



# Effective Strategies to Identify and Correct the Inflammation Caused by Mold Exposure

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## By Dr. Mercola

Dr. Ritchie Shoemaker is a recognized leader in patient care and research, having appeared on a variety of national TV shows, such as Good Morning America, NBC News, CBS News, and CNN. Like me, he is trained in family medicine and has investigated areas that reveal important insights into how we can treat chronic illness.

He currently serves as president of Chronic Neurotoxin Incorporated, and is a medical director for the Center for Research on Biotxin Associated Illnesses.

Dr. Shoemaker's interest in biotoxigenic disease began in 1996/97. He'd had a family practice in the small town of Pocomoke in Maryland since 1980, and around '96, they started having a problem with *Pfiesteria*, a dinoflagellate (like an algae) in the Chesapeake Bay and nearby rivers. *Pfiesteria* is a single-celled creature that creates potent toxins. The town of Pocomoke was the epicenter of the outbreak..

*"Because of my interest in the river and wetlands, when people started getting sickened by exposure to areas where the fish kill had occurred, I got a chance to see them," he explains. "... There was no one out there who had any data on this illness... No one has ever treated it. And quite frankly, I was kind of lost."*

## The Initial Treatment of *Pfiesteria* and Other Biotoxigenic Exposures

His foray into the exotic world of biotoxigenic illnesses began with patients exposed to and sickened by *Pfiesteria*. Most biotoxigenic illnesses are difficult to diagnose and treat as all of them, including mold, affect multiple systems in your body and produce a wide array of symptoms.

However, there is an underlying commonality, whether your disease is caused by dinoflagellates, mold, or spirochetes, for example, and that is *chronic inflammation*. The toxins produced by these microorganisms cause your innate immune system to respond to the foreign antigens, and the inflammation induced by exposure to the toxin is what wreaks havoc on your health.

*"In order to treat them, we need to both remove them from exposure and remove toxin from their body,"* Dr. Shoemaker says.

Dr. Shoemaker discovered what has since become the first step in a multi-step treatment plan almost by accident. When one of his *Pfiesteria* patients presented chronic diarrhea, he gave her cholestyramine (CSM), a rarely used cholesterol drug that binds to not just cholesterol, but just about everything of a particular molecular shape and size.

*"Cholestyramine is not absorbed," he explains. "It will bind very efficiently to small molecules that have what we call anion rings or sharing of electrons. These small molecular structures have a net negative charge. Cholestyramine has a net positive charge on its nitrogen containing side chains. The negative charge and positive charges are on structures that are about the same size. Binding CSM to the toxin prevents its reabsorption. There's another cholesterol-lowering resin called Welchol that also has these net positive charges."*

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- » Most biotoxigenic illnesses are difficult to diagnose and treat as all of them, including mold, affect multiple systems in your body and produce a wide array of symptoms. The underlying commonality, whether your disease is caused by dinoflagellates, mold, or spirochetes, for example, is chronic inflammation. The inflammation induced by exposure to the toxins and metabolic products produced by these microorganisms is what wreaks havoc on your health
- » Diagnosis begins with a careful medical history and differential diagnosis followed by a series of diagnostic blood tests that are readily available from commercial labs. Another extremely helpful test is a measure of functional vision called visual contrast sensitivity. Ninety two percent of those who are sick will also have a positive visual contrast sensitivity test, indicating a deficit in the neurologic function of vision
- » The first treatment step for biotoxigenic illnesses is cholestyramine, a rarely used cholesterol drug that binds to not just cholesterol, but just about everything of a particular molecular shape and size. According to Dr. Shoemaker, a recognized expert in the treatment of biotoxigenic disease, about 75 percent of patients experience a 75 percent reduction of symptoms with cholestyramine alone provided that they are not exposed to moldy building

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*The clays have very few of these binding sites. Even though people have used clays – and Bentonite is one – with some success, cholestyramine is so much better that people would put up with the common side effects of constipation and some reflux."*

According to Dr. Shoemaker, about 75 percent of patients experience a 75 percent reduction of symptoms with cholestyramine alone (but the numbers are less if there is ongoing mold exposure). Since the initial discovery of cholestyramine for the treatment of biotoxin disease, he has published about 20 papers about it, and approximately 500 physicians affiliated with SurvivingMold.com are using his protocol with benefit.

