

# CHEMICAL INJURY, CFIDS AND CHEMICAL SENSITIVITY

## A Crossroads for Industry and Society

An Interview with Gunnar Heuser, M.D., Ph.D., F.A.C.P.  
conducted by Cindy Duehring



*Gunnar Heuser, M.D., Ph.D., F.A.C.P. has been active in the field of immunotoxicology and neurotoxicology for more than ten years and practices at Cedars-Sinai Medical Center, Los Angeles, California. He has been at U.C.L.A. School of Medicine since 1970 and is Assistant Clinical Professor of Medicine there. He is a member of a number of medical societies and is a Fellow of the American EEG (electroencephalogram) Society and of the American College of Physicians.*

*Dr. Heuser has a special interest in the evaluation of patients who have suffered toxic chemical injury and may have developed multiple chemical sensitivities and/or chronic fatigue syndrome as a result. He has written three books and over eighty papers and abstracts in medical journals.*

**CD:** Why are you interested in the health effects of chemicals?

**GH:** I've seen so many chemically injured patients. For instance, there were at least four hundred in the May 1989 San Bernardino chemical spill alone. Many of them developed chemical sensitivities as well. I've seen hundreds of people who were made ill by carpet, pesticides, chemicals in the workplace, sick building situations, and formaldehyde at home. I've seen several thousand chemically injured patients now and that is just in my own practice. There are many other doctors out there who are inadvertently coming across more and more of these patients. I'm afraid it's just the tip of the iceberg.

**CD:** Was there a time when you were not concerned about the health effects of chemicals in everyday life?

**GH:** Absolutely! The effects of toxic-chemical exposure were not taught in medical school or during my specialty training in internal medicine. It was not until I developed an interest in patients with severe headaches that I realized that many of these people get their headaches from exposure to chemicals. Out of this realization developed an increasing interest in the effects of chemical exposure. I also realized that patients after exposure develop many symptoms beyond just headaches. As my interest and knowledge deepened, I began to appreciate also the need for objective documentation of the, at times, devastating effects of chemical exposure. This led to developing a whole program so that patients could be evalu-

ated properly and comprehensively.

My interest in the field was further stimulated by meeting Dr. Jack Thrasher more than ten years ago and by working with him on some projects of mutual interest.

**CD:** How do you know whether chemicals are involved in a patient's health problems?

**GH:** It is important to take a very detailed history and to do appropriate tests to establish a link between potential chemical exposure and the effects on a patient's health. Very sophisticated tests are now available to find chemicals in even trace

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amounts in blood, urine, and fat tissue. Exposure to some chemicals can be assessed also by doing antibody tests to these substances. Finally, a patient after chemical exposure shows a characteristic profile, once a comprehensive evaluation is completed.

It is important always to consider conditions and diseases unrelated to potential chemical exposure. Appropriate tests are done to help with this approach.

**CD: So which tests have you found are the best ones to document physical abnormalities related to chemical injury and chemical sensitivity?**

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***"The term allergy should be avoided altogether when discussing chemical injury and chemical sensitivity."***

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**GH:** I have published several papers <sup>(1,2)</sup> that show in detail how best to approach this problem. Almost all patients complain of difficulties with brain function. They are best documented with SPECT scanning of the brain and a neuropsychological evaluation. This can be complemented with brain mapping and evoked response studies, all of which test brain function. SPECT scanning of the brain will typically show decreased oxygen flow to the frontal, temporal, and parietal lobes. Inhalation of a small amount of perfume or other offending agent may make the SPECT scan even more abnormal and therefore document chemical sensitivity as far as brain function is concerned.

Chemical injury can adversely affect the eyes and also the nasal passages. A competent evaluation by a specialist can document problems in these organs rather convincingly.

Breathing tests (pulmonary function) should always be done. They are often abnormal after exposure to irritant chemicals and may become even more abnormal if a patient is challenged with a small amount of, for instance, perfume.

We always do in-depth testing of the immune system and find that

immune function becomes abnormal or worsens after exposure to a small amount of an offending chemical.

In summary, our approach is comprehensive, selects appropriate tests, and uses challenges with small amounts of perfume or other offending agents to show that the brain, the lungs, and the immune system are indeed sensitive to chemical exposure.

Consistencies in our findings have led us to propose diagnostic criteria for chemical sensitivity [published by the National Academy of Sciences <sup>(3)</sup>] similar to the criteria used to diagnose lupus. A person is considered to have lupus if he or she fits four of eleven criteria that you look for. Likewise, a person is considered to have multiple chemical sensitivities if objective abnormalities are found in four of seven test parameters addressing the central nervous system, peripheral nervous system, nose and sinuses, pulmonary function, autoimmune panel, immune T-cell subsets, and chemical antibodies.

We are very impressed with the fact that chemicals can profoundly affect brain function. The public has concentrated on the potential cancer causing effects of chemicals and, while this potential should not be ignored, the effects on our brains deserve far more attention than they have had in the past: as long as the toxin can reach the brain, it can potentially cause damage.

**CD: How do toxins reach the brain?**

**GH:** The quickest route is through the nose. The olfactory nerve endings in the nose can transport the chemicals directly to the brain, completely bypassing the blood-brain barrier that normally serves as a protection. Dr. Iris Bell and Dr. Claudia Miller have written on this. In simplified terms, the chemicals can go directly to the brain — where they can affect the hypothalamus and the limbic system, which also controls the immune system. And then you can get immune system involvement. They are all related. This almost immediate access accounts for the often almost immediate reactions of patients who inhale chemi-

icals. Chemicals also enter the brain through blood, having been absorbed through the skin, by inhalation, or by ingestion.

It is of interest to note that the inner lining of the nose in patients after chemical exposure is often thinned. This atrophy is something you do not get from allergies. Also, their sense of smell is often significantly changed — either heightened or reduced to the point where it no longer serves as a warning mechanism. Or patients may report that certain odors smell odd or different to them.

