



# Medical Problems . . . Arising from Environmental Conditions

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INTERVIEW . . . Conducted by Wells Shoemaker, BS FAFS

**Q** Good morning Ritchie. . . and welcome to the Board of Filtration News. One of the requirements for you is to keep us informed of the medical problems arising from environmental situations such as Sick Building Syndrome (SBS), and how they can be alleviated. . . so let's begin there. Maybe we can talk later about how filtration technology has the answer to preventing SBS, but first, how do you define SBS?

**A** The definition of SBS, or building related illness (BRI), or chronic, biotoxin associated illness (CBAI) or any other name an observer might use, must include the potential for exposure to a building with evidence of indoor fungal growth (for this discussion, mold and fungi will be used interchangeably); a grouping of multiple health symptoms that don't resolve with removal from the building; presence of genetic markers (HLA DR); deficits in visual contrast sensitivity (VCS); deficiencies in particular hypothalamic hormones and presence of additional markers of inflammation. SBS isn't an allergy or an irritant; people who suffer from SBS will have symptoms that often progress in severity and number, despite removal from exposure.

**Q** How can a person know if he or she has been affected with SBS? What are the symptoms?

**A** The most common symptoms are fatigue, muscle aches, headaches, respiratory symptoms that don't respond

to normal treatments for sinus congestion or asthma, joint problems (including morning stiffness that looks like rheumatoid arthritis), and here's the big deal: memory problems, difficulty with concentration and assimilation of new knowledge, confusion and difficulty with word finding. Neurologic problems include numbness, tingling, vertigo and metallic taste. We require that patients have multiple symptoms that change from day to day, but never leave and stay away. There must be at least four separate organ systems represented (general [fatigue and weakness], nerve, muscle, brain, eye, respiratory, gastrointestinal and joint). Keep in mind that fatigue and aching can mean depression, but depression won't cause metallic taste or sensitivity to bright light. Asthma and allergy might cause respiratory symptoms, fatigue and headache, but won't cause deficits in executive cognitive function such as recent memory, abstract handling of numbers, concentration, difficulty in assimilating new knowledge, difficulty in word finding and confusion. Unusual pains, such as sharp, stabbing "ice-pick pains" or electrical sensations are common. The grouping of symptoms, including neurologic abnormalities sometimes makes the physician think about multiple sclerosis; indeed, it is not uncommon in SBS patients that a MRI of the brain will show spots that look like MS. Hormone problems that reflect undesirable changes in pituitary function caused by hypothalamic dysfunction are quite common.

Often people won't know that an unseen mold, making spores in heating ducts or growing in areas of water intrusion (roofs, basements, plumbing leaks and wicking of surface water into a block foundation are a few examples) in a building is silently, relentlessly, making them sick. The symptoms aren't specific individually, but presence of multiple symptoms, changing from day to day, but no day has no symptoms, is a tip-off to the diagnosis.

A patient with these symptoms often fails to recognize the illness, as 'SBS' and unfortunately, many physicians also will miss the diagnosis. Instead, the doc writes down fibromyalgia, arthritis, flu, and chronic fatigue syndrome or says the patient needs a psychiatrist. What is necessary is exposure, chronic symptoms without response to standard medications, presence of the biochemical parameters and a deficit in VCS.

**Q** What are the most common sources of SBS?

**A** Let me take a minute to talk about fungi. I think a little time spent on what these organisms do will help the FN reader understand how we can interrupt their reign of toxic terror for genetically susceptible patients. Fungi must export their digestive enzymes to the outside world to dissolve foodstuffs for fuel. They must defend their dissolved food from those ever-present competitors, bacteria. Then the fungus must make its spores and give them a

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chance to survive in the outside world, despite all the competition that grows better if they eat the spores for food. So, the fungal species have evolved defense mechanisms that basically export toxic substances with its outside products. Just think about penicillin and the cephalosporins for a minute and you will see how some fungal export products are toxic; they kill bacteria. Whatever toxins are made by fungi that live indoors, in a building without the “dilution solution (or the filtration solution) to pollution,” have the capability to injure other indoor organisms, like people. Some fungi, like the black mold of media fame, *Stachybotrys*, make lots of toxins that are particularly nasty in what they do. The list of toxin formers is pretty long, including *Penicillium*, *Aspergillus*, *Chaetomium*, *Acremonium* and others. There aren’t too many days I don’t hear about a story on the TV shows and in the weekly mags about houses being burned because the contamination is too extensive and therefore too expensive, to fix, or some government building being abandoned because of complaints of mold.