*"Once we identify the source of the toxin illness and remove people from exposure, cholestyramine is our first step," he explains. "But then, there are 10 more steps that we follow along to sequentially, one at a time to stop the inflammatory process initiated by the toxin exposure."*

## Identifying Biotoxin Illness

One of the complicating factors in terms of diagnosis is the fact that symptoms don't necessarily remain static. They can vary from day to day, as the offending compounds affect multiple body systems; each capable of causing multiple symptoms.

*"The similarity to chronic fatigue syndrome and fibromyalgia, for example, is uncanny," he says. "It turns out the idea of a biotoxin really expands to apply to all the compounds that have similar structure, shape, and size. These compounds are called ionophores, which means they move from cell to cell without being carried in the bloodstream. They're hard to detect and certainly hard to eliminate. Self-healing is extremely rare."*

*But eventually, whether the toxin comes from a dinoflagellate, from a mold, whether it comes from a blue-green algae, a spirochete, an apicomplexan, or series of other sources of these illnesses, these compounds – these small and low molecular weight compounds – all end up being dumped in the bile by your liver. Your liver can't metabolize these things."*

Diagnosis begins with a series of diagnostic blood tests that are readily available by commercial labs such as LabCorp and Quest. The results of these tests will guide the treatment.

*"Fortunately, there's an inexpensive test called visual contrast sensitivity that has been shown... to be important in neurotoxicology to show a deficit in the neurologic function of vision. This can be done online or with a handheld kit. It takes five minutes. It's non-invasive... We look for a deficit in the shape and height of the VCS curve which tells us about impairment of the ability to see contrast. That is a pattern of gray lines against a gray background... It seems to be low-tech, but it's very sophisticated in its origin."*

*If you have symptoms, blood tests, visual contrast, and exposure, and differential diagnosis clears the way, you're off to the cholestyramine prescription pad. After a month, we will look to see where we are with symptoms, what happened to some labs that were abnormal, and what happened to visual contrast," he explains.*

The visual contrast test, which is typically priced around \$15, is available on a number of different websites. The newest and most sophisticated version of the test can be found on SurvivingMold.com and ChronicNeurotoxins.com. The visual contrast test is not 100 percent indicative, but it offers a good clue:

- 92 percent of those who are sick will have a positive test, indicating a deficit in vision
- Less than one percent of those who are not ill (controls) will have a positive test

Another interesting point to note are that biotoxin illness such as Pfiesteria will produce **normal** results on many of the traditional tests used to check for inflammation, including:

Complete blood count (CBC)	Metabolic profile	Erythrocyte sedimentation rate (SED rate)	C-reactive protein
Lymphocyte test	Immunoglobulins	Thyroid studies	Antinuclear antibody (ANA)

## Other Helpful Tests to Pin Down a Diagnosis

The lab tests Dr. Shoemaker recommends include genetic tests, such as HLA-DR. HLA (human leukocyte antigen) are immune response genes found on chromosome 6.

*"If there is genetic susceptibility, what we look for is particular kinds of inflammation from innate immunity," he explains. "Here we look for cytokines; inflammation proteins that are free-formed and ready to go fight off the antigens. We look for split products of complement. Not C3 and C4 that you might look for in lupus, but the split product of C3a and C4a... Some folks – the very unfortunate ones – have enhanced activity of the enzyme that makes C4a. It will actually auto-activate, so the illness not only gets worse the longer you stay ill, it is quicker to relapse at higher levels of C4a with another exposure as well."*

All of the recommended tests are well-recognized by insurance companies and are available through commercial labs like Quest and LabCorp. Other tests commonly used include:

- T regulatory cell deficiency (CD4+CD25+)
- Transforming growth factor beta 1 (TGF beta 1), which Dr. Shoemaker says is "a huge player in this illness." TGF beta 1 is associated with respiratory problems, particularly asthma-like symptoms, tremors (reminiscent of those associated with Parkinson's disease), as well as scarring on the brain, and symptoms similar to those of multiple sclerosis
- Melanocyte-stimulating hormone (MSH)
- Vasoactive intestinal polypeptide (VIP)

Whenever autoimmunity is identified (elevated TGF beta 1 with low CD4+CD25+ cells drives production of antibodies to gliadin and cardiolipin), you'll want to remove gluten from your diet. Dr. Shoemaker recommends eliminating gluten for three months.

