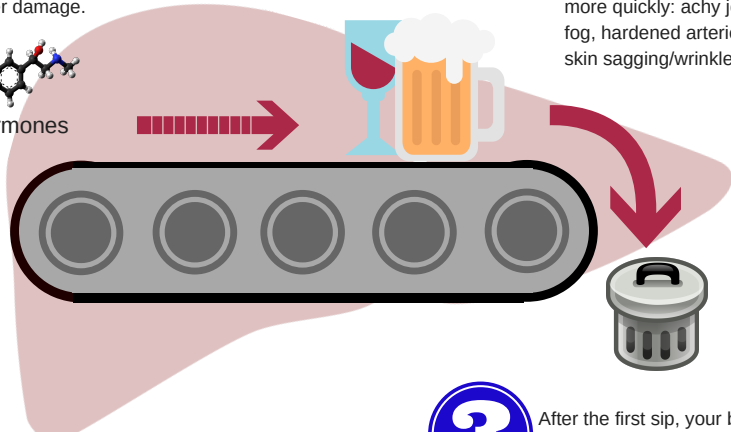
**1**

Alcohol "cuts" in line ahead of other waste that your liver is trying to eliminate. This means your hormones, toxins, and chemicals hang around longer, so your body is exposed to their effects. You'll have increased risk of infection, breast cancer, and liver damage.



**2**

As a result, you'll have more **oxidative stress** than your non-drinking friends. This cellular "rust" will age you more quickly: achy joints, brain fog, hardened arteries, and skin sagging/wrinkles.

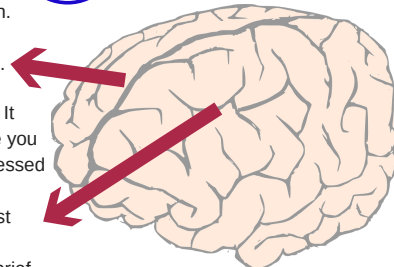


**3**

After the first sip, your brain produces **dopamine and dynorphin**.

**Dopamine** gives you the instant warm, fuzzy "feel good" emotion. It doesn't last long in your body, so you'll crave another sip soon.

**Dynorphin** affects your body much longer. It blocks the receptors in your brain that make you feel excited, so you'll feel anxious and depressed instead. With frequent drinking (even small amounts), you're still recovering from the last dynorphin production. Soon, you'll find that nothing seems "fun" any more without that brief dopamine hit.



Marisa Robertoa, Nicholas W. Gilpin, in Neurobiology of Alcohol Dependence, 2014

**4**

## Rethink your drink

You can help diminish the damage that alcohol does to your body by drinking plenty of water, eating a meal with fats and proteins (carbohydrates and alcohol together will spike your insulin levels, causing more inflammation) and choosing a beverage that has some beneficial qualities:

