Understanding HAPs and TAPs

EPA’s NESHAP Program and the LDEQ Air Toxics Program

Bliss M. Higgins, Principal
ENVIRO N International Corporation
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What we’ll cover

- Regulatory programs for stationary sources
- HAP – hazardous air pollutants
- TAP – toxic air pollutants
- Brief history, overview and recent developments
  - Part 61 NESHAP program
  - Part 63 NESHAP program
  - Louisiana Toxic Air Pollutant program
- Pointers for complying and consulting
Pre-Quiz

- Who was the US President in 1970?
- Who was the Governor of Louisiana in 1989?
- Who was the US President in 1990?
- When was the first Toxics Release Inventory report released to the public?
- What was the first MACT standard?
- What’s the difference in a HAP and a TAP?
- What is the HON?
- Who was Gus Von Bodungen?
- What is an ample margin of safety?
- What is the TTN?
What are NESHAP?

- National Emission Standards for Hazardous Air Pollutants
- 40 CFR Part 61 NESHAP
  - Older standards, mostly pre-1990
  - Major vs. area source distinction NOT relevant
- 40 CFR Part 63 NESHAP
  - Post-1990 Clean Air Act Amendments
  - Maximum Achievable Control Technology (MACT)
  - Generally Available Control Technology (GACT)
  - Residual Risk Standards
History of federal HAP program

- **1970** – “The Year of the Environment”
  - National Environmental Protection Act, January 1
  - First Earth Day, April 22
  - Creation of US EPA, December 2
  - Clean Air Act Amendments of 1970

- **1970’s – 1980’s**
  - First list pollutant as a HAP, then regulate emissions
  - EPA successful at regulating 7 HAP in 20 years
    - Radionuclides, inorganic arsenic, mercury, beryllium, asbestos, vinyl chloride, benzene
  - Proliferation of State air toxics programs

- **1989 Benzene NESHAP ruling**
  - Ample margin of safety
Part 61 NESHAP highlights

- Subpart F – Vinyl chloride
  - Covers EDC, VC and PVC plants
  - 1976 rule later adopted as MACT
  - Currently under review

- Subpart M – Asbestos

- Subparts J and V – Equipment Leaks

- Subparts Y and BB – Benzene Storage and Transfer

- Subpart FF – Benzene Waste Operations, 1990
History of federal HAP program

- 1990 – Clean Air Act Amendments
  - Title III, revised Section 112 of Title I of CAA

- 112(b) HAP List
  - 189 HAP, now 187

- 112(d) Emission Standards
  - Major and area sources
  - Source categories
  - MACT and GACT

- Much more
Federal HAP List

- **Section 112(b) List of 189 HAP**
  - EPA can add or delete
  - Public can petition for revisions

- **Revisions to the initial list**
  - $H_2S$ – “removed” in 1991 (woops)
  - Caprolactum – delisted 1996
  - Glycol ethers category
    - Redefined in 2000 (surfactant alcohol ethoxylates)
    - Revised in 2004 (EG BE)
  - Methyl Ethyl Ketone (MEK) – delisted in 2005

- **Now 187 HAP**
What is a HAP?

A pollutant that presents, or may present a threat of adverse human health effects, including:
- Carcinogenic, mutagenic, teratogenic, neurotoxic, reproductive dysfunction, acutely or chronically toxic
- Or adverse environmental effects
- By inhalation or other route of exposure
- By ambient concentrations, bioaccumulation, deposition or otherwise
- Not a criteria pollutant, but can be a precursor or a pollutant in a class listed as criteria pollutant
Federal HAP Sources

- **Major source based on potential to emit**
  - 10 tpy single HAP or
  - 25 tpy combined HAP

- **Area source**
  - “any stationary source of HAP that is not a major source”
    - 112(a) definition