**CD: How does chemical sensitivity relate to allergy?**

**GH:** The term allergy should be avoided altogether when discussing chemical injury and chemical sensitivity because we are not discussing allergy as defined by board certified allergists. We're talking about chemicals affecting the nervous system and about actual damage to different organ systems. Allergists define allergy as being IgE mediated and are rightly offended if you ignore their definitions. Chemical sensitivity involves IgM and IgG immune pathways, neurological phenomena, and who knows what else. It takes an altogether different pathway. Yes, the symptoms are allergy-like, but even using that term confuses the issue.

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***"It would appear that CFIDS can be caused by chemical exposures."***

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**CD: When you became aware of chemical injury from chemical exposure and the adverse effects from chemicals in our daily living, did that cause you to change your lifestyle in any way?**

GH: Yes, it did. We certainly changed procedures in my office, where the use of perfumes and sprays is discouraged. Also, every effort is made to avoid use of pesticides and herbicides in my office and home environment. Finally, our air is filtered in all consultation rooms.

CD: You gave a talk titled "Chemical Exposure as a Cause of Chronic Fatigue" at the Chronic Fatigue Syndrome Institute Fourth Annual Conference (May 7-9, 1993). How do chemicals relate to CFIDS (Chronic Fatigue Immune Deficiency Syndrome)?

GH: At that conference I presented some case reports on patients who had suffered toxic chemical exposure and were now suffering from profound chronic fatigue. Often these patients have all the indications of CFIDS in that their clinical presentation, immune function, and viral antibodies are all characteristic of that disease entity. In 1988 the Centers for Disease Control (CDC) suggested a number of diagnostic criteria for Chronic Fatigue Syndrome, now called CFIDS. In my experience chemical exposure frequently causes a flu-like illness that is often followed by profound fatigue, problems with cognitive and memory functions, fibromyalgia and headaches. Sleep is nonrefreshing, and exercise worsens symptoms. These are the exact diagnostic criteria for CFIDS. It would appear that CFIDS can be caused by chemical exposure. On the other hand, classic CFIDS and toxic chemical exposure show abnormalities on SPECT brain scans that are different in distribution from each other. It seems clear that a detailed history in a patient with complaints of chronic fatigue should therefore always address the question of past exposure to chemicals.

CD: Is there a treatment for chemical sensitivity?

GH: There is no cure, but avoidance of further chemical exposure can keep people from getting worse, and some will improve to varying degrees if they are careful. Patients

should be taught to avoid chemical exposures in their everyday environments. No detox program has any merit if a patient returns after that program to the same toxic work and/or home environment. The natural tendency is to keep pushing and trying to keep going as long as possible in the same situation. But that only makes things much worse.

Chemicals can cause autoimmune disease. It is interesting that some common neurological disorders such as multiple sclerosis and myasthenia gravis are now considered to be autoimmune diseases. Therefore, treatments have more recently been directed toward im-

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mune modulation. They include intravenous gamma-globulin therapy as well as plasmaphoresis. These treatments have shown promise and should be considered for patients with chemical injury and CFIDS.

CD: Do you have any ideas about what our nation should be doing to deal with the issue of chemical injury and chemical sensitivities?

GH: Conferences should be held at all levels of government and other organizations. They should bring together patients, professionals, and representatives from the industry so that an interchange can take place at regular intervals with the idea that our society can plan ahead to make our everyday environment less-toxic.

Also, there are notorious data gaps and problems with insufficient testing of the chemicals in building materials and in consumer products, especially in gauging the neurotoxic

effects of long-term low-level exposure. Materials used in our everyday life should be tested by an independent organization. These tests should be patterned after models already available in Consumer Reports.

The need for testing and for interaction among all involved parties is illustrated by the fact that some carpet and related materials have been found to be quite toxic, whereas others have not. This underscores the importance of independent testing of carpets and related materials so that the public and the scientists can be better informed and make an effort to create products that are less-toxic.

There are tremendous numbers of people who are being adversely affected by chemicals in our society. So many are being injured, and so many are at risk without even realizing it. Yet I think overall awareness is increasing and so is the consumer demand for safer products. It's a very exciting opportunity for industry because if they are really wise and creative about finding ways of building safer homes and making safer products, people will want to buy them.

CD: Any final thoughts?

GH: Based on objective evidence I have seen from our research, I strongly believe that multiple chemical sensitivity does exist as a true condition and disease. I believe that patients with chemical sensitivity deserve all our compassion and help. Society should be supportive and understanding of this condition. Patients with MCS constitute a force that will help all society by making our environment cleaner and healthier. ♦

#### References:

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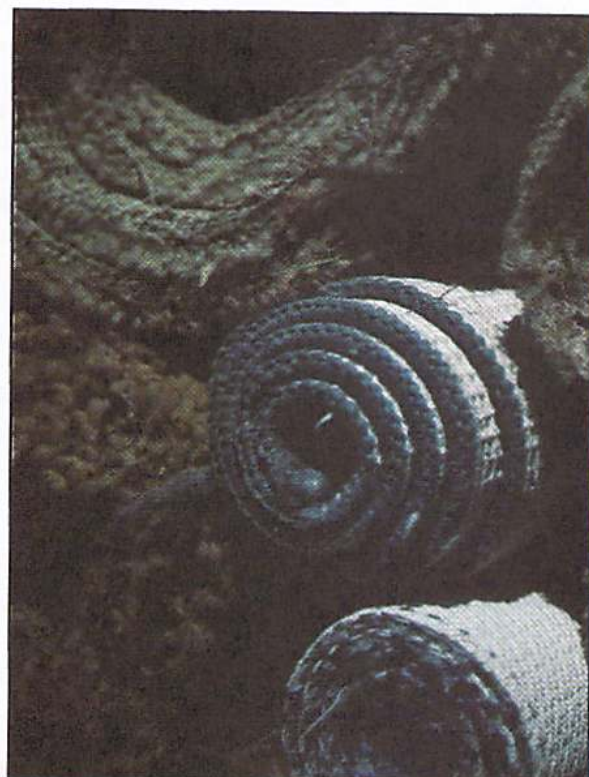


