



U.S. CONSUMER PRODUCT SAFETY COMMISSION
WASHINGTON, D.C. 20207

Record of Commission Action
February 22, 1982

The February 22, 1982, meeting of the U.S. Consumer Product Safety Commission was convened in open session by Chairman Nancy Harvey Steorts. Commissioners R. David Pittle, Edith Barksdale Sloan, Stuart M. Statler and Sam Zagoria were present.

Urea-Formaldehyde Foam Insulation (UFFI)

The Commission voted 4-1 to ban the sale of urea-formaldehyde foam insulation for use in residences and schools. Chairman Steorts and Commissioners Pittle, Sloan and Zagoria voted to ban. Commissioner Statler voted not to ban, but instead to implement a three-prong regulatory action program. All Commissioners filed statements concerning their views on this matter (attached).

For the Commission:

A handwritten signature in cursive script, reading "Sadye E. Dunn", is written over a horizontal line.

Sadye E. Dunn
Secretary

Attachments

NEWS from CPSC U.S. Consumer Product Safety Commission

FOR RELEASE: MARCH 2, 1982

Commission Decision, Meeting of
February 22, 1982

CPSC BANS UREA FORMALDEHYDE FOAM INSULATION (UFFI)

The U.S. Consumer Product Safety Commission, by a 4 to 1 vote, has banned the sale of urea formaldehyde foam insulation for use in residences and schools. The Commission noted that the product ban was based upon unreasonable risks to consumers from the irritation, sensitization and possible carcinogenic effects of formaldehyde emitted by UFFI.

The ban is expected to become effective within 130 days after publication in the FEDERAL REGISTER (4/82) of the Commission decision. The ban will not apply to UFFI installed prior to the effective date. The ban provides for exemptions to any company which can demonstrate that it can consistently manufacture a UFFI product which does not pose an unreasonable risk to consumers.

The CPSC reported that although all current UFFI installations do not pose the same degree of risk, it has received more than 2200 complaints involving more than 5700 persons who complained of symptoms such as eye irritation, respiratory problems, headaches, nausea and dizziness after UFFI installation.

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Commission Chairman Nancy Harvey Steorts was joined by Commissioners Sam Zagoria, Edith Barksdale Sloan and R. David Pittle in voting to approve a ban. Commissioner Stuart M. Statler voted against imposing a ban, proposing instead a three-point regulatory alternative.

The Commission concluded that no standard, voluntary or mandatory, to reduce risk to consumers was feasible at this time. CPSC noted that its decision to ban was based upon exhaustive research by its staff and a number of independent scientific sources.

The Commission advises consumers that if they have experienced no adverse health effects from this product, they should take no corrective action. If serious or persistent health effects have resulted from the installation of urea formaldehyde foam insulation, consumers should consult a physician, nearest medical clinic or contact the municipal, county or state board of health. Air quality measurements can be made by many state and local health departments as well as private testing companies.

The Commission is offering a fact sheet to consumers who call the Commission's toll-free hotline: Continental U.S. - 800-638-8326; Maryland only - 800-492-8363; Alaska, Hawaii, Puerto Rico and the Virgin Islands - 800-638-8333.

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Commissioner Stuart M. Stetler dissented from the agency

decision to ban UFFI, proposing instead a comprehensive

regulatory approach designed to address the most serious

health problems associated with formaldehyde off-gassing from

U.F. foam. This three-prong action program called for the

agency:

(1) to develop a mandatory product safety standard to set

limits defining tolerable levels of formaldehyde off-gassing

from UFFI;

(2) to mandate that industry members include in all

sales literature and sales contracts a detailed disclosure

statement, specifying potential adverse health effects, both

acute and chronic, associated with U.F. foam; and

(3) to require manufacturers, installers and other

members of the industry promptly to institute, through a

binding consent agreement, a broad consumer redress program

which would provide adequate means for purchasers of U.F. foam

to be made whole in the event that problems develop after

installation.

Commissioner Stetler stated that this regulatory scheme

offered major advantages for consumers including avoiding the

substantial lowering of resale values of some 500,000 homes

already insulated with U.F. foam which could result from a ban.

The approach would allow an industry with a sizeable number of small businesses to continue doing business. Moreover, consumers would be able to make an informed choice, aware of the potential risks, whether they still wanted to insulate their homes with U.F. foam or some other, less risky, substitute insulation.

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2/24/82

STATEMENT OF NANCY HARVEY STEORTS
CHAIRMAN,
UNITED STATES CONSUMER PRODUCT SAFETY COMMISSION

IN THE MATTER OF A PROPOSED
BAN OF UREA-FORMALDEHYDE FOAM INSULATION
FEBRUARY 22, 1982

IN MY CONFIRMATION HEARINGS BEFORE I BECAME CHAIRMAN OF THE CONSUMER PRODUCT SAFETY COMMISSION, AND IN DISCUSSIONS I HAVE HAD WITH CONSUMER GROUPS AND LEADERS OF INDUSTRY SINCE THAT TIME, I HAVE REPEATEDLY AND CONSISTENTLY STATED MY PREFERENCE FOR EFFECTIVE VOLUNTARY PROGRAMS WITH CONSUMERS, INDUSTRY LEADERS, AND GOVERNMENT OFFICIALS WORKING TOGETHER TO RESOLVE IMPORTANT CONSUMER CONCERNS. HOWEVER, AT THE SAME TIME, I HAVE ALSO REPEATEDLY AND CONSISTENTLY SAID THAT IF THE VOLUNTARY APPROACH IS NOT EFFECTIVE AND DOES NOT SOLVE THE PROBLEMS ADEQUATELY, I WILL REGULATE.

I BELIEVED THEN, AND I BELIEVE NOW, THAT THE TAXPAYER -- WHETHER CORPORATE OR CONSUMER -- IS BEST SERVED BY THE LEAST BURDENSOME FEDERAL INVOLVEMENT -- SO LONG AS IT DOES THE JOB EFFECTIVELY. THE JOB OF THE CONSUMER PRODUCT SAFETY COMMISSION IS TO PROTECT THE CONSUMER FROM UNREASONABLE RISK OF INJURY OR DEATH FROM CONSUMER PRODUCTS.

I AM CONVINCED THAT UREA-FORMALDEHYDE FOAM INSULATION PRESENTS AN UNREASONABLE RISK OF INJURY TO CONSUMERS BECAUSE OF THE ACUTE AND CHRONIC TOXICITY OF THE FORMALDEHYDE GAS IT RELEASES AND BECAUSE THE RELEASE OF FORMALDEHYDE GAS IN THIS UNIQUE PRODUCT CANNOT BE ADEQUATELY CONTROLLED.

