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COMMITTEE ON OVERSIGHT AND GOVERNMENT REFORM
MAJORITY STAFF ANALYSIS
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TRAILER MANUFACTURERS AND ELEVATED FORMALDEHYDE LEVELS

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EXECUTIVE SUMMARY

A year ago, the Oversight Committee held a hearing to investigate reports of elevated levels of formaldehyde in travel trailers purchased by the Federal Emergency Management Agency (FEMA) for victims of the Gulf Coast hurricanes of 2005. This hearing revealed that FEMA ignored multiple warnings about dangerous levels of formaldehyde because testing “would imply FEMA’s ownership of the issue.” According to documents released at the hearing, a FEMA lawyer instructed the field staff: “Do not initiate any testing until we give the OK. ... Once you get results and should they indicate some problem, the clock is running on our duty to respond.”

At the hearing, David Paulison, the Administrator of FEMA, testified that the Centers for Disease Control and Prevention would begin testing occupied trailers to assess the dangers of formaldehyde exposure. In February 2008, after testing more than 500 trailers and mobile homes, CDC reported finding dangerous levels of formaldehyde and urged FEMA to move occupants out of the trailers. According to CDC, four manufacturers of travel trailers — Gulf Stream, Forest River, Keystone, and Pilgrim — had a significant percentage of trailers with formaldehyde levels above 100 parts per billion (ppb), a level which can trigger adverse health effects.

At the request of Chairman Henry A. Waxman, the Committee initiated an investigation into what the four manufacturers knew about elevated formaldehyde levels in their trailers and how they responded. In the course of the investigation, the Committee received 9,000 pages of documents from the trailer manufacturers and interviewed several former employees. This staff analysis summarizes the information received by the Committee.

The documents and interviews show that the trailer manufacturers received complaints about high formaldehyde levels in their trailers from hurricane evacuees and others and tested formaldehyde levels in both occupied and unoccupied trailers. The most extensive testing was conducted over two years ago by Gulf Stream, the largest supplier of FEMA trailers. Gulf Stream found formaldehyde levels at or above 100 ppb in every occupied FEMA trailer tested, with two trailers having levels over 600 ppb. The company found even higher levels — up to 4,000 ppb — in unoccupied trailers waiting to be deployed by FEMA. One contractor hired by Forest River to test a trailer in Illinois found formaldehyde levels above 1,500 ppb and advised the manufacturer to “post signs ... stating ‘hazardous – do not enter.’”

Despite these test results, the trailer manufacturers did not warn trailer occupants of the dangerous levels of formaldehyde. Gulf Stream did not tell FEMA the company had found elevated levels of formaldehyde in occupied trailers or warn FEMA not to place families in its unoccupied trailers. The company did, however, send FEMA a letter making some of its test results available to FEMA, an offer which the agency apparently never pursued. Another trailer manufacturer, Keystone, revised its owner’s manual to advise consumers that new travel trailers were expected to emit formaldehyde, which it called a “naturally occurring substance,” resulting in “a strong odor and chemical sensitivity” that “is not a defect in your recreational vehicle.”

Gulf Stream's Trailers

Within weeks after Hurricane Katrina struck in August 2005, FEMA awarded Gulf Stream Coach, Inc., contracts worth over \$500 million for the production of over 50,000 travel trailers. These contracts were among the few contracts for travel trailers that FEMA awarded directly to a trailer manufacturer. According to former Gulf Stream employees, the company hired additional employees and opened new manufacturing plants to meet the FEMA order. The employees told the Committee that Gulf Stream used materials that had a “foul” and “very strong chemical odor” that was “just overwhelming” to make the FEMA trailers.

As the Gulf Stream trailers began to be deployed, the company received complaints about formaldehyde exposure from occupants. In March 2006, one occupant implored Gulf Stream: “There is an odor in my trailer that will not go away. It burns my eyes and I am getting headaches every day. PLEASE, PLEASE HELP ME!!” About the same time, a local television station in Biloxi began reporting on formaldehyde levels in FEMA trailers. In an e-mail to Dan Shea, Gulf Stream’s co-president, a FEMA official asked: “Does your field staff have the capability to put this to bed.” Mr. Shea replied: “I will send a person down ... to test units.”

The company subsequently tested approximately 50 trailers and components of trailers, including 11 occupied trailers. Gulf Stream discovered high levels of formaldehyde concentrations in trailers they had manufactured and also in trailers made by other manufacturers. Every occupied trailer tested had levels above 100 ppb, the level at which CDC, the Environmental Protection Agency (EPA), the World Health Organization, the Consumer Product Safety Commission, and the National Institute of Occupational Safety and Health say acute adverse health effects can be experienced. Four of the 11 occupied trailers had levels above 500 ppb, the level at which federal occupational safety regulations require medical monitoring for worker exposure. Formaldehyde levels in over 20 unoccupied trailers had formaldehyde levels above 900 ppb, a level at which EPA says it is dangerous to be exposed for more than eight hours in a lifetime, with several trailers having levels above 2,000 ppb.

Internal Gulf Stream documents show the company treated the test results and the issue of formaldehyde in its trailers as a public relations and legal problem, not a public health threat. The company told the Committee that the trailer testing was done in anticipation of litigation, not to assess health risks. The company did not advise occupants of its travel trailers that company testing showed they could be exposed to hazardous levels of formaldehyde. Gulf Stream also did not warn FEMA not to deploy additional unoccupied travel trailers until the formaldehyde problem could be addressed. Thousands of unoccupied trailers were subsequently placed into service by FEMA. Despite receiving complaints from trailer occupants, Gulf Stream did tell CNN: “We are not aware of any complaints of illness from our many customers of Cavalier travel trailers over the years, including travel trailers provided under our contracts with FEMA.”

Gulf Stream spent over a month carefully crafting a letter to FEMA regarding formaldehyde and the company’s test results. The final letter did not mention any of the test results of unoccupied trailers, and it referenced only an OSHA standard from 1992 that permitted workers to be exposed with medical monitoring to formaldehyde levels up to 750 ppb (0.75 parts per million). The letter stated:

We would like to reiterate our willingness to assist you in addressing any concerns about our products. Our informal testing has indicated that formaldehyde levels of indoor ambient air of occupied trailers fall below, for instance, the OSHA standard of .75 parts per million. We are willing to share these informal test results with you.

There is no evidence that FEMA responded to Gulf Stream's offer to share the test results.

Gulf Stream is a privately held company run by two brothers who serve as co-presidents, Dan Shea and Brian Shea. In 2005 and 2006, the years that Gulf Stream was supplying trailers to FEMA, the compensation of the co-presidents nearly doubled to over \$1.1 million per year for each co-president.

Forest River's Trailers

Forest River, Inc., did not contract directly with FEMA, but did provide thousands of trailers to FEMA as a subcontractor for North American Catastrophe Services, which had an existing contract with FEMA. According to FEMA, the agency purchased over 12,000 Forest River trailers for use by displaced Gulf Coast residents through North American Catastrophe Services and through the open market.

According to Forest River, it received no complaints from occupants of FEMA trailers and conducted no testing of FEMA trailers. In January 2006, however, Forest River did test a trailer purchased by an Illinois consumer after receiving repeated complaints. This testing, which was conducted by a contractor, found a formaldehyde level of over 1,500 ppb, causing the contractor to advise Forest River to post signs warning that the trailer had hazardous levels of formaldehyde and limiting access to "hazardous waste trained personnel." When bed, seating, and foam materials were removed from the trailer, the formaldehyde levels increased to over 3,000 ppb, which the contractor attributed to "off-gassing of formaldehyde" from exposed wood products.

The contractor speculated that the levels of formaldehyde in the trailer were so high that the wood in the trailer must have been contaminated with a source of formaldehyde after the trailer was built. When the Committee staff contacted the owner of the trailer, he stated that he did not bring any sources of formaldehyde into the trailer and advised Forest River of this fact.

Forest River's response to these results was to "bake out" the trailer for five days at 120 degrees, which lowered the formaldehyde levels to 120 ppb, above the level that triggers acute adverse health effects. Forest River initiated a switch to low-emitting construction materials in October 2006. Two trailers tested by Forest River in 2007 and 2008 had formaldehyde levels below 100 ppb.

