



FEMA

May 31, 2006

MEMORANDUM FOR: John Crowley, Chief of Staff
JFO, Biloxi, Mississippi

FROM: Bronson Brown, Chief
Occupational Safety and Health

SUBJECT: Formaldehyde Air Sampling, FEMA Trailer Staging Area,
Purvis, Mississippi

CORRECTIVE ACTION: Specific recommendations are provided.

Air monitoring for formaldehyde exposure conducted at the FEMA Trailer Staging Area in Purvis, Mississippi revealed that employee exposures were all below the Occupational Safety and Health Administration (OSHA) Permissible Exposure Limit (PEL) of 0.75 parts per million (PPM) and the Action Level (AL) of 0.5 ppm for formaldehyde based on an eight-hour time weighted average (TWA). This memorandum transmits the complete findings of the investigation and makes recommendations for corrective actions needed to ensure compliance in accordance with OSHA 29 Code of Federal Regulations (CFR) 1910.1048 for Formaldehyde.

Background

Per your request, formaldehyde air monitoring was performed in FEMA new and refurbished trailers on March 28 and 29, 2006. The focus of the monitoring was to determine the worker exposure level of formaldehyde and to evaluate the work operations associated with the trailer staging operations. The monitoring was conducted by Messrs. Ken Medernach and Vincent McCarthy, Disaster Safety Officers (DSO), FEMA Occupational Safety and Health (OSH). FEMA employees performing work activities involving the trailer staging operations may include inspections, prep work and set-up for trailers prior to public receipt. This monitoring was conducted in response to general concerns and inquires related to potential employee exposure to formaldehyde.

Specifically, area and instantaneous air monitoring was performed in 13 newly received and 15 refurbished trailers. Short term air monitoring was performed in three trailers. Personal air monitoring was performed on three FEMA employees whose job duties require entering staged trailers. During our evaluation it was indicated by trailer staging management that FEMA employees do not perform job activities inside trailers for more than two hours per day. In an effort to simulate a "worst case scenario" area monitoring was performed with trailer doors and windows closed.

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Findings

Formaldehyde is a chemical component commonly found in building materials utilized in commercially manufactured trailers. Laboratory results from the area air monitoring indicated that area formaldehyde levels were below the OSHA PEL of 0.75 ppm and the Action Level of 0.5 ppm, based on an eight-hour time weighted average (TWA). Results ranged from 0.02 to 0.3 ppm calculated during a two hour period. Instantaneous formaldehyde results upon entering the trailers ranged from 0.03 to 0.47 ppm. Short term air monitoring results for formaldehyde ranged from 0.05 to 0.31 ppm.

Additional monitoring conduct after the same trailers were ventilated for three and one half hours ranged from 0.03 to 0.26 ppm. Personal air monitoring results were all below the laboratory's level of quantification. A summary of the air monitoring that was performed are provided as Attachment 1.

Based on the sampling results, there is no indication that FEMA employees have the potential to be exposed above OSHA's permissible exposure level while performing job activities involving trailer staging operations. The formaldehyde levels found in the trailers are comparable to the levels posted on the Environmental Protection Agency (EPA) website for typical levels found from building materials off-gassing in trailers and/or manufactured homes.

Recommendations

To ensure the safety and health of all workers involved in the trailer staging operations, the following practices and recommendations must be implemented:

1. FEMA employees assigned to trailer staging operations must receive formaldehyde training in accordance with OSHA 29 CFR 1910.1048 guidelines and hazard communication training in accordance with OSHA 29 CFR 1910.1200.
2. Standard operating procedures are to be written for FEMA trailer staging operations and provided to all FEMA employees required to perform work in the trailers for review.
3. Manufactures' recommendations for trailer occupancy are to be posted in all trailers prior to public receipt.

Should you have any questions or concerns regarding this report please contact myself at [REDACTED] or David Chawaga at [REDACTED]

Table One
 FEMA Purvis, Mississippi Trailer Staging Area
 Formaldehyde Sampling
 Area Monitoring