DURING THE LAST FEW WEEKS, I HAVE EXAMINED ALTERNATIVES IN AN ATTEMPT TO FIND A SOLUTION THAT WOULD EFFECTIVELY ELIMINATE OR REDUCE THE RISK OF ILLNESS FROM UREA-FORMAYDEHYDE FOAM INSULATION.

I HAVE EXAMINED THE MATERIAL PUT FORWARD BY THE INDUSTRIES INVOLVED. I HAVE HEARD AND READ THE VIEWS OF CONSUMERS -- BOTH THOSE CONCERNED CITIZENS WHO COMPLAIN OF HEALTH HAZARDS AND THOSE WHO FEAR ECONOMIC LOSS, AND I HAVE HEARD, READ AND QUESTIONED, SOMEWHAT SHARPLY AT TIMES, THE STAFF OF THE CONSUMER PRODUCT SAFETY COMMISSION IN ORDER TO ASSURE MYSELF THAT ALL POSSIBLE REMEDIES HAVE BEEN CONSIDERED AND EVALUATED. I WANTED TO FIND A VOLUNTARY SOLUTION -- ONE THAT WOULD PROTECT THE CONSUMER FROM UNREASONABLE RISK OF INJURY. BUT, UNFORTUNATELY, AT THIS TIME, I HAVE CONCLUDED THERE IS NOT A VOLUNTARY SOLUTION TO THIS PROBLEM.

UREA-FORMALDEHYDE FOAM INSULATION IS A UNIQUE PRODUCT. ITS FORMALDEHYDE OFF-GASSING IS EXTREMELY DIFFICULT TO CONTROL AND IF THERE IS A PROBLEM, ONCE IT IS IN THE CONSUMER'S HOME, THE PROBLEM IS VIRTUALLY IMPOSSIBLE TO ELIMINATE.

I HAVE CONCLUDED THAT:

- NO STANDARD - VOLUNTARY OR MANDATORY - CAN ASSURE THE CONSUMER OF AN INSTALLATION OF UREA-FORMALDEHYDE FOAM INSULATION THAT WILL ADEQUATELY REDUCE THE RISK OF FORMALDEHYDE OFF-GASSING.
- NO STANDARD - VOLUNTARY OR MANDATORY - CAN GUARANTEE THE CONSUMER A TIMELY AND COMPLETE REMEDY IN THE EVENT THE INSTALLATION RESULTS IN UNDESIRABLE LEVELS OF FORMALDEHYDE GAS.
- NO STANDARD - VOLUNTARY OR MANDATORY - IS FEASIBLE.

THEREFORE, BECAUSE I FIND THAT UREA-FORMALDEHYDE FOAM INSULATION PRESENTS AN UNREASONABLE RISK OF INJURY TO THE CONSUMER -- AND BECAUSE I FIND THAT NO STANDARD - VOLUNTARY OR MANDATORY - IS FEASIBLE, I VOTE TODAY TO BAN UREA-FORMALDEHYDE FOAM INSULATION.

STATEMENT OF COMMISSIONER R. DAVID PITTLE ON
UREA FORMALDEHYDE FOAM INSULATION

FEBRUARY 22, 1982

At the outset, I would like to express once again my appreciation to the CPSC staff for their tireless and conscientious efforts in developing and analyzing the voluminous materials before us. Not only have they worked hard and well -- they have done so fairly and objectively. I mention this because in my eight years as a member of this agency, never before have I witnessed a more concerted -- and unfair -- attack on the personal integrity of our staff than the one recently launched by certain members of the urea formaldehyde foam insulation (UFFI) industry.

This attack on the agency staff brings to mind an old adage cited by many-trial lawyers: when the facts are against you, argue the law. When the law is against you, argue the facts. When the facts and the law are against you, attack your opponent.

As before, when the Commission voted to propose a ban, a mass of material has accumulated which has provoked hundreds of hours of study, meetings and thought. I have tried as hard as I can to examine the record with a fresh and skeptical eye. In particular, I have paid close attention to the comments alleging mistake or miscalculation by CPSC in formulating its proposed ban.

Among the objections to a ban that most concern me is the argument that ulceration of the test animals' nasal cavities caused by tissue irritation at high concentrations of formaldehyde is essential for the formation of cancerous tumors. Implicit in this argument is the notion that lower concentrations of formaldehyde

will not produce ulcerations and therefore will not result in cancer.

While this is an intriguing interpretation of the data, I find it unconvincing. It is true that animals exposed to high concentrations of formaldehyde in the CIIT tests did show ulceration and inflammation of the nasal cavity in the early days of the experiment, however, it is not true that this condition persisted beyond this initial reaction. As I understand it, the cell layer destroyed during initial formaldehyde exposure was later replaced by layers of squamous cells which are more resistant to damage from formaldehyde than the original cells. At each of the six-month intervals when animals were sacrificed, there was no ulceration in their noses of the sort alleged to result in cancer.

Moreover, based on several laboratory studies, we know that formaldehyde is capable of direct interaction with the genetic material in cells. This seems to provide evidence of its ability to produce cancer independently of ulceration.

Also, if irritation were a vital link in the chain of events leading to cancer, one would expect that a higher degree of irritation would lead to larger numbers of cancers. However, the results of a New York University study do not support this proposition. In that study, test animals were exposed to a combination of formaldehyde and hydrochloric acid, a known irritant. While the animals showed significantly more inflammation than those exposed solely to formaldehyde, they showed no larger numbers of cancers.

Another point that concerns me is the absence of epidemiological studies that confirm in a statistically meaningful way that human exposure to formaldehyde leads to cancer. One must be precise on this point. Contrary to the claims of some commentators, it is erroneous to insist that studies have demonstrated formaldehyde not to be a human carcinogen. Instead, studies conducted to date have simply proven to be inconclusive one way or the other. I am aware that some recent reports of occupational cancers in the nasal passage associated with formaldehyde exposure may be significant but, at the moment, they are suggestive only.

Were epidemiological data a sine qua non to a proper scientific conclusion that formaldehyde is a human carcinogen, I would be reluctant to consider this hazard in my deliberations of a ban for UFFI. But this is not the case. Most eminent scientists, including members of the Federal Panel on Formaldehyde; and including Dr. J. D. Millar, Director of the National Institute of Occupational Safety and Health; Dr. Vincent DeVita, Director, National Cancer Institute; Dr. David Rall, Director, National Toxicology Program and National Institute for Environmental Health Sciences (NIEHS) and others who have looked at the data before the CPSC have stated that formaldehyde should be presumed to be a human carcinogen.

