

California's ATCM to Reduce Formaldehyde Emissions from Composite Wood Products

Kitchen Cabinet Manufacturers Association
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Olympic Valley, California

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California Air Resources Board

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Outline



- Background
- Available Technologies
- Approved Airborne Toxic Control Measure
- Benefits and Impacts
- April ARB Hearing Summary
- 2007 Schedule



Background



California's Air Toxics Program

Identification

Potential Toxic
Substance

ARB/OEHHA Publishes
Draft Report

- Public Workshops
- Comment Periods

SRP Reviews Report

Public Hearing

Risk Management

Evaluates Source
Categories

Investigate Risk
Reduction Options

- Public Workshops

Publish Staff
Report/Proposal

- Public Workshops
- Comment Period

Public Hearing

Formaldehyde as a Toxic Air Contaminant

- Identified as a Toxic Air Contaminant in 1992
- No level of exposure considered “safe”
 - Damages DNA
- Inhalation causes cancer in the region of the throat behind the nose
- Non-cancer effects

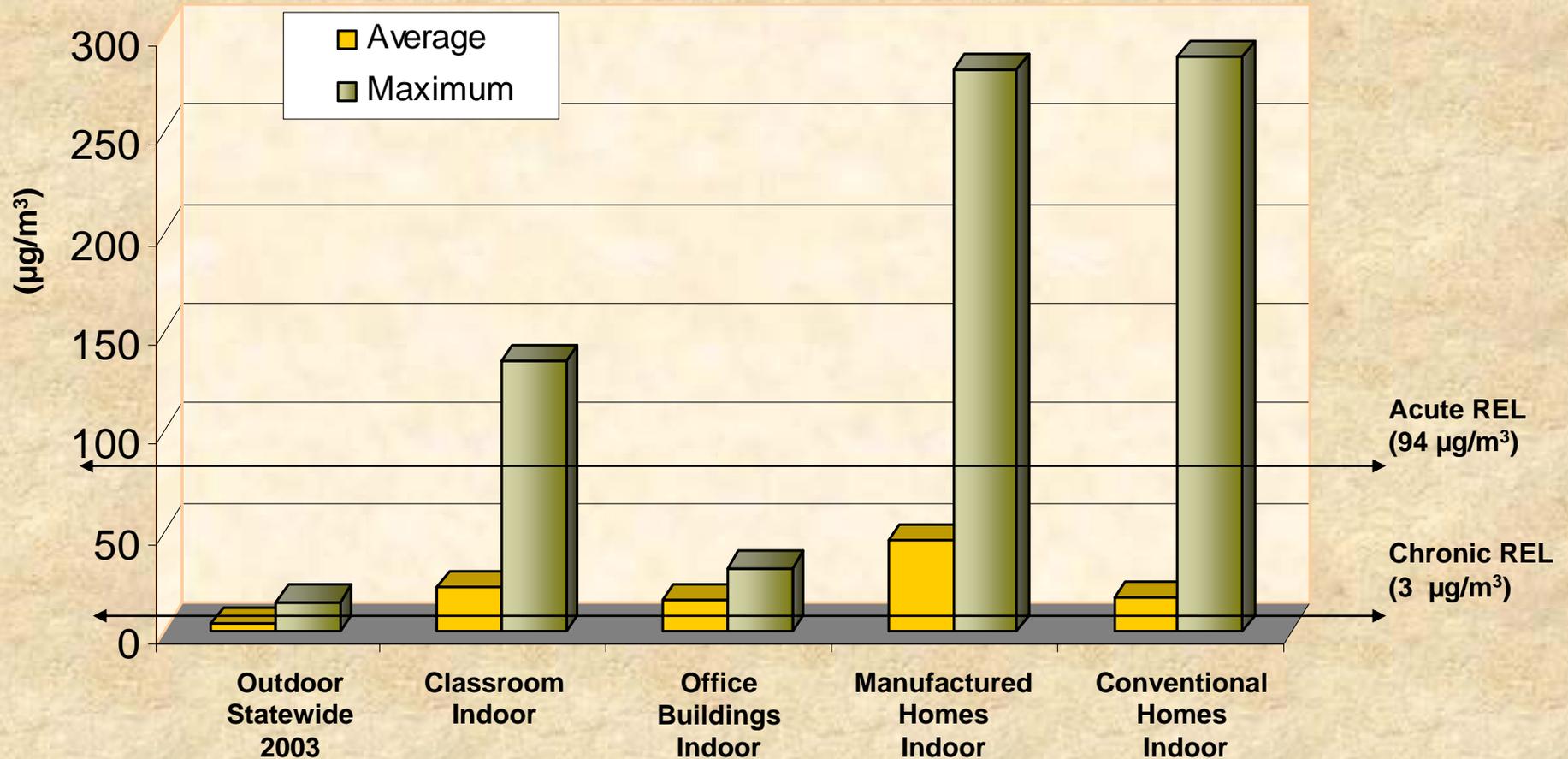
Composite Wood Products Covered Under ATCM

