# Multiple Chemical Sensitivity Fact Sheet: OH State U

http://ohioline.osu.edu/cd-fact/0192.html

Ohio State University Extension Fact Sheet

Community Development

700 Ackerman Rd., Suite 235, Columbus, OH 43202-1578

---

Multiple Chemical Sensitivity

CDFS-192-96

Joe E. Heimlich

A trend noted by many people has been an increase in what seems to be allergic reactions in the general population. Ranging from congestion to sneezing to more severe reactions such as rashes, breathing problems and worse, these reactions are often non-specific to natural allergens. Some activists and researchers have identified chemicals as potential factors in these reactions. Multiple Chemical Sensitivity (MCS) is the name given to the broad issue of reactions to specific or cumulative chemicals in the environment. This fact sheet will present a definition of MCS and the related Environmental Illness; explore factors of and criticisms to MCS; and examine the individual's role in reducing potential sensitivity.

## What is MCS?

In theory, MCS is an adverse physical reaction to low levels of many common chemicals. Chemical sensitivity is generally accepted as a reaction by certain individuals to chemicals but debate rages on whether MCS is classifiable as an illness. One of the difficulties in classifying MCS as an illness has been the complex nature of chemicals in the environment and the interaction effects with and within the human body. The length of exposure, the concentration of the chemical(s), and the individual's threshold of resistance are also factors complicating a simple definition. In the relatively few but growing documented cases of severe reactions to chemicals, there seems to be no single stimuli or predictor of reactions. The most severe cases, often called either Environmental Illness or 20th Century Disease, sometimes result in individuals isolating themselves from society, synthetic products, and any type of chemical product.

## What makes MCS so hard to identify?

Few products in our society do not include some synthetic or natural chemicals. While most people are generally unaffected by them, many of us have experienced some type of reaction, stimulated by synthetic chemicals at some time in a particular situation. Headaches, dizziness, and shortness of breath are sometimes symptoms of reactions to chemicals. These same symptoms, however, are also common to many other illnesses, diseases, stress, and stimuli. A related illness caused by environmental stimuli is that of Sick Building Syndrome. This condition has, over the last twenty years, gained credibility in scientific circles and there are well-documented cases of large percentages of building inhabitants or workers reacting to chemicals in the closed environment of the building.

Exposure to specific chemicals or any combination of chemicals has an impact on the human body. The interaction may be positive, negative, or neutral. Most synthetic chemicals imitate natural chemicals normally found in the human body, without many of which we would die. In great concentration, these same chemicals can be toxic. The variables of concentration and time are central to how the chemicals affect an individual. The amount of time exposed, the type of chemical, and the concentration of chemicals may contribute to the individual's reaction.

Various chemicals flow through the human body unless the level of chemical exceeds the body's ability to cleanse itself.

Some chemicals may accumulate in the body, however, other chemicals have an additive effect in that the toxicity of one can add to the toxicity of another. Additivity and body burden are very different, but are not mutually exclusive. There are also chemicals that stimulate the breakdown of other chemicals. This is called an antagonistic effect. Antagonism is an outcome of the process; in the breakdown, a chemical might exacerbate the toxicity of another, or become more toxic in a synergistic relationship.

These interactions of chemicals can be isolated in laboratories, but the human body, and the unique ability of each body to respond to different chemicals in different ways, makes it difficult to understand the effects of any one chemical in a particular concentration on any person. Just as some people are allergic to certain medications while others are not, the way one person reacts to a chemical in the environment may be entirely different than another person.

What is the research on MCS?

Does MCS really exist? Some researchers claim it does, others claim it doesn't and some say it might. Why do they disagree?

To date, most studies of MCS have been anecdotal--isolated case studies of individuals or very small groups of people. These people have come to physicians already experiencing the reactions, so discerning cause is very difficult. Although the number of cases is increasing, there is still not a large enough mass of cases to determine any significance between or among cases. Recognizing that the definition and symptoms are vague, several research projects have identified why there are reasons to question the existence of MCS as a disease:

There is no consistent pattern of symptoms.

There are no consistent diagnostic test results.

There is no known mechanism of illness (specific triggers).