A third point of concern for me centers on the assertion that the CPSC lacks data to show adverse health effects at formaldehyde levels of 0.1 ppm and below. This is incorrect. The Commission staff has developed a quantitative risk assessment that shows that consumers face a heightened risk of cancer from long-term exposure to formaldehyde levels even below 0.1 ppm.

Moreover, I believe that credible evidence supports the

conclusion that a serious irritation health hazard also exists even in the case of fairly low levels of exposure to formaldehyde. For example, a study by Professor Ib Anderson shows that roughly nineteen percent (19%) of healthy young adults exhibited irritant responses when exposed to formaldehyde levels of 0.25 ppm. Based on this data and other information, a panel of expert toxicologists assembled by the National Academy of Sciences concluded that there is no population threshold for the irritant effects of formaldehyde in humans. This panel recommended that the levels of formaldehyde in indoor residential air be kept at the lowest practical exposure. Consistent with the panel's thinking is the fact that in many of the homes where consumers complained about adverse health effects related to formaldehyde, the levels were at or below 0.1 ppm.

In citing this evidence, I am not arguing that the only acceptable level for formaldehyde in a consumer's home is zero. As I shall discuss in a moment, a "zero-risk" society is an ideal that neither corresponds to reality nor is consistent with the strictures of the Consumer Product Safety Act, the authority under which we operate. I offer this evidence to demonstrate that even at low levels of formaldehyde, significant adverse health effects occur.

A fourth point that concerns me is the argument by at least one company that the addition of phenol to its brand of UFFI reduces the level of formaldehyde off-gassing to an acceptable level. Frankly, nothing would make me happier than to discover that someone has developed a cure for the UFFI off-gassing problem. Having examined the material submitted by the company, I would make several observations. First, this product is not phenol formaldehyde, which produces less formaldehyde release than UFFI. Rather, it is a UFFI

mixture with phenol added. Second, while the phenol may make a difference and while the company may be on the right track, it does not seem to have achieved success yet. Results from the Franklin Institute Research Laboratory (FIRL) indicate that the company's product, as marketed at the time of the test, while off-gassing at relatively low levels, was nevertheless outperformed by at least one UFFI product with no phenol added.

I wish this and other companies well in the continuing search for an acceptable UFFI. Should we vote a ban today and should acceptable progress have been made in the development of these companies' products, I would be delighted to vote for exemptions to the ban.

The final point regarding comments submitted in response to our proposed ban that I wish to discuss revolves around the notion of a "feasible standard."

At the time of the vote to propose a ban, I wrote an opinion in which I discussed extensively my reasons for concluding that no feasible standard existed. I do not intend to repeat my remarks at length but I believe that my reasoning then is valid today.

The basic problem remains that, even with the most current refinements to the industry standard, no one is quite sure why some installations off-gas at high levels and others do not. It seems clear, as confirmed by CPSC tests at the FIRL, that a large number of variables affect the quality of an installation and no standard yet developed has been demonstrated consistently to reduce formaldehyde release to reasonable levels. In saying this, I am aware of the claims that the panels tested by FIRL were not foamed in accordance with current industry standards. I disagree with these

claims. While it is true that these standards were not finalized until after the test panels were foamed, all of the relevant provisions in those standards purporting to relate to formaldehyde release were complied with. Had the industry standards been in print at the time the panels were foamed, the test results would have been the same.

The most recent incarnation of a standard unveiled by the industry just days before our vote reveals that its members continue to struggle with the technology of UFFI installation. The standard remains essentially a recipe from a cookbook that tells an installer how to mix the ingredients but does not tell him or her precisely how the final product will perform. Rather than predict a final performance level of formaldehyde release, the standard instead mandates a series of quality assurance steps. While that may be useful for installers, it is far too design-oriented for this agency to consider as a government standard. More importantly, the consumer cannot be sure what the level of off-gassing will be until after the product is installed.

I realize that many members of the UFFI industry believe that this critique of their standard is overly fussy. After all, we do not need perfection; we need only be assured that unreasonable levels of formaldehyde will not be released in consumers' homes. While I agree with the principle, I do not agree that this industry has attained it. The evidence leads me to conclude that even with the best manufacturing practices, a number of consumers will be exposed to significant amounts of formaldehyde off-gassing from UFFI installations. And because the consequences of error can be so momentous for consumers -- cancer or acute reactions, life-long

sensitization requiring tearing apart a consumer's home to remove this product or forcing a move from the house -- I believe the Commission is justified in insisting that the industry be able to demonstrate greater reliability than it has done so far.

This does not mean that I am advocating a "zero-risk" approach, as I mentioned before. Rather, it means that in applying the traditional test of balancing the risk of injury from UFFI versus the public's need for insulation, and for UFFI in particular, I see no reason to permit this product to be sold without reasonable assurances that consumers will not encounter levels of formaldehyde significantly above ambient resulting from the installation of this product. Given the ready availability of substitutes for UFFI and the potentially serious health consequences of long-term exposure to formaldehyde by persons who cannot afford to remove UFFI from their homes or, if necessary, to move from their homes, I see no alternative at this time to finalizing the ban.



U.S. CONSUMER PRODUCT SAFETY COMMISSION

WASHINGTON, D.C. 20207

February 22, 1982

STATEMENT
OF
COMMISSIONER EDITH BARKSDALE SLOAN
CONCERNING
THE UREA FORMALDEHYDE FOAM INSULATION BAN

There have been some public allegations that I have prejudged the decision on a possible ban and made up my mind before all the evidence that is now available was submitted. While this type of statement perhaps does not warrant a response, I would like to take this opportunity to make clear that at no time during this proceeding have I been unwilling to consider new evidence on any aspect of this question, including the degree of risk associated with U.F. foam insulation, the feasibility of a standard to address that risk, and the economic effects on the industry and others of various alternatives for addressing this problem. I have not had a closed mind on any issue concerning U.F. foam insulation. In fact, along with everyone else in the Commission who is working on this issue, I have spent many hours considering the comments and material that have been submitted.

In my nearly-four-years on this Commission, I have not faced an issue so riddled with complexities as the one before us today. Since the ban on Urea Formaldehyde Foam Insulation was proposed and published for comment just over a year ago a tidal wave of paper, enough, I think, to keep some governments in operation for a decade, has descended on the Commission. Much of it added to our understanding and some, frankly, was obfuscating.

Thanks to a dedicated and talented staff -- whose competence was unfairly and unnecessarily called into question -- the wheat was separated from the chaff, fact from fancy, and shadow from substance.