# Carpet



## *Part One: EPA Stalls and Industry Hedges while Consumers Remain At Risk*

*By Cindy Duehring*



*(Photo by Dave Ostlund)*

**"I'll never forget when it first started. I was sitting at a table eating a sandwich and reading *People* magazine, with my ten-month-old son, Christopher, nearby on the carpet. All of a sudden, he went into this strange seizure-like reaction. His upper body tensed up, and his arms started shaking, and his jaw moved kind of funny-like."**

Jocelyn McIvers rushed her son to the doctor. He immediately hospitalized Christopher, whose reactions continued unabated. After a week of testing, the doctors ruled out multiple sclerosis, muscular dystrophy, and tumors, but they couldn't identify the disorder. Christopher was then taken to the head of pediatric neurology at UCLA, who diagnosed "tremors of unknown origin."

"Christopher's EEG was normal,

even during reactions, so his doctor said it was either something occurring in the deeper part of the brain [subcortical] or something different altogether," said Kevin McIvers. "He told us their best guess was that there was something dreadful going on neurologically. We would just have to wait and see, and eventually it would get worse and the root of the problem would show itself." The doctors tried drugs to suppress the central nervous system, but they didn't stop the tremors. "So we were waiting, just watching our son have all these terrible episodes, forty to fifty a day, and not knowing the cause."

Because Christopher had been perfectly healthy until this point, Jocelyn's father, a building contractor, suggested they consider as a possible cause of the problem the new carpet they had installed in their Santa Barbara home just five days before the onset of the tremors. So Kevin and Jocelyn, both lawyers, cautiously approached the carpet manufacturer for information.

"Being a trial lawyer, I'm very aware of some of the shenanigans that

can go on over semantics, so I was very careful how I worded my questions to the industry. I wanted the correct information for my son's benefit. I asked specifically, 'I don't want to know if the industry believes that carpet can cause problems, or if it's scientifically documented or anything like that. Just tell me, please, has anyone ever complained or claimed that they have had a neurological or neuromuscular reaction of any kind to carpet?' And the answer was, 'No. We've never heard of it.'"

The manufacturer followed up their call with a letter a month later: "You reported that your 11-month-old son has been experiencing some allergy-type symptoms since your new carpeting was installed," the July 18, 1991 letter stated. "We have not heard of any reactions similar to what you describe."<sup>(1)</sup>

Christopher's tremors seemed to lessen when they were away from home, so, on the advice of their doctors, the McIverses consulted with an indoor air consultant. He advised them to



**Christopher McIvers lying  
on the problem carpet.**

steam-clean the carpet several times and bake out the house by shutting the windows and heating it to speed up the offgassing of volatile organic compounds (VOCs), then airing it for several days. They went through this routine twice, while living at Jocelyn's mother's house for six weeks. During that time Christopher's tremors had decreased. "So we returned to our home and kept all the windows open. The tremors got worse again but were still less frequent than before," said Jocelyn.

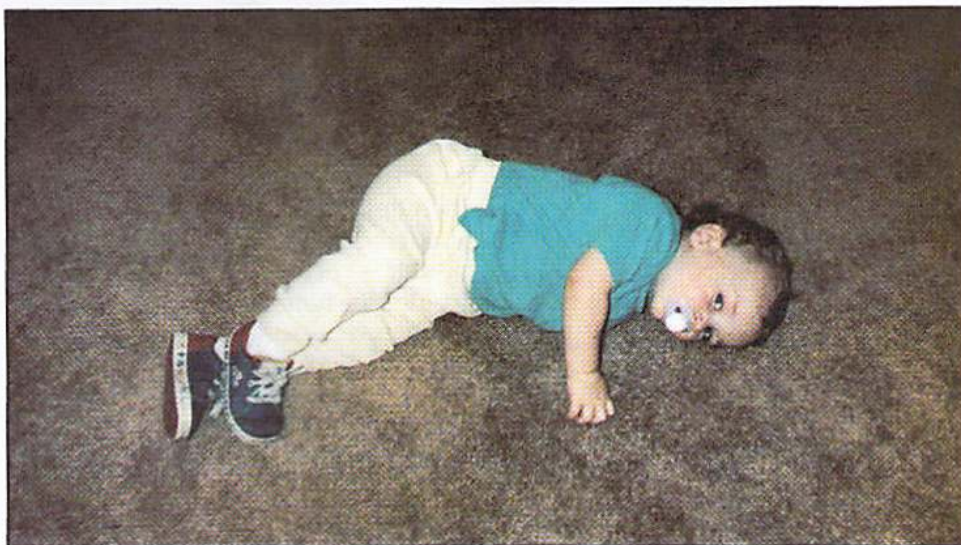
That October the CBS news program *Street Stories* did a segment about Anderson Laboratories in Dedham, Massachusetts. At the request of a number of people, the lab had tested certain carpet samples for biological effects and come up with some disturbing findings. Using a standard testing method (ASTM-E981), Rosalind Anderson, Ph.D., found that air blown across the samples was causing severe respiratory and neurological/neuromuscular abnormalities and death in mice. <sup>(2,3)</sup> The television script highlighted the health problems several families had experienced as a result of new carpeting. The McIverses saw the program.

"So we had our carpet tested and sure enough, the mice were rolling over and shaking just like our son did," said Jocelyn. "We were horrified."

