California's New Composite Wood Products Formaldehyde Regulation

Meeting of the

Construction Specification Institute

January 9, 2008

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California Environmental Protection Agency

Air Resources Board

Overview

- Background
- Airborne Toxic Control Measure (ATCM)
  - Overview
  - Emission Standards
- Resin Technology
- Products Available
- Costs and Benefits of the Approved ATCM
- Closing Comments

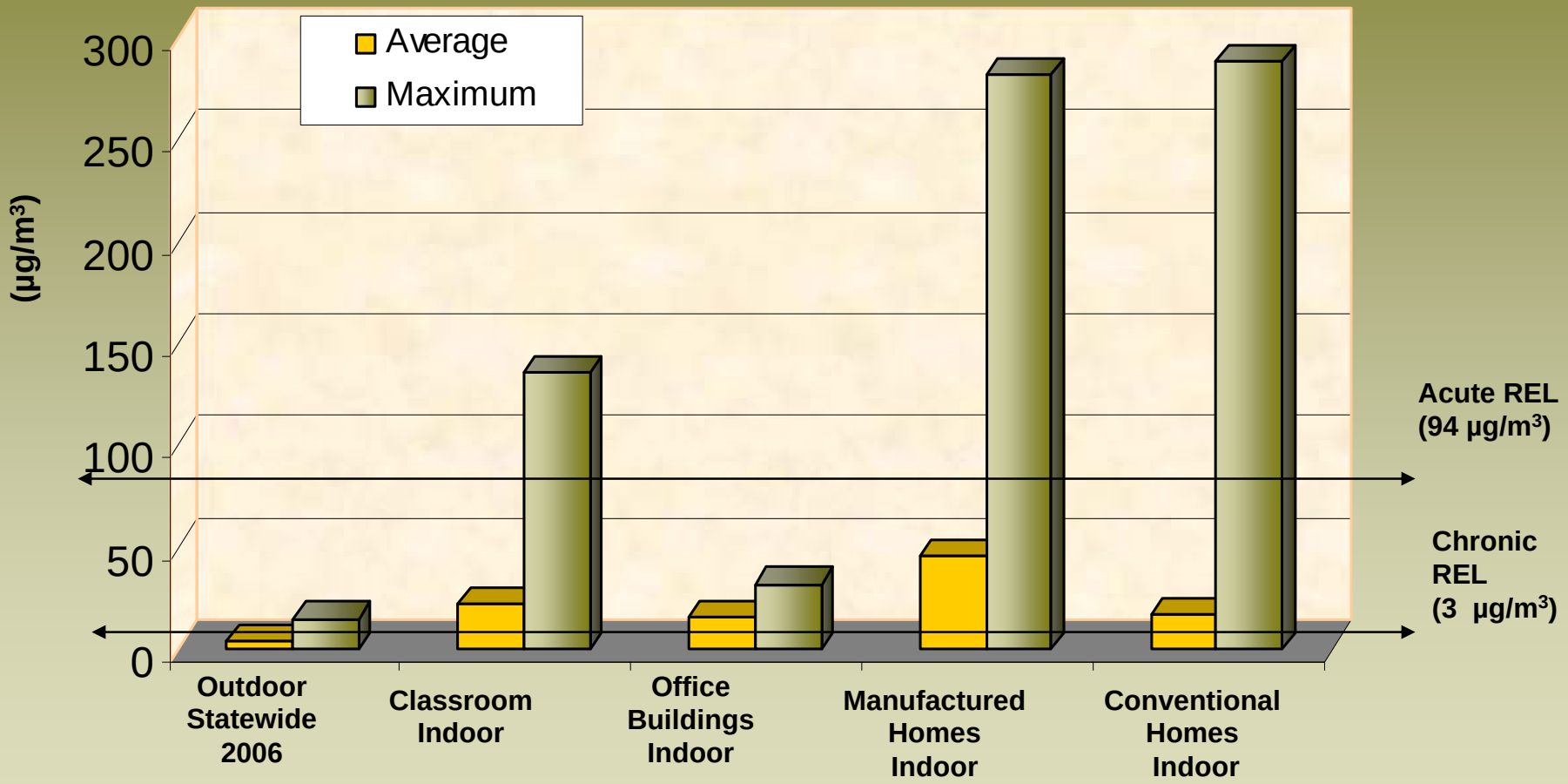
California Health & Safety Code Requirements

- § 39657 - Requires ARB to identify toxic air contaminants; identify minimum threshold level if any
- § 39658 - Requires ARB to develop Air Toxic Control Measures (ATCMs)
- § 39666 - For compounds with no safe threshold level, the HSC requires the development of control measures based on ***best available control technology***, or more effective controls in consideration of costs and risk

Why Formaldehyde?