Keystone's Trailers

FEMA bought over 6,000 trailers manufactured by Keystone RV Company on the open market for use by displaced Gulf Coast residents. According to Keystone, it did not receive complaints from occupants of FEMA trailers and conducted no testing of FEMA trailers. Keystone did, however, conduct testing in 2007 and 2008 of four travel trailers sold to other customers. Three of these tests showed formaldehyde levels above 200 ppb with the ventilation system off, and one showed levels over 100 ppb. The formaldehyde levels dropped below 100 ppb when the ventilation system was turned on.

In September 2006, after the news media covered reports of dangerous levels of formaldehyde in FEMA trailers, Keystone revised its owner's manual to explain that new travel trailers were expected to off-gas formaldehyde resulting in "a strong odor and chemical sensitivity." According to the revised manual, formaldehyde is a "naturally occurring substance" and "[t]his is not a defect in your recreational vehicle." The manual advises ventilation to lower formaldehyde levels.

Pilgrim's Trailers

FEMA bought over 5,000 trailers manufactured by Pilgrim International, Inc., on the open market for use by displaced Gulf Coast residents. According to documents submitted by Pilgrim, it conducted no testing of FEMA trailers or other trailers.

I. BACKGROUND

On August 29, 2005, Hurricane Katrina made landfall in Louisiana. The hurricane, along with Hurricane Rita, displaced tens of thousands of residents throughout the Gulf Coast in 2005. Thousands of homes and apartment buildings across the region were destroyed by wind and flood damage.

Following the devastating hurricanes, the Federal Emergency Management Agency began working to provide temporary housing for the displaced residents. At the time, FEMA's primary method for providing temporary shelter was purchasing travel trailers, mobile homes, and park models through private contractors and the open market. The federal government spent approximately \$2 billion purchasing over 120,000 travel trailers for displaced residents of the Gulf Coast to use as temporary housing.¹

In March 2006, WLOX, a television news station in Biloxi, Mississippi, reported that a couple living in a travel trailer supplied by FEMA were experiencing adverse health effects due to the level of formaldehyde in the travel trailer.² Formaldehyde is a chemical widely used in

¹ Department of Homeland Security Office of Inspector General, *Review of FEMA's Use of Proceeds from the Sales of Emergency Housing Units* (Feb. 2008) (OIG-08-23).

² *Couple Discovers High Levels of Formaldehyde in FEMA Trailer*, WLOX (Mar. 17, 2006).

building materials, often as a component of glue, adhesives, paint, or coatings. It has been classified as a “known carcinogen” by the International Agency for Research on Cancer.³ It can also cause a number of acute adverse health effects at elevated levels, including: burning sensations in the eyes, nose, and throat; coughing and chest tightness; nausea; and skin rashes and allergic reactions.⁴

In May 2006, the Sierra Club announced that it had conducted testing of FEMA-supplied travel trailers and that most tested trailers had elevated levels of formaldehyde.⁵ Formaldehyde in outdoor ambient air is typically found at levels below 10 parts per billion (ppb); indoor air concentrations in conventional homes typically range from 10 to 30 ppb; and formaldehyde levels can reach 40 ppb on busy city streets.⁶ The Sierra Club results showed that 83% of the 52 trailers tested had formaldehyde concentrations above 100 ppb. According to the Centers for Disease Control and Prevention,⁷ the Environmental Protection Agency,⁸ the Consumer Products Safety Commission,⁹ the National Institute for Occupational Safety and Health,¹⁰ and the World Health Organization,¹¹ acute adverse effects from formaldehyde exposure begin to be experienced at exposures of 100 ppb, especially in vulnerable individuals such as asthmatics and those with chronic illness.

FEMA’s response was to deny that there were any problems with the trailers. In May 2006, its spokesperson stated, “FEMA and industry experts are monitoring the small number of cases where odors of formaldehyde have been reported, and we are confident that there is no ongoing risk.”¹²

³ International Agency for Research on Cancer, *IARC Classifies Formaldehyde as Carcinogenic to Humans* (June 15, 2004).

⁴ Consumer Product Safety Commission, *An Update on Formaldehyde* (1997 Revision) (online at www.cpsc.gov/cpsc/pub/pubs/725.html).

⁵ Sierra Club, *Toxic Trailers* (online at www.sierraclub.org/gulfcoast/downloads/formaldehyde_test.pdf) (accessed on July 6, 2008).

⁶ Centers for Disease Control and Prevention, *Interim Findings on Formaldehyde Levels in FEMA-Supplied Travel Trailers, Park Models, and Mobile Homes* (Feb. 29, 2008).

⁷ Centers for Disease Control and Prevention, *Final Report on Formaldehyde Levels in FEMA-Supplied Travel Trailers, Park Models, and Mobile Homes* (July 2, 2008).

⁸ Environmental Protection Agency, *Indoor Air Quality* (online at <http://www.epa.gov/iaq/formalde.html>) (accessed on July 8, 2008).

⁹ Consumer Product Safety Commission, *An Update on Formaldehyde* (1997 Revision) (online at www.cpsc.gov/cpsc/pub/pubs/725.html).

¹⁰ National Institute for Occupational Safety and Health, *NIOSH Pocket Guide to Chemical Hazards* (Sept. 2005) (online at www.cdc.gov/niosh/npg/npgd0293.html).

¹¹ World Health Organization, *Concise International Chemical Assessment Document: Formaldehyde* (2002) (online at www.who.int/ipcs/publications/cicad/en/cicad40.pdf).

¹² *Environmental Group Says Some FEMA Trailers Unsafe*, Associated Press (May 18, 2006).

On July 19, 2007, the Committee on Oversight and Government Reform held a hearing to investigate FEMA's response. The hearing revealed that FEMA field staff urged immediate action to address reports of formaldehyde contamination, saying "This needs to be fixed today,"¹³ "we need to take a proactive approach,"¹⁴ and there is an "immediate need"¹⁵ for a plan of action. But despite the warnings from the field, FEMA officials in Washington refused to authorize testing of trailers because testing "would imply FEMA's ownership of this issue."¹⁶ One FEMA attorney directed: "Do not initiate any testing until we give the OK. ... Once you get results and should they indicate some problem, the clock is running on our duty to respond to them."¹⁷

At the hearing, the FEMA Administrator, David Paulison, acknowledged FEMA could have moved faster and that it now recognized there was a problem.¹⁸ He also informed the Committee that FEMA had asked CDC to commence testing of occupied trailers.¹⁹

In December 2007, CDC began testing the formaldehyde levels of a random sampling of the travel trailers, mobile homes, and park models that had been provided by FEMA to displaced residents of the Gulf Coast in 2005 and 2006.²⁰ CDC tested 519 FEMA-supplied occupied travel trailers, park models, and mobile homes.²¹ The number of travel trailers, park models, and mobile homes chosen to be studied by CDC "was based on power calculations designed to allow researchers to draw statistically valid conclusions" for common types of "travel trailers, park models, and mobile homes within that population of FEMA-supplied travel trailers, park models, and mobile homes."²²

¹³ Internal FEMA E-mail from James Russo to Eric Gentry, Sidney Melton, Eugene Romano, Crystal Payton, and Mary Hudak (Mar. 17, 2006).

¹⁴ Internal FEMA E-mail from Eric Gentry to James Russo, Sidney Melton, Eugene Romano, Crystal Payton, Mary Hudak, and James Lowery (Mar. 17, 2006).

¹⁵ Internal FEMA E-mail from James Lowery to James Kaczorowski, Colonel Scott, and Michael Miller (Mar. 17, 2006).

¹⁶ Internal FEMA E-mail from Peggy Phillips to Michael Miller, Patricia Trask, Tracy Aupperlee, Sidney Melton, Jill Igert, and others (June 16, 2006).

¹⁷ Internal FEMA E-mail from Patrick Preston to Jill Igert, Jordan Fried, and Kevin Souza (June 15, 2006).

¹⁸ House Committee on Oversight and Government Reform, *Hearing on FEMA's Toxic Trailers*, 110th Cong. (July 19, 2007).

¹⁹ *Id.*

²⁰ Federal Emergency Management Agency, *CDC to Begin Testing Trailers for Formaldehyde* (Dec. 13, 2007).