The Commission has met, I believe, with every facet of the industry from representatives of resin manufacturers to installers. We have sat with consumer groups and with consumers themselves. We have heard from the academic, scientific and medical communities. Further, we have met with these groups not only in Washington, but in public forums in New Haven, ^{Hartford} Connecticut; Portland, Oregon; Atlanta, Georgia and Minneapolis, Minnesota.

I have carefully weighed and reweighed all the information available to me on the subject of Urea Formaldehyde Foam Insulation and I have reached several inescapable conclusions: First, that the preponderance of evidence points unwaveringly to the fact that UFFI presents an unreasonable risk of acute and often traumatic health problems. It is a sensitizer which can have a permanent effect on the quality of life of its victims. Second, there is no known population threshold for the acute irritant effects of formaldehyde in humans. Lastly, when a panel of eminently qualified government scientists-experts with no vested interest in the issue -- conclude, after studying the results of ~~an~~ industry-sponsored tests that it would be prudent to regard Formaldehyde as a human carcinogen and when Dr. Arthur Upton, former Director of the National Cancer Institute and now Professor and Chairman of the Department of Environmental Medicine at New York University School of Medicine, joined by I. Bernard Weinstein, Professor of Medicine and Environmental Sciences at Columbia University College of Physicians and Surgeons write that "there is general agreement among experts in chemical carcinogenesis that a substance which causes cancer in significant numbers of experimental animals in well-conducted assays poses a presumptive carcinogenic risk to some humans, even in the absence of confirmatory data," one must search the deepest reaches of the soul to seek the just response.

When Dr. Upton gets unanimous support from some of the world's leading authorities on chemical carcinogenicity, as he outlined in a recent letter, one can only conclude that to ignore the unanimity would be a senseless struggle against the tide of probability.

Thus, I have become convinced that Urea Formaldehyde Foam Insulation presents an unreasonable risk to human health from both an acute and chronic view. Consequently, I vote to finalize the ban.

STATEMENT

BY

COMMISSIONER SAM ZAGORIA

U. S. CONSUMER PRODUCT SAFETY COMMISSION

IN THE VOTE ON UREA FORMALDEHYDE FOAM INSULATION

FEBRUARY 22, 1982

Today marks a climactic point in the history of the tiny urea formaldehyde foam insulation industry. And, it is a climactic point for this tiny government agency as well. The pending proposal, whether to finalize a ban on a product, is a far-reaching action taken only a few times in the Commission's history.

We approach this decision after several years of consumer complaints about acute effects such as respiratory distress, eye irritations, and other health problems. In some cases these were so aggravated as to require families to vacate all or a part of their homes, often on the advice of physicians. Measured formaldehyde off-gassing has followed insulation installation for many months even when the installation was by companies recommended by UFFI manufacturers, or even when the manufacturer's own demonstration or trainer teams did the work.

Many tragic experiences have been brought to our attention by families who sent in letters, who testified at our four regional hearings and at sessions here in Washington. The Commission staff has carried out 384 investigations in depth, and formaldehyde levels in the homes were measured in 30 percent of these cases. (The Commission would have done more if its budget had permitted.)

The readings were made by local and state health departments, laboratory consultants and Commission staff itself. The results have varied a great deal -- one in Maryland, measured by a method rated "highly reliable" showed a reading 120 times higher than the 0.03 parts per million (ppm) formaldehyde typical background level in homes. Other homes in several other states, measured by less reliable methods, showed readings as high as 440 times over normal indoor formaldehyde concentrations. It is important to remember, too, that formaldehyde poses a greater risk to those who spend most of their time indoors -- the aged and infants -- and it troubles those with respiratory ailments most painfully.

The Commission has also heard from the chemical industry, UFFI suppliers and the installers on numerous occasions. They have aided us by their testimony, exhibits and briefs. The record is full and supported by the statements of experts from various disciplines. While some of these views were contested at key points, they were heard at length and in detail, probably more so than any other issue dealt with by the Commission.

The protections accorded all members of the public -- consumers and industry alike -- through the provisions of the Administrative Procedures Act and the Sunshine Act -- have assured a thorough and robust dialogue. Some three feet of papers amassed in the process offer weighty testimony to this.

The problem before us, however, is no longer acute symptoms only. The chemical industry, acting as responsible members of American society, cooperated in a two-year study of the effect of formaldehyde on laboratory rats and mice. The results were announced last year and put everyone on notice that in the industry laboratory setting and at higher concentrations of formaldehyde there was the presence of the dread disease -- cancer.

Two of the rats exposed to 30 hours a week of formaldehyde at 5.6 ppm dosage developed nasal cancer within the two years of the study. Another eight rats exposed to 2.1 ppm dosage developed benign tumors, which some expert medical authorities warn indicates change that could be a stage toward malignancy. Since residents of homes are exposed to more hours per week than 30 and for many, many years more than two, the rat findings must be taken very seriously. Indeed, recorded formaldehyde levels found in some UFFI homes has approached and occasionally exceeded the levels to which the rats were exposed. The precise measurements may be challenged, but the proximity is apparent.

When these results became known, the Commission did not rely on its own small health sciences staff alone, but like industry, acting responsibly, arranged for the convening of an outstanding panel of neutral expert Federal scientists to evaluate the results. The panel concluded, "Formaldehyde should be presumed to pose a carcinogenic risk to humans."

Since then, a number of other neutral and expert governmental and academic groups and individuals have come to a similar conclusion. These include the National Institute of Occupational Safety and Health; Dr. Arthur Upton, former director of the National Cancer Institute, and several of his colleagues at New York University; Dr. Vincent DeVita, Director of the National Cancer Institute; Dr. David Rall, Director of the National Toxicology Program and the National Institute for Environmental Health Sciences; Dr. Ronald Hart, Director of the National Center for Toxicological Research; and a working group of the International Agency for Research on Cancer.

Unfortunately, in the course of these lengthy proceedings, there have been some allegations about the integrity of our staff. Obviously, for the accusers to suggest that staff has been "misleading" the Commission is also to suggest that we Commissioners are easily misled. Such charges do not add to the credibility of the industry arguments.

There are several regulatory alternatives open to the Commission. Last year when a majority of the Commission voted to propose a ban, I voted against it and spoke in favor of a warning incorporated in the sales agreement instead. The notice, which the UFFI trade association indicated it would accept, warned of the possibility of acute symptoms after installation of the insulation.

I now believe the warning is inadequate to protect consumers against unreasonable risk. The warning was tried by the State of Connecticut for four years, and last June a ban was enacted instead, by a decisive vote of the Legislature.