### Worst

Liqueurs  
Sweet mixed drinks

Sweet wines  
Cognac  
Whisky

Rum  
Gin  
Vodka

### Best

Champagne  
Beer

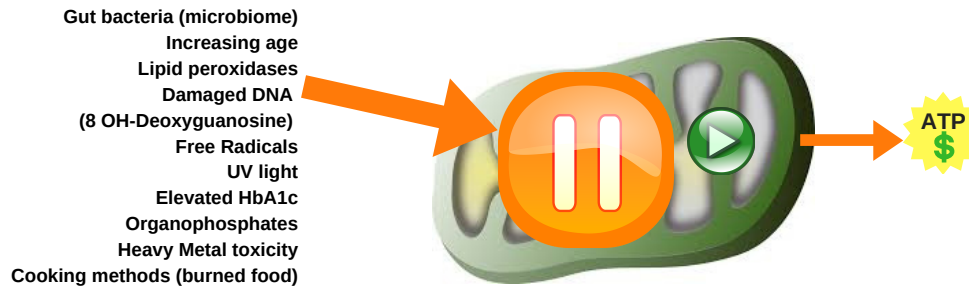
White wine

Red wine

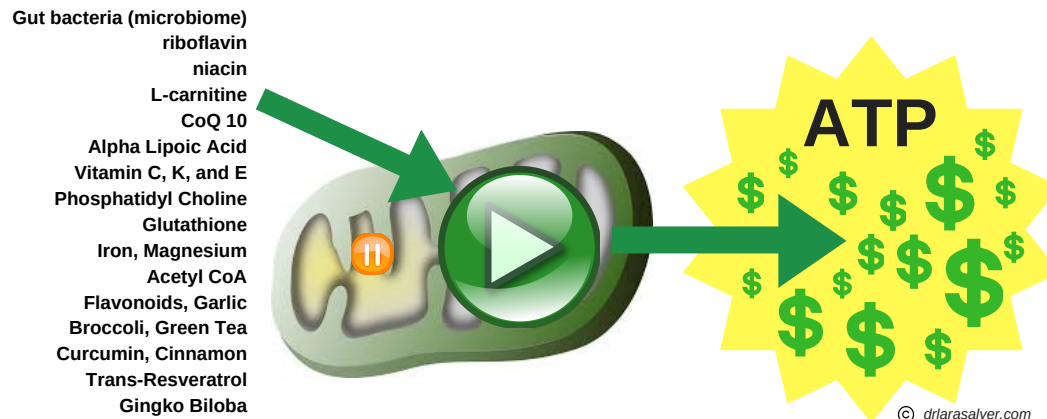
# Meet Your Mitochondria



## INFLAMMATION AND OXIDATIVE STRESS: TURNS ON TNF alpha & NF-kB

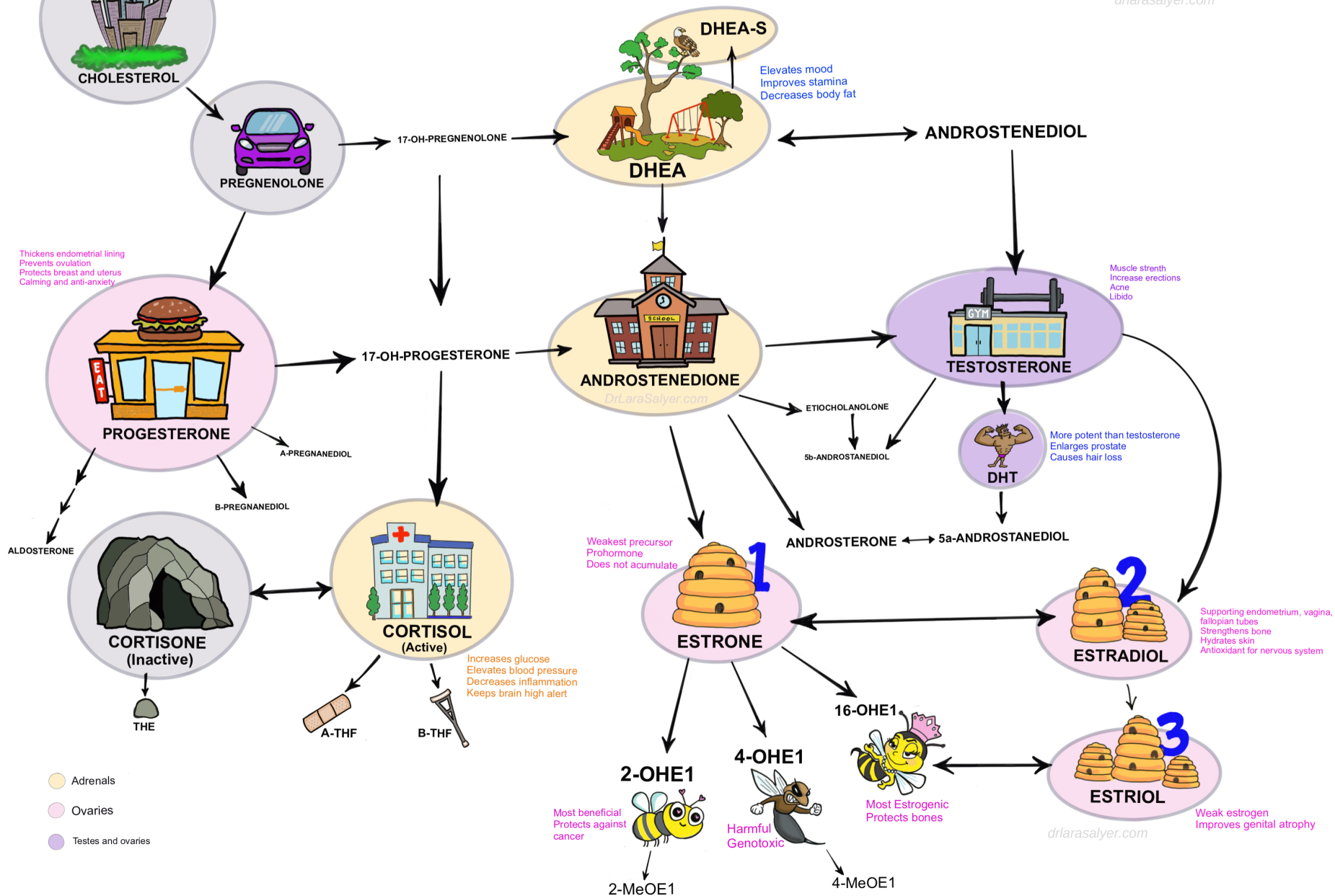


## ANTI-OXIDANTS, ANTI-INFLAMMATORY: TURNS ON NRF-2



# Greetings from Hormone World!

drlarasalyer.com



- Adrenals
- Ovaries
- Testes and ovaries

drlarasalyer.com

# Check out the Environmental Working Group Guides



- <https://www.ewg.org/ewgverified/>
- Fragrance
- Hair Dyes
- Anti-perspirants
- Cosmetics
- Sunscreens





- 70 oz. of water daily
- Gentle walking and stretching daily
- 7.5+ hours of sleep nightly
- Whole foods
- Nutritional supplements
- Take a break from caffeine and alcohol.
- Spend time in nature daily.
- Forgive others
- Let go of unhealthy relationships and habits.
- Let go and let God.



## **My Daily “Detox” Routine**

# Handouts in Your Toolkit



- Toxin Exposure Questionnaire
- The Importance of Detoxification
- Reducing Exposure to Harmful Chemicals
- Mercury Amalgam Removal Protocol
- GMO, Pesticides and Organics
- HEPA Air Purifiers
- UltraClear Renew Detox Support Product Info.

# E-Mail Your Questions in Advance



**[HELP@CARINGFORTHEBODY.ORG](mailto:HELP@CARINGFORTHEBODY.ORG)**

**OR**

**VIA YOUR PATIENT PORTAL**

**OR**

**CALL THE OFFICE AT (828)490-1545**

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