

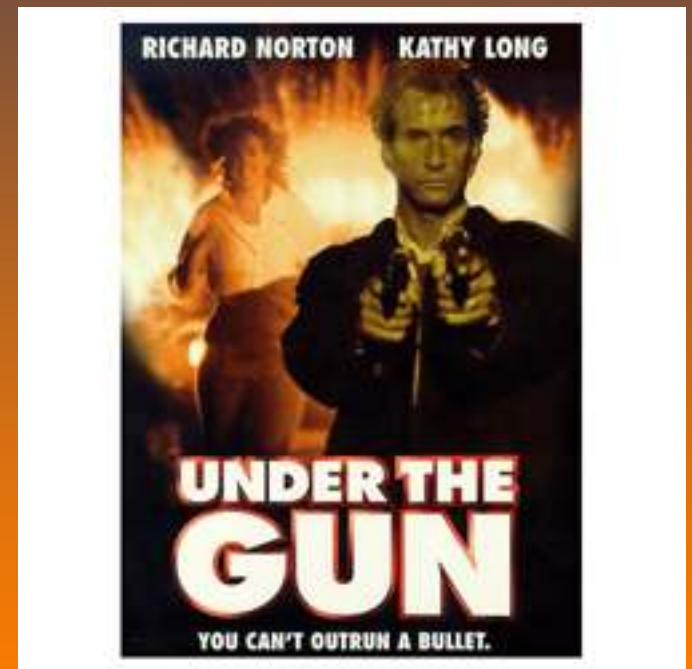
**STOP THE
FORMALDEHYDE
INSANITY**

**Current edition
brought to you by:**

FEMA Trailers

**The furniture
industry—along
with many others—**

**is under the
gun!**



So is CARB

**Enforcement of rule starts
1 April 2009**

**But all the details have not yet
been worked out**

Regulations

Table 1
Phase 1 and Phase 2 Formaldehyde Emission Standards for Hardwood Plywood (HWPW), Particleboard (PB), and Medium Density Fiberboard (MDF)¹

Effective Date	--- Phase 1 (P1) and Phase 2 (P2) Emission Standards (ppm) ---				
	HWPW-VC	HWPW-CC	PB	MDF	Thin MDF
1-1-2009	P1: 0.08	-----	P1: 0.18	P1: 0.21	P1: 0.21
7-1-2009	-----	P1: 0.08	-----	-----	-----
1-1-2010	P2: 0.05	-----	-----	-----	-----
1-1-2011	-----	-----	P2: 0.09	P2: 0.11	-----
1-1-2012	-----	-----	-----	-----	P2: 0.13
7-1-2012	-----	P2: 0.05	-----	-----	-----

⁽¹⁾ Based on the primary test method [ASTM E 1333-96(2002)] in parts per million (ppm).
HWPW-VC = veneer core; HWPW-CC = composite core.

HCHO—CARCINOGENICITY

EPA—“B1” *Probable human carcinogen*

ACGIH—“A2” *Suspected human carcinogen*

WHO (IARC)—“Group 1” *Carcinogenic to humans*

HCHO

OCCUPATIONAL EXPOSURE STANDARDS

ACGIH TLV[®]

0.3 ppm (Ceiling)

OSHA PEL

0.75 ppm (TWA)

2 ppm (Ceiling)

NIOSH REL

0.016 ppm (TWA)

0.1 ppm (Ceiling)

However...

According to renowned toxicologist

Meryl H. Karol, Ph.D.

**Testimony of Dr. Meryl H. Karol
Professor Emerita, University of
Pittsburgh
Pittsburgh, Pennsylvania**

**Before the U.S. House Committee on
Science and Technology
Subcommittee on Investigations and
Oversight**

**Hearing on “Toxic Trailers: Have the
Centers for Disease Control Failed to
Protect Public Health?”**

Tuesday April 1, 2008



“There is considerable controversy regarding the conclusion that formaldehyde causes cancer in humans.”

MEASURING FORMALDEHYDE

NIOSH ANALYTICAL METHODS

Method 2016 *most sensitive*

Silica gel/2,4-dinitrophenylhydrazine

Method 2541

Sorbent tube/2-hydroxymethyl piperidine

Method 3500

**Impinger/chromotropic acid
(1,8-dihydroxynaphthalene-3,6-disulfonic acid)**

INSTRUMENTATION METHODS

Practical and otherwise

Proton Transfer Reaction–Mass Spectrometry (PTR-MS)

FTIR

Semi-automated wet chemical methods

Electrochemical (converted alcohol detectors)