The McIverses immediately removed the carpet and pad, scraped off the adhesive, washed down the entire house, baked it out again, aired it, and moved back in December of 1992. "Since December Christopher's tremors have entirely stopped," Kevin reports.

It is not known whether any neurological damage will become evident as the child grows. "He tends to 'zone out' and stare into space a lot more than seems normal to me, which concerns me," said Jocelyn. "But we don't know if it means anything. We'll just have to wait and see."

The more Kevin and Jocelyn learned about the history of toxic carpet problems [see "Carpet Cover-Up Time Line" in this issue], the angrier they became. "We felt utterly betrayed. The manufacturer we had contacted was a major player front and center in



the carpet industry and had people on the board of the Carpet and Rug Institute [CRI]," said Kevin. "Long before we ever called them, the CRI was very much involved in the episode where over a thousand complaints were reported by EPA workers made ill by new carpet in the EPA headquarters building. <sup>(4)</sup> I know, at a minimum, they were well aware of neurological complaints and very serious pulmonary complaints from a number of EPA workers."

The incident in Washington had brought CRI into the Carpet Policy Dialogue with the Environmental Protection Agency (EPA) and the Consumer Product Safety Commission (CPSC), a working agreement between government and industry that was restricted to studying total volatile organic compounds and not health effects. The dialogue had been underway nearly a year, and the carpet industry was already studying ways to reduce total VOCs in carpet and carpet-related products, when Kevin McIvers called to ask about carpet concerns. <sup>(4,5)</sup>

CPSC had received hundreds of complaints about carpet. In a memorandum attached to a CPSC report obtained by the McIverses, dated nearly a year before they had bought their carpet, CPSC presented the results of their evaluation of complaints from 206 households about respiratory and central nervous system problems attributed to carpet and stated, "We are continuing to interact with the carpet industry and will provide them with copies of these studies for their information." <sup>(6)</sup>

Two months before Kevin McIvers called the manufacturer of their carpet for help, the New York Attorney Gen-

eral, Robert Abrams, had petitioned CPSC to require warning labels on carpets. <sup>(7)</sup> Because of the large number of carpet complaints, the attorneys general of twenty-five other states signed the petition as well. <sup>(9)</sup> CPSC refused to even consider their petition. <sup>(7,8,9)</sup> According to Kevin, numerous lawsuits had by then been filed against the carpet industry by individuals injured by carpet: "The industry representative that I spoke to repeatedly on the phone when I was looking for information on carpet was very compassionate and always asked about Christopher's health. It wouldn't surprise me at all if that guy sincerely believed carpet couldn't be a problem and there hadn't been any history of complaints, and simply had been misinformed by upper management. But somewhere in the corporation someone has been making decisions about what information gets to the public, and it is a real dishonest, hideous decision that is being made. The direct result was that our son continued to live with the toxic carpet for another year and a half, continuing to have thousands of tremors, while my wife and I spent most of our time with a knot in our stomachs, wondering when he would go further downhill. And that's just unconscionable."

Although the tremors have stopped, testing on Christopher McIvers shows that he has immune system damage consistent with chemical exposure, including autoantibodies (indicating that the body's immune system has mistakenly identified its own tissues or cellular components as foreign and has directed antibodies against them) to the myelin in his nervous sys-



## Carpet Cover-Up Time Line

**1980** First documented case of people becoming sick after carpet installation. Glenn and Sharon Beebe become ill from carpet installation at their business building in Cincinnati.<sup>(20)</sup> They have now documented several thousand cases of carpet-related complaints dating back to 1972.

**1986** The Beebes send thousands of notices to industry, medical personnel, government agencies, and consumers.<sup>(20)</sup>

**October 1987** The Environmental Protection Agency (EPA) begins carpet installation in its Waterside Mall headquarters building, and employees complain of ill health from the fumes. A total of 1,141 complaints are received. To date, at least twenty people are still unable to work in the building.<sup>(4,27,28)</sup>

**May 1988** Over 100 EPA employees hold a rally in front of EPA headquarters to demonstrate their concern over air quality, the toxic carpet in their building, and EPA's refusal to acknowledge the problem and take action.<sup>(4)</sup>

**August 1988** EPA establishes a policy of not using carpet containing the chemical 4-phenylcyclohexene (4-PC) in headquarters facilities and starts accommodating injured employees. Officially denies they are "real" injuries and claims that carpet poses no problems.<sup>(4)</sup>

**May 1989** EPA is involved in a joint project with CPSC to study carpet complaints. EPA management tells EPA union they will not use data from their investigation into the air quality at the headquarters building because they fear lawsuits.<sup>(4)</sup>

**September 1989** As a result of its indoor air quality study, EPA removes the carpet from its headquarters. A total of 27,000 square yards are replaced.<sup>(4,13,14)</sup>

**September 1989** "The freshly manufactured carpet clearly caused the initial illness," EPA's Director of Health and Safety tells *Washington Times*. EPA management removes him from that job within a few weeks.<sup>(4)</sup>

**March 1990** EPA management tells union "off the record" that because the union's petition to EPA to start testing and regulating carpet emissions could potentially cost the carpet industry "billions of dollars," it will not grant the petition.<sup>(4)</sup>

**April 1990** EPA publicly denies the union petition. EPA's Indoor Air Division director privately tells attendees at an indoor air conference in Virginia that "everyone knows the new carpet made people sick," while publicly denying the same.<sup>(4)</sup>

**June 1990** The EPA union files suit

tem — a sign that nerve tissue damage has occurred.<sup>(10)</sup>

His mother reflects: "I was extremely careful about what my baby came into contact with. Organic chemical-free food and everything. Even though I know better, I still feel guilty about the carpet. I mean, I picked it out myself — beautiful and expensive. I wanted the house to be so nice, and then I poisoned my son with it. Looking back at all this, we wished we had just ripped it out, but they assured us the carpet wasn't the cause, and we just believed them - which was really stupid, but we did."