- Hardwood Plywood (HWPW)
- Particleboard (PB)
- Medium Density Fiberboard (MDF)

Formaldehyde Emissions from Composite Wood Products

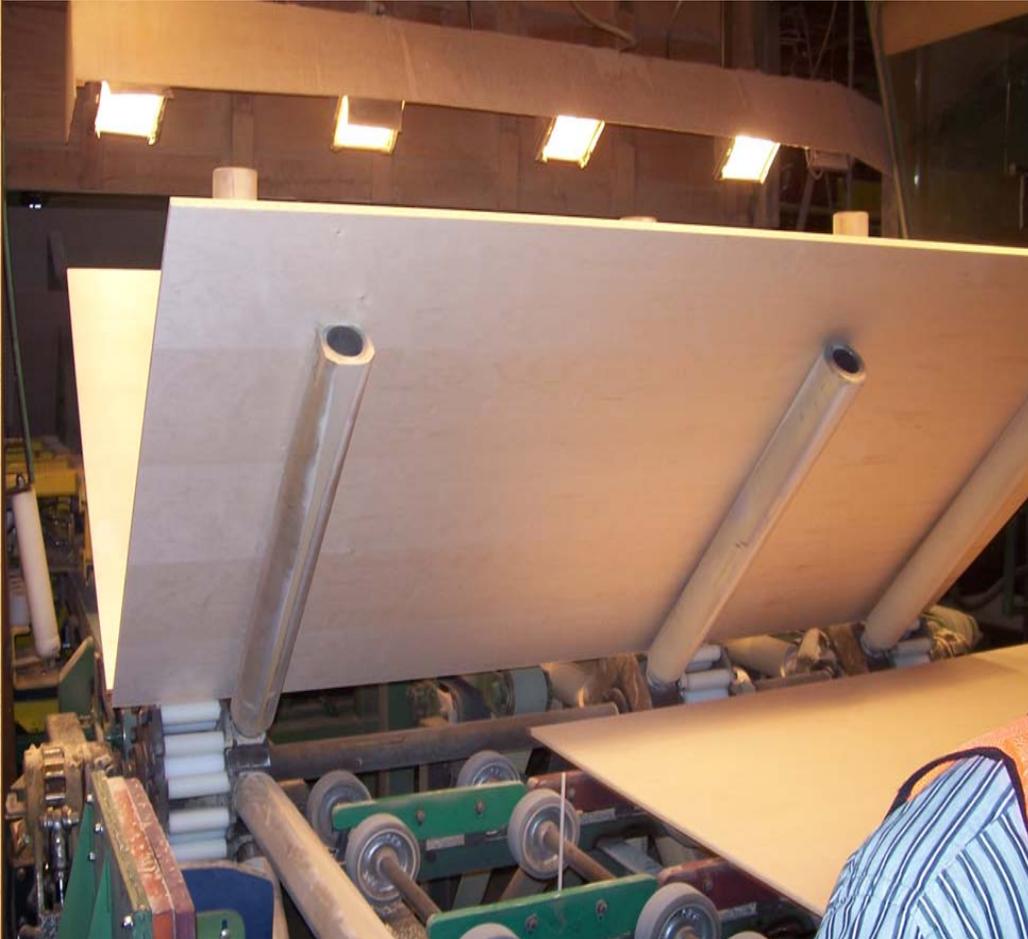
- Hardwood plywood
 - 240 tons per year
- Particleboard
 - 450 tons per year
- Medium density fiberboard
 - 190 tons per year
- Total of about 900 tons per year