Interscan purpose-designed HCHO sensor

FLEC

**Field and Laboratory
Emission Cell**



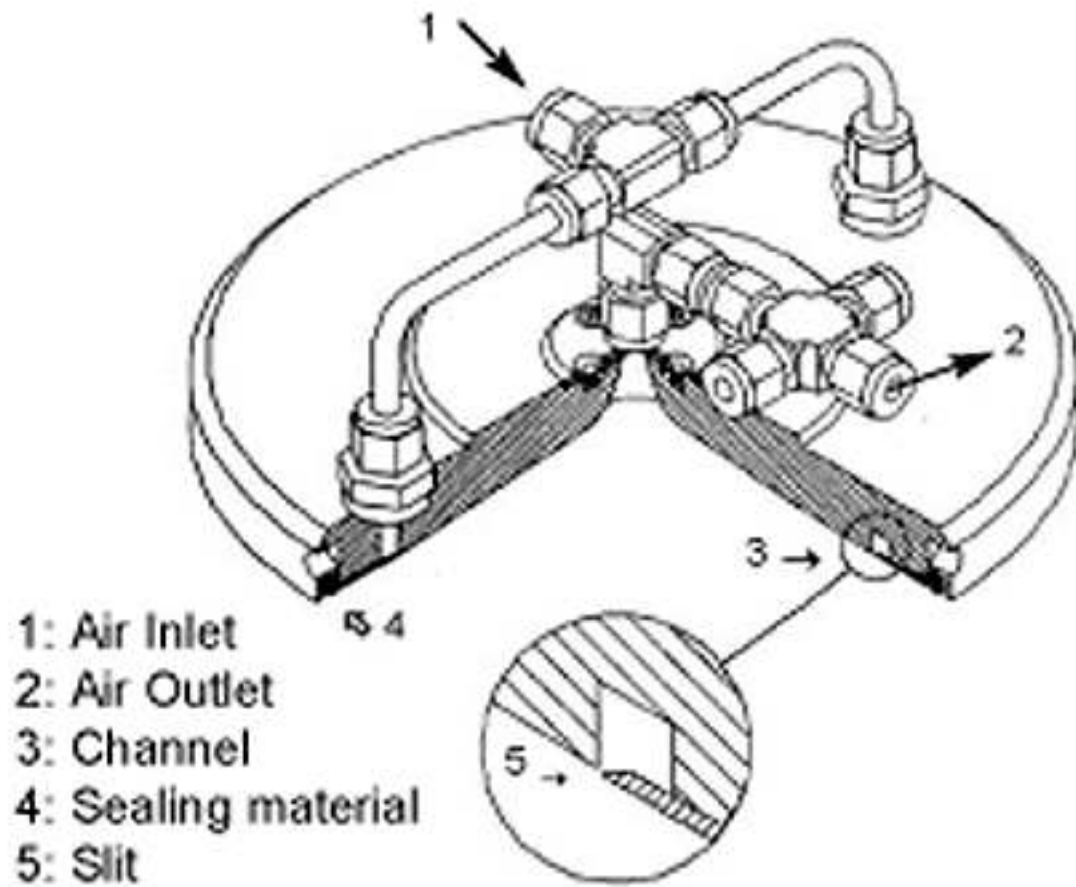


Figure 2. FLEC schematic

**FLEC is placed onto material to be tested
such that the surface of the material
effectively becomes one wall of a
mini (≈ 35 ml volume) test chamber**



A controlled flow of purified and humidified air enters the cell from a baffle around the perimeter of FLEC passing over the test material at flow rates simulating real-world conditions.

INTERSCAN PORTABLE ANALYZER



Direct-reading unit

Integral pump

**Read formaldehyde level
instantly**



**CARB has worked out a
technique using the FLEC
with the Interscan
portable formaldehyde
analyzer on raw board**

**This correlates with
chamber methods**

BUT...

**Is FLEC/Interscan
combination
practical for field
testing?**

Probably not

ASTM D 7143 – 05

**Standard Practice for Emission Cells
for the Determination of Volatile Organic
Emissions from Indoor Materials/Products**

**Has many provisions which would
preclude its use for field testing**

Such as...

**Temperature and humidity have to be controlled
($23 \pm 2^{\circ}\text{C}$ and $50 \pm 5\%$ RH)**

**If the indoor material under test is not homogeneous
(for example, natural wood), repeat for multiple test specimens
in order to establish a mean area specific emission rate.**

**FLEC has to be flushed with clean, humidified air
for approximately 15 minutes.**

Long sample equilibration time

**Most practical field method
would be to directly “sniff”
the furniture piece with an
Interscan analyzer**

**Empirically-derived
boundary conditions would
create a pass/fail HCHO
value, based on testing at
the furniture piece**

**A suitable fudge factor would be
built in to accommodate
various environmental effects**

Here's the good news...



**The Consumer Product
Safety Improvement Act is
jump-starting a grass roots
backlash against excessive
regulation**

**Possibly the worst law
passed in the last 50 years**

**All over-regulated
industry should take
advantage of this
opportunity**

Special thanks to...

**Bill Perdue and
The American Home
Furnishings Alliance**