As the State's Commissioner of Consumer Protection, Mary Heslin, noted, "Even with a warning printed on the contracts apprising potential customers of the possible acute health problems or with standards set by the Federal government, I feel the material is too volatile, unpredictable, and subject to too many 'ifs' that can result not just in dollar costs for families but in very real physical, mental and emotional suffering."

Few people know in advance how formaldehyde will affect them. Indeed, in the present state of knowledge it is difficult, if not impossible, to predict how much off-gassing will occur. UFFI is manufactured on site. Unlike other consumer products, this one cannot be examined in advance; its problem is not apparent to the naked eye. To recognize the extent of the problem requires education and equipment of a kind rarely-found among consumers. The problem is compounded by the possibility that future occupants of the house may react differently to the off-gassing than the present ones and, indeed, they may be unaware of what is causing their distress. After all, how do you label the inside of a wall?

Another regulatory alternative is a mandatory standard. Over the four years that UFFI has been before the Commission, industry has proposed several standards, but none of them carry proof of effectiveness gained through actual experience. Experts on our staff and in academia point to the many variables involved in the process of manufacturing UFFI on site and reject the practicality of developing a standard that will result in a consistent and predictable product.

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Here are only some of the factors that are believed influence formaldehyde off-gassing -- temperature, humidity, water hardness, foaming agent ratio, air quality, resin chemistry, resin shelf life, resin storage temperature, foam wet density, moisture content of adjacent wood and, of course, operator skill, equipment maintenance and controls, plus others. A CPSC inspector would be needed on every installation site and the health results would still be uncertain.

What if the consumer can't live with the insulation? The industry has said it makes good, but witnesses before us have related sad experiences involving lengthy, expensive and uncertain efforts to obtain redress. Some installers have told suffering residents to try ventilation, vapor barriers, dishes of ammonia, solutions of vegetable roots and leaves, or coffee grounds. However, the Massachusetts Office of Consumer Affairs, in a pamphlet for UFFI owners, said, "The only permanent relief has been provided by removal of the foam. This is a complicated task which involves removal of the wall, scraping out the UFFI and washing out the cavity with a neutralizing solution...Even when all the foam has been physically removed, there may be residual formaldehyde vapor from the foam solution which has permeated the structural members and plaster."

The unhappy truth about this product is that you don't know it will hurt you until it is too late -- until it is in your home. And then you can't just unplug it like some electrical appliance and remove it. Once in, it is difficult to take out.

Sad to relate, in some cases installers with small resources have been unable to cope with adversity and they have closed down leaving the consumer with a home in which he cannot live. In recent days, the industry has circulated some new proposals about redress mechanisms, but past experience does not generate confidence.

And this brings us to the ban. In the folder of regulatory tools given the Commission by the Congress, this is the toughest. In the present issue we are faced with a problem of health and safety of life-and-death magnitude. We are not talking about the inconvenience of scratches or bruises; this one is a possible killer. What we do here today may decide whether 20 to 25 years from now a number of Americans will be struck down by and die prematurely of cancer. We know, too, that this cause of death is avoidable. There are alternatives to this kind of insulation. This one presents an unreasonable risk of injury. We need not add an extra load of formaldehyde to our daily living -- there is enough formaldehyde in the atmosphere from other products and processes.

Industry pleads again for more time for more study, and this is an alluring plea. There would be few victims visible to object. Cooperation with industry in today's society is essential, but cooperation is not to be confused with abdication of responsibility. While we should and do look out for industry's interest, our primary responsibility is for the health and safety of consumers.

I suggest we not brush aside by procrastination the knowledge we have gained from the laboratory and from scientific analysis. We must now weigh the possibilities and probabilities necessary to a sound judgment. As has been said, "Inaction has considerable costs of its own."

This is an important decision, not only for the people with a particular interest who are gathered here, but for unknown Americans who will be affected by the judgment here. While we study charts of costs, benefits, risk assessments and the like, we are talking about real people and how to help them avoid premature death and unnecessary suffering.

I have watched relatives and friends wasting away, day by day, painfully. It is too late to regulate for them. They, like us, wanted to live out their full time. In voting for the ban, as I do, I know the decision will hurt the industry which sells UFFI, but I am convinced it is necessary in the public interest -- to protect the present and future health of Americans throughout the land.

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2/22/82



U.S. CONSUMER PRODUCT SAFETY COMMISSION
WASHINGTON, D.C. 20207

In the Matter of Regulating)
Urea Formaldehyde Foam)
Insulation)

DISSENTING OPINION OF
COMMISSIONER STUART M. STATLER

On February 22, 1982, the Consumer Product Safety Commission ("Commission") voted 4-1 to finalize its proposed ban of urea formaldehyde foam insulation ("UFFI"). I respectfully dissent from that decision and propose instead a comprehensive regulatory approach to address the most serious health problems associated with formaldehyde off-gassing from U.F. foam.

A thermal insulation material for residences and other buildings, U.F. foam is manufactured at the job-site by mixing resin, a foaming agent, and a compressed gas. This mixture, which resembles shaving cream in texture and appearance, is pumped into the walls of the structure being insulated. After a period of time, it hardens within the wall cavity (becoming firm and self-supporting) and insulates against energy loss.

exhaustive analysis given this complex issue by the staff of this agency and by all affected parties--the industry, and consumers and groups representing them.

Review of this massive record demonstrates clearly that acute as well as chronic health effects may result from the off-gassing of formaldehyde from U.F. foam. That these risks are serious is confirmed by the efforts of other governmental bodies--both foreign and domestic--to protect their citizens from adverse health effects associated with U.F. foam.^{3/}

^{3/} One country, Canada, has banned UFFI; Great Britain, Germany and Holland have set safety standards. Nationally, two states--Massachusetts and Connecticut--have enacted statewide bans, although the Massachusetts ban recently was set aside by a court.*/ Colorado has a ban on use of UFFI in state-licensed buildings. Other bans exist in Arvada County, Colorado and Euclid, Ohio. Warning statements specifying adverse health effects of UFFI are required (under differing criteria) in Colorado, Maine, Minnesota, New Hampshire, New York, Rhode Island and Texas. Certification requirements for manufacturers and/or installers exist in California and Adrien, Michigan. In six states, (Kentucky, Michigan, Ohio, Pennsylvania, Vermont, and West Virginia) bills have been proposed to ban U.F. foam. Other jurisdictions have proposed disclosure or certification measures while still more await resolution of litigation to determine whether similar precautionary measures can be enforced.