- ARB identified as TAC in 1992 with no safe threshold for exposure
  - nasopharyngeal cancer
  - acute and chronic effects – eye, nose, respiratory irritant
- Formaldehyde is both an indoor and outdoor health risk
  - indoor concentrations contribute to ambient levels
  - CA average concentration above OEHHA chronic REL (3 µg/m3)

Typical Formaldehyde Levels



70 years at 1 µg/m^3 = 6 lifetime cancers per million

Airborne Toxic Control Measure (ATCM): Overview

- Establishes new formaldehyde emission limits for manufactured particleboard (PB), medium density fiberboard (MDF), and hardwood plywood (HWPW) panels
- Applies to products sold, supplied, used, or manufactured for sale in California
- Applies to manufacturers, distributors, importers, fabricators, retailers

Airborne Toxic Control Measure (ATCM): Overview – *cont'd*

- Requires finished products to be made from compliant PB, MDF, and HWPW panels
- Manufacturer Third Party Certification (TPC) and Quality Assurance Requirements (QA)
- Enforcement program
  - Chain of Custody
  - Emissions Testing
- Sell through
- Exemptions

2002 CWP Survey

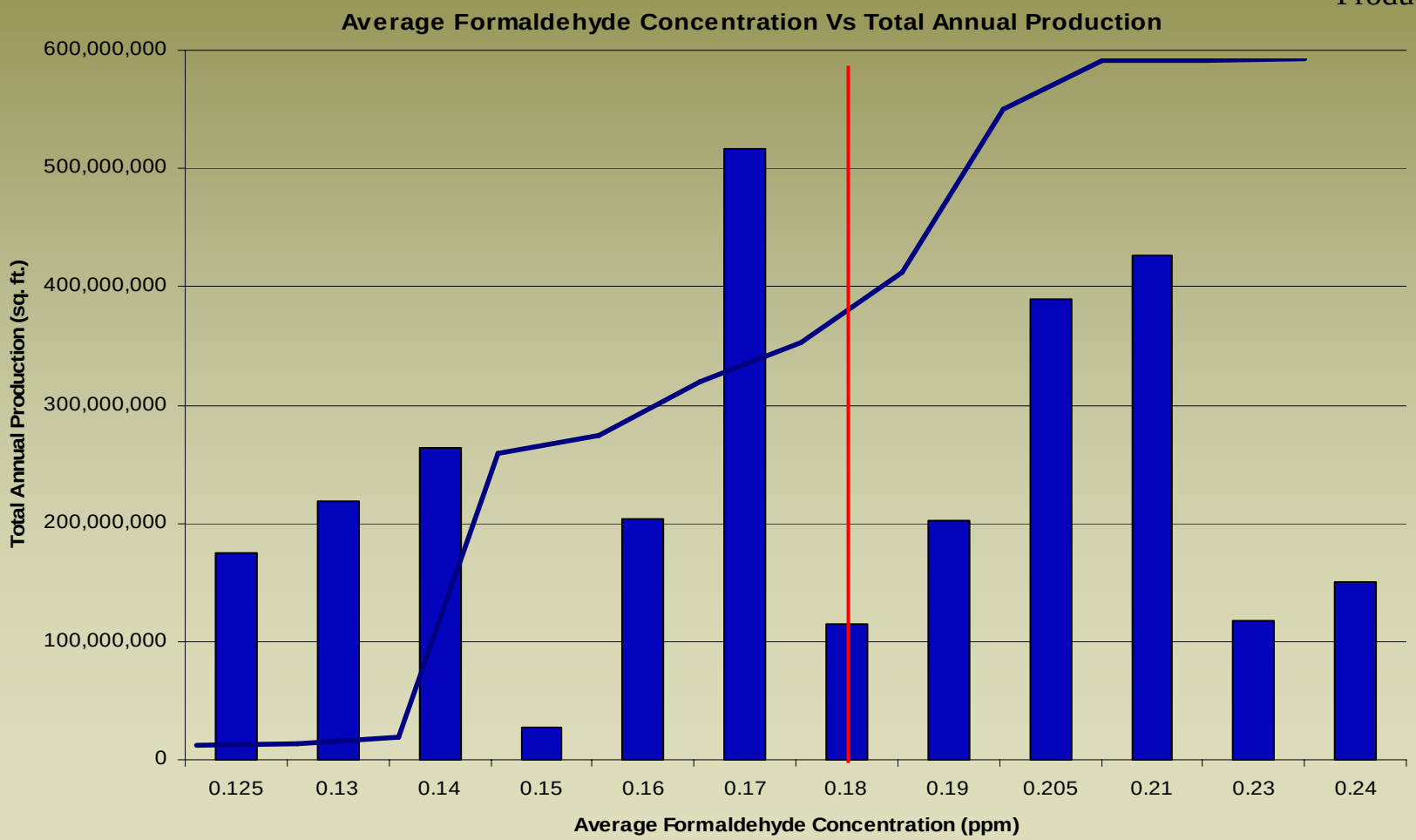
- Composite wood products survey to manufacturers across U.S.
- Survey pertained to manufacturers, products, resins and processes
- Response rate 50-80%
- Findings:

