

# Airborne Toxic Control Measure for Composite Wood Products



**Jim M. Aguila**  
**California Air Resources Board**

**WDMA Fall Conference**  
**Summerlin, Nevada**  
**October 30, 2006**

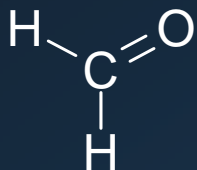




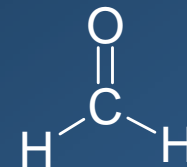
# California Health & Safety Code Requirements

---

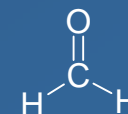
- § 39657 - Requires ARB to identify toxic air contaminants; identify any minimum threshold levels
- § 39658 - Requires ARB to develop Airborne Toxic Control Measures (ATCMs)
- § 39666 - For compounds with no threshold level, the HSC requires control measures to be based on Best Available Control Technology, or more effective controls in consideration of costs and risk



# Why is Formaldehyde a Concern?



- ARB Identified as TAC in 1992 with no safe threshold exposure level
  - nasopharyngeal cancer
  - acute and chronic effects- eye, nose, respiratory irritant
- SRP Identified as a Tier 2 compound under SB 25 evaluation
  - Children's Environmental Health Protection Act
- Formaldehyde is both an indoor and outdoor health risk
  - CA average concentration above OEHHA chronic REL ( $3\mu\text{g}/\text{m}^3$ )
  - Avg. ambient levels estimated to result in 18 excess cancers per million
  - 4% of CA classrooms above OEHHA's interim 8-hr REL (27ppb)
  - 80% of ambient levels are photochemically derived





# Why is ARB Targeting Composite Wood Products?

---

- Composite wood products made from urea-formaldehyde resin systems
- Formaldehyde emitted outdoors
  - truck/rail/ship transportation, lumberyards, new home construction/remodeling, through open windows and doors, and home ventilation systems
- Significant source of personal formaldehyde exposure
- Other CA sources being addressed by volatile organic compound controls
  - e.g. motor vehicles & consumer products



# Worldwide Standards for Wood-Based Panels



- United States
  - 1985 HUD standards; voluntary
  - New ASTM/ANSI specifications under review
- Europe
  - E1 standards for plywood and particleboard are about half of the HUD standards
- Japan (F\*\* - F\*\*\*\*)
  - F\*\*\* standard is stringent, technology-forcing for some products
  - F\*\*\*\* standard represents de minimis levels

# Proposed ATCM

---

- Applies to particleboard, medium density fiberboard and hardwood plywood
  - Raw boards
  - Finished products
- Formaldehyde Performance Standards
  - Phase 1- Level similar to E1 std.
  - Phase 2- Technology forcing; similar to Japan F\*\*\* stds.
- Applies to producers, fabricators, importers, retailers
- Enforcement
  - Manufacturers- 3<sup>rd</sup> party certification to ensure compliance
  - Chain-of-Custody
  - Lab verification procedures

# Proposed ATCM Standards\*

Wood Product	HUD Std.	Phase 1 (ppm) Effective Date: 2009	Phase 2 (ppm) Effective Date: 2011-2012
Particleboard	<b>0.30</b>	<b>0.18</b>	<b>0.08</b>
Medium Density Fiberboard	<b>None</b>	<b>0.21</b>	<b>0.08</b>
Hardwood Plywood:			
- Veneer Core	<b>0.20</b>	<b>0.07</b>	<b>0.03</b>
- Composite Core	<b>None</b>	<b>0.09</b>	<b>0.05</b>

\* Based on ASTM E1333



# Solutions Exist to Meet Phase 2

Tradename	Company	Compwood Products	Resin System
Arreis	Sierra Pine	MDF	MDI
Medite II			
Medex			
Purekor- Particleboard Plus/MDI Plus	Panel Source International	PB, MDF	MDI
Purebond	Columbia Forest Products	HWPW	Soy-based
Skyblend	Roseburg	PB	PF
<b><i>EcoBind</i></b> resin system	Hexion	HWPW, PB, MDF	MUF/co-react, PF, soy/PVA blend
<b><i>Kenocatch</i></b> resin system	Akzo Nobel	MDF, PB	MUF + catcher
<b><i>Rubinate</i></b> resin system	Huntsman	PB, MDF	polyurethane
<b><i>Soyad</i></b> resin system	Heartland Resource Technologies	HWPW	Soy + PF



# ATCM Impact on Panel Mfg. Costs

---

- Drop-in resin technologies available for Phase 1 & 2
- Adhesive is about 30% of particleboard & medium density fiberboard **mfg. cost**; 5% of hardwood plywood

	<u>Phase 1 Stds</u>	<u>Phase 2 Stds.</u>
<b>Particleboard</b>	5%	30%
<b>MDF</b>	5%	30%
<b>HWPW (*)</b>	10%	20%

(\*) Based on \$40 panel cost

# Benefits of the Proposed ATCM

---

- Reduce potential formaldehyde emissions
  - i.e. effective pollution prevention
- Achieves reductions in indoor settings where people spend most time
- Reduces composite wood emissions by 30% in Phase 1 and 80% in Phase 2
- Reduces overall exposure by 15% (Phase 1) to 40% (Phase 2)

# ATCM Applicability to Window and Door Manufacturers

---

- Windows and doors are considered finished products
- Applies only to products marketed in California
- Window and door mfgs. viewed as “fabricators”
  - Exception are those who produce panels for their finished products
  - Requirements recognize that fabricators do not affect emissions performance of raw panels

# Fabricator ATCM Requirements

---

- Use of complying panels
  - Third party certification from panel producers
- Maintenance of Chain of Custody records
  - Pass along Chain of Custody record to customers (i.e. label, invoice)
  - 3 yr record retention
- Finished product screening
- Sell Through provisions

# Major WDMA Issues

---

- Clarity of Chain of Custody requirements
- Affirmative negative labeling
- Product screening
  - Whole door or window testing
- Performance based criteria for Phase 1 exemption
- De minimis use exemption

# Get Involved!!!

---

- Mike Fischer, WDMA rep.
  - Meetings, letter
- Individual companies: Pella, Masonite, Jeld-Wen
  - Meetings, emails, facility tour
- ATCM relies on public process with opportunity for input
  - Composite wood ATCM listserve
  - 45 day comment period starts Dec. 8, 2006
  - Public hearing Jan. 26, 2007

# For Latest ATCM Text and More Information:

---

Visit our website-

<http://www.arb.ca.gov/toxics/compwood/compwood.htm>



Contact the Substance Evaluation Section-

Jim Aguila, Manager  
(916) 322-8283; [jaguila@arb.ca.gov](mailto:jaguila@arb.ca.gov)

Brent Takemoto, PhD.,  
Staff Air Pollution Specialist  
(916) 327-5615; [takemot@arb.ca.gov](mailto:takemot@arb.ca.gov)



**Thank you for your interest !!!**