"The general public needs to be aware," says Kevin McIvers, "that in spite of two congressional hearings that have been held regarding the toxic carpet issue (October 1, 1992, and June 11, 1993), the industry is still giving a very imbalanced picture to anyone who asks, and that's a great disservice."

At the October hearing, chaired by Sen. Joseph Lieberman (D-CT), Dr. Anderson reported that three of thirteen random, new carpet samples caused adverse health effects. EPA responded that the health hazard reported from 25 percent of carpets is not enough to require a warning label on all carpeting and that it would be "unfair" to do so. EPA was instructed by the congressional panel to replicate Anderson's tests.<sup>(4,11)</sup>

"The carpet industry has mounted a massively deceptive merchandising campaign that intentionally misleads the public by implying that all carpets with the green tag have met safety standards," says New York Attorney General Robert Abrams. "First of all, there are no such recognized standards of safety. CRI has set its own arbitrary standards. Secondly, CRI's testing program is completely inadequate because it measures only a small percentage of the chemicals emitted from carpets. Finally, a manufacturer can get a green tag for an entire product line simply by having one small piece of carpet tested once a year."

One of the carpets to pass the green tag testing is associated with disabling the members of the Charles Fitzgerald family of West Friendship, Maryland, who were exposed to it in their lighting store in 1992. When tested by Anderson Labs, the Fitzgeralds' carpet caused gross nervous system abnormalities in mice. It was then analyzed by another independent lab, at the University of Pittsburgh, with results that duplicated those of Anderson.

EPA and CPSC lent their names to the green tag program, and they have increasingly come under fire for not fulfilling their role as protectors of the public interest.<sup>(4,12)</sup> "The Consumer Product Safety Commission receives hundreds of complaints and inquiries each year about the adverse health effects associated with the materials used to make carpet," said Abrams. "Yet the government has chosen to sweep this problem under the rug by ignoring the public's health concerns as well as my request to disseminate meaningful information about potential carpet hazards."

When EPA investigated carpet complaints from its headquarters building, it published a report showing a positive correlation between EPA worker complaints and new carpet, according to an EPA Senior Scientist, Bill Hirzy.<sup>(4,13,14)</sup> Despite its own study, and the removal of 27,000 square yards of carpet from the headquarters building in 1989, EPA published a public information brochure, "Indoor Air Quality and New Carpet: What You Should Know," which states, "Limited research to date has found no links between adverse health effects and the lev-

els of chemicals emitted by new carpet."<sup>(15)</sup>

There was no scientific basis for the brochure's statement, admitted Bob Axelrad of EPA during an interview on CBS "Evening News."<sup>(15)</sup> He went on to say that the brochure was formulated during the Carpet Policy Dialogue and

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**"The carpet industry has mounted a massively deceptive merchandising campaign."**

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constituted a compromise with industry.<sup>(16)</sup>

"My sense is that EPA is avoiding the issue because they don't want to participate in a financial massacre of industry," said Hirzy, speaking as president of EPA Union Local 2050. "And there is a certain amount of investment in reputation by people in EPA who early on said carpet wasn't a problem. Industry won't publicly admit there's a problem because of the liability. In the meantime, how many lives have been and will be devastated?"

"To date we have tested over 400 carpet samples," said Dr. Rosalind Anderson. "Of the carpets sent in by persons with health complaints, at least 90 percent have shown severe neurological effects. Approximately 25 percent of new carpets, ones that have never been installed, have been deadly. We've found death in mice from a new sample just seven square inches at room temperature."

In a side-by-side test conducted at Anderson Labs, EPA replicated Anderson's work. "The EPA people even picked out a new carpet sample for the test run themselves, so there couldn't be any accusation that Dr. Anderson deliberately picked a contaminated sample," said Kevin McIvers. The side-by-side test was videotaped with Anthony Pollina, aide to Rep. Bernard Sanders (I-VT), as a witness. "EPA found the same neurological effects and death in the mice as did Dr. Anderson," said Pollina.

Then, when EPA returned to its own labs, "instead of duplicating what Rosalind Anderson did, as they were charged to do at the October '92 carpet hearing, EPA created its own protocol," said Hirzy. "They replicated Anderson's results at her lab, but when EPA scientists used bottled air in their own lab and bubbled it through water to add humidity, the humidity changed the result. What they found was that the humidity reduced the toxicity, so apparently whatever the toxins are, they are soluble in water at low levels."

After Anderson Labs changed their

protocol to humidify the air in the same manner as EPA had done, "we found it removed the toxic effect as well," said Anderson. When they passed air over a toxic carpet sample and bubbled it

through water, the air was not toxic to the mice. So they took that water and exposed the mice to it in the form of a mist. "Lo and behold, the toxic effect had been removed from the air and put into the water. We were now seeing the same neurotoxic effects from the water, including death," said Anderson.

"We found the same results when we injected the water into the muscles of the mice. We used appropriate control mice, which were totally unaffected by water that wasn't exposed to the carpet air. So something very bad was coming off that carpet, which can be trapped in water. It's really an exciting finding, actually. All that needs to be done now is for someone to analyze the water and see what the chemicals are."

"It cries out for follow-up," said Hirzy. "What is in the water that's killing mice? The chemicals in the carpet have already been isolated by the water, so all you have to do is test the water. But it's a terribly expensive process, so a private lab couldn't fund it on its own."