  Highest formaldehyde emitting composite wood products were HWPW, PB, MDF

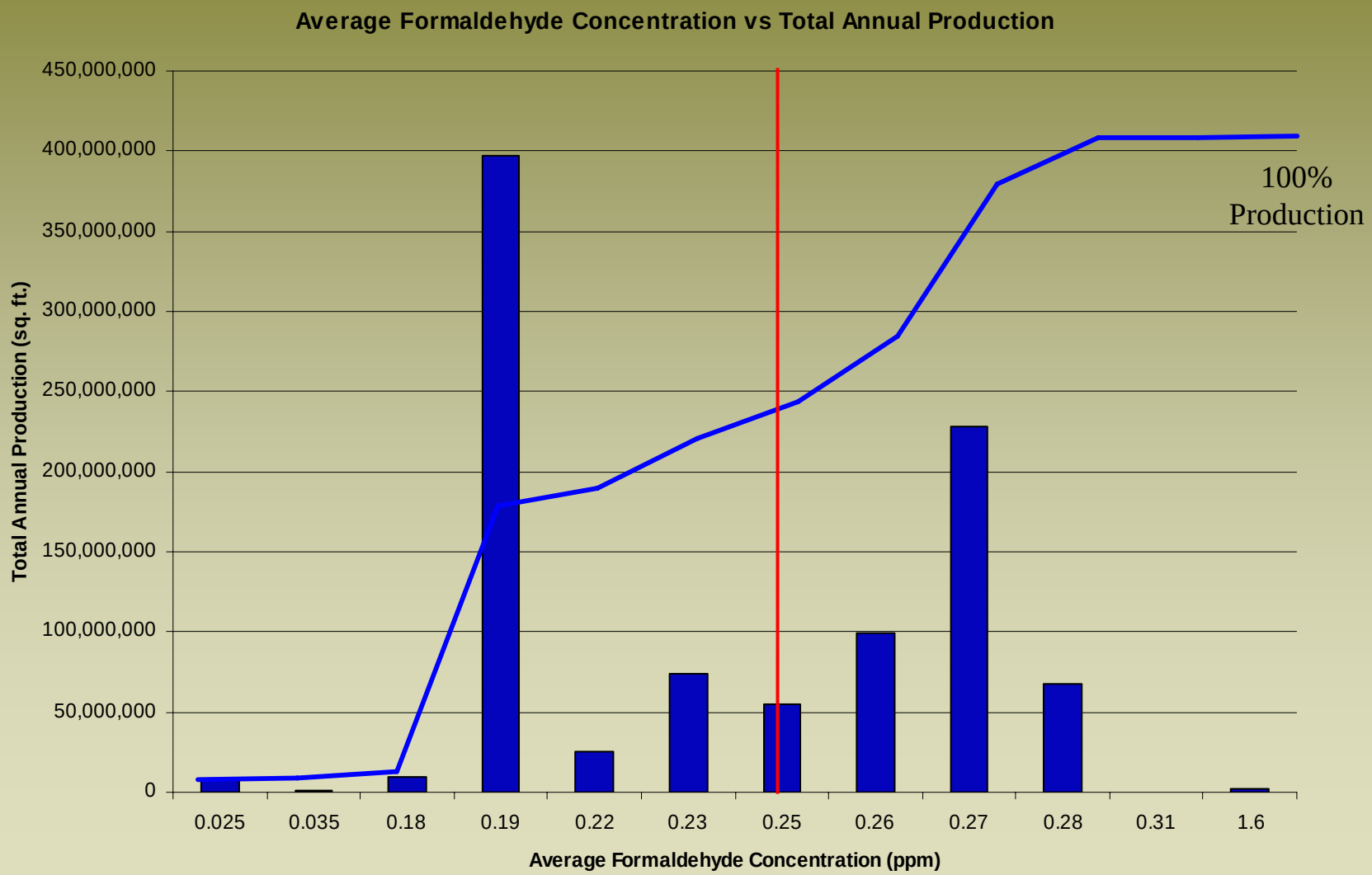
  Majority were made with urea-formaldehyde resins (UF resins)

