FHWA's Interim Guidance on Mobile Source Air Toxics Analysis in NEPA Documents

Karen Perritt, M.S.
Air Quality Specialist
FHWA Office of Natural Environment

Mobile Source Air Toxics for Transportation Projects

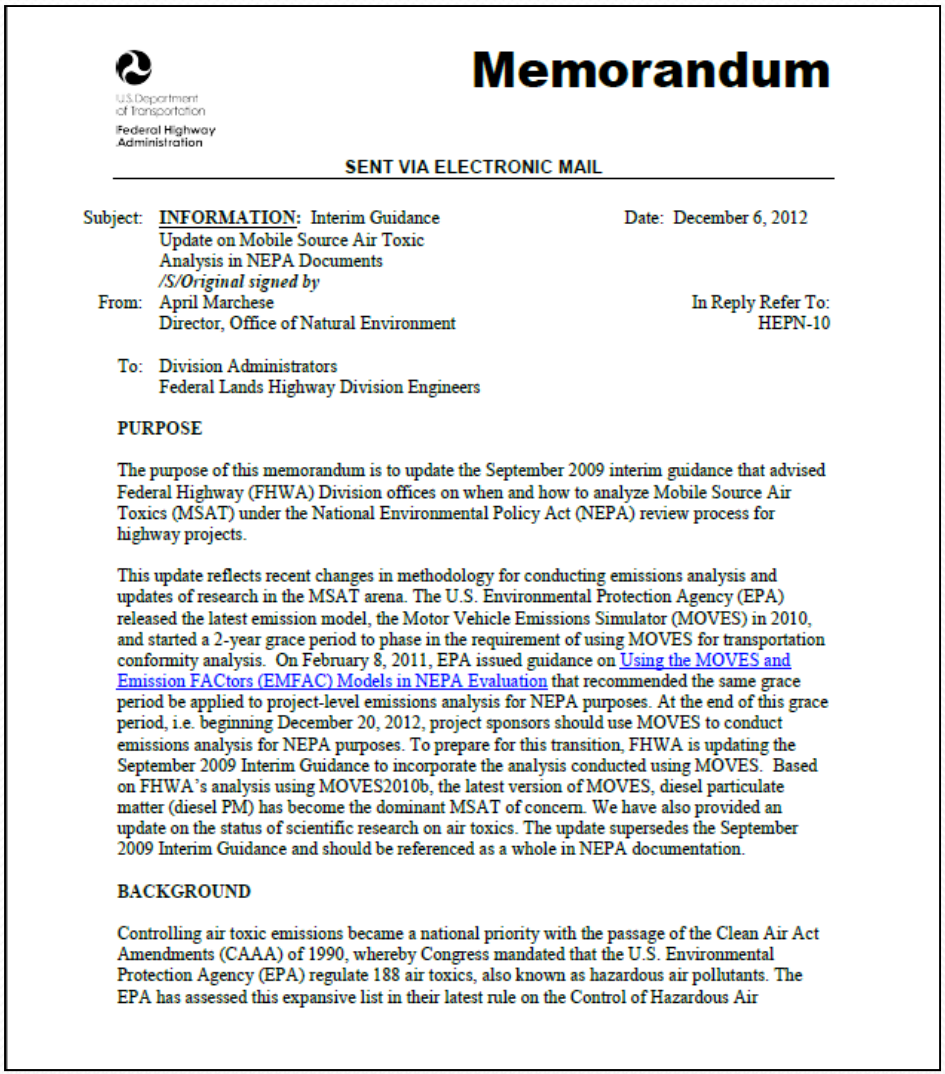
Where do MSATs fit in the air quality puzzle?

Project-level Air Quality Requirements

1) Clean Air Act
   - Applies in nonattainment/maintenance areas for ozone, nitrogen dioxide, particulate matter, and carbon monoxide
   - Transportation conformity

(2) National Environmental Policy Act (NEPA) Requirements
   - Meet FHWA requirements (23 CFR 771)
   - Evaluate potential air quality effects
   - Apply to all pollutants, including mobile source air toxics (MSATs)

FHWA MSAT Interim Guidance



U.S. Department of Transportation
Federal Highway Administration

Memorandum

SENT VIA ELECTRONIC MAIL

Subject: **INFORMATION:** Interim Guidance Update on Mobile Source Air Toxic Analysis in NEPA Documents
/S/Original signed by
From: April Marchese
Director, Office of Natural Environment

Date: December 6, 2012

In Reply Refer To:
HEPN-10

To: Division Administrators
Federal Lands Highway Division Engineers

PURPOSE

The purpose of this memorandum is to update the September 2009 interim guidance that advised Federal Highway (FHWA) Division offices on when and how to analyze Mobile Source Air Toxics (MSAT) under the National Environmental Policy Act (NEPA) review process for highway projects.

