

Chemical Sensitivity

It's a Serious Problem More Often Than You Think!!!

by Adrienne Buffaloe, MD

The source of the problem

There are over 70,000 chemicals commercially produced in the United States today, many of which were developed after World War II. The long-term, low dose effects of many of these chemicals have never been investigated. In fact, the term “low dose” is misleading, implying low concentrations are harmless. But many chemicals are harmful in very low doses, like the herbicide 2,4, 5-T which is harmful in parts-per-trillion. Unless generated by the body (formaldehyde, pentane), the body’s level for chemicals should be non-detectable, and not “low level”.

With the energy conservation efforts of the 1980’s came the construction of closed buildings. The inability to circulate fresh air coupled with the rise in toxic construction materials and an increase in the use of office machines has created an indoor air pollution problem that exceeds outdoor air pollution. In fact, only approximately 40% of indoor chemicals come from outdoors. Sixty percent of indoor chemicals are generated by products or machines used indoors.

The workplace is a site for chemical toxicity. Closed buildings present their own problems, and each profession additionally contributes specific chemical exposures. With the down-sizing of many businesses and the movement of workers from the office to their respective homes, the home must also be evaluated as a source of occupational chemical exposure. And because the “work” of childhood is to become educated, schools with their multiple chemicals (asbestos, chalk, paints, solvents, commercial cleaning products, etc.) are a source for substantial chemical toxicity, not only for children but also for teachers, secretaries, janitors, and other school employees.

Who's at risk?

The exact number of persons suffering from chemical sensitivity is unclear, but the rise in asthma, chronic fatigue syndrome, Attention Deficit Disorder, and second-hand smoke lung disease are all examples of this illness. A study of 24,000 students at Northern Texas University revealed 25 normals for chemical toxicity (0.1%). The ratio of females to males presenting for medical treatment is 7:1. Males more typically present with advanced disease.

What are the signs of chemical sensitivity?

Chemicals Sensitivity is defined as an adverse reaction(s) to ambient doses of toxic chemicals contained in air, food, and water. Both inorganic compounds (carbon monoxide, nitrous oxide, heavy metals, etc.) and organic compounds (pesticides, formaldehyde, phenol, etc.) are involved. The suffering patient usually presents with multi-system complaints depending on the tissues or organs involved, the pharmacological nature of the exposure, the susceptibility of the exposed person, and the presence of other body stressors.

Central nervous system dysfunction is common, resulting in headache, chronic fatigue, poor short term memory, hyperactivity, and increased appetite leading to food cravings and overeating. Respiratory complaints include adult onset “asthma”, shortness of breath, and fibrotic lung disease. Heart palpitations and dysrhythmias herald severe cardiac dysfunction. Abdominal bloating, constipation, and multiple food intolerances signal gastrointestinal involvement. Often Raynaud’s-type vascular constriction resulting in cold hands and feet, easy bruising, or phlebitis signal chemically- induced peripheral vascular disease. Arthritis and myalgias indicate musculoskeletal involvement. Recurrent, sterile urinary tract inflammation, auto-immune endocrine involvement, and peripheral nerve weakness, paresthesias, and sensory deficits are also found. In fact, the hallmark of chemical sensitivity is that patients present with multisystem disease. This is because, once the chemicals enter the body, they enter the bloodstream and circulate to all parts of the body, even the brain.

Two important phenomena to understand are "spreading" and "switching." Spreading occurs when additional organ systems are involved, or when a patient additionally becomes sensitive to inhalants, foods, dust, animal danders, or other environmental exposures. Switching occurs when the same exposure produces entirely different organ involvement (i.e. photocopier fumes initially caused headache, and subsequently caused no headache but wheezing).

The main mechanism for chemical sensitivity is the failure of the body’s enzyme detoxification pathways to adequately clear chemical compounds. Both immune and non-immune processes have been involved. Chemical sensitivity can develop after a massive chemical exposure (i.e. Bhopal), after specific non-chemical events (massive trauma, childbirth, surgery), after severe infections (viral, bacterial, parasitic) or with no identifiable cause (60% in one large study). Approximately 28% of patients diagnosed with chemical sensitivity have employment-related exposures.

Because most of the toxic chemicals involved are lipophilic (fat soluble), they become stored in the body’s fat, resistant to metabolism and excretion. In fact, the chemical levels measured from fat biopsies are sometimes 300 times greater than the circulating serum levels.

How can I tell if I am sensitive to chemicals?

The diagnosis of chemical sensitivity is achieved by taking a thorough patient history including occupational, home, and environmental exposures, diet, medications, and personal care items. The timing of symptoms to exposure, reproducibility of the symptoms, spreading, and switching must all be investigated. Serum levels of suspected chemicals confirm the diagnosis. If serum levels are negative and suspicion is high, a fat biopsy must be performed and often cinches the diagnosis. Additionally, chemical challenge tests can demonstrate the cause-and-effect relationship between a chemical exposure and symptoms. A brain SPECT scan calibrated for chemical sensitivity can demonstrate classic patterns of cerebral bloodflow and brain neuron function aberrations.

Evaluation of end-organ disease is accomplished through pulmonary function tests, chest x-rays, liver function tests, thyroid function tests with antibodies, adrenal evaluation with antibodies, urinalysis, blood chemistry, endoscopy, cystoscopy, etc. depending on the symptoms involved.

Is there any treatment for chemical sensitivity?

Avoidance of the harmful chemicals is the first step in treatment. Removal eliminates the exposure. Face masks and air filters can minimize exposures when total removal is not possible (i.e. car fumes on the street). However, total removal should be accomplished whenever possible.

To maximize a patient's liver detoxification pathways, selected nutrients which are co-factors of liver Phase II detoxification pathways are administered. To decrease the fat stores of chemicals, a heat detoxification program has been developed consisting of selected nutrients, exercise, heat therapy, and massage. The protocol of nutrients, exercise, and heat therapy can often reduce the serum levels of the chemicals to "non-detectable."

Because of the spreading phenomenon, sensitivity to molds, grasses, trees, weeds, foods, dust, and other environmental factors must also be determined. Avoidance and/or desensitization for these factors is the treatment of choice.

So what's the prognosis, Doc?

The prognosis depends on how early in the disease process the diagnosis is made and treatment is started. Early diagnosis and treatment yields an excellent prognosis. Although the patient usually remains chemically sensitive, symptoms can be controlled. Late diagnosis and treatment often results in irreversible, fixed, end-organ disease and progressive spreading and switching. The goal is to make the diagnosis and to initiate treatment as soon as symptoms develop.

Summary

Chemicals are pervasive in our environment, and constant exposure to low levels can cause multi-system dysfunction. Good diagnostic modalities are now available to detect chemical toxicity. Treatment consists of avoidance of toxic chemicals, augmenting liver pathways to excrete chemicals, and a heat treatment protocol that mobilizes chemicals from the fat deposits in the body where chemicals often get stored.

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