Candidate Control Measures for Architectural and Industrial Maintenance (AIM) Coatings

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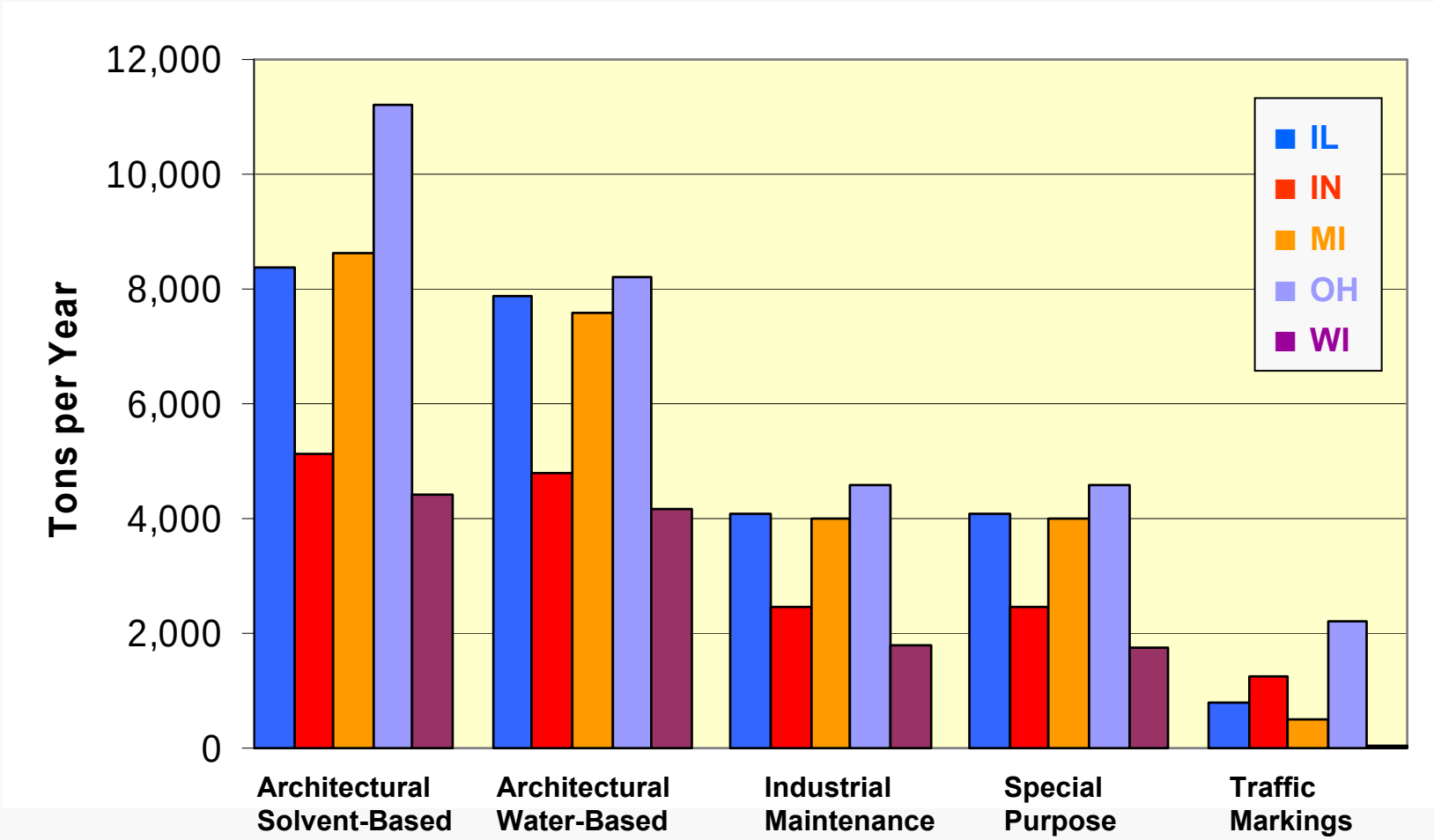
Category Description: AIM Coatings

- Used to beautify and protect
  - Homes
  - Buildings
  - Factories
  - Pavements, and curbs
- Used by consumers, painting contractors, or maintenance personnel
- AIM coatings include over 50 subcategories, such as:
  - interior and exterior paints,
  - traffic markings,
  - industrial maintenance coatings
- VOC emissions result from the evaporation of solvents in the coatings during application and drying
- Account for about 3.7% of the total anthropogenic VOC emissions in the MRPO region in 2002

