

MassDEP Asphalt Paving Regulation

Presentation to MA Municipal Association
Public Works Committee Meeting
March 24, 2011

Purpose of meeting

- To advise municipal stakeholders that MassDEP will propose revisions to its asphalt paving regulations
- To explain why we are proposing to further regulate the content of asphalt paving materials
- To get feedback from local government stakeholders
- To identify issues and questions prior to issuance of a draft regulation

Background - Ozone

- MA does not meet the federal health-based air quality standard for ozone
- All of MA is an ozone “nonattainment” area under the existing ozone standard. U.S. EPA is expected to issue a more stringent ozone standard in 2011
- Breathing ozone can irritate the respiratory tract, reduce lung function, heighten sensitivity to allergens that trigger asthma attacks, contribute to premature death in people with heart and lung disease
- Ozone is a seasonal problem: April - September

Background - Ozone

- As an ozone nonattainment area, MA was required to submit a State Implementation Plan (SIP) to EPA showing how it plans to meet the ozone standard
- MA SIP includes multiple ozone control measures for sources of emissions that lead to unhealthy levels of ozone
- MA SIP includes a commitment to propose amendments to MassDEP's asphalt paving regulation in order to reduce volatile organic compound (VOC) emissions from paving materials

Background – Ozone Transport Commission

- MA is a member of the 13-state Ozone Transport Commission (OTC), which plans for ozone attainment in the OTC region
- OTC was created by Congress to address widespread ozone nonattainment along the northeast corridor
- OTC states collaborate on developing ozone control measures for adoption within the OTC region
- Ozone reduction to achieve attainment has 20+ years of history in MA and OTC region and is a continuing effort

Background - OTC

- In 2006, OTC recommended that all OTC states adopt stricter controls of Volatile Organic Compounds (VOCs) or Nitrogen Oxides (NO_x) emitted from:
 - Consumer products, paints and other coatings, adhesives and sealants, large boilers, glass furnaces, cement kilns, asphalt production (batching) plants, **asphalt paving**
- OTC is continuing to assess additional control measures to reduce emissions of VOCs and NO_x

Background - Asphalt

- Asphalt is used to pave, seal and repair surfaces such as roads, parking lots, and walkways
- Various types of asphalt exist
- The most commonly used types of flexible asphalts (i.e., asphalts that contain asphalt cement) are:
 - hot mix
 - cutback
 - emulsified

Background – Asphalt

- **Hot mix asphalt**

- Essentially heated asphalt cement
- Most commonly used for paving operations (top coat)

- **Emulsified asphalt**

- An emulsion of asphalt cement in water and an emulsifying agent, such as soap.
- In some cases, petroleum distillates added and may contain up to 12% solvent.

- **Cutback asphalt**

- a blend of asphalt cement and petroleum distillates (25% to 45%); generates highest VOC emissions

EPA Asphalt Paving Guidelines

- 1977 - EPA published a Control Technology Guideline (CTG) for cutback asphalt, which recommends replacing cutback asphalt binders with emulsified asphalt during the ozone season
- 1979 - EPA added a specification for emulsified asphalt to the CTG to limit the content of oil distillate in emulsified asphalt to no more than 7 percent (by ASTM test method)

MassDEP Existing Asphalt Paving Regulation 310 CMR 7.18(9)

- Only regulates use of cutback asphalt
- Prohibits all uses of cutback asphalt during ozone season (May 1 – Sept 30) except:
 - Use as a penetrating prime coat;
 - Storage or stockpiling of patching mixes used in pavement maintenance for a period greater than one month; and
 - Use of cutback asphalt of which less than 5% by weight of the total solvent evaporates at a temperature up to and including 500 F as determined by ASTM Method D402, “Distillation of Cutback Asphalt Products.”

2006 OTC Recommendation

- Cutback asphalt
 - prohibit all use during ozone season (May 1 – Sept 30)
- Emulsified asphalt
 - limit ozone season use (regardless of application) to that which contains not more than 0.5 ml of oil distillate from a 200 ml sample using ASTM Test Method D244 (equivalent to an oil distillate content of 0.25%)

MassDEP Regulation Under Consideration

- Prohibits use of any cutback asphalt or materials containing cutback asphalt during ozone season (i.e., eliminate exceptions in current rule) but allows a case-by-case exemption
- Adopts restrictions on VOC content of emulsified asphalt used during ozone season
- Does not regulate use of asphalt outside ozone season (no change)

Emulsified Asphalt New Requirements

- Limit of 6.0 ml of oil distillate from a 200 ml sample by ASTM test method (equivalent to an oil distillate content of 3.0%)
- Less stringent than OTC recommendation
- Limit is consistent with several other OTC states' regulations including Connecticut, and several CA Air Quality Districts
- Limit has been in effect in these other states/districts for several years

Replacement Options

- **For Cutback Asphalts**

- Emulsified asphalts and emulsified-based materials
- New patching products, e.g., US Cold Patch
- Hot mix asphalt in some cases

- **For Emulsified Asphalts**

- Low VOC emulsified asphalts -- already available on the market

Costs for Alternatives

- Costs to replace high-solvent emulsions and cutback asphalt in both patches and other applications are similar or less in most cases

Questions and Comments

- For additional information, or to provide feedback please contact:

Azin Kavian, MassDEP

azin.kavian@state.ma.us

617-574-6801

Eileen Hiney, MassDEP

eileen.hiney@state.ma.us

617-292-5520