Particleboard

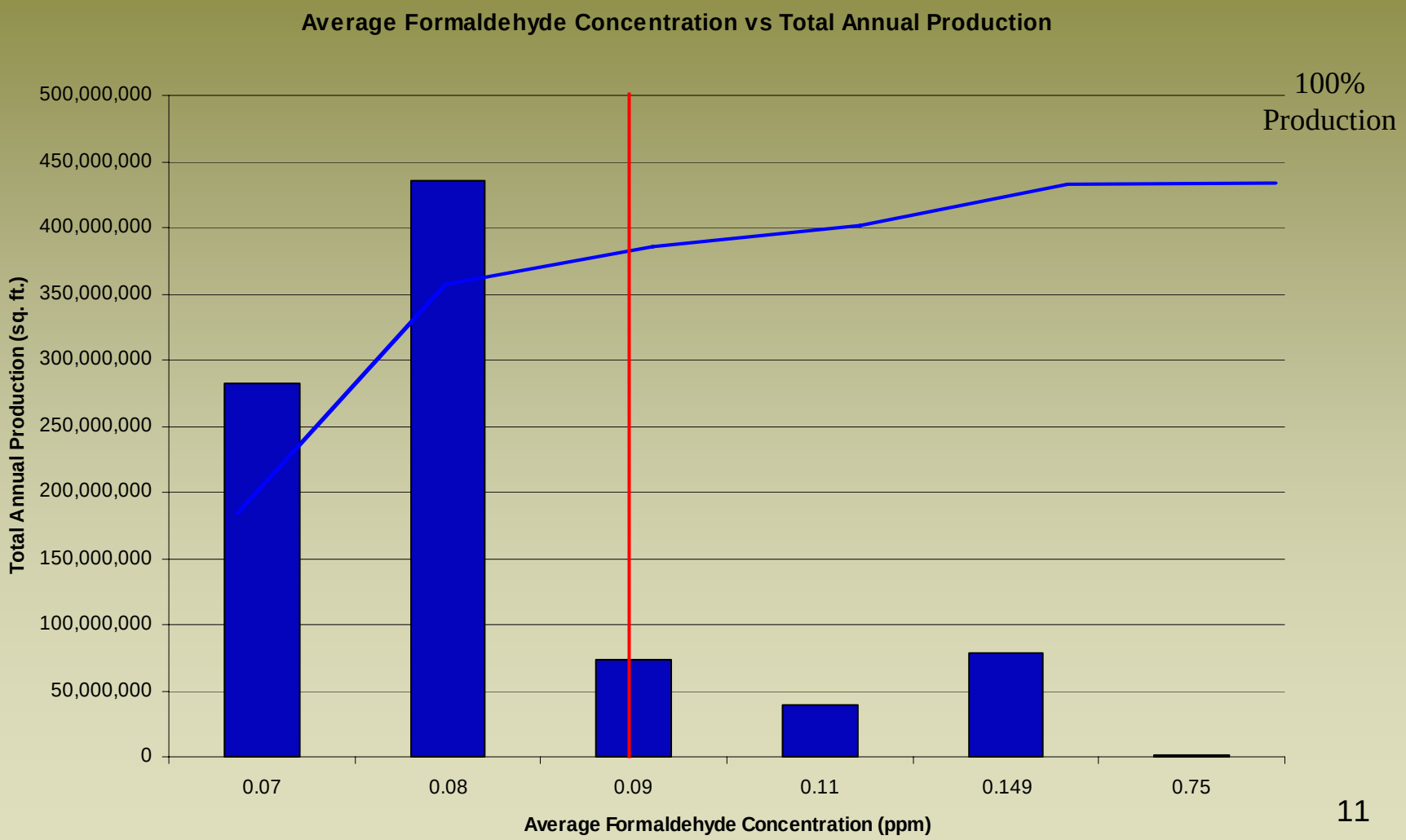
100% Production



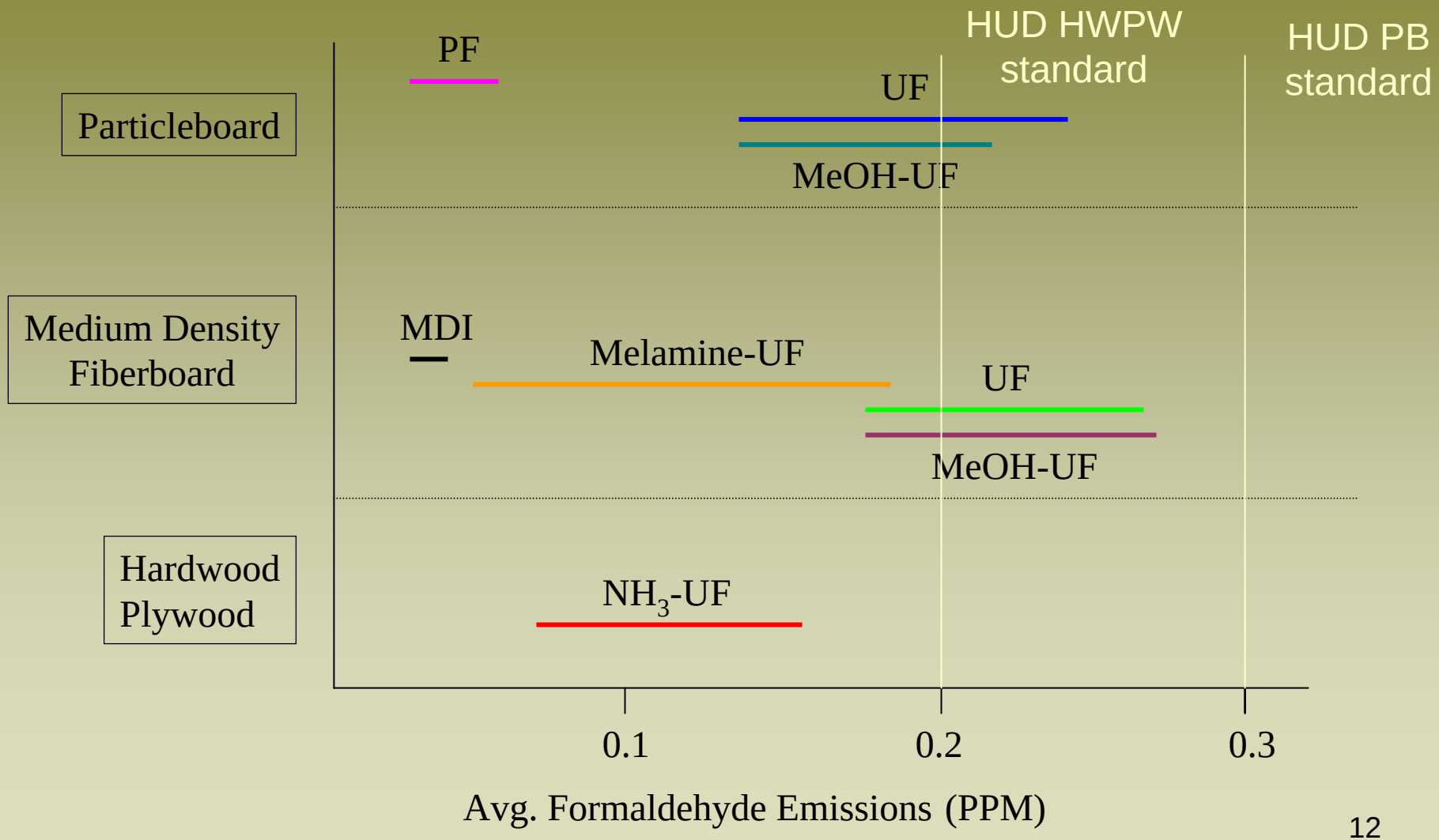
Medium Density Fiberboard



Hardwood Plywood



2002 CWP Survey- *Resin Use*



Approved Formaldehyde Standards

- Phase 1
- Phase 2