This update reflects recent changes in methodology for conducting emissions analysis and updates of research in the MSAT arena. The U.S. Environmental Protection Agency (EPA) released the latest emission model, the Motor Vehicle Emissions Simulator (MOVES) in 2010, and started a 2-year grace period to phase in the requirement of using MOVES for transportation conformity analysis. On February 8, 2011, EPA issued guidance on Using the MOVES and Emission FACtors (EMFAC) Models in NEPA Evaluation that recommended the same grace period be applied to project-level emissions analysis for NEPA purposes. At the end of this grace period, i.e. beginning December 20, 2012, project sponsors should use MOVES to conduct emissions analysis for NEPA purposes. To prepare for this transition, FHWA is updating the September 2009 Interim Guidance to incorporate the analysis conducted using MOVES. Based on FHWA's analysis using MOVES2010b, the latest version of MOVES, diesel particulate matter (diesel PM) has become the dominant MSAT of concern. We have also provided an update on the status of scientific research on air toxics. The update supersedes the September 2009 Interim Guidance and should be referenced as a whole in NEPA documentation.

BACKGROUND

Controlling air toxic emissions became a national priority with the passage of the Clean Air Act Amendments (CAAA) of 1990, whereby Congress mandated that the U.S. Environmental Protection Agency (EPA) regulate 188 air toxics, also known as hazardous air pollutants. The EPA has assessed this expansive list in their latest rule on the Control of Hazardous Air

http://www.fhwa.dot.gov/environment/air_quality/air_toxics/

Background

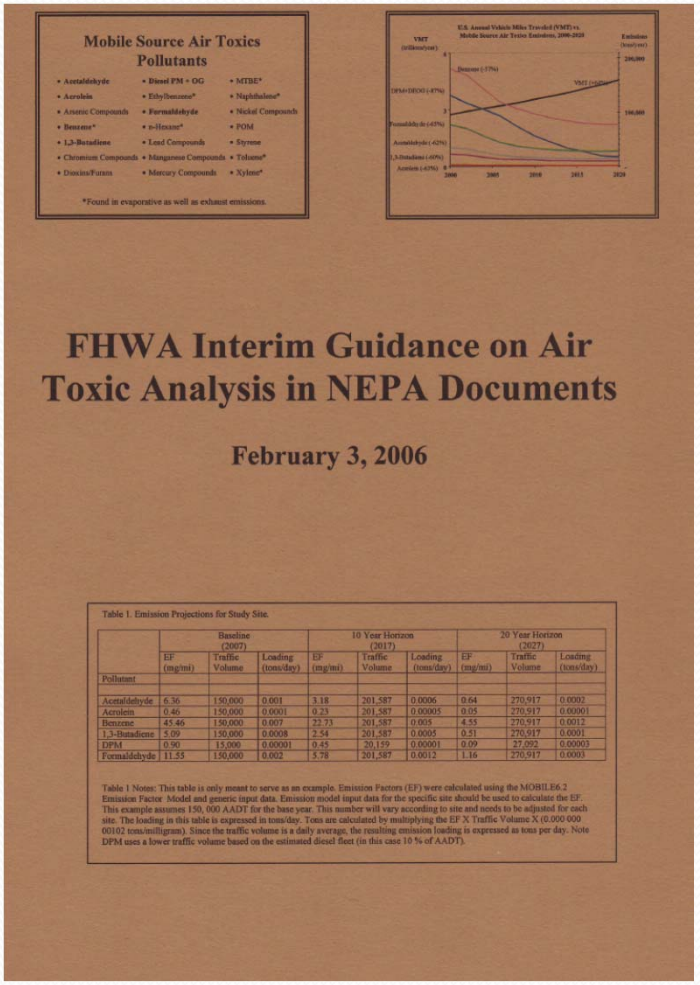
- CAA directed EPA to identify all hazardous air pollutants (HAPs) not identified as criteria pollutants that could result in illness
- EPA issued its final MSAT Rule in February 2007
  - Rule adopted new standards and controls on fuels and vehicles to reduce toxic compounds that are emitted by mobile sources
  - EPA considers the following MSAT to be of particular concern:
    - naphthalene
    - acrolein
    - benzene
    - 1,3-Butadiene
    - formaldehyde
    - diesel particulate matter (DPM)
    - polycyclic organic matter