Many of the patients have psychiatric problems.

Treatments do not work.

Although each of these factors has validity in the studies in which they were identified, other researchers have been able to address each of these five concerns by suggesting that MCS is not an "allergy" and that comparing MCS to more common allergic patterns, tests, triggers, and treatments will not work. These researchers claim that as this is a distinct type of illness, it must be viewed and managed differently. Some researchers point to Sick Building Syndrome, which, when it was first suggested as a problem, was criticized in a similar way. Other researchers have suggested that the psychiatric problems are not the explanation for the illness, but that people with depression or other problems are more likely to be affected by MCS or that the onset of MCS has created a situation in which the individual becomes psychologically troubled by stress, fear, isolation and other outcomes of having MCS. The result is depression, panic disorder, or paranoia. To determine if MCS is a disease, the real challenge is in trying to find the cause of the physical illness--which came first, the reaction to the chemicals or the emotional problems and did one cause the other, or are they simply related but not causally linked?

Should we be concerned about children?

As with many illnesses, children seem to be more sensitive to non-specific chemical reactions than adults. Although some of the documented cases suggest the individual developed MCS later in life, most of the case studies indicate that there were significant exposures to chemicals during childhood. There are several reasons that children seem more susceptible to chemical sensitivity than adults. Children's bodies do not have as many detoxifying enzymes as do adult bodies. Children spend more time outdoors which may expose them to a variety of chemicals in different media such as air, water, or soil. Children breathe more air per pound of body weight than do adults. Additionally, children eat and drink more than do adults per pound of body weight.

What are common chemicals of exposure in the home or office?

Whether indoors or out, in the city or in the country, the mountains or the desert, all of us are continually exposed to chemicals. Both natural and synthetic, chemicals are a part of our lives. Most of us are unaware of our dependence upon chemicals and how much we often use them to make our lives easier. Whether or not MCS is a "real illness," the

discussion about MCS suggests there may be a concern in our society. We use and depend on chemicals; often we overuse chemicals and ignore the impacts from using these chemicals. At home, at work, in recreation, or wherever, it is important to be aware of the chemicals that are likely to be present and to take appropriate precautions to minimize the use of the chemicals we control.

Below is a chart of some of the chemicals to which some people are most likely to have sensitivity.

One of the areas over which individuals have the most control is the choices for household products and cleansers. What is selected to bring into the home and to use in the home can significantly reduce the cumulative exposure to chemicals by individuals. Purchasing decisions can be based on:

The types of chemicals used in a product

Whether chemicals are synthetic or naturally occurring and individual reactions to each

The likelihood of interaction effects (especially in different cleansers in the same area of the home such as window cleaner, dust spray, floor cleaner, furniture polish, etc. in one room)

Fragrances and dyes used including "scents" that are supposed to smell clean such as synthetic lemon, pine, floral and the like

Natural versus synthetic fabrics and materials and individual reactions to each.

Reducing multiple exposures and unnecessary exposure is important. But chemophobia is not the desired behavior either. Chemicals are not bad. Excessive use and misuse of chemicals is often the problem. For products used in the home, careful reading of the label and careful following of the instructions is necessary. Information on chemicals is available from libraries and health departments; if you are concerned about someone's health, it is always advised to see a physician. As with most environmental issues, learning about the issue starts with understanding the issue on a personal, manageable level.

Chemical Where found Reactions

Formaldehyde carpet, plywood, particle board

insulation, adhesives sore throat

headaches

Pesticides bug sprays, lawn chemicals, household cleaners skin/eye/respiratory

digestive tract/nervous system

Nitrogen dioxide unvented gas stoves/heaters

Carbon monoxide gas appliances respiratory problems

headaches/dizziness

Solvents household cleansers,

paints strippers, gasoline respiratory problems

fatigue/dizziness

Latex paints, gloves, caulking allergic reactions

Dyes (especially dark blue) clothing, curtain, tablecloths,

napkins, rags, furniture skin reaction

---



Keith L. Smith, Associate Vice President for Ag. Adm. and Director, OSU Extension.

TDD No. 800-589-8292 (Ohio only) or 614-292-1868