²¹ Centers for Disease Control and Prevention, *Interim CDC Findings — Formaldehyde Levels in FEMA-Supplied Travel Trailers, Park Models, and Mobile Homes* (Feb. 29, 2008).

²² *Id.*

CDC released the results of the testing and its interim findings in February 2008.²³ The testing results confirmed that there were elevated levels of formaldehyde in the tested travel trailers. In the interim report, CDC identified four brands of travel trailers — Gulf Stream, Forest River, Keystone, and Pilgrim — as having “significantly higher formaldehyde levels” than other brands.²⁴ In July 2008, CDC released its final findings, which confirmed its interim findings.²⁵ Of the tested trailers, 56% of Gulf Stream travel trailers tested above 100 ppb, 53% of Keystone travel trailers tested above 100 ppb, 51% of Pilgrim travel trailers tested above 100 ppb, and 42% of Forest River travel trailers tested above 100 ppb. In contrast, only 6% of Fleetwood travel trailers and 13% of Fleetwood CA travel trailers tested above 100 ppb.²⁶ See Table 1.

Table 1. CDC Findings on Formaldehyde Levels, by Manufacturer

Brand	Range (ppb)	Weighted Percentage of the Sample with Levels	
		≥ 100 ppb	≥ 300ppb
Gulf Stream	3-590	56%	9%
Forest River	17-510	42%	6%
Fleetwood	3-140	6%	0%
Fleetwood CA	7-300	13%	3%
Pilgrim	25-520	51%	3%
Keystone	23-480	53%	11%
Other	57-96	37%	3%

In its final report, CDC observed that the measured formaldehyde levels were likely to “underrepresent occupant exposures in the early months of occupation and even the average exposure over time the trailers were occupied because formaldehyde levels tend to be higher in newly constructed trailers and during warm weather.”²⁷ Because of the high levels CDC detected, the agency recommended that FEMA begin taking steps to move people, especially children, the elderly, and those with chronic diseases, out of the trailers with higher levels of formaldehyde.²⁸

²³ Federal Emergency Management Agency and Centers for Disease Control and Prevention, *CDC Releases Results of Formaldehyde Level Tests: FEMA to Expedite Relocation of Residents from Temporary Housing Unites* (Feb. 14, 2008).

²⁴ Centers for Disease Control and Prevention, *Interim CDC Findings — Formaldehyde Levels in FEMA-Supplied Travel Trailers, Park Models, and Mobile Homes* (Feb. 29, 2008).

²⁵ Centers for Disease Control and Prevention, *Final Report on Formaldehyde Levels in FEMA-Supplied Travel Trailers, Park Models, and Mobile Homes* (July 2, 2008).

²⁶ *Id.*

²⁷ *Id.*

²⁸ *Id.*

In July 2008, CDC also released the results from further testing it had conducted on four unoccupied travel trailers that had been purchased by FEMA. CDC studied the indoor emissions of volatile organic compounds in the trailers and gases released from specific parts of the trailers, such as walls, floors, ceilings, tables, and cabinets.²⁹ The results of the tests showed formaldehyde was the only volatile organic compound in the trailers that could be a health hazard and that component parts in the trailers emitted formaldehyde, most notably the cabinet walls, subflooring, and bench materials.³⁰

The CDC testing used 100 ppb as a benchmark for unsafe levels of exposure, which reflects the consensus of health experts. There is, however, a patchwork of other standards for formaldehyde, many of them a decade or more old. The most stringent standard is 16 ppb, which is what NIOSH recommends for long-term worker exposure.³¹ This standard is based on formaldehyde's carcinogenic effects, not acute health risks. In 1992, under the first Bush Administration, the Occupational Safety and Health Administration set an action level of 500 ppb, which requires medical surveillance of exposed employees, and a regulatory standard prohibiting exposures over 750 ppb.³² Environmental Protection Agency standards provide that it is dangerous to be exposed to formaldehyde levels over 900 ppb for more than eight hours in a lifetime.³³

There are also standards for component parts of products, though there are no applicable federal standards for travel trailers. A 24-year-old standard of the Department of Housing and Urban Development provides that the plywood used in manufactured homes must have formaldehyde emission levels that are no more than 200 ppb and the particle board must have levels that are no more than 300 ppb.³⁴ The California Air Resources Board promulgated updated standards for products in 2007. These standards are much stricter than the HUD standards, requiring levels no more than 50 ppb in plywood and 90 ppb in particleboard by 2011.³⁵

²⁹ Centers for Disease Control and Prevention, *Fact Sheet: Lawrence Berkeley National Laboratories Study of Unoccupied Trailers* (July 2, 2008).

³⁰ Centers for Disease Control and Prevention, *CDC Summary of Lawrence Berkeley National Laboratory Interim VOC Report* (June 26, 2008).

³¹ National Institute for Occupational Safety and Health, *NIOSH Pocket Guide to Chemical Hazards* (Sept. 2005) (online at www.cdc.gov/niosh/npg/npgd0293.html).

³² 29 C.F.R. § 1910.1048 (2008).

³³ Environmental Protection Agency, *Acute Exposure Guideline Levels: Formaldehyde* (online at www.epa.gov/oppt/aegl/pubs/results68.htm).

³⁴ 24 CFR § 3280.308 (2006).

³⁵ 17 CCR § 93120-93120.12 (2208).

Further complicating a discussion of formaldehyde standards, some organizations use “parts per million” as opposed to “parts per billion” to describe the standards. The standard of 100 ppb is numerically identical to a standard of 0.1 ppm.

II. THE COMMITTEE’S INVESTIGATION

On February 14, 2008, Chairman Waxman expanded the Committee’s investigation into the FEMA trailers to examine what the trailer manufacturers knew and did about the problem of high formaldehyde levels.³⁶ On June 4, 2008, Chairman Waxman requested documents from Gulf Stream Coach, Inc., Forest River, Inc, Keystone RV Company, Pilgrim International, Inc.³⁷

In the course of the investigation, the Committee has received over 9,000 pages of documents from the four trailer manufacturers: 2,200 from Gulf Stream, 600 from Forest River, 4,600 from Keystone, and 1,700 from Pilgrim. The documents include specifications for trailers, formaldehyde test results, handwritten notes, trailer warranty registrations, purchase orders for building materials, material safety data sheets, and internal e-mails and correspondence. The Committee staff has also interviewed two former Gulf Stream Coach employees who worked to construct the trailers sold to FEMA.

Each of the companies that provided documents to the Committee are also involved in litigation over the formaldehyde levels in their travel trailers, and the Committee has made accommodations on documents related to the litigation at the request of the companies. For this reason, the Committee may not be aware of all documents in the companies’ possession.

III. GULF STREAM’S TRAILERS

Following Hurricane Katrina, Gulf Stream immediately began communicating with FEMA to secure a contract to manufacture travel trailers for use in the Gulf Coast by residents displaced by the hurricane.³⁸ By September 9, 2005, Gulf Stream had secured two contracts

³⁶ Letter from Henry A. Waxman, Chairman, to Steve Bennett, President, Pilgrim International, Inc. (Feb. 14, 2008); Letter from Henry A. Waxman, Chairman, to Richard M. Lavers, Chief Executive Officer, Coachmen Industries, Inc. (Feb. 14, 2008); Letter from Henry A. Waxman, Chairman, to Brian Shea, President, Gulf Stream Coach, Inc. (Feb. 14, 2008).

³⁷ Letter from Henry A. Waxman, Chairman, to Brian Shea, President, Gulf Stream Coach, Inc. (June 4, 2008); Letter from Henry A. Waxman, Chairman, to Steve Bennett, President, Pilgrim International, Inc. (June 4, 2008); Letter from Henry A. Waxman, Chairman, to Ronald J. Fenech, President, Keystone RV Company (June 4, 2008); Letter from Henry A. Waxman, Chairman, to Peter Liegl, President, Forest River, Inc. (June 4, 2008).