*/ In the Massachusetts Superior Court decision, Borden et al. v. Commissioner of Public Health, handed down on January 18, 1982, Judge Ronan found state regulations banning use of UFFI and requiring refund of the purchase price, removal of the insulation and restoration of the home to have been issued without adequate administrative procedure safeguards. He also determined that adjudicatory hearings are required before future UFFI use can be banned. An appeal of this decision has been filed.

state that a "properly" foamed home will not lead to adverse health effects--a statement often repeated by members of the industry.

However, far more troubling than particular objections raised by commenters is that the record lacks definitiveness first, in gauging the severity of acute reactions, and second, in providing an estimate of the percentage of persons likely to suffer serious irritant reactions upon exposure to extremely low levels of formaldehyde gas. Further, I do not view the lack of a precise population threshold--i.e., the inability to establish a level of formaldehyde gas which will not trigger adverse health effects among any member of the population--as a sufficient ground upon which to altogether eliminate a product. To the contrary, predicating a ban even partially on the failure to predetermine a tolerable level of risk means that the Commission would be sanctioning a zero risk philosophy. The Commission's mandate is not to create an environment which is risk-free, but rather to mitigate unreasonable risks of injury presented by consumer products.

Concerning potential chronic effects, CPSC staff, together with highly respected scientists in government and in the private sector, have concluded that formaldehyde is an animal carcinogen and should be presumed to pose a carcinogenic risk to humans. These highly respected individuals

by CPSC staff.^{4/} The upper and lower estimates were reached by applying a methodology utilizing the multi-stage model and the concept of linearity at low dose to data developed by the Chemical Industry Institute for Toxicology ("CIIT"). To its credit, CIIT conducted a two-year, long-term inhalation study to provide information concerning long-term health effects resulting from formaldehyde exposure.^{5/}

For every 10,000 new installations of U.F. foam made annually, the upper estimates of the CPSC risk assessment

4/ Questions have been raised concerning the validity of the initial (November 1980) as well as the revised (October 1981) CPSC risk assessment. Some commenters criticized assumptions used in the multi-stage model while others argued that data included in the assessment should have been excluded for various reasons. Notwithstanding these criticisms, the revised risk assessment merits evaluation as an effective guide in determining the relative magnitude of chronic risk presented by UFFI.

5/ The 24 month test involved exposing rats and mice to 0, 2.0, 5.6 and 14.3 ppm of formaldehyde gas for six hours per day, five days a week. Completed in June 1980, the testing showed that, at the highest concentration levels, there was a statistically significant increase in the number of squamous cell carcinomas in the rats' nasal cavities.

national population of over 230,000,000 persons. Although potential additional cancers in any amount cannot be overlooked, the fact remains that the cancer risk to humans from low-level formaldehyde off-gassing from U.F. foam is decidedly small.^{9/}

Moreover, key test results utilized in the CPSC risk assessment are entirely from animal testing. As noted in my previous opinion on this issue in January 1981 at the time of the Commission's proposed ban, the nuances of extrapolating from animals to humans are complex. Species differences in exposure, susceptibility, and response make such extrapolation particularly difficult. To date, available epidemiologic evidence is at best inconclusive as to whether formaldehyde is in fact carcinogenic in humans,

^{9/} It is useful to reference a recent memorandum prepared by staff of the Environmental Protection Agency and made a part of the record in this proceeding. This memo recommends that formaldehyde should not be considered as a priority chemical for remedial action under Section 4(f) of the Toxic Substances Control Act, and concludes that formaldehyde should not be viewed as posing a serious or widespread risk of cancer to humans, to wit:

One can ... conclude on the basis of available toxicological data, exposure information, and risk analysis techniques that ... the risk estimates suggest that certain populations may experience a carcinogenic risk--albeit low--due to formaldehyde exposure. However, because of the nature of the toxicology data and the unreliability in the exposure data, one cannot reasonably conclude, at this time, that formaldehyde poses a significant risk among the U.S. population.

standing alone, at levels up to 0.1 ppm, do not constitute an unreasonable risk of injury under the Consumer Product Safety Act ("CPSA"). Similarly, viewed in isolation, the potential chronic hazards arising from these relatively low levels of off-gassing do not, in my view, represent an unreasonable risk. As to the combined risk of acute and chronic effects from low levels of UFFI off-gassing, albeit a close call, on balance the weight of evidence supports a determination of unreasonable risk at formaldehyde off-gassing levels above 0.1 ppm.

Apart from the health considerations, I am further led to this conclusion by a unique facet of U.F. foam. It is not a product which readily can be returned if an aggrieved consumer suffers ill effects from off-gassing. Removing the insulation or being forced to abandon a home and relocate are expensive, dispiriting, and traumatic steps which consumers may have to undergo to rid a household of problems associated with this product. These considerations, when weighed against the availability of acceptable substitute forms of insulation, confirm the unreasonableness of the risk of formaldehyde off-gassing from U.F. foam at levels above 0.1 ppm.

product--assurances which have been largely deficient until very recently--will go a long way toward eliminating adverse health effects associated with formaldehyde off-gassing from U.F. foam.

Interestingly the affected industry, although on record as disagreeing with the staff assessment of the magnitude of risk from U.F. foam, is nonetheless altogether willing and eager to cooperate to the fullest in minimizing such risk. The industry has stated time and again its best judgment, based on current technology, that a standard is feasible. Although an eleventh-hour submission, the industry in recent days has presented to this agency its latest good faith effort at an improved, all-inclusive standard. This submission includes additional requirements to limit formaldehyde off-gassing from U.F. foam, including specifications relating to equipment certification, continuous circulation of U.F. resin and foaming agent through the hoses, automatic shut-down of foaming nozzles when needed, and an improved training program for installers. Further, the revised proposed standard offers a new means--a dry density emission test--to monitor the quality of U.F. foam upon installation. Installers would prepare a sample specimen at the same time a structure is foamed and retain this sample

First, a mandatory product safety standard proceeding should be initiated under Section 7 of the CPSA to regulate U.F. foam installation in residences and schools. The advance notice commencing the rulemaking should indicate this agency's informed opinion that the new rule specify that:

- (i) any change in ambient levels of UFFI off-gassing of formaldehyde within a structure must not exceed 0.1 ppm at any time following installation;
- (ii) formaldehyde levels prior to installation must be measured to ensure that UFFI is not installed where there is a pre-existing ambient level above 0.1 ppm;
- (iii) the standard would be deemed violated if the combined total of the pre-existing ambient formaldehyde level plus any increase in formaldehyde levels from U.F. foam installation is greater than 0.15 ppm;
- (iv) some form of periodic testing of post-installation ambient formaldehyde levels, especially in the event of health complaints, is needed to check whether performance requirements are being met; and
- (v) payment for necessary testing should be borne by the installer or manufacturer.