"We did not independently replicate the severe toxicity described by Anderson Laboratories," reported EPA at the carpet hearing held on June 11, 1993, before the House Subcommittee on Environment, Energy, and Natural Resources.<sup>(17)</sup> The hearing was held to discuss EPA's findings, according to Congressman Sanders' aide Pollina. But instead of talking about the positive implications of its discovery, EPA simply denied replicating Anderson's tests and then reiterated the stance taken in its brochure: "We do not have a sound basis for concluding exposure to carpet emissions presents a health risk."<sup>(17)</sup>

Under cross-examination, EPA admitted having changed the protocol and having had problems monitoring humidity.<sup>(11,18,19)</sup> "EPA's presentation be-



Rosalind Anderson, Ph.D.

over petition denial. Court grants EPA's motion to kill the suit.<sup>(6)</sup>

**August 13, 1990** The Consumer Product Safety Commission (CPSC) distributes a memorandum regarding the evaluation of carpet complaints from 206 households. The memorandum states that they have been interacting with industry on the topic and will continue to do so.<sup>(6)</sup>

**August 21, 1990** EPA convenes a Carpet Policy Dialogue with floor-covering industries (including CRI) and other government agencies. The dialogue is restricted to studying only total volatile organic compound (VOC) emissions and not health effects.<sup>(4,5)</sup>

**April 1991** A consumer alert, "Chemicals in New Carpets Pose Potential Health Hazards," is issued by New York Attorney General Robert Abrams.<sup>(20)</sup>

**April 10, 1991** New York Attorney General Robert Abrams petitions CPSC to require consumer warning labels on carpet.<sup>(7)</sup> In time twenty-five other state attorneys general sign the petition.<sup>(9)</sup>

**June 1991** EPA publishes the result of the air quality investigation into worker complaints in its headquarters building. Volume 4 establishes a link between adverse effects and carpet.<sup>(4,12,20)</sup>

**June 1991** Kevin McIvers calls Monsanto carpet manufacturer when his ten-month-old son, Christopher, develops tremors and has to be hospitalized five days after carpet installation. Kevin reports being told they had never heard of that type of complaint before and that it could not be caused by the carpet.

**September 6, 1991** Carpet Policy Dialogue is concluded. A public information brochure has been prepared, and industry has agreed to take steps to measure VOC emissions in their products and to take steps to reduce them.<sup>(4,5)</sup>

**October 1991** CPSC refuses to docket the New York attorney general's petition to require warning labels.<sup>(4,6)</sup>

**March 1992** EPA brochure is published, claiming that no links have been found between carpet and ill health.<sup>(19)</sup>

**May 1992** The carpet that disabled the Fitzgerald family of West Friendship, Maryland, and killed several mice with the ASTM-E981 testing at Anderson Laboratories (Dedham, Mass.) passes the carpet industry's testing program and qualifies for a Green Tag.<sup>(30)</sup>

**July 17, 1992** CRI announces its Green Tag program in a press release.<sup>(31)</sup> The program tests only one carpet sample from each carpet

type once a year — a test based only on total VOC emissions, not biological health effects. EPA and CPSC lend their names to the program.<sup>(4,31)</sup>

**August 13, 1992** A CPSC report states that measuring total VOCs is "probably not adequate as a standard to protect health" and recommends the ASTM-E981, developed by Dr. Yves Alarie.<sup>(22)</sup>

**August 18, 1992** After presenting their findings to EPA management and industry and receiving no response, Anderson Labs goes public with test results of carpet fumes killing mice, using the ASTM-E981 testing method.<sup>(23)</sup>

**August 21, 1991** CRI has Dr. Alarie check out Dr. Rosalind Anderson's testing technique. Dr. Alarie reports that it is scientifically valid. CRI hires him to replicate Anderson's tests in his labs. He finds the same neurotoxic results four times.<sup>(24)</sup>

**September 1992** The EPA union files a complaint with the Federal Trade Commission and EPA's Indoor Air Division, claiming the Green Tag program to be fraudulent and a danger to public health.<sup>(4)</sup>

**October 1, 1992** Sen. Joseph Lieberman (D-CT) holds carpet hearings. Dr. Anderson says 3 of 13 random, new carpet samples tested caused adverse health effects. EPA replies that the health hazard reported from 25 percent of carpets is not enough to require a warning label on all carpeting and that "it would be unfair" to do so. EPA is given a charge to exactly replicate Anderson's test exactly.<sup>(4,11)</sup>

**October 29, 1992** CBS "Evening News" and "Street Stories" air segments on problem carpet, Anderson's findings, and the Fitzgerald story. When questioned about EPA's carpet brochure, which states that research has found no link between adverse health effects and carpets, EPA's Bob Axelrad admits there is no scientific basis for that statement and that the brochure represents a compromise with industry.<sup>(18)</sup>

**November 6, 1992** Testing of McIvers' carpet shows in mice the same type of tremors and neuromuscular reactions their infant son had. They remove carpet, and their son's reactions stop.<sup>(32)</sup>

**January 1993** EPA is videotaped replicating Anderson's test results in a side-by-side test at Anderson Labs with Rep. Bernard Sanders' aide, Anthony Pollina, as a witness. The mice have respiratory and neuromuscular reactions, and some die.<sup>(11)</sup>

**January 27, 1993** Blood testing of Christopher McIvers shows im-

fore Congress was confusing at best," said New York Environmental Protection Bureau Assistant Attorney General Gail Suchman. "It hasn't answered our request, which is to get the right information out to the public."

Congressman Sanders and Subcommittee Chairman Mike Synar (D-OK) were especially critical of EPA for "dragging its heels." Said Sanders: "I am extremely disturbed that after months of promises to get to work on this issue, the EPA has failed to accurately replicate Dr. Anderson's tests, has failed to talk to a single doctor whose patients have suffered ill health effects from carpeting, and has failed to make any serious effort to identify which chemicals are causing the problem."<sup>(20)</sup>

At the hearing Ron VanGelder, president of the Carpet and Rug Institute, testified that current research suggests that "carpet itself does not adversely affect public health."<sup>(21)</sup>

Pollina reports that under cross-examination "the three people from industry were kind of hedging and giving conflicting answers and then the chairman basically said, hey, wait a minute, you're under oath. There can be only one answer to this question. Either people are getting sick from carpet or they're not. The industry guys

kind of looked at each other, and then one of them said something to the effect of, well, if you consider an allergy-like reaction to be an adverse health effect, then yes, I suppose you could say

carpet causes problems for some sensitive people."