**Q** Interest in SBS has been growing rapidly... what’s behind all that?

**A** You already know the answer- its follow the money trail. When you lose your job, can’t perform effectively, and are hurting financially as well as in body, you begin to get interested. The media pick up the stories, and you start asking questions. In many cases this leads to complaints, either in the factory, office, school, home, even a penitentiary, and a Methodist Bishop’s office. Did the mold do it? If no satisfactory resolution can be developed, then call in the lawyers. Once a health idea has enough interest, everyone will jump on the bandwagon of “covering the new epidemic.” It’s analogous, too, to the situation we

have seen with the rise in crime that follows hiring of more policemen- the crime that was always there now gets reported, hence the epidemic. Now SBS is getting reported, and the rate of cases is rising.

**Q** How far back do you think SBS goes, and where will it go in the future??

**A** Well, maybe Adam and Eve had a hut that wasn’t too well ventilated. Molds are all around us all the time, but relatively few molds make toxins that make us sick. What has happened that we suddenly have so many toxin-formers? One suggestion is that our energy efficient buildings give new niches for indoor fungi. Wafted by 70° temperature trade winds from the HVAC, maybe a little extra moisture from plumbing leaks and subbasement water intrusion, fungi have it made. Without a significant turnover of air, and with ongoing toxin formation, the concentration of compounds in air we breathe that have the potential to cause illness continues to rise. More frequent use of basements for living/recreation quarters has followed the rise in cost of new construction; now people are putting carpets on concrete slabs, covering below grade walls with paneling and storing cardboard boxes in humid environments too. What more would you want if you were a fungus? Makes you wonder about the new green color on the pool table in the rec room; it isn’t baize. And how about those flat roof schools? Guaranteed to leak sooner or later. Prefab homes are often a disaster if the water has a chance to stir fungi to life before the building halves are put together. On a more sinister note, I see an ongoing trend for our chemical use to be a force of natural selection, whether it is antibiotics in animal feed, copper in estuaries or bacteriostatic/mildew resistant wall coverings that cut maintenance costs in new construction, we are giving potential toxin-formers a

chance to grow by eliminating benign organisms that would normally out-compete, and therefore control the “new” pathogens.

The combination of moisture, heat, and stagnant air isn’t new. What is new is the emphasis on energy efficient homes, tightly sealed with Tyvek, foamed insulation, triple glass windows, no outside air intake either in summer or winter. Do you recall that I provided you with information for a talk at the Washington AFS meeting back in the 80’s, but I gather it wasn’t well attended

**Q** That was a session on filtration for environmental matters, such as drinking water, acid rain, waste disposal, and so on. There were about 10 in the audience for Sick Building, but the Sick Building paper was printed in the Proceedings and has gathered dust to this day. Speaking of recall, do you recall making a presentation to the Filtration Society in Easton some years ago, you discussed ‘living membranes’ in comparison to synthetic one. The membranes in the lung are self-generating, efficient, don’t have to be replaced... what’s the effect of SBS on these membranes?