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	-----

* Based on ASTM E1333-96

Rationale for Phase 1 Standards

- Sets industry cap to level similar to E1
- Over 50% of CWP manufacturers need to lower emissions
- Curtails low-cost, high-emitting imported products
- Establishes enforcement program

Approved Phase 2 Standards*

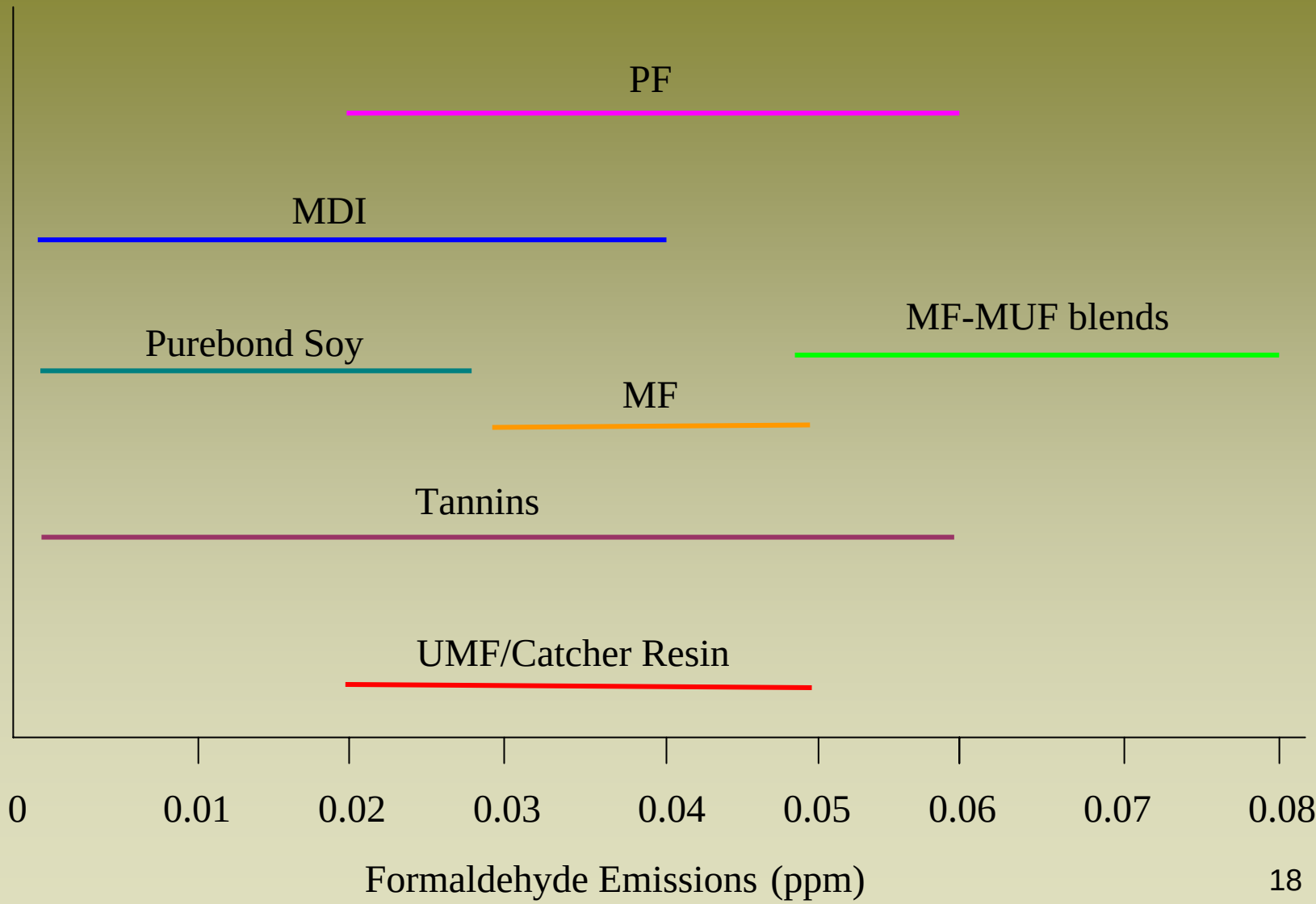
Product	Jan 1, 2010	Jan 1, 2011	Jan 1, 2012	Jul 1, 2012
HWPW-VC	0.05 ppm		-----	-----
HWPW-CC		-----	-----	0.05 ppm
PB		0.09 ppm	-----	-----
MDF		0.11 ppm	-----	-----
Thin MDF		-----	0.13 ppm	-----