*"With MSH, this is a master hormone—it regulates other hormones, especially antidiuretic hormone—you'll see people that are thirsty. They urinate more frequently. And they get static shocks, interestingly. It's wild. Folks will turn on light switches with their elbows, because they get zapped all the time... When you fix antidiuretic hormone/osmolality relationships, as our fourth step, you'll have a lot of very happy people,"* Dr. Shoemaker says.

*"MSH also has effect on gonadotrophins. Men and women both have gonadotrophins that affect estrogen and testosterone primarily. You'll find abnormalities of androgens in about 40 percent of patients. Part of the mechanism for these androgen problems is the enzyme that converts testosterone over to estrone, called aromatase. Aromatase is upregulated like crazy."*

Unfortunately, many of these people will also present with low testosterone, and their doctors will often times prescribe testosterone as a result. However, *if you are biotoxic*, this will only cause the aromatase to convert more testosterone into estrogen, Dr. Shoemaker warns. The end result will be a *worsening* of symptoms.

*"But if you fix aromatase – and we can do that – you will normalize testosterone and estrone responses, and fix testosterone and DHEA without supplementation,"* he says.

## Getting Rid of Staph

Biotoxic patients will also frequently come down with staph colonization, caused by biofilm-forming microorganisms that live deep in the nose without causing nasal symptoms. These microorganisms create compounds that can affect genetic expression by turning on certain genes.

*"We knew that these coagulase-negative staphs had to be eradicated to get people better. I didn't know about the genomic effects until recently,"* Dr. Shoemaker says. *"But if you use cholestyramine and the patient still has symptoms, the next step is to get rid of these biofilm-forming, coagulase-negative staphs."*

*What that means is that you got to do the culture to begin with. That's not a very comfortable procedure – putting a swab four inches back in the nasal pharynx – but Diagnostic Lab Medicine in Massachusetts does those assays. It takes about two to three weeks for the results to come back.*

*Basically, cholestyramine is a mandatory first step. If you try to eradicate coagulase-negative staphs without cholestyramine first for at least 30 days, the patients don't get better."*

## An Important Note about Biotoxicity and Response to Exercise

It's a rarity for lifestyle changes to be placed toward the bottom of a treatment protocol, but according to Dr. Shoemaker there are a number of reasons for this when it comes to biotoxic patients. Clearly, an unhealthy lifestyle will only serve to make your condition worse in this case, but lifestyle changes like diet and exercise are not enough when you're riddled with inflammation caused by biotoxins. In some cases certain otherwise healthy measures may be counterproductive. According to Dr. Shoemaker:

*"The inflammation that we see in these patients responds poorly to hygienic measures (such as diet and exercise). But certainly, we want to maximize a healthful living as best as we can..."*

*Exercise is interesting. Just about everybody who has this illness know all about "push-crash" or good days followed by crash days. That common phenomenon is actually due to a very low anaerobic threshold.*

*If they try to use exercise and do too much, they will very quickly outstrip the delivery of oxygen to mitochondria. So, while this disorder is not a mitochondrial primary disorder, it becomes a secondary mitochondrial problem. We want to let them exercise to the anaerobic threshold, but not beyond. Because if they go beyond, they will start burning protein first after they've wasted glycogen due to anaerobic activity."*

*... this is important, because if you try to give someone with capillary hypoperfusion, low anaerobic threshold, and low VO2 max, which these illnesses all have; if you put them on an intense exercise program, you will sicken them immediately. You will make them much, much worse. Remember, these people are often short of breath going up four and five steps. We can use exercise as therapeutic protocol over time. And as exercise matches anaerobic threshold or oxygen delivery, we can make them into some of the most vigorous exercises anyone's seen, but you can't start that way."*

### More Information

For more information, [SurvivingMold.com](http://SurvivingMold.com) is a great resource for medical practitioners and patients alike. Dr. Shoemaker has also authored eight books. His most recent book, *Surviving Mold*, details his cutting-edge research into the acute and chronic effects of bitoxins. It also examines the root causes of dangerous mold growth in homes and buildings.

I've previously written about [mold remediation](#) and other [treatment strategies for mold](#), so to learn more, you can also review the hyperlinks provided and the related articles listed on the side panel at the top of this article.

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