- **Source categories and subcategories**
  - Initial list in 1992
  - As listed by EPA, see [http://www.epa.gov/ttn/atw/socatlst/socatpg.html](http://www.epa.gov/ttn/atw/socatlst/socatpg.html)
Maximum Achievable Control Technology (MACT)
- “maximum degree of reduction in emissions that the Administrator determines is achievable…”
- Considering cost, non-air quality health and environmental impacts and energy requirements

New source MACT not less stringent than
- “emission control that is achieved in practice by the best controlled similar source”

Existing source MACT not less stringent than
- “average emission limitation achieved by the best performing 12 percent (or 5 if <30) of the existing sources…” with caveats
Post-1990 NESHAP

- MACT standard is required for all major source categories and subcategories

- Generally available control technology (GACT)
  - An alternative to MACT, allowed for area sources only

- CAA required all 112(d) standards within 10 years
  - 41 within 2 years
  - 25% within 4 years
  - + 25% within 7 years
  - 100% within 10 years
Title III “Safeguards”

- **112(j) – MACT hammer**
  - If EPA fails to promulgate within 18 months of schedule
  - Implement MACT “equivalent” by permit
  - All sources in the source category

- **112(f) – Residual Risk**
  - Assess risk remaining after MACT
  - must provide ample margin of safety if risk >10\(^{-6}\)

- **112(k) – Urban Air Toxics Strategy**
  - Address sources emitting 30 HAP creating greatest risk
112(d) – Review and revise
   - EPA must review standards every 8 years

112(g) – Case-by-case M A C T
   - If construct a new major source and 112(d) M A C T not established
Coke ovens – first MACT, October 1993
Subpart A, General Provisions
Hazardous Organic NESHAP (HON)
- SOCMI plus certain other processes
- Reg-neg for equipment leaks
- Subparts F, G, H and I
Cluster Rule for Pulp and Paper
- Combined MACT and Effluent standards in one rulemaking
- MACT I, II and III
Part 63 NESHAP

- **Generic MACT**
  - An alternative methodology for making MACT determinations
  - Subpart YY
  - Carbon black, hydrogen fluoride, ethylene production

- **Miscellaneous Organic NESHAP (M O N )**

- **Many other MACT standards**
  - [http://www.epa.gov/ttn/atw/mactfnlalph.html](http://www.epa.gov/ttn/atw/mactfnlalph.html)

- **~ 70 area source categories**
  - [http://www.epa.gov/ttn/atw/area/arearules.html](http://www.epa.gov/ttn/atw/area/arearules.html)
Residual Risk and Technology Reviews

- Completed 16 reviews

- October 2010 Proposal
  - Chromium Electroplating and Chromium Anodizing;
  - Group I Polymers and Resins;
  - Marine Tank Vessel Loading Operations;
  - Pharmaceuticals Production;
  - The Printing and Publishing Industry; and
  - Steel Pickling–HCl Process Facilities and Hydrochloric Acid Regeneration Plants
Residual Risk and Technology Reviews

- September 2010 Consent Decree schedule
  - 7 Bins, 2010 - 2018

- EPA uses National Emissions Inventory (NEI) to model risk

- Section 114 ICRs precede RR&T review

- Errors or misinformation in NEI and ICR responses carry over to risk analysis and MACT review

- [http://www.epa.gov/ttn/atw/rrisk/rtrpg.html](http://www.epa.gov/ttn/atw/rrisk/rtrpg.html)
Louisiana Air Toxics Program

History

- **Act 184 of 1989**
  - Louisiana Comprehensive Toxic Air Pollutant Emission Control Program
  - Spurred by release of first TRI report release
  - Goal of 50% reduction in toxics statewide from 1987 levels by December 31, 1994

- LDEQ formed Advisory Committee for rule development
  - Industry, small business, environmental groups
  - Initial rule proposal November 1990
  - Led to statutory revisions and reproposal
Chapter 51

- LAC 33:III. Chapter 51 adopted December 1991
- Applies to new and existing major sources
- Major source
  - Tracks federal definition
  - Emits or has potential to emit 10 tpy single TAP or 25 tpy combined TAPs
Chapter 51  List of TAP