Typical Formaldehyde Levels



70 years at 1 µg/m³ = 6 lifetime cancers per million

Hardwood Plywood



Uses

- Non-structural paneling
- Cabinets
- Furniture
- Engineered floors

Particleboard



Uses:

- Cabinets
- Countertop core
- Floor underlayment
- Store fixtures
- Shelving
- Stair treads

MDF

Uses:

- Cabinets
- Furniture
- Moldings & trim
- Door skins
- Window components
- Shelving
- Engineered floors
- Speaker components



United States Emission Standards

- Set in 1985 by U.S. Dept. of Housing and Urban Development (HUD)
- Applies only to PB and HWPW in manufactured homes
- Limits surface emissions
- High emission rate compared to Europe, Australia, and Japan

International Emission Standards

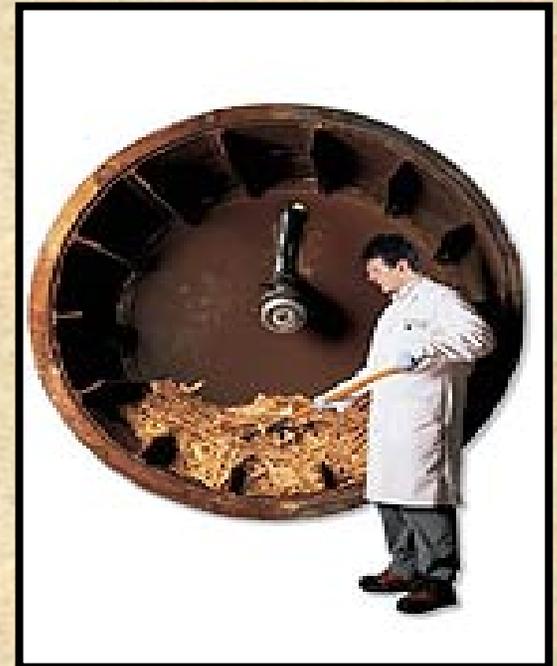
- Lower than current U.S. standard
- Programs are fundamentally different;
not directly comparable
- Generally not emission caps

Need for Control

- U.S. HUD standard not protective
- Childhood risk (9 years)*
 - 23-63 cancer cases per million
- Lifetime risk (70 years)*
 - 86-231 cancer cases per million

* Based on total daily average formaldehyde exposure

Available Technologies

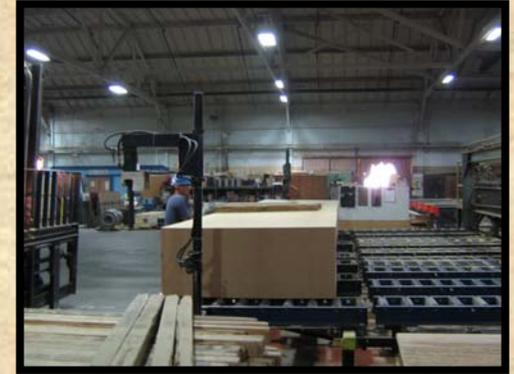


Resin Options

- Common Resins
 - Urea-formaldehyde (UF)
 - Phenol-formaldehyde (PF)
 - Methylene Diisocyanate (MDI)
 - Polyvinyl Acetate (PVA)
 - Soy
- Emerging Resins
 - MDI Hybrids, Tannin-based, other soy blends
 - Modified UF resins – scavengers and blends

Best Available Control Technology Considerations

- Lowest level achievable
- In use and lab-tested alternative resins
- International standards
- Resin technology cost



Airborne Toxic Control Measure

Approved by the ARB on April 26, 2007

ATCM Applicability

- Panel manufacturers
- Distributors
- Importers
- Fabricators
- Retailers
- Finished goods

ATCM Provisions

- Applies to products sold, supplied, used, or manufactured for sale in California
- Emission standards in two phases
- Sell-through
- Exemptions
- Enforcement

Rationale for Phase 1 Standard

- Set an industry cap; over 50% of CWP mfrs. need to lower emissions
- Curtail low-cost, high-emitting imported products

Approved Phase 1 Standards

Product	Jan 1, 2009	Jul 1, 2009
HWPW-VC	0.08 ppm	-----
HWPW-CC	-----	0.08 ppm
PB	0.18 ppm	-----
MDF	0.21 ppm	-----
Thin MDF	0.21 ppm	-----