"One of the best things that happened at the hearing," Pollina adds, "was industry admitting under oath, that yes, carpet can cause problems in some people. The term allergy-like can mean just

about anything, but at least they admitted that carpet could be the cause of it."

The same day of the hearing, CRI issued a press release stating: "The scientific evidence overwhelmingly demonstrates that carpet itself does not adversely affect public health."<sup>(22)</sup>

VanGelder's testimony cited EPA and CPSC as not finding scientific evidence to warrant concern over carpet. He blasted Anderson's test method, calling it "irrelevant to the debate on indoor air quality."<sup>(21)</sup> Yet just six days before Anderson went public with her test findings, CPSC had distributed a report recommending the use of the same testing method (ASTM-E981) for carpet that Anderson was using. The report analyzed the final results of a carpet testing study conducted by interagency agreement. It warned that measuring total VOCs, the measure used by the carpet industry's green tag program, is "probably not adequate as a standard to protect health."<sup>(23)</sup>

The health effects of the many chemicals the scientists found offgassing from carpet are for the most part unknown, the CPSC report stated. It then recommended the test founded by Yves Alarie, Ph.D., the ASTM-E981, calling it a "standard method" that "could be used to make reasonable predictions of effects in humans over a wide range of concentrations."<sup>(23)</sup>

"Dr. Alarie of the University of Pittsburgh was hired to develop the ASTM-E981 in the 1960s by the U.S. Department of Defense to test for the



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potency of nerve gases to be used by the U.S. Army in Vietnam for cleaning out tunnels," said Mark Goldman, manager of Anderson Labs. "It was later used by the pesticide industry. It came from the camp of the manufacturers, frankly."

Alarie, who had been hired by CRI in the past, testified at the June hearing that when Anderson first released her test results, VanGelderren asked him to verify her test protocol. After Alarie visited her lab and reported that "her description of the effects observed was correct and her experimental design was valid," VanGelderren hired Alarie to see if he could replicate her work for CRI.<sup>(24)</sup>

Alarie testified that he replicated her results four times: "Her results are perfectly reproducible in my laboratory."<sup>(20)</sup>

In his testimony Alarie expressed concern about the many rumors being spread to try to discredit Anderson's work: "As results of neurotoxic effects and death were reported by Dr. Anderson to be due to volatile emissions from carpets, rumors were circulated that these effects were due to the exposure method — i.e., placing the mice in restraining tubes as described in the ASTM-E981 method." Alarie conducted additional testing over even longer periods of time, "in order to satisfy those rumor generators," and proved the restraints were absolutely not a problem.<sup>(24)</sup>

A CRI press release issued on the day of the hearing quoted one of its experts regarding the restraints: "[The tests] are tantamount to lacing up a human being in a strait jacket and repeatedly choking him for two days."<sup>(22)</sup>

"Cretins will continue to spread their rumors, and there is not much I can do about it," testified Alarie at the hearing. "This method ASTM-E981 has been used all over the world and I have never received a complaint from a user of it that the method itself produces neurotoxic effects."<sup>(24)</sup>

Congressman Sanders went on

record agreeing with Chairman Synar, whom he quoted as saying that the testimony and evidence presented at the hearing "remind us of EPA's past failures to protect indoor air quality ... After years of complaints, consumers still have difficulty in getting straight answers to questions about chemical risks if they ask carpet retailers, or frankly, even if they ask government officials."<sup>(20)</sup>

One week after the hearing, EPA's designated carpet spokesperson was asked about the side-by-side EPA replication of Anderson's tests at her lab. "There was no side-by-side," said EPA's Charles Auer, director of the Chemical Control Division. He said that EPA had observed Anderson's testing but had not replicated it.<sup>(25)</sup>

"We submitted the videotape of the side-by-side test to Congress as part of our testimony," said Mark Goldman. "It's part of the Congressional Record."

EPA plans workshops this fall with industry and Anderson Laboratories to discuss whether to pursue the test results any further. "That's just a government tactic for delay," said EPA Union President Hirzy. "It's designed to keep the industry covered. There are some hot leads here. We have human evi-

dence that people are getting respiratory, neurological, and immunological injury from carpet. If I were industry, I'd be scurrying around behind the scenes trying to find out what's in the air and the water that's killing those critters, and then working to reduce it.

And if EPA can keep things stalled up by pushing for workshops and time-consuming quote 'peer reviews,' and all sorts of delay mechanisms, that mutes out a lot of lawsuits."

Congressman Sanders' office wants action. "Number one," said Pollina, "We'd like to see EPA sit down and have some serious talks with a group of doctors who can help them make the connection to human health. Number two: We'd like to see industry not just

(Continued on Page 30)

mune system damage consistent with chemical injury.<sup>(10)</sup>

**February 1993** Anderson's paper "Toxic Emissions from Carpets" is presented at an international conference and accepted for publication in a peer-reviewed journal.<sup>(33)</sup>

**March 1993** In its own lab EPA changes Anderson's protocol instead of replicating the test.

**April 1993** CRI distributes a letter to members of the carpet industry, including retailers, assuring them that "extensive research" by EPA and others failed to discover any link between carpet and ill health. Letter provides sample statements for retailers to use in assuring the public that carpet is safe and to cast doubt on Anderson's testing.<sup>(34)</sup>