VOC Emissions By AIM Category



Regulatory History: AIM Coatings Federal Rule

- EPA published the AIM coatings rule on Sept. 11, 1998 (40 CFR Part 59 Subpart D)
  - Authority under CAA Section 183(e)
  - Limits the amount of VOC that manufacturers and importers of AIM coatings can put into their products.
  - Options for complying with the VOC limits, including exemptions for products that are hard to reformulate
  - VOC content limits took effect on September 11, 1999
  - VOC reductions of 20 percent from uncontrolled

Regulatory History: AIM Coatings State Rules

- SCAQMD adopted Rule 1113 on September 2, 1977
  - Phase I (1996) lowered the VOC limits for some coating categories
  - Phase II (1999) further lowered VOC limits
  - Phase III (2003) relies on near-zero or zero VOC formulations for several AIM coating categories
- CARB Suggested Control Measure (2000)
  - Adopted by over half of the 35 CA local districts
  - Similar to SCAQMD Phase II limits
- STAPPA/ALAPCO Model Rule
- Ozone Transport Commission (OTC) Model Rule
  - More stringent VOC limits than the Federal AIM rule
  - Adopted in DC, DE, ME, MD, NJ, NY, PA, VA
  - Considering in CT, MA, NH, RI, VT

Regulatory History: AIM Coatings MRPO State Rules

- Wisconsin NR422 limits VOC content of traffic markings
  - applies during the ozone season in nine counties
  - limits the VOC content of traffic markings to 91 grams per liter of coating, which is about 39 percent lower than the limit imposed by the Federal rule or the OTC model rule
- No other MRPO States have rules specifically regulating AIM coatings beyond the requirements of the Federal AIM rule

Available Control Measures: AIM Coatings

- Product reformulation
  - Replacing VOC solvents with non-VOC solvents;
  - Increasing the solids content of the coating;
  - Altering the chemistry of the resin so that less solvent is needed for the required viscosity; and,
  - Switching to a waterborne latex or water-soluble resin system.

- Establish VOC content limits for specific coatings

Candidate Control Measures: AIM Coatings

- *Measure SOLV1A – Adopt More Stringent VOC Content Limits for AIM Coatings*
  - Establish more stringent VOC limits than the Federal AIM rule, based on:
    - CARB suggested control measure
    - OTC Model Rule
    - SCAQMD Phase I and II limits
    - OTC Model Rule estimated to reduce VOC by 31% beyond the reductions from Federal rule
  - More stringent VOC content limit for traffic markings
    - Based on Wisconsin rule NR422.17,
    - 39% lower than the limit imposed by the Federal rule or the OTC model rule