³⁸ Letter from Phil Savari, Gulf Stream Executive Vice President, to Bryan McCreary (Aug. 30, 2005); Letter from Daniel G. Shea, Gulf Stream Co-President, to Michael Wagner (Aug. 31, 2005).

with FEMA to produce over 50,000 travel trailers.³⁹ The contracts combined were worth over \$500 million.⁴⁰ Gulf Stream's contracts with FEMA for the production of travel trailers were the largest contracts the Department of Homeland Security awarded to a private company in 2005.⁴¹

A. The Manufacturing Process

The FEMA contracts required Gulf Stream to dramatically ramp up its production of travel trailers. Gulf Stream produced more travel trailers in 2005 than in the three previous years combined, due to the requirements of the contract with FEMA.⁴² In order to meet this increased demand, Gulf Stream hired additional employees and opened new manufacturing plants.⁴³

One Gulf Stream plant with approximately 380 employees produced 100 travel trailers for FEMA per day.⁴⁴ Two former employees in this plant told the Committee that they worked 15-hour days with a frantic production schedule.⁴⁵ One employee, a group leader in charge of installing flooring in the travel trailers, stated: "you were expected to work as hard and as fast as you could" and "it was the most extreme rough conditions I've ever worked in my life and I've been in construction, nothing but construction some shape, form or way for roughly the past 12, 13 years."⁴⁶ The other employee, who was assigned to do quality control, said: "There would be supervisors and plant managers walking down the line with bullhorns screaming at us, go faster, you're not doing your job, you don't deserve your paycheck."⁴⁷

The former Gulf Stream employees told the Committee that they experienced adverse health effects while working for Gulf Stream. One employee said that these adverse health

³⁹ Contract No. H5FEHQ-05-C-4000 (Sept. 2, 2005); Contract No H5FEHQ-05-C-4041 (Sept. 9, 2005).

⁴⁰ *Id.*

⁴¹ HS Today, *DHS Top 25 in 2005* (online at www.hstoday.us/content/view/866/111/) (accessed on July 6, 2008).

⁴² Letter from Eleanor Hill, King & Spalding LLP, to Chairman Henry A. Waxman (June 18, 2008).

⁴³ House Committee on Oversight and Government Reform, Transcribed Interview of Terry Slone (July, 2, 2008).

⁴⁴ House Committee on Oversight and Government Reform, Transcribed Interview of Terry Slone (July, 2, 2008).

⁴⁵ *Id.*; House Committee on Oversight and Government Reform, Transcribed Interview of Linda Esparza (July 2, 2008).

⁴⁶ House Committee on Oversight and Government Reform, Transcribed Interview of Terry Slone (July, 2, 2008).

⁴⁷ House Committee on Oversight and Government Reform, Transcribed Interview of Linda Esparza (July 2, 2008).

effects included “nose bleeds,” “shortness of breath,” “dizziness,” and “ears bleeding.”⁴⁸ The other described it as a “sinus infection that lasted the whole time I was there.”⁴⁹

These employees attributed their health effects to formaldehyde exposure. One of the employees reported that the wood materials Gulf Stream used in the production of the travel trailers for FEMA had a “foul odor” and that the odor “got worse” as “more and more came.”⁵⁰ He explained that he realized the odor was coming from the wood materials used in the assembly of the travel trailers because he “would take two pieces of that and lift one up” and that it “was just overwhelming, the smell that would come from that.”⁵¹ According to the employee, “anywhere you went in the plant, you could smell it. ... It was throughout the entire plant.”⁵²

The employees stated that some of the wood products Gulf Stream used in the assembly of the travel trailers for FEMA was of low quality and “very sticky.”⁵³ One of the employees stated that he discussed the matter with his supervisor and the plant manager and that he informed them the “new material you got us is no good” because “it stinks,” “it’s sticking together,” its “slowing us down,” and “it looks like its got water damage or mold or something.”⁵⁴ He said their explanation was that the materials were from “a new supplier.”⁵⁵

The second employee told the Committee that it was well known at the Gulf Stream plant that the travel trailers contained a strong odor after their production. She said: “Everybody was aware of that odor. It wasn’t something you had to report. Everybody smelled it.”⁵⁶ She stated that workers could not stay in one of the recently completed travel trailers for “maybe 5 or 10 minutes before your eyes were watering and your nose was burning.”⁵⁷ She described the travel trailers as having a “very strong chemical odor.”⁵⁸

⁴⁸ House Committee on Oversight and Government Reform, Transcribed Interview of Terry Slone (July 2, 2008).

⁴⁹ House Committee on Oversight and Government Reform, Transcribed Interview of Linda Esparza (July 2, 2008).

⁵⁰ House Committee on Oversight and Government Reform, Transcribed Interview of Terry Slone (July, 2, 2008).

⁵¹ *Id.*

⁵² *Id.*

⁵³ *Id.*

⁵⁴ *Id.*

⁵⁵ *Id.*

⁵⁶ House Committee on Oversight and Government Reform, Transcribed Interview of Linda Esparza (July 2, 2008).

⁵⁷ *Id.*

⁵⁸ *Id.*

B. Formaldehyde Complaints from FEMA Trailer Occupants

As FEMA deployed the Gulf Stream trailers, the company received numerous complaints from Gulf Coast occupants about an “odor” in their unit. On March 10, 2006, Gulf Stream received its first complaint about formaldehyde from a displaced resident of the Gulf Coast. John Smith, a Gulf Stream employee, forwarded an e-mail with an attached document titled “Daily FEMA Phone Log” to Dan Shea, Gulf Stream’s Co-President; Scott Pullin, Gulf Stream’s Vice President of Operations; and Phil Sarvari, Gulf Stream’s Executive Vice President.

The “Daily FEMA Phone Log” is dated March 10, 2006, and summarizes a conversation between John Bruhn, a Gulf Stream employee, and an occupant of a travel trailer manufactured by Gulf Stream for FEMA. The document states:

Issues Discussed Retail as strong odor, burns eyes. Unit delivered in December but only until now need to live in. I asked is it sewer gas? No. Is it LP Gas odor and has any of the detector alarms sounded? No. I asked since Dec. have you opened windows, run the A/C to air out? Yes. The odor comes and goes; One day will have and next will not.

Resolution I directed her to the Disaster Recovery Center in Metairie. She did not have a FEMA service phone number to call.⁵⁹

Mr. Pullin sent a reply e-mail to John Bruhn, stating: “With regards to the second call, airing out the unit and leaving the a/c run should clear up the ‘New’ smell until the occupant actually gets into the unit and starts using it on a regular basis. The temperatures are starting to elevate down there and will impact the amount of ‘new’ smell in a closed up trailer.”⁶⁰

On March 20, 2006, Gulf Stream received another complaint about formaldehyde from an occupant of a FEMA trailer in Jefferson, Louisiana. Contacting Gulf Stream through an interactive feature on the Gulf Stream website, the resident stated:

There is an odor in my trailer that will not go away. It burns my eyes and I am getting headaches every day. I have tried many things, but nothing seems to work. PLEASE, PLEASE HELP ME!!⁶¹

On May 19, 2006, Mr. Shea wrote a FEMA official “to confirm your direction ... that Gulf Stream is not to address any complaints we may receive ... or to make future contact with

⁵⁹ Internal Gulf Stream Coach e-mail from John Smith to Dan Shea, Phil Savari, and Scott Pullin (Mar. 10, 2006).

⁶⁰ Internal Gulf Stream Coach e-mail from Scott Pullin to John Bruhn, John Smith, Dan Shea, and Phil Savari (Mar 10, 2006).

⁶¹ E-mail from Scott Pullin to Dan Shea (Mar. 21, 2006).

the occupants who made those complaints. Rather, you directed that Gulf Stream should refer all complaints to FEMA for future handling.”⁶²

C. FEMA’s Request to “Put This Issue to Bed”

On March 16, 2006, WLOX, a television news station in Biloxi, Mississippi, reported that Paul Stewart, a displaced resident living in a FEMA-supplied trailer, and his wife Melody had been experiencing “burning eyes, burning nose, scratchy throats, nasal headaches” while living in a FEMA-supplied travel trailer and that they had discovered that the travel trailer had levels of formaldehyde significantly higher than the level at which the Environmental Protection Agency has stated these adverse health effects can occur.⁶³ The FEMA-supplied travel trailer Paul and Melody Stewart were living in at the time was manufactured by Gulf Stream.⁶⁴

On the same day, Dan Shea, the Gulf Stream co-president, sent an e-mail to Stephen Miller, a FEMA official, stating:

I want to advise you of Gulf Stream Coach’s use of low formaldehyde emitting materials in our Cavalier travel trailers. To my knowledge there is no requirement in the RV industry for low formaldehyde emitting materials. Where possible our company uses material that meet the HUD specification of low formaldehyde emissions for manufactured housing. ...