**June 1993** Four state attorneys general (N.Y., Vt., Conn., and Oreg.) prepare a report, "Carpet and Indoor Air: What You Should Know," which warns the public about the misleading nature of the green tag program. The report is sent to CRI and carpet manufacturers along with a request that they withdraw the green tag program.<sup>(35)</sup>

**June 11, 1993** A second carpet hearing is held before Congress regarding EPA's work. EPA testimony states that its scientists were unable to replicate Anderson's findings. Anderson submits the videotape showing EPA's replication of her findings in the side-by-side test. EPA admits having changed the protocol in its own lab. Under cross-examination, industry admits that some people may experience adverse effects from carpet, and the Carpet and Rug Institute agrees to work on a new additional label with the New York attorney general's office. CRI also agrees to fund more research into carpet and work with EPA on it. That same day, CRI issues a press release stating that "carpet itself does not adversely affect public health."<sup>(11, 17, 18, 19, 22, 36)</sup>

**June 18, 1993** Contradicting the videotape presented at the hearing, EPA's Charles Auer, director of the Chemical Control Division and current official spokesperson to the public on carpet, states when questioned about the result of EPA's side-by-side test with Dr. Anderson: "We never ran a side-by-side."<sup>(25)</sup>

**July 4, 1993** When Dr. Anderson presents two papers at "Indoor Air '93, the Sixth International Conference on Indoor Air Quality and Climate" in Helsinki, Finland, she is approached by many researchers from around the world who tell her that they are seeing similar carpet-related health problems that this is a worldwide dilemma.<sup>(16)</sup>



# LESS-TOXIC FLEA CONTROL

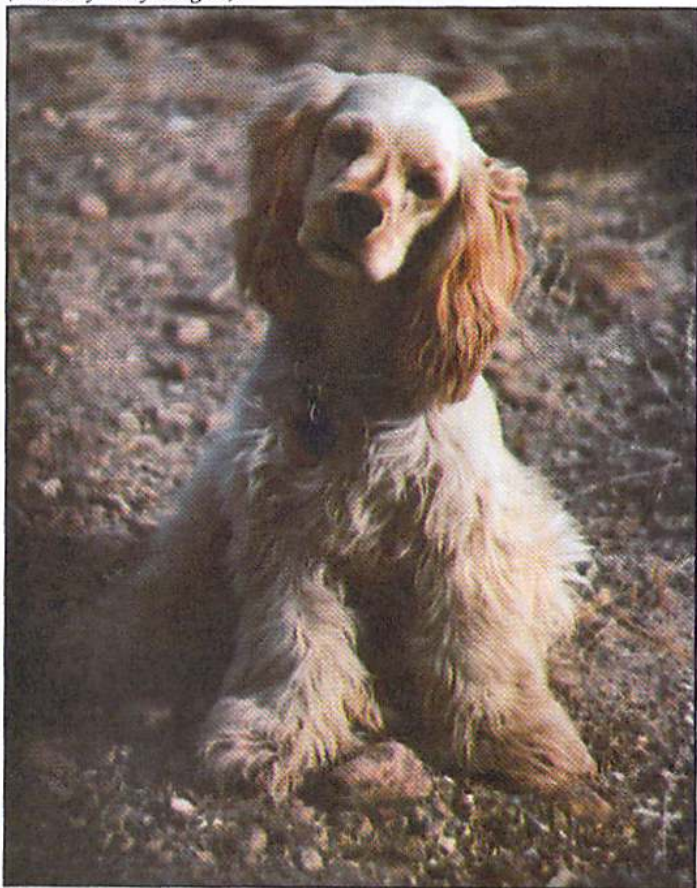
by Cindy Duehring



## Family Finds Natural Methods Succeed where Pesticides Fail

**"We were devastated. We had saved for so long and were so happy to move into our first home, and it turned out to be a nightmare. It was a flea haven," said Peter Jeffrey. They hadn't noticed the fleas before they bought the house, in part because the carpet was a dark brown and littered with dirt, and in part because they weren't watching their feet.**

*(Photo by Gary Vorgert)*



The Jeffreys piled all their belongings into the garage and began painting the inside of the empty house. Their two children, who were lying on the carpet, were the first to be bitten. "Once we knew what to look for, our eyes were opened," said Peter. "You could see fleas jump every step you took. A few fleas wouldn't have bothered us. But the place was infested."

Peter thought getting the problem under control was just a simple matter of a good pesticide job, so he set off some foggers, sprayed heavy-duty pesticide on the carpet, and covered the yard and foundation with a pesticide.

"It killed the spiders and the ants but not the fleas. It may have put a damper on them somewhat, but the next day you could still see them hopping. I didn't realize it at the time, but the fleas must have been resistant."

Six days later, after no improvement, the Jeffreys were so frustrated that they ripped out all the carpet and covered the bare wood floors with another round of liquid pesticide, set off more foggers, and applied additional pesticide in the yard and on the foundation.

The next day the fleas were still hopping and biting. So Peter made yet another trip to the hardware store. "I saturated the floors with heavy-duty insecticide. I was really going to get them this time! You know the old adage — 'more is better' — but it still didn't work. In less than two weeks, I spent 148 dollars and it was for nothing," said Peter. "In the meantime the kids were starting school and all their clothes and stuff were still in the garage. We were financially strapped and couldn't afford to stay anywhere else. It was a terrible strain on our family."

About that time the Jeffreys discovered some information on least-toxic flea control. Desperate, they decided to give it their best effort. They had been monitoring the flea problem through the use of water traps which comprised a pan of soapy water placed under a night light. With one in each room, they had been catching a total of about forty to sixty fleas a night, a figure that did not diminish even with the pesticing after the carpet was removed.

Following the least-toxic method to get the infestation under control, the Jeffreys vacuumed thoroughly twice a day, hitting every crack and crevice and carefully disposing of the vacuum bag contents. Since the pesticide flea dip they had