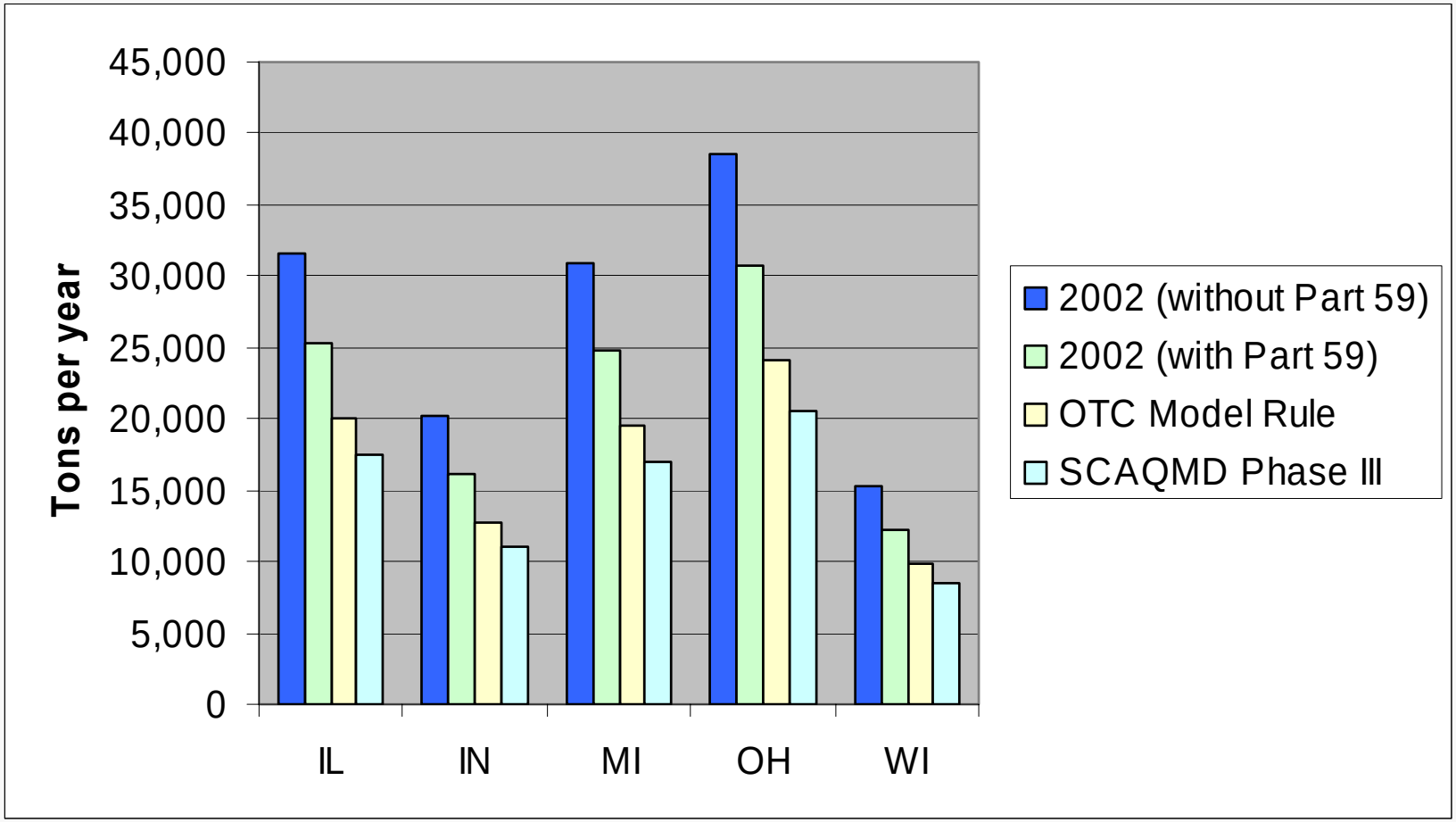
Candidate Control Measures: AIM Coatings

- *Measure SOLV1B – Adopt SCAQMD Phase III VOC Emission Limits in addition to the OTC Model Rule and WI NR422.17*
  - Provides a 51 percent reduction beyond the reductions obtained from the OTC Model Rule
  - Relies on near-zero or zero VOC formulations for:
    - cleanup and thinning solvents
    - clear wood finishes
    - exterior opaque stains
    - semi-transparent stains
    - sanding sealers
    - waterproofing sealers.

Candidate Control Measures: AIM Coatings

- *Measure SOLV1C – Develop Reactivity-Based Limits*
  - CARB has funded a $300,000 research project with the University of California, Riverside
  - Mass-based emission reductions are becoming more difficult because architectural coatings have already been reformulated to some extent
  - Target VOCs with the greatest ozone forming potential
  - Cannot determine at this time the additional reductions that might be obtained by developing reactivity-based emission limits for AIM coatings

VOC Emissions For AIM Coating Candidate Control Measures



Cost Effectiveness: AIM Coatings

- OTC Model Rule - $6,400 per ton VOC
  - Based on CARM suggested control measure analysis
- SCAQMD Phase III - $20,000 per ton VOC
  - Based on an incremental reformulation cost of $8.00 per gallon for the architectural coating categories targeted by this control measure

Other Issues: AIM Coatings

- Timing for reductions
  - Ozone SIPs in 2007, compliance by 2009
  - "Sell through" provisions
    - Creates time for manufacturers to reformulate while continuing to sell and deplete their existing inventories
- Geographic applicability
  - Implemented across the MRPO region
  - Maintain consistency and uniformity for manufacturers
- Rule Effectiveness and Rule Penetration
  - Rule effectiveness (RE) is an adjustment to account for failures and uncertainties that affect the actual performance of the control measure
    - Because emissions will be controlled via reformulations, the EIIP guidance recommends that the rule effectiveness (RE) can be assumed to be 100 percent for all coating types affected by the rule
  - Rule penetration (RP) is the percentage of the area source category that is expected to by complying with the regulation
    - Not all products will be expected to comply by 2009, so the rule penetration (RP) is estimated to be 80 percent

Questions? AIM Coatings