

# Candidate Control Measures for Asphalt Paving



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# Category Description: Asphalt Paving

- Used to pave, seal, and repair surfaces such as roads, parking lots, drives, walkways, and airport runways
- Three general categories:
  1. Hot-mix asphalt is the most commonly used
    - Organic components have high molecular weights and low vapor pressures
    - Produces minimal emissions of VOCs
  2. Cutback asphalt
    - Blended or “cut back” with a diluent, typically with 25-45% petroleum distillates
    - Emits the highest levels of VOCs per ton used.
  3. Emulsified asphalt can be used in same applications as cutback asphalt
    - Lower emitting alternative to cutback asphalts.
    - Use blend of asphalt cement, water and an emulsifying agent, such as soap
    - May contain up to 12 percent by volume organic solvents
- Accounts for about 2.0% of the total anthropogenic VOC emissions in the MRPO region in 2002

# Regulatory History: Asphalt Paving Federal Efforts

- EPA published Control Technique Guideline (CTG) for cutback asphalt December 1977
  - Recommended replacing cutback asphalt binders with emulsified asphalt during the ozone season
  - Limit the content of oil distillate in emulsified asphalt to no higher than 7 percent oil distillate

# Regulatory History: Asphalt Paving Non-MRPO State Rules

- SCAQMD Rule 1108.1 contains specifications on the amount and volatility of any petroleum distillate used in emulsified asphalt. The limit is 3 percent for any type of emulsified asphalt.

# Regulatory History: Asphalt Paving MRPO State Rules

- All five States have adopted requirements that are variations of the CTG recommendations
- Cutback asphalt application is banned during the ozone season
- For emulsified asphalts:
  - Illinois, Michigan, and Wisconsin do not specify the maximum oil distillate content in emulsified asphalt
  - Indiana limits the oil distillate to 7 percent
  - Ohio allows between 3% and 12% oil distillate, dependant on the asphalt mix

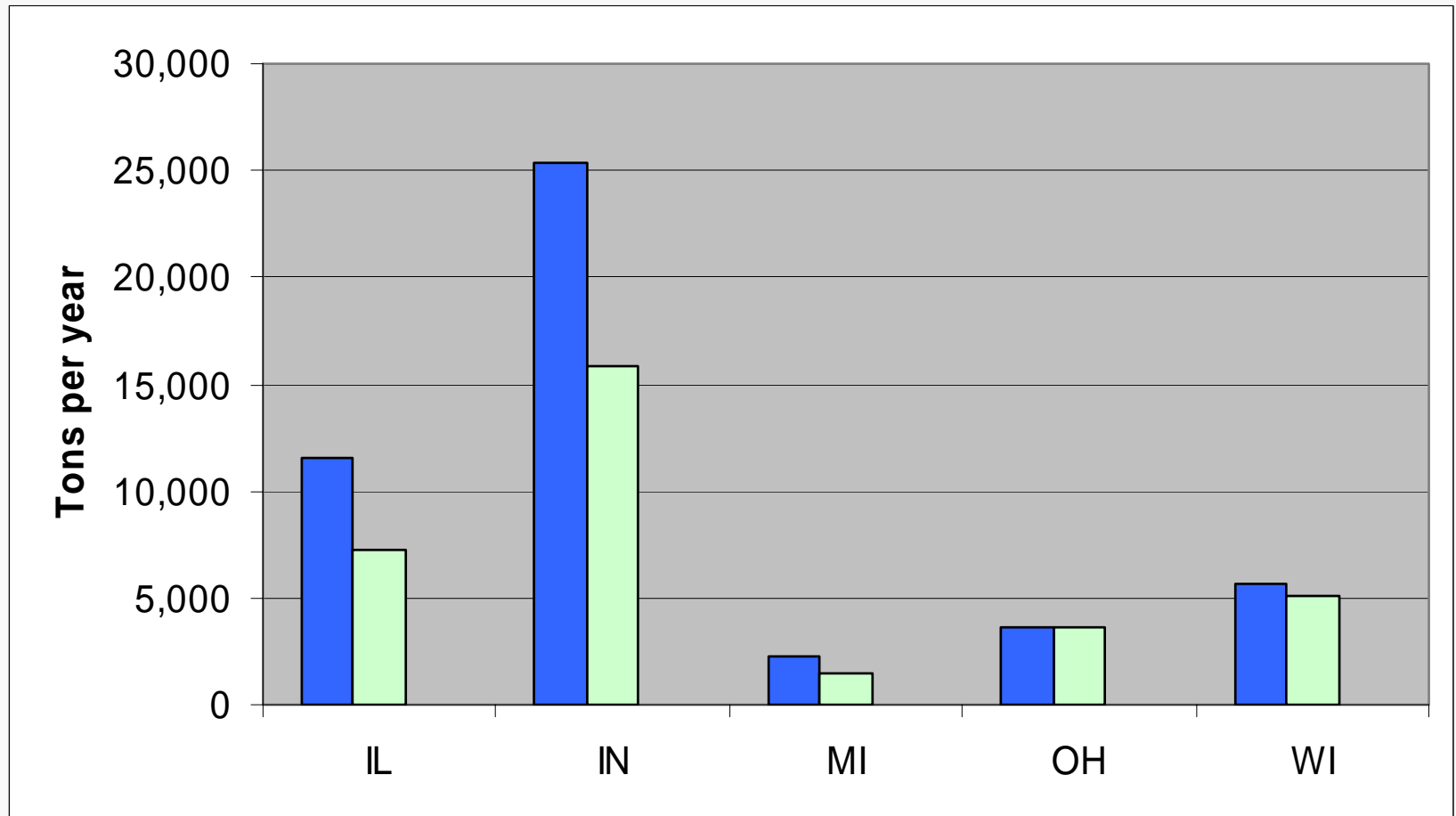
# Available Control Measures: Asphalt Paving

- MRPO states already ban the use of cutback asphalt during the ozone season, no further emission reductions are available for cutback asphalt
- Emulsified asphalts may contain up to 12 percent organic solvents by volume
  - SCAQMD Rule 1108.1 contains a more stringent VOC content limit (3 percent) than the limits in the MRPO states

# Candidate Control Measures: Asphalt Paving

- *Measure SOLV8A – Adopt SCAQMD Rule 1108.1 VOC content limit for emulsified asphalt*
  - limit of 3 percent content limit for oil distillate for slow, medium, and rapid setting emulsified asphalt

# VOC Emissions For Asphalt Paving Candidate Control Measures



# Cost Effectiveness: Asphalt Paving

- We could not locate any references describing the cost-effectiveness of the SCAQMD or Ohio EPA asphalt paving regulations.

# Other Issues: Asphalt Paving

- Timing for reductions
  - Ozone SIPs in 2007, compliance achieved by 2009
- Geographic applicability – options:
  - All 8-hr nonattainment counties
  - All counties in or adjacent to an 8-hr nonattainment area
  - All counties in the MRPO region
- 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 EIP 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 be complying with the regulation
    - Likely that smaller entities may not be aware of the rules and not all will likely by 2009, so the rule penetration (RP) is estimated to be 80 percent

# Questions? Asphalt Paving