Second, I propose that the industry provide consumers, in advance of any agreement to install U.F. foam, a disclosure statement specifying potential adverse health effects, both acute and chronic. Such a statement should be included in all sales literature and contracts used by manufacturers and installers. At a minimum, this statement should indicate that:

Third, an effective consumer redress program must be put into effect quickly. Manufacturers, foam installers, and other members of the industry should formalize, through a binding consent agreement, a consumer redress program that will ensure a prompt response to aggrieved homeowners. This program should be fashioned so as to provide adequate means for consumers to be made whole in case a problem develops after installation. At a minimum, this program must:

(i) liberally define what constitutes a consumer complaint so that it is not left to the whims of individual installers or manufacturers whether a distressed consumer "qualifies" for relief;

(ii) describe the steps consumers should take and industry members will take following validation of a complaint to correct the situation, as well as specific time frames for expediting relief;

(iii) establish consumer action panels or binding arbitration boards to resolve disputes which cannot be handled expeditiously between consumers and installers/manufacturers;

(iv) provide means for alternative living arrangements, such as hotel lodging and meal allowances, for individuals experiencing extreme reactions from formaldehyde off-gassing until such time as relief can be accorded;

to guarantee a particular result. Thus, the unreasonable risk associated with UFFI--an unacceptable level of acute and chronic health effects--would be dramatically reduced, if not eliminated. Third, we would avoid a potentially damaging repercussion from a ban, namely, the substantial lowering of resale values of some 500,000 consumers' homes already insulated with U.F. foam. Fourth, in the future, if consumers experience difficulties related to U.F. foam, specific, direct and efficient means of relief would be readily available--guaranteed, and agreed to by all segments of the industry.

Other collateral advantages also attend this proposed regulatory program. The options suggested--particularly development of a safety standard--will allow the U.F. foam industry, which claims a sizeable number of small businesses, to continue doing business.^{10/} Offering greater flexibility than the straightjacket of a ban, the program means that all parties--manufacturers of U.F. resins, foam installers, and

^{10/} Recent information from industry notes that some 230 dealers and installers are still active in the U.F. industry. Also, there are six manufacturers currently producing resins for U.F. foam, namely: Celsius Insulation Resources Inc., of Weedsport, New York; Rapco Foam Inc., of Florence, South Carolina; Scientific Applications Inc., of Mount Pleasant, Iowa; Tailored Chemical Co., of Hickory, North Carolina; C.P. Chemical Co., of White Plains, New York; and Insulmaster, Inc. of Knoxville, Tennessee.

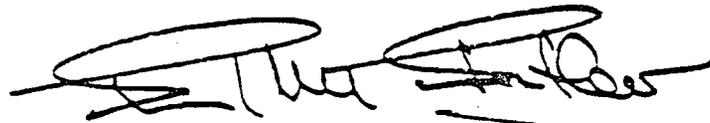
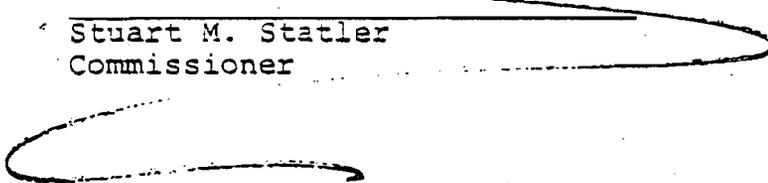
product. In these hard economic times, who possibly can afford to hold onto inventories or to continue committing resources toward improving the product, in the absence of any sales whatsoever, on the scant hope or prayer--perhaps nothing more than a figment of the Commission's imagination--that somewhere down the road, in perhaps 6 months or a year or two, an exemption request might conceivably be granted?

Lastly, the proposal to ban provokes an unnecessary alarm, suggesting that all formaldehyde-emitting products are on a hit list and, therefore, candidates for future Commission banning. This disturbing signal undermines the agency's ability to work cooperatively with industry to develop means to address related formaldehyde off-gassing problems. For example, the agency has been working with industry to develop a voluntary standard to reduce off-gassing from particle board and plywood products. Off-gassing from these products has contributed to measured levels of formaldehyde in homes which have ranged at least as high as 0.3 ppm--levels considerably above the unreasonable risk levels considered in connection with U.F. foam.

The spectre of the UFFI ban tends to erode industry's incentive to continue these cooperative efforts. The ban and the zero-risk philosophy upon which it is predicated suggests that this agency is not seriously interested in

formaldehyde off-gassing from U.F. foam. Moreover, this comprehensive approach would offer significant advantages to consumers while avoiding forced failure on the part of so many small businesses and economic hardship to an entire industry.

March 3, 1982
Date


Stuart M. Statler
Commissioner


STATEMENT ON UREA FORMALDEHYDE FOAM INSULATION

OF

STUART M. STATLER
COMMISSIONER, U.S. CONSUMER PRODUCT SAFETY COMMISSION

February 22, 1982

The threshold issue before us today is whether urea-formaldehyde foam insulation ("UFFI") poses an unreasonable risk of injury to consumers, and, if so, what remedial action is warranted.

In evaluating the degree of risk, a record of monumental length has been compiled which makes clear that acute as well as chronic effects may result from the off-gassing of formaldehyde from UFFI.

Adverse Health Effects

From an acute reaction standpoint, exposure to even small amounts of formaldehyde can cause skin, eye, nose and throat irritation, respiratory difficulties, nausea, vomiting, headaches and dizziness. The record, however, lacks definitiveness in gauging the severity of these acute reactions, and in providing an estimate of the percentage of persons likely to suffer serious irritant reactions upon exposure to extremely low levels of formaldehyde gas. It is not enough simply to note that there is no population threshold—no level sufficiently low enough to avoid adverse acute health effects among all members of the population—and therefore conclude that the only acceptable level of risk is zero risk.

Concerning potential chronic effects, CPSC staff together with highly respected scientists in government and in the private sector have concluded that formaldehyde is an animal carcinogen and should be presumed to pose a carcinogenic risk to humans. Yet that risk is

considerably less serious than the risk from other known cancer-causing substances, since staff informs us that formaldehyde is a relatively weak carcinogen. By way of comparison, the assessment of the Canadian government—which has banned UFFI—identifies the added cancer risk associated with 0.1 ppm formaldehyde exposure as comparable to smoking one-third of a cigarette daily.