Background: Air Toxics Health Effects

- Known or suspected to adversely effect health:
  - Cancer
  - Development of organs and tissues
  - Damage to immune, neurologic, reproductive or respiratory systems

Background

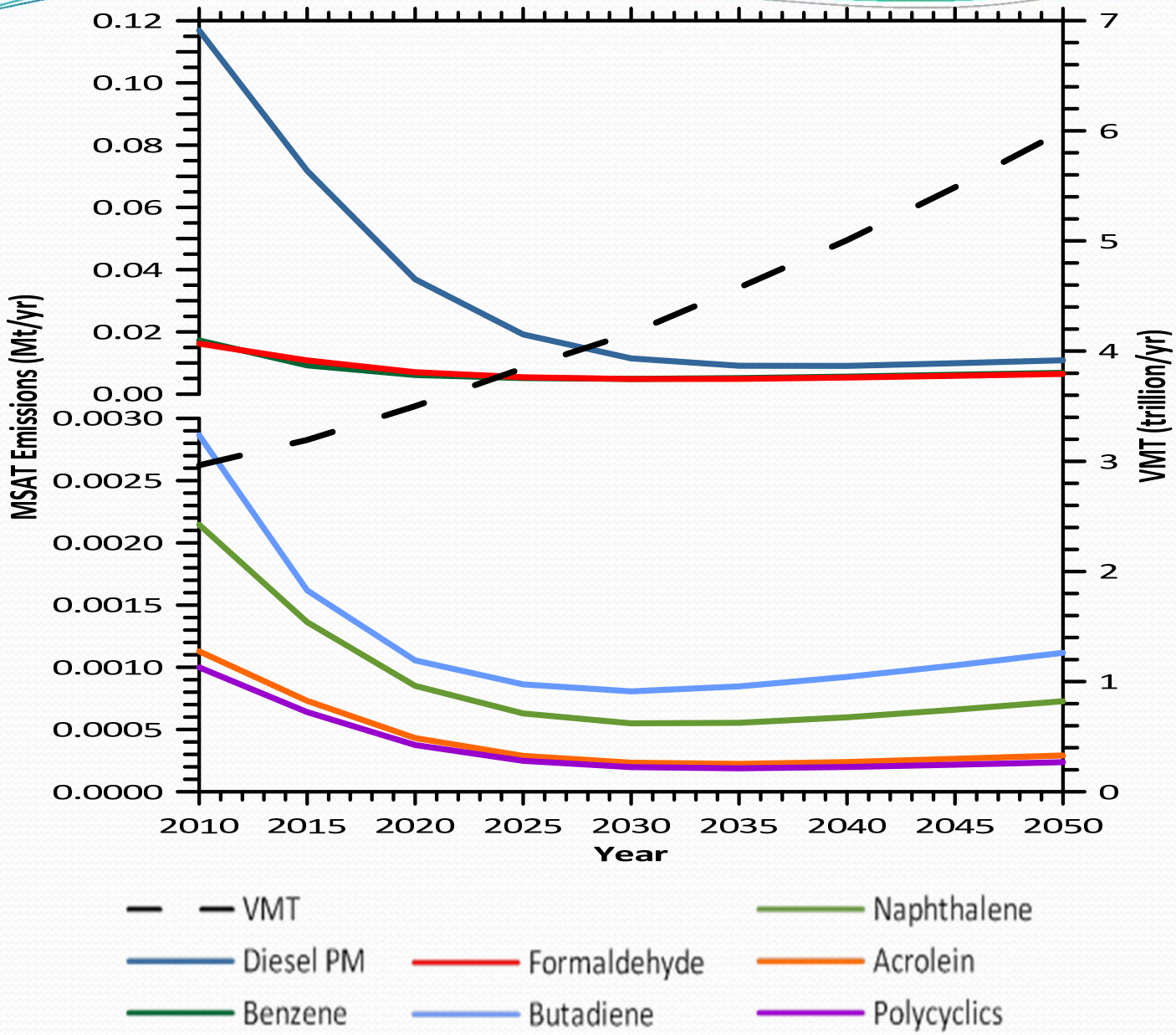
- First issued in February 2006
- Updated in September 2009, December 2012
- Provides methods to assess potential MSAT emissions for project alternatives



Background: Guidance Contents

- Guidance memo
  - Appendix A: Prototype language for exempt projects
  - Appendix B: Examples of prototype language for qualitative analysis
  - Appendix C: CEQ provisions covering incomplete or unavailable information (40 CFR 1502.22)
  - Appendix D: FHWA sponsored MSAT research
  - Appendix E: MSAT mitigation strategies

