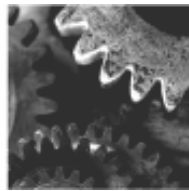


Residual Risk Standards:

EPA Begins Implementing Section 112(f) of the Federal Clean Air Act



Presented by Steve Ramsey

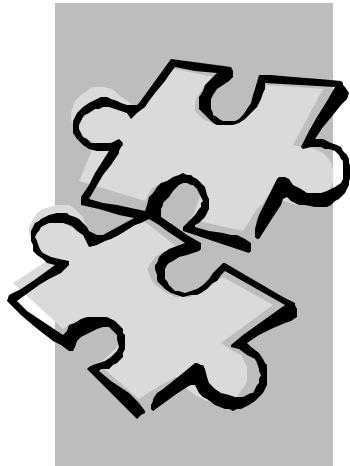
Air & Waste Management Association, Gulf Coast Chapter

April 11, 2006

E N V I R O N



MACT Standards: The Story So Far



- ✍ Section 112(d) of the 1990 Federal Clean Air Act (FCAA) Amendments required EPA to promulgate regulations establishing emission standards for major and area sources of hazardous air pollutants (HAP).
- ✍ Existing source standards statistically derived.
- ✍ First standard issued final in September 1993 (dry cleaners).
- ✍ The last standard was issued final in September 2004 (industrial, commercial and institutional boilers and process heaters).
- ✍ 89 standards have been issued (codified in 40 CFR 63) for all source categories that EPA considers to be significant sources of HAP.
- ✍ A few standards have regulated area (non-major) sources, but most have regulated only major sources of HAP emissions.



Residual Risk Program Mandate

Promulgation of standards beyond MACT when necessary to provide an ample margin of safety to protect the public health and to prevent – considering costs, energy, safety and other relevant factors – an adverse environmental effect



Statutory Requirements: Report to Congress

- ✍ Section 112(f) of the Federal Clean Air Act establishes specific requirements:
- Report to Congress within 6 years after enactment of the 1990 FCAA Amendments on:
 - Methods of calculating risk remaining after implementation of standards under §112(d) – our current MACT standards;
 - The public health significance of any remaining risks;
 - Technologies available to reduce these risks; and
 - Recommendations on legislation to address these remaining risks.



Statutory Requirements: Residual Risk Emission Standards

✍ If Congress does not act on the recommendations in the referenced report, EPA is to:

- Promulgate new standards for each source category regulated by a §112(d) MACT standard if such a standard is required to protect the public health or prevent an adverse environmental effect; and
- Promulgate these residual risk standards within 8 (or in some cases, 9) years of final publication of the original MACT standard.

✍ As stated in §112(f)(a):

“If standards promulgated pursuant to subsection (d) and applicable to a category or subcategory of sources emitting a pollutant . . . Classified as a known, probable or possible human carcinogen do not reduce lifetime excess cancer risks . . . to less than one in one million, the Administrator shall promulgate standards under this subsection . . .”

✍ EPA is not required to address area sources.



A Few Known, Probable or Possible Human Carcinogens¹

Acetaldehyde	Creosote	Propylene oxide
Acrylonitrile	Ethyl Acrylate	Styrene
Benzene	Ethylene Oxide	Tetrachloroethylene
1,3-Butadiene	Formaldehyde	Trichloroethylene
Chromium VI Compounds	Naphthalene	Vinyl chloride

¹From 2/2005 Technical Update to list of OSHA carcinogens



Statutory Requirements:

Regular Review of 112(d) Emission Standards

✍ Section 112(d)(6) of the FCAA requires EPA to:

“review and revise as necessary . . . , emission standards promulgated under this section no less often than every 8 years.”

✍ Per the FCAA, the process of reviewing and revising the MACT standards will continue until such time as this provision is changed or eliminated.



EPA's Residual Risk Rule Projects Status

Project	Date of Final 112(d) MACT Standard	Date of Residual Risk Proposal	Date of Final Residual Risk Rule
Coke Ovens	10/27/1993	08/09/2004	04/15/2005
Dry Cleaning	09/22/1993	12/21/2005	
Industrial Cooling Towers	09/08/1994	10/24/2005	04/07/2006
Petroleum Refineries (MACT I)	08/18/1995		
Hazardous Organic NESHAP	04/22/1994		
Gasoline Distribution	12/14/1994	08/10/2005	04/06/2006
Ethylene Oxide Sterilizers	12/06/1994	10/24/2005	04/07/2006
Magnetic Tape	12/15/1994	10/24/2005	04/07/2006
Halogenated Solvents	12/02/1994		
Chrome Electroplating	01/25/1994		
Polymers & Resins II	03/08/1995		
Secondary Lead	06/23/1995		
Aerospace	09/01/1995		
Marine Vessel Loading	09/15/1995		
Wood Furniture	12/07/1995		
Ship Building	12/15/1995		
Printing & Publishing	05/30/1996		
Off-Site Waste	07/01/1996		
Polymer & Resins I	09/05/1996		
Polymer & Resins IV	09/12/1996		