SAMPLE ID NUMBER	TRAILER BARCODE	MONITORING DATE	INSTANTANEOUS RESULTS	AIR SAMPLE START TIME	AIR SAMPLE END TIME	LAB RESULT (PPM)	TWA RESULT (PPM)	DATE TRAILER ARRIVED ON LOT	TRAILER NEW OR REFURB	TRAILER MFG
DL6421	1375857	3/28/06	0.09	0735	1600	0.15	0.04	3/24/06	New	Morgan/Fleetwood
PE7052	1375782	3/28/06	0.39	0735	1535	0.41	0.1	3/26/06	New	Morgan/Fleetwood
DR0888	1375866	3/28/06	0.09	0740	1545	0.13	0.03	3/27/06	New	Morgan/Fleetwood
DL6426	1375883	3/28/06	0.21	0740	1559	0.24	0.06	3/28/06	New	Morgan/Fleetwood
DV0071	1234369	3/28/06	0.21	0740	1502	<0.079	<0.079	3/23/06	New	Morgan/Fleetwood
DL6411	1375868	3/28/06	0.03	0742	1548	0.096	0.02	3/27/06	New	Morgan/Fleetwood
DR9106	1375885	3/28/06	0.05	0742	1605	0.19	0.05	3/22/06	New	Morgan/Fleetwood
PE7044	1375677	3/28/06	0.21	0742	1607	0.2	0.05	3/22/06	New	Morgan/Fleetwood
PE7005	1375882	3/28/06	0.47	0745	1559	0.34	0.09	3/28/06	New	Morgan/Fleetwood
DR9080	1375867	3/28/06	0.47	0746	1550	0.11	0.03	3/27/06	New	Morgan/Fleetwood
PG0691	1375279	3/28/06	0.21	0746	1615	0.98	0.25	3/11/06	Refurb	Pilgrim
PG0703	1122438	3/28/06	0.05	0747	1615	0.32	0.08	3/11/06	Refurb	Cavallier
DV0469	1375870	3/28/06	0.09	0750	1553	0.25	0.06	3/27/06	New	Morgan/Fleetwood
DL6418	1375871	3/28/06	0.31	0750	1554	0.24	0.06	3/28/06	New	Morgan/Fleetwood
DR9058	1118378	3/28/06	0.09	0750	1617	0.66	0.17	3/13/06	Refurb	Cavallier
DR0856	1375878	3/28/06	0.21	0755	1557	0.34	0.09	3/28/06	New	Morgan/Fleetwood
DR9100	1288983	3/29/06	0.31	0800	1610	0.3	0.075	3/24/06	Refurb	MaxiLite
DR9065	1152958	3/29/06	0.31	0803	1612	0.63	0.16	3/22/06	Refurb	Outback
PG0701	1287952	3/29/06	0.47	0806	1628	1.19	0.3	3/24/06	Refurb	Jayco

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DR0857	1234464	3/29/06	0.31	0808	1630	0.61	0.15	3/24/06	Refurb	Zinger - Crossroads
PE7036	1154433	3/29/06	0.31	0810	1630	0.41	0.1	3/24/06	Refurb	Z Il- Keystone
DR0826	1243315	3/29/06	0.28	0820	1635	0.75	0.19	3/16/06	Refurb	Jag - Fabrique
PG0675	1142789	3/29/06	0.47	0822	1637	0.31	0.08	3/17/06	Refurb	Coachmen
PE7038	1144125	3/29/06	0.29	0828	1630	0.086	0.02	3/17/06	Refurb	Terry - Fleetwood
DF5807	1243130	3/29/06	0.47	0832	1638	0.78	0.2	3/17/06	Refurb	Jag - Fabrique
DV0102	1288930	3/29/06	0.03	0853	1653	0.88	0.22	3/24/06	Refurb	Dutchmen
DL6366	1288735	3/29/06	0.05	0856	1650	0.62	0.16	3/24/06	Refurb	Dutchmen
PG0679	1289003	3/29/06	0.04	0859	1655	0.43	0.1	3/24/06	Refurb	Dutchmen
DL6421	1375857	3/28/06	0.09	0735	1600	0.15	0.04	3/24/06	New	Morgan/Fleetwood

**Table Two
 FEMA Purvis, Mississippi Trailer Staging Area
 Formaldehyde Sampling
 Personal Monitoring**

Sample ID Number	Trailer Barcode	Monitoring Date	Sample Time Start	Sample Time End	Lab Result (PPM)	TWA Result (PPM)	Date Trailer on Lot	Trailer New or Refurb	MFG Name/model
DF5845 Burkett	Various	03/29/06	0645	1540	<0.086	<0.086	3/24/06	Various	Various
DF5826 Gibbs	Various	03/29/06	0650	1530	<0.086	<0.086	3/26/06	Various	Various
DF5844 Chapman	Various	03/29/06	0653	1533	<0.083	<0.083	3/27/06	Various	Various

**Table Three
 FEMA Purvis, Mississippi Trailer Staging Area
 Formaldehyde Sampling
 Short Term Monitoring**

Sample ID Number	Trailer Barcode	Monitoring Date	Short Term Time Start	Short Term Time End	Short Term Monitoring Results	Trailer New or Refurb	MFG Name/model	Comments
Short Term 1a	1375510	03/29/06	1420	1435	0.31	New	Morgan	Closed
Short Term 1b	1375510	03/29/06	1810	1825	0.03	New	Morgan	Ventilated for 3.5 hrs then closed
Short Term 2a	1375482	03/29/06	1422	1437	0.05	New	Morgan	Closed
Short Term 2b	1375482	03/29/06	1812	1827	0.05	New	Morgan	Ventilated for 3.5 hrs then closed
Short Term 3a	1375463	03/29/06	1424	1439	0.26	New	Morgan	Closed
Short Term 3b	1375463	03/29/06	1815'	1830	0.26	New	Morgan	Ventilated for 3.5 hrs then closed