Gulf Stream is one of the leaders in reducing formaldehyde emission in recreational vehicles.⁶⁵

On March 21, 2006, Stephen Miller forwarded Mr. Shea’s e-mail to six other FEMA employees.⁶⁶ Sidney Melton, one of the FEMA officials who received the e-mail, responded: “Are they willing to come down and test their new units?”⁶⁷ Later that morning, Mr. Miller forwarded two internal FEMA e-mail chains to Mr. Shea at Gulf Stream. In forwarding one e-mail, Mr. Miller wrote: “This is the big stir. I have your email but is there anything additional

⁶² Letter from Daniel G. Shea, Gulf Stream President, to David Porter, FEMA Program Specialist (May 19, 2006).

⁶³ *Couple Discovers High Levels of Formaldehyde in FEMA Trailer*, WLOX (Mar. 17, 2006).

⁶⁴ Paul Stewart, Prepared Remarks of Paul Stewart for Committee on Oversight and Government Reform and Oversight Committee (July 19, 2007).

⁶⁵ E-mail from Dan Shea to Stephen Miller (Mar. 17, 2006).

⁶⁶ Internal FEMA E-mail from Stephen Miller to Sidney Melton, Michael Miller, Stephen DeBlasio, Juan Gil, Jill Iger, and Robert Parker (Mar. 21, 2006).

⁶⁷ Internal FEMA E-mail from Sidney Melton to Stephen Miller (Mar. 21, 2006).

you can provide.”⁶⁸ In the other e-mail to Mr. Shea, Mr. Miller asked: “Does your field staff have the capability to put this to bed?”⁶⁹

A few hours later, Dan Shea responded to Mr. Miller’s e-mail, replying: “I will send a person down to Baton Rouge on Friday to test units in your staging area.”⁷⁰

D. Gulf Stream’s Testing of FEMA Trailers

Between March 26, 2006, and May 15, 2006, Scott Pullin, Gulf Stream’s Vice President of Operations, tested the formaldehyde levels within both occupied and unoccupied travel trailers that Gulf Stream had manufactured for FEMA, as well as unoccupied travel trailers manufactured by other companies. During this timeframe, based upon documents Gulf Stream provided to the Committee, it appears that over 200 separate formaldehyde readings were taken on approximately 50 travel trailers.

Mr. Pullin tested the formaldehyde levels within eleven occupied Gulf Stream travel trailers in March and April 2006.⁷¹ For each of the tested Gulf Stream travel trailers, Mr. Pullin noted the temperature inside and outside each trailer, the humidity inside and outside each trailer, and the level of formaldehyde within each trailer.⁷² Mr. Pullin also took down notes about his conversations with some of the displaced residents within the trailers.⁷³

Mr. Pullin’s tests indicated formaldehyde levels at or above 100 parts per billion within every occupied travel trailer he tested. The results showed formaldehyde levels ranged between 100 ppb and 620 ppb.⁷⁴ Four of the 11 occupied trailers had levels above 500 ppb, the OSHA action level for mandatory medical monitoring.⁷⁵

Mr. Pullin’s notes show that some Gulf Stream travel trailer occupants indicated there was “no problem with trailer, never any problems w/eye; nothing other than new smell,”⁷⁶ while other occupants mentioned “burning”⁷⁷ and “no problems at first.”⁷⁸

⁶⁸ E-mail from Stephen Miller to Dan Shea (Mar. 21, 2006).

⁶⁹ E-mail from Stephen Miller to Dan Shea (Mar. 21, 2006).

⁷⁰ E-mail from Dan Shea to Stephen Miller (Mar. 21, 2006).

⁷¹ Gulf Stream Coach, Inc., *Activated Trailer Records* (Mar. 28, 2006 - Apr. 22, 2006).

⁷² *Id.*

⁷³ Gulf Stream Coach, Inc., *Handwritten Notes of Scott Pullin* (Mar. 28, 2006 - Apr. 22, 2006).

⁷⁴ Gulf Stream Coach, Inc., *Activated Trailer Records* (Mar. 28, 2006 - Apr. 22, 2006).

⁷⁵ *Id.*

⁷⁶ Gulf Stream Coach, Inc., *Handwritten Notes of Scott Pullin* (Mar. 28, 2006 - Apr. 22, 2006).

Mr. Pullin also tested over 35 new travel trailers that had not yet been deployed for displaced residents. Of these trailers, over 25 were manufactured by Gulf Stream and 7 by other companies. Mr. Pullin's testing of the unoccupied trailers showed even higher levels of formaldehyde in the unoccupied travel trailers. At least 10 Gulf Stream trailers contained formaldehyde levels in excess of 900 ppb, a level at which EPA says it is dangerous to be exposed for more than eight hours in a lifetime. One Gulf Stream trailer had formaldehyde levels of 2,690 ppb.⁷⁹ Other makes of travel trailers contained similarly high levels of formaldehyde, with each trailer having formaldehyde levels over 900 ppb and one trailer having levels of 4,480 ppb.⁸⁰

On April 21, 2006, Mr. Pullin sent an e-mail to Dan Shea, the company co-president, with a draft spreadsheet attached for keeping track of the formaldehyde testing data.⁸¹ On April 24, 2006, a Gulf Stream employee e-mailed another spreadsheet of formaldehyde testing results to both Mr. Pullin and Mr. Shea.⁸² On April 24, 2006, Dan Shea wrote a report that listed travel trailers by brand with their tested levels of formaldehyde, in parts per million.⁸³ This report identified 18 trailers with levels over 100 ppb, 17 trailers with levels over 500 ppb, 750 ppb, and 900 ppb, 7 trailers with levels over 2,000 ppb, 4 trailers with levels over 3,000 ppb, and 2 trailers with levels over 4,000 ppb.⁸⁴

Between March 31, 2006, and April 14, 2006, Gulf Stream also conducted extensive formaldehyde testing on one of its travel trailers and the component parts. The testing again showed elevated levels of formaldehyde in the trailer, confirmed that the component parts used in the assembly of the travel trailer, including medium density fiberboard and lauan paneling, contained formaldehyde, and revealed that an increase in temperature within the travel trailer would dramatically increase the levels of formaldehyde.⁸⁵

In addition, beginning on March 24, 2006, Gulf Stream's general counsel and outside counsel began coordinating efforts to have a sample of paneling tested for its formaldehyde

⁷⁷ *Id.*

⁷⁸ *Id.*

⁷⁹ Gulf Stream Coach, Inc., *Handwritten Notes of Scott Pullin* (Mar. 26, 2006 - Mar. 30, 2006).

⁸⁰ Internal Gulf Stream Coach E-mail from Barb Vining to Dan Shea and Scott Pullin (Apr. 24, 2006).

⁸¹ Internal Gulf Stream Coach E-mail from Scott Pullin to Dan Shea (Apr. 21, 2006)

⁸² Internal Gulf Stream Coach E-mail from Barb Vining to Dan Shea and Scott Pullin (Apr. 24, 2006).

⁸³ Gulf Stream Coach, Inc., *Stored Unit Report* (Apr. 24, 2006).