**A** Toxins can cause direct effects on mucus membranes, and not just on lung surfaces. But the key concept is that the toxins, once they get in you, normally will be cleared if your immune cells, we call them antigen presenting cells, can recognize them and make a protective antibody. The genetics of the immune response genes is such that some people have “holes” in their recognition systems, so the fungal toxins just can go anywhere they want. They set off the next layer of alarms from the immune system, the group of compounds called cytokines that then start making us sick. The chemistry is a little complex, but excessive cytokine re-

sponses can cross into the brain to damage incredibly important neurohormonal-immunomodulatory pathways (Hey, Dad, did you count the letters in that word?) that produce alpha melanocyte stimulating hormone (MSH). Once you start damaging MSH production, chronic pain and chronic fatigue will inevitably follow. If your doctor doesn't measure MSH, he will say that everything is normal. But it isn't normal. The point is that we can easily recognize the systemic effect of toxins by the chemical and physiologic changes they produce. The fungal toxin syndrome is about as obvious as a steam roller running over your foot once you recognize the distinctive grouping of symptoms and start ordering the "new" blood tests, like MSH, leptin, HLA DR and MMP9. If the tests aren't familiar to your doctor, take this to him. If he won't read it, ask him again. It is your health we are talking about.

**Q** How can one prevent SBS?

**A** Prevention might not be the right concept. The toxin formers now live with us indoors. Indoor exposure is almost guaranteed, unless you can work outdoors in the clean air. . . . Stay out of schools and offices with recirculated air, or wear a gas mask, now that they're in vogue thanks to Tom Ridge, but even then the pore size has to be small. You should be alert to the symptoms (don't put up with nonsense diagnoses such as fibromyalgia or chronic fatigue when you have the potential for exposure to indoor resident toxin-formers.) You should check on the facilities where you work or live and have a check made for these contaminants. As you know, many homes and buildings have had to be torn down because of the unhealthy inside air situation. Perhaps if members of AFS wanted to, they could develop filter sys-

tems that would really give clean air. In my view, that is the only logical solution. The cost of litigation and insurance will eventually make even expensive filtration systems cost effective.

**Q** There are indeed many proposals. . . but the expense is high. You well know that in hospitals and airplanes, for example, the quality of the air is questionable. . . . Treated air filters are available, but as yet they don't seem to be the right answer. Now the final question-how can a patient with SBS be treated?

**A** We have developed a protocol that has had phenomenal success rate with biotoxin-associated illnesses. SBS is like many other illnesses caused by toxins formed by invertebrate species. Take a look at our web site [www.chronicneurotoxins.com](http://www.chronicneurotoxins.com). Taking a simple eye test, VCS, is the first step that will help identify whether or not a multisymptom, multisystem illness is due to a biotoxin. We carefully review the history of the patient, and if biotoxins are present, we begin a regime with cholestyramine, antibiotics, and other procedures. With the cooperation of the patient, we are able to overcome these symptoms provided that the patient comes to us early on. Recently, we had one patient who was profoundly disabled during work because of the air quality, and entered into legal proceedings. Fortunately for her, but probably not for the insurance company and employer, she received a substantial settlement. There are hardly any days now that go by without some attorney calling for information about the link between illness and exposure. Since we can treat the illness, that means we can also provide prospective exposure to an affected building, proving causation of the illness, if necessary. No doubt this will encourage other victims to seek similar redress. . . . And in turn this will emphasize to readers of Filtration News

who make air filters that the need for better air quality is indeed here.

**Q** I am still wondering about the genetic basis of this illness. . . does the susceptibility vary from person to person? If one gets the disease, why not everybody?

**A** A simplistic answer is that your genetic makeup indeed is involved, but the molecular biology is complex. We had one client who owned an office with 28 workers. A lot of people said they were sick, but 9 had no problems at all. Sure enough, it was SBS; the 19 people who had the gene susceptibility were the ones with the symptoms. The story of how this case turned out is interesting, and might be the subject for another discussion in a later issue.

*Thank you for your time!*

*The results of this interview were specifically written for publication in Filtration News, courtesy of Wells Shoemaker and Dr. Ritchie Shoemaker . .*

*Focusing on the serious consequences of the presence of molds & fungi within buildings & homes, Dr. Shoemaker has outlined symptoms to watch for, and solutions in addressing these problems.*

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