Resin Technologies for Phase 1 in 2009

HWPW, PB and MDF:

- UF + 4% Melamine
- Low mole ratio UF co-blend

Rationale for Phase 2 Standards

- Technology forcing
- Defines BACT

Approved Phase 2 Standards

Product	Jan 1, 2010	Jan 1, 2011	Jan 1, 2012	Jul 1, 2012
HWPW-VC	0.05 ppm		-----	-----
HWPW-CC		-----	-----	0.05 ppm
PB		0.09 ppm	-----	-----
MDF		0.11 ppm	-----	-----
Thin MDF		-----	0.13 ppm	-----

BACT for Phase 2 in 2010-12

- **HWPW**
 - UF + 15% Melamine
 - PVA
 - PVA-Soy Blend
- **PB**
 - Low mole ratio UF + 8% Melamine
 - Low mole ratio UF + Scavengers
 - PF
- **MDF**
 - Low mole ratio UF + 12% Melamine
 - Low mole ratio UF + Scavengers
 - Polymeric MDI

Sell-through

- Allows sale of non-compliant products manufactured before standard effective
- Time period limited
- Differing sell-through periods

Exemptions

- Products not for sale in California
- Products subject to HUD standards
- Windows with <5 vol% composite wood
- Exterior doors; doors with <3 vol% composite wood
- Military specification plywood
- Vehicles

Enforcement Provisions

- Third Party Certification
- Statements of Compliance
- Recordkeeping
- Product Labeling
- Facility Inspections
- Compliance Testing

Importance of Enforcement



- Necessary to achieve ATCM benefits
- Fair competition between imports and domestic products
- Essential to viability of industry

KCMA Members

- Fabricators
 - Must use compliant wood products, label products and keep records
- Panel manufacturer/fabricator
 - Must also TPC panel products
- Importers
 - Must use “reasonable prudent precautions”
 - Maintain “statement of compliance” documentation

Fabricator Responsibilities

- Buy compliant wood products from TPC certified manufacturers
- Maintain records documenting compliant purchases and product sales
- Apply labels denoting compliance with CARB standards
- Adhere to product sell-through provisions
- Report unscrupulous practices

Benefits and Impacts



Emissions, Exposure, and Risk Reductions

- **Emission reductions**
 - 180 tons per year - Phase 1
 - 500 tons per year - Phase 2
- **Exposure reductions***
 - 15% - Phase 1
 - 40% - Phase 2
- **Lifetime cancer risk reductions***
 - Baseline 86-231 cases
 - 12-35 cases reduced – Phase 1
 - 35-97 cases reduced – Phase 2

* Based on total daily average formaldehyde exposure

Increase in Panel Production Costs

Product	Phase 1	Phase 2
HWPW	< \$0.20	\$4 to 6
PB	< \$1	\$3 to \$4
MDF	< \$1	\$4 to \$6

Annual Industry-wide Costs

Product	Phase 1	Phase 2
HWPW	\$6 million	\$17 million
PB	\$5 million	\$61 million
MDF	\$9 million	\$49 million
Total -- All	~\$19 million	\$127 million

Air Resources Board Action at April 27th Hearing

- Adopted staff's proposed modified regulation (7-0 vote)
- Directed staff to provide enforcement program update for Board in 2008
- Delegated authority to Executive Officer to reopen the public record for subsequent 15-Day public comment period

Approved Modifications to the Original Proposal

- Move HWPW-VC implementation up one year to Jan. 2010
- Exemption for garage and exterior doors
- Performance-based compliance option for low-emitting formaldehyde based resins

Approved Modifications to the Original Proposal (cont'd)

- Sell-through provision dates
- Definition of “architectural plywood”
- Other clarifications

Other ATCM Related Issues

- Dual inventories for CA and 49-state
- Direct sales to builders
- Internet sales
- Finished product testing
- Enforcement liability

2007 Schedule



June- Industry consultation

July- Release modified regulation for public comment

Summer- Lab development; DHS chamber study



Fall- Large chamber correlation; round robin testing

Winter- Complete ATCM OAL process

Thank you for your Interest!

For more information, visit our website-

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



Or, contact-

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Substance Evaluation Section

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