⁸⁴ *Id.*

⁸⁵ Gulf Stream Coach, Inc., *Handwritten Notes of Scott Pullin* (Mar. 31, 2006 - Apr. 14, 2006).

emissions.⁸⁶ Gulf Stream used the type of paneling in the assembly of the travel trailers it manufactured for FEMA.⁸⁷ This testing was performed by Progressive Engineering, Inc. On April 27, 2006, Progressive Engineering completed its testing of two samples of paneling. The results showed that the formaldehyde emissions for each sample of paneling were elevated.⁸⁸

E. Gulf Stream's Research on Formaldehyde

During the same period, Gulf Stream began a research effort to better understand the dangers of formaldehyde. As part of this effort, a professor at Purdue provided Jim Shea, Gulf Stream's Chairman, with contact information for four experts on formaldehyde and indoor air quality.⁸⁹

On April 24, 2006, Gulf Stream's outside counsel sent both Jim and Dan Shea a 1997 document created by the Consumer Products Safety Commission entitled "An Update on Formaldehyde."⁹⁰ The document included the following information:

Formaldehyde is a colorless, strong-smelling gas. When present in the air at levels above 0.1 ppm (parts in a million parts of air), it can cause watery eyes, burning sensations in the eyes, nose and throat, nausea, coughing, chest tightness, wheezing, skin rashes, and allergic reactions. It has also been observed to cause cancer in scientific studies using laboratory animals and may cause cancer in humans. ... Formaldehyde is normally present at low levels, usually less than 0.03 ppm in both outdoor and indoor air.⁹¹

On May 8, 2006, Gulf Stream's outside counsel provided Gulf Stream's general counsel with information on formaldehyde that had been prepared by the Formaldehyde Council, the Agency for Toxic Substances and Disease Registry, the Environmental Protection Agency, and the National Cancer Institute.

The information included EPA's statement that formaldehyde at levels above 100 ppb "can cause watery eyes, burning sensation in the eyes and throat, nausea, and difficulty breathing."⁹² It also included the National Cancer Institute's statement that when formaldehyde

⁸⁶ E-mail from Tom Brandt to Brian Hoffer, lawyer for Kindig & Sloat, and Ken Brinker, General Counsel for Gulf Stream (Mar. 24, 2006).

⁸⁷ Letter from Kelly Rentfrow, Esco Industries General Manager, to Gulf Stream Coach (Apr. 24, 2007).

⁸⁸ Progressive Engineering, Inc., *Formaldehyde Measurement Using Two Hour Desiccator Test* (Apr. 27, 2006).

⁸⁹ E-mail from Gary Carlson to Jim Shea (Mar. 27, 2006).

⁹⁰ E-mail from Marcia Madsen to Dan Shea and Jim Shea (Apr. 24, 2006).

⁹¹ Consumer Products Safety Commission, *An Update on Formaldehyde* (Revised 1997).

⁹² Environmental Protection Agency, *Sources of Indoor Air Pollution-Formaldehyde* (Updated Mar. 3, 2006).

is present in the air at levels exceeding 100 ppb, “some individuals may experience health effects such as watery eyes; burning sensations of the eyes, nose, and...coughing; wheezing; nausea; and skin irritation.”⁹³ ATSDR’s fact sheet on formaldehyde described OSHA’s permissible exposure limit for formaldehyde of 750 ppb, as well as NIOSH’s recommendation that formaldehyde exposure in an occupational setting be limited to less than 16 ppb.⁹⁴

F. Gulf Stream’s Response to FEMA

The documents show that Gulf Stream carefully considered how to communicate its testing results to FEMA. The first version of a letter to FEMA regarding formaldehyde in Gulf Stream’s trailers was drafted on March 21, 2006.⁹⁵ The final letter was not sent until May 11, 2006, over six weeks later.⁹⁶ During the interim, multiple drafts of the letter were prepared and revised.

Gulf Stream executives met with FEMA officials in Washington, DC, on April 25, 2006. Notes taken at that meeting make no mention of Gulf Stream sharing the information it had gained about formaldehyde in the travel trailers FEMA was distributing to displaced residents of the Gulf Coast.⁹⁷

On May 11, 2006, Gulf Stream did write to FEMA regarding the formaldehyde in travel trailers. In relevant part, Gulf Stream’s letter states:

We wanted to follow up on our recent conversations regarding the travel trailers supplied to FEMA. ... As we have previously indicated, we wanted to again let you know that we remain committed to providing high quality products. ...

As we discussed, no particular information on ventilation or standards for indoor air quality including formaldehyde are required by the RVIA code or government regulation relating to travel trailers. However, as we further discussed, even though not required, Gulf Stream has taken the added step of specifying low emission materials. ...

We would like to reiterate our willingness to assist you in addressing any concerns about our products. Our informal testing has indicated that formaldehyde levels of indoor ambient air of occupied trailers fall below, for instance, the OSHA standard of .75 parts

⁹³ National Cancer Institute, *Formaldehyde and Cancer: Questions and Answers* (online at www.cancer.gov/cancertopics/factsheet/Risk/formaldehyde) (accessed on May 8, 2006).

⁹⁴ Agency for Toxic Substances and Disease Registry, *ToxFAQs for Formaldehyde* (online at www.atsdr.cdc.gov/tfacts111.html) (accessed on May 8, 2006).

⁹⁵ Internal Gulf Stream Coach e-mail from Denise Woody to Dan Shea (Mar. 21, 2006).

⁹⁶ Letter from Philip S. Savari, Gulf Stream Executive Vice President, to Deidre Lee, FEMA Director of Operations (May 11, 2006).

⁹⁷ Gulf Stream Coach, Inc., Handwritten Notes (Apr. 25, 2006).

per million. We are willing to share these informal test results with you. And, as mentioned during our meeting, if FEMA wishes to conduct formal testing protocols on any designated units, we are willing to participate in that testing.⁹⁸

Gulf Stream did not inform FEMA that all of the 11 occupied units it tested had levels above 100 ppb. It did not inform FEMA that four of the 11 occupied units had levels above 500 ppb, which is the OSHA action level for mandatory medical monitoring. And it did not inform FEMA that over 20 of the approximately 40 unoccupied trailers it tested had formaldehyde levels above the 750 ppb OSHA standard.

G. Gulf Stream's Public Statements and Communications to Occupants

On April 24, 2006, Porter Novelli, a public relations firm retained by Gulf Stream, advised Gulf Stream that CNN was preparing a story on the health issues of Katrina victims, with a key part of the story focused on the "trailer/formaldehyde angle."⁹⁹ According to Porter Novelli, "the story will likely run next week."¹⁰⁰

Over the next few days, Gulf Stream's co-president and chairman, Porter Novelli, and Gulf Stream's outside counsel sent versions of a draft statement to one another via e-mail.¹⁰¹ The statement was finalized on April 27, 2006. Although Gulf Stream had received complaints from FEMA trailer occupants, it said: "We are not aware of any complaints of illness from our many customers of Cavalier travel trailers over the years, including travel trailers provided under our contracts with FEMA. ... Although not required for travel trailers, our company goes the extra step to specify low formaldehyde emissions building materials from our suppliers."¹⁰²

⁹⁸ Letter from Philip S. Savari, Gulf Stream Executive Vice President, to Deidre Lee, FEMA Director of Operations (May 11, 2006).

⁹⁹ E-mail from Mike Heimowitz, Senior Vice President, Porter Novelli to Dan Shea, Gulf Stream Coach Co-President, Jim Shea, Gulf Stream Coach Chairman, Marcia Madsen, Gulf Stream outside counsel, and Luke Levasseur, Gulf Stream outside counsel, and others (Apr. 24, 2006).

¹⁰⁰ *Id.*

¹⁰¹ E-mail from Luke Levasseur to Mike Heimowitz, Carolyn Tieger, Dan Shea, Jim Shea, and Marcia Madsen (Apr. 25, 2006); E-mail from Dan Shea to Brian Shea (Apr. 26, 2006); E-mail from Mike Heimowitz to Dan Shea, Jim Shea, Marcia Madsen, Luke Levasseur, and Carolyn Tiger (Apr. 26, 2006); E-mail from Mike Heimowitz to Dan Shea, Jim Shea, Marcia Madsen, Luke Levasseur, and Carolyn Tieger (Apr. 26, 2006); E-mail from Dan Shea to Marcia Madsen (Apr. 27, 2006); E-mail from Mike Heimowitz to Dan Shea, and Jim Shea (Apr. 27, 2006); E-mail from Mike Heimowitz to Dan Shea, and Jim Shea (Apr. 28, 2006).

¹⁰² *Statement*, Gulf Stream Coach, Inc. (Apr. 27, 2006).