* Based on ASTM E1333-96

Rationale for Phase 2 Standards

- Defines Best Available Control Technologies (BACT)
  - Technology forcing
- Technologically feasible
- Reasonable cost

Low Formaldehyde Resin Technology



Products Currently Available to Meet Phase 2 Standards

Tradename	Company	Compwood Products	Resin System
Arreis	**Sierra Pine**	**MDF**	**MDI**
Medite II			
Medex			
Purebond	**Columbia Forest Products**	**HWPW, PB**	**Soy-based**
Skyblend	**Roseburg**	**PB**	**PF**
Vesta	**Flakeboard**	**PB**	**NAF**
EcoBind resin system	*Hexion*	*HWPW, PB, MDF*	*MUF/co-react, PF, soy/PVA blend*
Kenocatch resin system	*Akzo Nobel*	*MDF, PB*	*MUF + catcher*
Soyad resin system	*Heartland Resource Technologies*	*HWPW*	*Soy + PF*

Emerging Resin Technology

- MDI Hybrids, Tannin-based resins, polyurethane, other soy blends (NAFs)
- Ultra low emmiting formaldehyde resins(ULEFs)-scavengers and blends

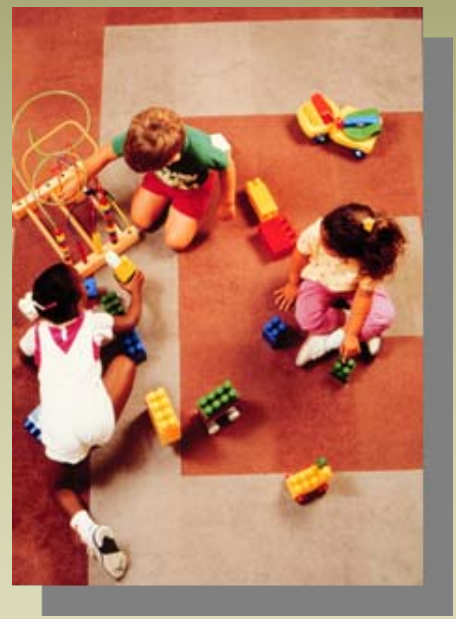
Costs

- Industry-wide Cost (Annual)
  - $19 million (P1)
  - $127 million (P2)
- Incremental Production Cost (Per panel)

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

Benefits of the ATCM

- Effective pollution prevention
- Reduces formaldehyde emissions by
  180 tons/year (Phase 1) to
  500 tons/year (Phase 2)
- Reduces overall exposure by
  15% (Phase 1) to 40% (Phase 2)
- Achieves reductions in indoor settings where people spend most time
- Reduces lifetime cancer cases by
  12-35 (Phase 1) to 35-97 (Phase 2)



Closing Comments

- Growing market for low-polluting building materials
- Cost effective, viable low-emitting products are now in the market
- Future resin technology will add new commercial products with performance comparable to no-added formaldehyde products (NAFs)

For More Information

Visit our website:

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

Or, contact us:

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