- ~100 pollutants on initial list (1991)
  - Covered >99% of Louisiana TRI emissions
- Established Ambient Air Standard for each TAP
- 3 Classes based on toxic effects
  - Class I – known and probable human carcinogens
  - Class II – suspected human carcinogens and known or suspected human reproductive toxins
  - Class III – acute and chronic (non-carcinogenic) toxins
- Included 13 TAPs not on HAP list
  - Now 14 with MEK
TAPs not on HAP list

- Ammonia
- Barium and compounds
- N-butyl alcohol
- Chlorine dioxide
- Copper and compounds
- Diaminotoluene
- 2,6-dinitrotoluene
- Hydrogen sulfide
- Methyl ethyl ketone
- Nitric acid
- Pyridine
- Sulfuric acid
- Toluene-2,6-diisocyanate
- Zinc and compounds
Chapter 51 List of TAP

- Adopted supplemental list in 1992 to include all federal HAP
  - Don’t count toward major source status
  - No MER or Ambient Air Standards
  - Reporting only

- LDEQ required to review list and AAS every three years and revise list as needed
Substantive Requirements

- Annual emissions reporting and fees
  - TEDI not incorporated in ERIC
- Case-by-case MACT determinations for all Class I and Class II TAP
- Compliance with AAS for all TAP
- Initial compliance certifications or compliance plans were submitted December 20, 1992
  - Note HON proposed December 31, 1992
- Compliance reviews through permitting for ongoing construction and modifications
- Public notice and comment
Chapter 51 Applicability Triggers

- Applies on a pollutant basis
  - Different from federal source category approach

- Minimum Emission Rate (MER) for each TAP
  - Pounds per year, facility wide
  - Triggers applicability of MACT and AAS
  - Set by worst case modeling at 1 in a Million risk levels

- If PTE > MER, must meet MACT and AAS

- Ambient Air Standards set at 1 in 10,000 risk level

- MER and AAS mirror federal ample margin of safety
Chapter 51 Compliance

- Each existing major source required to submit certification of compliance or compliance plan and schedule for MACT and AAS
- Case-by-case MACT determinations
- Some negotiated MACT by category
  - Non-HON Equipment Leaks
  - LA Refinery MACT
- LDEQ review and approval, public notice
- Compliance required by December 1996
Significant differences in state and federal program

**Louisiana Program:**
- Pollutant specific, case-by-case review
- Technology and risk review combined
- Promulgated AAS

**EPA Program:**
- Source category M A C T by rule
- Risk review follows M A C T by 8 years
- No A A S
Incorporation by Reference

- **Chapter 51 Subchapters B and C**
  - Part 61 N ESHAP
  - Part 63 N ESHAP as applicable to major sources
  - Updated annually
  - Modifications and exceptions noted

- **Chapter 53 Subchapter B**
  - Part 63 N ESHAP as applicable to area sources
  - Updated annually
  - Modifications and exceptions noted

- See also **Chapter 53 Subchapter A**
  - Annual emissions reporting for area sources
December 2007 Updates to Louisiana Air Toxics Program

- Deletion of obsolete language from initial program implementation

- Compliance with applicable Part 63 standard constitutes compliance with MACT

- Exemption from SOP requirement if complying with Part 63 MACT

- Clarification/expansion of exemption for virgin fossil fuel combustion

- Unqualified exemption for electric utilities
Act 103 of 2010 Updates

- Compliance with Part 61 or Part 63 standard constitutes compliance with Louisiana air toxics program for the NESHAP affected source

- Ambient air standards still apply
  - do not apply to roads, railroads, or water bodies where activities are transient in nature and long-term exposure is not reasonably anticipated
  - do not apply to adjacent or impacted industrial sources, provided not causing OSHA standard exceedance

- Emissions reporting and fees still apply
Questions?