On April 28, 2006, Porter Novelli informed Gulf Stream that CNN had “thanked us for our ‘prompt response’ and asked whether we will say it on camera.”¹⁰³ Porter Novelli recommended that Gulf Stream “NOT go on camera,” but did suggest that Gulf Stream could answer some additional follow up questions.¹⁰⁴

On May 16 and May 22, 2006, CNN aired stories that addressed formaldehyde in travel trailers supplied by FEMA to displaced residents of the Gulf Coast. The May 16, 2006, story aired on the CNN show “American Morning” and the May 22, 2006, story aired on Anderson Cooper’s “360 Degrees.”¹⁰⁵ Included within both stories were Gulf Stream’s statements that they “received no complaints of illnesses” and that they use “low formaldehyde emission building materials.”¹⁰⁶

Although the Committee requested all documents from Gulf Stream relating to formaldehyde in FEMA travel trailers, the Committee received no documents from Gulf Stream that advised trailer occupants of Gulf Stream’s testing results. In fact, the Committee received no documents in which Gulf Stream officials even discussed the option of informing trailer occupants of the health hazards they could face.

H. Gulf Stream’s Compensation

The Committee requested information from Gulf Stream related to the compensation of its president before and after FEMA awarded the company the contract to manufacture travel trailers. Gulf Stream has two co-presidents. The information provided by Gulf Stream showed that the compensation for each co-president was approximately \$580,000 in 2004, \$1,260,000 in 2005, \$1,130,000 in 2006, and \$515,000 in 2007.¹⁰⁷

IV. FOREST RIVER’S TRAILERS

FEMA purchased over 12,000 travel trailers manufactured by Forest River, Inc.¹⁰⁸ Forest River did not have a contract with FEMA, but it did have a subcontract with a FEMA contractor, North American Catastrophe Services. North American Catastrophe Services purchased 5,000

¹⁰³ E-mail from Mike Heimowitz to Dan Shea, Jim Shea, Marcia Madsen, Luke Levasseur, and Carolyn Tieger (Apr. 28, 2008).

¹⁰⁴ *Id.*

¹⁰⁵ *American Morning*, CNN (May 16, 2006); *360 Degrees*, CNN (May 22, 2006).

¹⁰⁶ *Id.*

¹⁰⁷ Letter from Eleanor Hill, King & Spalding to Chairman\ Henry A. Waxman (June 18, 2006).

¹⁰⁸ E-mail from Stephen Miller, FEMA, to Gina Smith, Jill Igert, Tracy Haynes, Gail Haubrich, Steve Mason, and Elizabeth Doomes (July 19, 2006).

Forest River trailers for FEMA under this subcontract.¹⁰⁹ The remainder of the Forest River trailers was presumably acquired by FEMA on the open market from travel trailer dealers.

Forest River has told the Committee that it does not have records of any complaints about formaldehyde from displaced residents of the Gulf Coast hurricanes of 2005. It has also said it did not conduct any testing of trailers acquired by FEMA.¹¹⁰

Documents obtained from Forest River indicate that in at least one instance, Forest River was aware of a formaldehyde problem with a trailer sold to a private citizen and tested the trailer. In this instance, a resident of Illinois purchased a Forest River travel trailer on July 21, 2003.¹¹¹ By October 2003, the owner complained to Forest River about “strong odors,” but no action was taken to address the complaint.¹¹² In June 2005, the owner returned to the Forest River dealer complaining of a “very strong formaldehyde odor” and the dealer installed new air vents to improve ventilation.¹¹³ On January 4, 2006, the trailer was returned to the Forest River factory for testing.¹¹⁴

Forest River conducted a series of tests on this trailer. On January 16, 2006, an outside contractor tested the trailer for formaldehyde and detected a formaldehyde level of 1,520 ppb.¹¹⁵ The contractor notified Forest River that this level of formaldehyde required specific response actions to be “immediately implemented.”¹¹⁶ Forest River was told to “post signs on the trailer unit stating ‘hazardous – do not enter,’” ensure that “only hazardous waste trained personnel remove any materials or items within the trailer,” and guarantee that “all items or materials removed from the trailer unit are to be classified as hazardous materials.”¹¹⁷

All bed and seating fabric and foam materials were subsequently removed from the trailer and the trailer was tested again.¹¹⁸ The concentrations of formaldehyde were found to have

¹⁰⁹ Letter from Peter J. Liegl to Chairman Henry A. Waxman (June 24, 2008).

¹¹⁰ Letter from Peter J. Liegl to Rep. Henry A. Waxman (June 24, 2008).

¹¹¹ Forest River, Inc., Surveyor _____ Time Line (undated).

¹¹² Forest River, Warranty Repair Claim Form (Oct. 27, 2003).

¹¹³ Forest River, Warranty Repair Claim Form (June 16, 2005).

¹¹⁴ Forest River, Inc., Surveyor _____ Time Line (undated).

¹¹⁵ ACM Engineering & Environmental Services, Formaldehyde Air Sample Analysis Report (Feb. 1, 2006).

¹¹⁶ *Id.*

¹¹⁷ *Id.*

¹¹⁸ ACM Engineering & Environmental Services, Formaldehyde Air Sample Analysis Report (Mar. 6, 2006).

increased to 3,220 ppb.¹¹⁹ The testing contractor concluded that “a source or sources of formaldehyde are still present within the trailer and are off-gassing.”¹²⁰ The contractor reported:

The higher concentration of airborne formaldehyde for the second air sample ... indicates that the fabric and foam bedding and seating materials were enclosing formaldehyde. ... Once exposed to the open air, the formaldehyde within the wood began off-gassing. This off-gassing of formaldehyde caused the concentration of airborne formaldehyde to increase, as the data indicates.¹²¹

The contractor also told Forest River:

It seems very unlikely that the building materials within the trailer unit have been off-gassing formaldehyde continuously at this high concentration level or higher for the three (3) years since the trailer unit was built. The source or sources of formaldehyde most likely have been brought into the trailer unit after the trailer was built and have contaminated materials within the trailer unit.¹²²

At the recommendation of the contractor, Forest River next implemented a “bake out” procedure. The internal air temperature of the trailer was heated to 120 degrees for five days with periodic purging of the internal air.¹²³ Upon completion, formaldehyde was found to be present at concentrations of 120 ppb. The contractor concluded that the travel trailer could be reoccupied, and the trailer was returned to its owner on May 12, 2006.¹²⁴

Majority Committee staff contacted the owner of the trailer, who stated that he did not bring any sources of formaldehyde into the trailer and that he had informed Forest River of this.¹²⁵ There is no evidence in the record that indicates that Forest River took any additional steps to determine the source of contamination in this trailer or to determine whether other trailers exhibited the same characteristics.

Forest River has taken steps to reduce formaldehyde levels in its products prospectively. In October 2006, Forest River decided to switch to low formaldehyde emitting construction material.¹²⁶ Two trailers tested in 2007 and 2008 had formaldehyde levels below 100 ppb.¹²⁷ Forest River switched to even lower formaldehyde emitting materials in February 2008.¹²⁸

¹¹⁹ *Id.*

¹²⁰ *Id.*

¹²¹ *Id.*

¹²² *Id.*

¹²³ ACM Engineering & Environmental Services, Formaldehyde Air Sample Analysis Report (Apr. 10, 2006).

¹²⁴ Forest River, Inc., Surveyor _____ Time Line (undated).

¹²⁵ Telephone Conversation between Committee Staff and Trailer Owner (July 7, 2008).

¹²⁶ Letter from Peter J. Liegl to Chairman Henry A. Waxman (June 24, 2008).

V. KEYSTONE'S TRAILERS

FEMA purchased over 6,000 travel trailers manufactured by Keystone RV Company.¹²⁹ FEMA did not have a contract with Keystone and purchased these trailers from trailer dealers on the open market.

Keystone has informed the Committee that it became aware of the health concerns associated with formaldehyde in travel trailers through media reports. According to Keystone, it received no complaints from occupants of FEMA trailers and conducted no testing of FEMA trailers.¹³⁰

According to documents provided to the Committee, Keystone has tested four other travel trailers for formaldehyde. Three of the trailers were tested by Keystone customer service representatives.¹³¹ These tests showed fluctuating levels of formaldehyde that appear to relate to the trailers' ventilation.