PROJECTED NATIONAL MSAT EMISSION TRENDS 2010 – 2050 FOR VEHICLES OPERATING ON ROADWAYS USING EPA's MOVES2010b MODEL



Summary of FHWA Guidance Direction

- Exempt projects: no potential for meaningful MSAT effects
  - no analysis
- Projects with low potential for MSAT effects
  - qualitative analysis
- Projects with higher potential for MSAT effects
  - conduct quantitative emissions burden analysis
  - evaluate mitigation if meaningful emissions differences

Exempt Projects

- Qualify as a categorical exclusion (under 23 CFR 771.117(c)
- Projects exempt under CAA conformity rule (40 CFR 93.126)
- Other projects with no meaningful impacts on traffic volumes or vehicle mix

Bus shelter at Park-n-Ride, Atlanta

Projects with Low Potential for MSAT effects

- Improve operations of highway, transit or freight without:
  - adding substantial new capacity OR
  - creating a facility that is likely to meaningfully increase MSAT emissions
- Cover a broad range of projects

Projects with Low Potential for MSAT effects

- Qualitative assessment:
  - Compare expected effect of project on traffic volumes, vehicle mix, routing of traffic and associated changes in MSATs for project alternatives (including no-build)
  - Discuss health impacts of MSATs

Projects with Low Potential for MSAT effects

- Qualitative assessment:
  - Consider such issues as:
    - Are benefits of increased speeds offset by increased VMT?
    - Any alternatives move emissions or economic activity closer to homes, businesses, other populated areas?
    - Facility generate new development that may increase MSAT emissions from new trips, truck delivers, and parked vehicles?

Projects with Higher Potential MSAT Effects

Potential for meaningful differences in MSAT emissions among project alternatives

(1) Create or significantly alter a major intermodal freight facility with the potential to generate high levels of diesel particulate emissions in a single location, involving a significant number of diesel vehicles for new projects or a significant increase for expansion projects; OR

OR

(2) Create new capacity or add significant capacity on roadways where the traffic volume will be 140,000-150,000 AADT (or higher) in the design year

AND

Proposed to be located in proximity to populated areas

Projects with Higher Potential MSAT Effects

- Quantitative analysis to forecast local-specific emissions trends for the priority MSATs for each alternative

- If meaningful differences among alternatives, mitigation options should be identified and considered

Mitigation

- Cleaner (newer) construction equipment
- Retrofit of construction equipment/cleaner fuels
- Alternative fuels (propane, biodiesel)
- School bus retrofit
- Truck stop electrification
- Anti-idling ordinances
- Move receptors (sensitive populations)

Summary: Project Level Requirements

- For air quality analyses in environmental documents, both Clean Air Act and NEPA requirements can apply
- CAA requirements are very prescriptive, cover transportation-related NAAQS
- MSAT analysis falls under NEPA requirements
- FHWA's Interim Guidance for MSATs has 3 Tiers:
  - Exempt projects
  - Projects unlikely to produce meaningful MSAT impacts
  - Projects with a higher potential to produce meaningful MSAT impacts

Looking back…

FHWA & MSAT Project Experience

- 60 projects around the US have received this level of analysis since 2005
- Numerous Court Cases (MD, NH, NV, TX, etc.)
- Analysis Examples: Guam, NV School, CA Ports

Looking forward…

Research

- National Near Roadway Study
  - Las Vegas & Detroit
- Health Effects Institute
  - Mobile Source Air Toxic Hot Spots
  - Traffic-Related Air Pollution: A Critical Review of the Literature on Emissions, Exposure, and Health Effects
  - MSATs: Critical Review of Literature on Exposure and Health Effects
  - RFA: Improving Assessment of Near-Road Exposure to Traffic Related Pollution
- MAP-21: Air Quality and Congestion Mitigation Measure Outcomes Assessment Study

Looking forward…

MSAT Analysis Direction

- Continued desire to provide information the is useful to decision makers
- Uncertainty
- Disagreement about the best approach
- Resource constraints

Resources

Contacts

- FHWA Division Offices
- http://www.fhwa.dot.gov/about/field.cfm
- FHWA Office of Natural Environment:
  - Karen Perritt, Karen.Perritt@dot.gov
  - Victoria Martinez, Victoria.Martinez@dot.gov

FHWA Air Quality Website

http://www.fhwa.dot.gov/environment/air_quality

Thank you for your attention