

Chemicals and You



Exposure

Elimination
Storage



Response

Allergy
Sensitivity
Toxicity



Detoxification



Where and when does chemical exposure occur?



Exposure occurs anytime, anywhere, everywhere in food, air and water.

What is chemical exposure?

Chemical exposure is both an immunological and non-immunological response.

Chemicals can unite with amino groups (e.g., proteins) to create asthmatic reactions.

Antigen* and IgE unite with Mast Cell to release histamine.

Chemical, IgG, and IgM unite with complement.

IgG and antigens unite to form immune complexes, which unite with complements.

Macrophage, sensitized T-lymphocytes, and antigen unite.

These four types of immune responses produce allergic cellular-mediated responses in target organs.

**Antigen equals chemical or metal.*

What illnesses are associated with chemical exposure?

Illnesses can be dermatitis, lupus, joint pain, vasculitis, neurotoxicity, affecting brain, peripheral, central and autonomic nervous systems, blood cell abnormalities, lung, kidney and heart problems, chemical and food sensitivity.

Additional exposures lead to increased responses and increased sensitivities with decreased tolerance levels.

What happens to chemicals after they enter my body?

Water-soluble chemicals are excreted through the kidneys.

Fat-soluble chemicals are stored in organs or fatty tissue, or they are converted to water soluble substances by the action of the Chemical Enzyme Detoxification system.

What is the Chemical Enzyme Detoxification System?

This system has two phases, Phase I and Phase II. They involve the liver, intestines, kidneys, adrenal cortex, spleen, heart, brain and skin.

What is Phase I?

Phase I is the Cytochrome P-450 system. It is the first line of defense in the biotransformation of all environmental toxins. The highest concentration of Cytochrome P-450 is in the liver.

What are the functions of Phase I?

It eliminates a sulfur group from a molecule and adds an oxygen group.

It eliminates a halogen group and adds an oxygen group to the molecule.

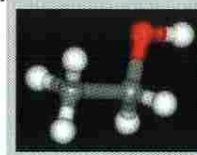
It changes alcohols to aldehydes.

It changes aldehydes to acids.

Then the chemical is excreted or presented to Phase II.

If this system is not working effectively, the chemicals are not changed for presentation to Phase II and are not eliminated from the body.

Therefore, toxicity may increase.



Alcohol Molecule

What nutrients are important to the efficient operation of Phase I?



Major nutrients for the proper functioning of Phase I are lecithin, methionine, B1, vitamin C, beta carotene, vitamins E and A, choline, and alpha-keto glutaric acid.

How do they work?

B1 moves an aldehyde group from one molecule to another.

Methionine is a precursor for glutathione and adds a methyl group (CH₂) to the chemical.

Vitamin E regulates Cytochrome P-450 and prevents the formation of free radicals.

Vitamin C is necessary for the action of Phase I and increases antioxidant protection.

Alpha-keto glutaric acid helps to detoxify ammonia.

Choline is necessary for proper functioning of Cytochrome P-450 enzymes. It aids peristalsis.

Are other nutrients important?

Magnesium, copper, manganese, and molybdenum are part of the nutrient requirements of Phase I.

How do these nutrients help the operation of Phase I?

Magnesium is necessary for glutathione production and aids ammonia detoxification.

Molybdenum helps change aldehydes to acids.

Manganese, copper, and zinc are in superoxide dismutase, which is a key in preventing free radical activity and cellular damage.

What is Phase II? What is its function?

Phase II is the conjugation phase of the detoxification system.

Its function is to change chemicals which cannot be excreted by the kidneys into chemicals which can. It takes a fat-soluble substance and changes it into a water-soluble substance by utilization of specific molecular changes.

It adds acetyl (CH₃CO) coenzyme-A to the molecule to form mercapturic acid. This helps change aromatic, sulfur and aliphatic amines into substances which can be excreted.

It forms a peptide conjugation using acyl coenzyme-A and taurine, glycine, and glutamine.

It adds a sugar group (C + H₂O) by using glucuronic acid to change and eliminate chemicals.

It adds a methyl (CH₃) group to the molecule by using methionine.

It adds inorganic sulfur (S) and a hydroxyl (OH) group to the chemical or metal, to finally detoxify it, and make it acceptable for excretion.

What are the most important nutrients for the effective functioning of Phase II?

Glutathione, folic acid, B2, B3, B5, B6, B12, D-glucarate, and glycine are the nutrients important for the successful functioning of Phase II.

Glycine, B1, B2, B3, B6 are important in the formation and regeneration of glutathione.

Cysteine converts to glutathione, and detoxifies pesticides, plastics and hydrocarbons.

Glutathione unites with the metabolites of chemicals for kidney excretion.

Glycine aids the elimination of phenol, and it helps peptide conjugation of chemicals.

B12 aids in the transfer of methyl groups, and folic acid is an intermediate carrier for the process of methylation.

What other nutrients keep Phase II working efficiently?

Germanium, selenium, magnesium, manganese, zinc, and molybdenum are significant nutrients.

Germanium aids heavy metal detoxification and raises glutathione levels.

Molybdenum aids the cellular use of vitamin C, and helps in the creation of sulfur amino acids.

Selenium and sulfur assists the sulfonation process. These help change toxic substances into less toxic substances which can be excreted by the kidneys.

Magnesium and manganese boost the production of glutathione.

Zinc is present in enzymes for the joining or conjugation of substances.

Your Chemical Detoxification System needs to function efficiently and effectively.

The functioning of the Phase I and Phase II enzyme system needs to be balanced.

If Phase I and Phase II are not balanced and functioning effectively, more toxic substances are created.

If Phase I and Phase II do not function properly, detoxification does not occur, and chemical toxicity increases.



How is illness prevented?

Seek treatment with a physician who understands chemical exposure and chemical sensitivities.

Evaluate the detoxification system through the caffeine test, acetaminophen test, or Genova detox profile. Evaluate the immune system through laboratory analyses. Evaluate the nutritional status through blood and urine profiles. Evaluate toxicity levels through SPECT Scans, toxicological panels, and hair mineral analysis.

Participate in a physician-directed detoxification program.

What methods promote detoxification?

Detoxification methods can include detox baths, lymphatic and total body massage, I.V. and oral nutrient supplementation, deep-heat chamber chemical detoxification, oxygen therapy, and weight loss. To aid detoxification, it is important to support liver, kidney, and immune system functioning.

What supports the health of these organs of detoxification?

It is crucial to minimize chemical exposure in air, food, and water. I.V. and oral supplementation of vitamins, minerals and amino acids provide antioxidant protection and promote cellular health. Self-derived T-lymphocyte factor (ALF) and gamma globulin aid immune function. Oxygen therapy increases tissue oxygenation to improve cellular health. Detoxification is a total body response. Protect your body, so it can protect you.

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