Unreasonableness of The Risk

To address the unreasonableness of the risk to consumers, I believe that as a regulatory agency we are obligated by law to specify at what levels of exposure the risk becomes unreasonable. To do otherwise, and simply note that at any level some ill-effects may be found in some segment of the population, is to subscribe to a zero-risk approach and, by so doing, shirk our statutory responsibility.

My review of all the evidence in the record leads me to conclude that formaldehyde off-gassing from UFFI at levels above 0.25 ppm clearly creates significant adverse health effects so as to constitute an unreasonable risk of injury.

However, at relatively low levels of formaldehyde exposure, identifying what is an unreasonable risk is far more difficult. I do not find that formaldehyde off-gassing's acute health effects, standing alone, at levels up to 0.1 ppm, constitute an unreasonable risk of injury under the CPSA. Similarly, viewed in isolation, the potential chronic hazards arising from these relatively low levels of off-gassing do not, in my view, represent an unreasonable risk. As to the combined risk of acute and chronic risks from low levels of UFFI off-gassing on balance, albeit a close call, the weight of evidence supports a determination of unreasonable risk.

Apart from the health considerations, I am further led to this conclusion by a unique facet of urea formaldehyde foam. It is not a product which readily can be returned if an aggrieved consumer suffers ill effects from off-gassing. Removing the insulation or being forced to abandon a home and relocate are expensive, dispiriting, and traumatic steps which consumers may have to undergo to rid a household of problems associated with the product. These considerations, when weighed against the availability of acceptable substitute forms of insulation, confirm the unreasonableness of the risk at formaldehyde levels above 0.1 ppm.

Regulatory Options

A. Whether to Ban

In addressing an unreasonable risk, there are a number of regulatory options available to the Commission. The immediate issue before us today is whether to finalize last year's proposed ban of UFFI. A ban of a product is the most drastic remedy that this agency can order. Because the ramifications entail wiping out an entire industry, such an action must be most carefully weighed.

Under the CPSA, to ban U.F. foam requires a Commission finding that no feasible safety standard can be fashioned which would adequately protect the public from the unreasonable risk. Based on the record, there is ample evidence that a product standard is feasible. Accordingly, I cannot subscribe to a ban. The affected industry, clearly disagreeing with the staff assessment of the magnitude of the risk, is nonetheless altogether willing to cooperate to the fullest in minimizing it. That industry has stated time and again its best judgment, based on current technology, that a standard is feasible. In fact, we are presented with the unusual situation of an industry not only maintaining

that a rigorous standard with reproducible results can be developed but also expressing its willingness to commit resources and to take upon itself all resulting liability and costs of cure if such a standard fails.

B. Three-Prong Approach:
Standard, Disclosure of Risk, Consumer Redress

I propose, therefore, that the Commission undertake a three-prong program of actions to address the unreasonable risk associated with UFFI off-gassing. First, a mandatory product safety standard proceeding should be initiated under Section 7 of the CPSA to regulate U.F. foam installation in residences and schools. The advance notice commencing this rulemaking should indicate the agency's informed opinion that the new rule specify that:

(i) any change in ambient level of UFFI off-gassing of formaldehyde within a structure must not exceed 0.1 ppm at any time following installation;

(ii) formaldehyde levels prior to installation must be taken to ensure that UFFI is not installed where there is a pre-existing ambient level above 0.1 ppm; and

(iii) the standard would be deemed violated if the combined total of the pre-existing ambient formaldehyde level plus any increase in formaldehyde levels from UFFI installation is greater than 0.15 ppm.

Second, I propose that the industry provide consumers in advance of any agreement to install UFFI a disclosure statement specifying potential adverse health effects, both acute and chronic. Such a statement should be included in all sales literature and contracts used by manufacturers and installers. At a minimum, this statement should indicate that:

- U.F. foam may release formaldehyde gas over a long period of time.
- Formaldehyde gas may cause eye, nose and throat irritation, skin irritation, coughing, shortness of breath, nausea, headaches and dizziness.
- Such symptoms may appear immediately or not for months after installation. People with respiratory problems or allergies may suffer more serious reactions, especially persons allergic to formaldehyde.
- Formaldehyde has been found to cause cancer in laboratory animals.
- If health concerns are present, call a doctor. Also, notify the installer and material supplier.

In this context, I suggest that the Commission finalize its proposed Section 27(e) disclosure rule with one modification. As members of the industry unanimously agreed, the notice should be changed to state that U.F. foam should not, under any circumstances, be installed in attics, ceilings or interior walls.

And, since the proposed rule addresses only UFFI's irritant effects, I suggest further that this rule, once promulgated, promptly be amended to include notification of UFFI's potential cancer risk, as indicated above.

Third, manufacturers, foam installers, and other members of the industry should formalize, through a binding consent agreement, a consumer redress program that will ensure a prompt response to aggrieved homeowners. This program should be fashioned so as to provide adequate means for consumers to be made whole in case a problem develops after installation. At a minimum, this program must: (1) liberally define what constitutes a consumer complaint so that it is not left to the whims of individual installers or manufacturers whether a distressed consumer "qualifies" for relief; (2) describe the steps consumers should

take and industry members will take following validation of a complaint to correct the situation, as well as specific time frames for expediting relief; (3) establish consumer action panels or binding arbitration boards to resolve disputes which cannot be handled expeditiously between consumers and installers/manufacturers; (4) provide means for alternative living arrangements, such as hotel lodging and meal allowances, for individuals experiencing extreme reactions from formaldehyde off-gassing until such time as relief can be accorded; (5) provide for removal of the product if formaldehyde levels after installation exceed 0.1 ppm above the pre-installation ambient formaldehyde level; (6) provide for buy-back of the structure if residents' complaints persist after the foam's removal and ambient formaldehyde levels remain above 0.1 ppm; and (7) provide for performance bonds for installers and manufacturers, or alternatively establish an industry insurance pool to adequately cover potential liabilities arising under the consumer redress program, so that homeowners are not left holding the bag should any particular installer or manufacturer go out of business.

* * * * *

A Personal Observation

In January of last year, when the Commission voted to propose a ban of U.F. foam, although disagreeing with that proposal I nevertheless said that "... I would not put the product in my own home..." While I believe that the course of regulatory action I have outlined today comports with this agency's statutory responsibility and affords adequate

safeguards for future purchasers, my best advice to consumers remains-- consider the alternative. In almost every case, there are satisfactory, far safer, less risky, substitute forms of retrofit insulation on the market. In light of everything I know about urea formaldehyde foam insulation as of this moment, emphatically I would advise neighbors and friends to hold off putting it into their homes; and for myself, I still would not put the product in my own home.