

# Formaldehyde-Based Resins and Potential CARB Impact

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# Key Scientific and Regulatory Issues

- IARC in June 2004 reclassified formaldehyde as “carcinogenic to humans” – based essentially on one questionable study
- Plant 1 study update (Marsh investigation)
  - Six (6) out of the 10 NPC’s in the NCI study occurred in Plant 1
    - This finding drives the association with cancer
  - **New evidence indicates NPC risk in Plant 1 may be related to previous work in the metal industry of the local area (silver smithing)**
  - Manuscript accepted for publication – April 2007
- National Cancer Institute (NCI) study update
  - Draft scheduled for release literally any day now
  - FCI is funding a robust independent review panel
  - **Regulatory agencies worldwide are awaiting results**
  - Final manuscript likely not available until the end of 2007
- California Air Resources Board adopted the world’s most stringent regulation limiting formaldehyde emissions from Composite Wood Products on April 26, 2007.

# Eco(nomics) Chemistry 101

- Why use UF resins?
  - Safety: Proven over many years. One of the most studied of all resin systems.
  - Cost: Lower total cost than alternative resin systems.
  - Performance: High quality, physical properties and production speed.
- Barriers to changing?
  - Capital investment for modifications to [or replacement of] existing assets.
  - Capital diversion to comply with Federal MACT standards.
  - Economic challenges from competitors, including offshore.
  - Price point sensitivity of customer base and the end consumer.
  - Quality/consistency concerns of downstream customers.

## Key CARB ATCM Regulation Order Issues

Creates a very tight timeline for compliance for manufacturers of particleboard, MDF, and especially for hardwood plywood. Also applies to goods manufactured from these panels, and down the chain of commerce to the retail level.

Defines and creates an exemption from testing for “no added formaldehyde” bonded products, without any assurance [or requirement] that they will result in lower emissions than required for a given product under the applicable Phase emission limit that is made with any other binder system.

Places significant, ongoing and costly QC testing and third-party certification requirements on those using formaldehyde-based resins.

Does not yet adequately address enforcement testing, especially for finished goods or imports.

## UF-Based Resins: Availability and Alternatives

Currently, North America consumes approximately 3 billion pounds of UF-based resins annually. Given that California consumes about 10% of the products made with UF-based resins, this translates into about 300 million pounds to meet current market demands – not counting imports.

There is not enough existing resin manufacturing capacity, especially among the preferred no-added-formaldehyde [NAF] sources, to replace this volume. Even converting existing UF manufacturing capacity to manufacture the performance-equivalent replacement amount of PF production would be highly unlikely in the timeframe allowed under the proposed regulation order.

Further, it is anticipated that the impact will be larger than that which has historically been observed due to the California market alone.

**No commercially viable binding technology exists for composite products except hardwood plywood that does not include the use of formaldehyde.**

## Level Playing Field

- It is proposed that CARB establish a common, performance-based category for third-party certification exemption eligible “Near-background” formaldehyde emission products [“NBE”] as those having an ASTM E1333 measured or extrapolated formaldehyde emission meeting the applicable Phase 2 emissions limit or some percentage thereof. This would replace the currently defined “no-added formaldehyde resins” in the body of the Proposed Regulation Order, and would be exemption eligible under application and performance terms as otherwise stated.
- It should be specified in the regulation that screening testing and enforcement testing will be defined and conducted on all products equally, including those granted exemption under applicable sections of the regulation order.

## Benefits of a Level Playing Field

- establishes clearly defined and performance-based emission characteristics for exempt-eligible panel products,
- encourages both short and long term adhesive and panel manufacturing innovation commensurate with potential for acquiring exempt status based on documented emission performance,
- eliminates the uncertainties associated with formaldehyde emission component variability (substrate, adhesive, and other processing conditions), and
- enables a panel manufacturer to establish cost/benefits associated with establishing exempt status.