On November 16, 2007, a trailer was tested five times.¹³² First, the trailer was found to have a level of formaldehyde of 170 ppb. After 15 minutes of "air exchange," the level decreased to 60 ppb. After 30 minutes of air exchange, the level increased to 110 ppb. Ventilation was discontinued and the level of formaldehyde climbed to 260 ppb. After 30 minutes of ventilation, formaldehyde levels dropped to 50 ppb.¹³³

A test of a second trailer on December 3, 2007, had similar results.¹³⁴ After initially testing at 230 ppb, formaldehyde levels in the trailer dropped to 60 ppb after 15 minutes of ventilation. After being closed for half an hour, formaldehyde levels climbed back to 190 ppb. Levels dropped to 50 ppb after 30 minutes of ventilation. The customer service representative noted that it was possible that the trailer's toilet chemical could be a source of formaldehyde.¹³⁵

¹²⁷ ACM Engineering & Environmental Services, Mold and Formaldehyde Gas Assessment Report (Nov. 7, 2007); ACM Engineering & Environmental Services, Mold and Formaldehyde Gas Assessment Report (Mar. 27, 2008).

¹²⁸ Letter from Peter J. Liegl to Chairman Henry A. Waxman (June 24, 2008).

¹²⁹ E-mail from Stephen Miller, FEMA, to Gina Smith, Jill Igert, Tracy Haynes, Gail Haubrich, Steve Mason, and Elizabeth Doomes (July 19, 2006).

¹³⁰ *Id.*

¹³¹ Letter from Steven Ross, Counsel to Keystone RV Company to Committee Staff (July 7, 2008).

¹³² Keystone, HCHO Test Data Sheet (Nov. 16, 2007).

¹³³ *Id.*

¹³⁴ Keystone, HCHO Test Data Sheet (Dec. 3, 2007).

¹³⁵ *Id.*

Similarly, a third trailer tested on February 12, 2008, had formaldehyde concentrations of 220 ppb.¹³⁶ This level dropped after ventilation. The customer service representative included a notation that it was possible that the trailer's holding tank chemical could be a source of formaldehyde.¹³⁷

Keystone also provided three sets of formaldehyde test results for a trailer in Wisconsin. Advanced Chemical Sensors, Inc., found the level of formaldehyde to be 260 ppb.¹³⁸ The Wisconsin State Laboratory of Hygiene found the level of formaldehyde to be 460 ppb.¹³⁹ The company mSolve reported the level of formaldehyde to be 5.4 ppb. The mSolve report, which was prepared for Keystone, discounts the other two test results.¹⁴⁰

In October 2006, Keystone responded to a private consumer's complaint regarding a chemical odor and a burning sensation in his eyes and nostrils related to spending time in the travel trailer he purchased. In a letter to the consumer, Keystone wrote:

Chemical sensitivity is not new to the RV industry nor is it specific to just Keystone RV. Various components used to manufacture RV's have various chemicals in them. Over the course of time, it is normal for these chemicals to 'Off-Gas' or 'Flash-Off.' It is not unusual for people to be sensitive while others may not have any reaction."¹⁴¹

Keystone did revise its owner's manual from 2005 to 2006. In the owner's manual dated September 1, 2005, there is no mention of the issue of formaldehyde.¹⁴² The 2006 owner's manual contains a chapter on chemical sensitivity.¹⁴³ This chapter explains to travel trailer owners that they may experience "a strong odor and chemical sensitivity."¹⁴⁴ The revised manual says that formaldehyde is a "naturally occurring substance" and asserts that "[t]his is not a defect in your recreational vehicle."¹⁴⁵

¹³⁶ Keystone, HCHO Test Data Sheet (Feb. 12, 2008).

¹³⁷ *Id.*

¹³⁸ Advanced Chemical Sensors, Inc., Formaldehyde Vapor Analysis Report (May 29, 2007).

¹³⁹ Letter from Kim Dietz, Industrial Hygiene Consultant, Wisconsin State Laboratory of Hygiene, to ____ (June 11, 2007).

¹⁴⁰ mSolve, Formaldehyde Investigation (Aug. 8, 2007).

¹⁴¹ Letter from Jim Morrical, Keystone RV Customer Service, to Marvin Motes (Oct. 6, 2006).

¹⁴² Keystone RV Company, Owner's Manual (Sept. 1, 2005).

¹⁴³ Keystone RV Company, Owner's Manual (Sept. 1, 2006).

¹⁴⁴ *Id.*

¹⁴⁵ *Id.*

Keystone has taken steps to reduce formaldehyde levels in its products prospectively. In June 2007, Keystone decided to switch to low formaldehyde emitting construction material. In March 2008, Keystone stated that it “started the process of moving to compliance” with California’s new formaldehyde standards.¹⁴⁶

VI. PILGRIM INTERNATIONAL’S TRAILERS

FEMA purchased over 5,000 travel trailers that were manufactured by Pilgrim International, Inc.¹⁴⁷ FEMA did not have a contract with Pilgrim and purchased these trailers from trailer dealers on the open market.

Pilgrim produced no documents showing any testing of FEMA trailers or other Pilgrim trailers for formaldehyde levels.

Documents obtained from Pilgrim indicate that Pilgrim collected letters from its suppliers in May 2007 which would indicate those components of Pilgrim trailers that did not contain formaldehyde. For instance, the LaSalle Bristol Corporation supplies Congoleum brand flooring, among other products, to the recreational vehicle industry. On May 31, 2007, Congoleum wrote to LaSalle Bristol, stating “Congoleum does not knowingly use formaldehyde in any of our product formulations.”¹⁴⁸ Congoleum also stated “our products are specifically tested for formaldehyde emissions” and the “formaldehyde emissions are below the limit of quantitation.”¹⁴⁹ An employee at the LaSalle Bristol Corporation then had the letter sent to Pilgrim, stating, “Congo info that says no Femaldehyde. Please fax to Jeremy at Pilgrim. ... He needs for meeting.”¹⁵⁰

Additional letters from suppliers provided from Pilgrim include letters from CRB Birmingham, Textile Rubber & Chemical Co., Inc., Para-Chem, Inc., Chem-Tex Laboratories, Inc., ACT Technologies, Inc., Four Colors, and Premier Polymers.¹⁵¹

¹⁴⁶ Letter from Steven Ross, Counsel to Keystone RV, Co., to Majority Staff, Committee on Oversight and Government Reform (July 2, 2008).

¹⁴⁷ E-mail from Stephen Miller, FEMA, to Gina Smith, Jill Igert, Tracy Haynes, Gail Haubrich, Steve Mason, and Elizabeth Doomes (July 19, 2006).

¹⁴⁸ Letter from F. Joseph Ehrhardt, Quality Assurance Manager, Congoleum Corp., to Larry Campbell, President, LaSalle Bristol Corp. (May 31, 2007).

¹⁴⁹ Letter from F. Joseph Ehrhardt, Quality Assurance Manager, Congoleum Corp., to Larry Campbell, President, LaSalle Bristol Corp. (May 31, 2007).

¹⁵⁰ E-mail from Gay A. Eby to Evie O’Dell (Nov. 8, 2007).

¹⁵¹ Letter from Mark C. Claybrook, CRB Birmingham to Danny Freeman, Global Textile Services (May 17, 2007); Letter from Bob Rodric, Textile Rubber & Chemical Co., Inc., to Clinton Poole, Global Textile Services (May 15, 2007); Letter from Robert W. Smith, Jr., Para-Chem Inc., to Clinton Poole, Global Textile Services (May 18, 2007); Letter from Dave Bilbro, Chem-Tex Laboratories, Inc., to Clinton Poole, Global Textile Services (May 17, 2007); Letter

Documents provided to the Committee were insufficient to explain why these letters were collected or the substance of the meetings that Pilgrim had regarding formaldehyde.

On June 9, 2008, Pilgrim announced that it would be selling a formaldehyde free trailer.¹⁵² David Hoefler, the Chairman and founder of Pilgrim, stated that this new type of trailer will be “so much better for the people that are out there. It will avoid any issues that they’ve ever had.”¹⁵³

from Jerry West, ACT Technologies, Inc., to Clinton Poole, Global Textile Services (May 17, 2007); Letter from Steve Sykes, Four Colors, to David Arnold, Chem-Tech Finishers (June 4, 2007); Letter from Scott Henson, Premier Polymers, to David Arnold, Chem-Tech Finishers (undated).

¹⁵² Pilgrim International, Inc., Press Release, Pilgrim International, Inc. Announces World Premiere of Composite RV (June 9, 2008).

¹⁵³ WLOX News (June 9, 2008).