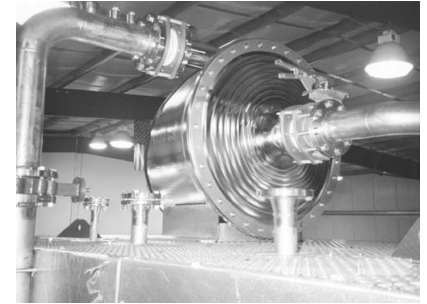
Residual Risk Standards: Coke Ovens

- ✍ Residual risk standards affect five coke oven batteries.
- ✍ Final residual risk standards:
 - Limits visible emissions due to
 - Leaking coke oven doors
 - Topside port lids
 - Offtake systems





Residual Risk Standards: Ethylene Oxide Sterilizers



- ✍ 76 major and area sources in source category
- ✍ Residual risk assessment findings:
 - Cancer risk above 1-in-1 million near 44 modeled sources
 - Cancer risk above 10-in-1 million near 19 sources with approximately 7,300 residents in these areas
 - No cancer risk above 100-in-1 million
 - No significant chronic or acute non-cancer risk
 - No adverse environmental impacts
- ✍ Current health risks deemed acceptable.
- ✍ Additional controls would achieve minimal emission and risk reduction at very high cost.
- ✍ Residual risk decision: no changes to existing standards.



Residual Risk Standards: Magnetic Tape



- ✍ Emissions data was collected from various sources
 - National Emissions Inventory
 - Toxics Release Inventory
 - State environmental agencies
 - Major sources (6 still in operation)

- ✍ EPA modeled exposure for affected facilities, calculated risks, and evaluated potential health and ecological impacts. Conservative assumptions are used in lieu of site-specific data.

- ✍ Findings: negligible risks for potential chronic cancer (less than 1-in-1 million), chronic non-cancer, and acute non-cancer.

- ✍ Residual risk decision: no changes to existing standards.



Residual Risk Standards: Industrial Cooling Towers



- ✍ Applicability of standard amended to affect only sources using chromium-based water treatment chemicals.
- ✍ 1994 MACT standard eliminated the use of chromium-based water treatment chemicals.
- ✍ Residual risk assessment does not consider leaks into cooling water from heat exchange systems.
- ✍ Assessment findings (chemicals other than chromium-based):
 - Highest chronic cancer risk due to cooling towers was estimated as 0.4-in-1 million.
 - Chronic non-cancer, acute non-cancer and environmental impacts are determined to be negligible.
- ✍ Residual risk decision: no changes to existing standards.



Residual Risk Standards: Gasoline Distribution Facilities



- ✍ Focus is on 9 HAP typically found in gasoline
- ✍ Using National Emissions Inventory, collected emissions data on 69 of 102 facilities affected by existing MACT standard.
- ✍ EPA modeled exposure for affected facilities, calculated risks, and evaluated potential health and ecological impacts. Conservative assumptions used in lieu of site-specific data.
- ✍ Findings:
 - Highest chronic cancer risk due to gasoline distribution facility was 5-in-1 million.
 - Considering facility-wide emissions (e.g. co-located refinery), highest chronic cancer risk was estimated as 26-in-1 million.
 - Approximately 80% of facilities posed a risk less than 1-in-1 million.
- ✍ Preamble to proposal states: *“EPA will generally presume that if the risk to the individual is no higher than approximately 1 in 10 thousand, the risk level is considered acceptable.”*
- ✍ Residual risk decision: no changes to existing standards.



Residual Risk Standards: Dry Cleaners (1 of 2)



✍ EPA modeled representative dry cleaning operations using:

- Site-specific data (emissions, modeling parameters)
- Census-derived population data
- Default exposure assumptions
- ISCST-3 model

✍ Findings:

- 7 major source modeled
 - All had a residual risk due to perchloroethylene > 1-in-1 million
 - Highest risk between 300 and 2,400-in-1 million
 - Large population exposure: 3.3 million with risk greater than 1-in-1 million
 - One facility had a non-cancer hazard that was considered significant.



Residual Risk Standards: Dry Cleaners (2 of 2)



✍ Findings (continued):

- “Model” facility assessment for area sources:
 - Average model facility had chronic cancer risk range from 2-in-1 million to 15-in-1 million.
 - Worst-case model facility ranged from 30-in-1 million to 220-in-1 million.
 - Non-cancer hazards are not considered significant.

✍ Proposed residual risk standards:

- Major sources
 - Enhanced leak detection and repair (LDAR) programs
 - Closed-loop, dry-to-dry machines with refrigerated condensers and secondary carbon adsorbers.
- Area sources
 - Enhanced LDAR and replace existing transfer machines with dry-to-dry machines

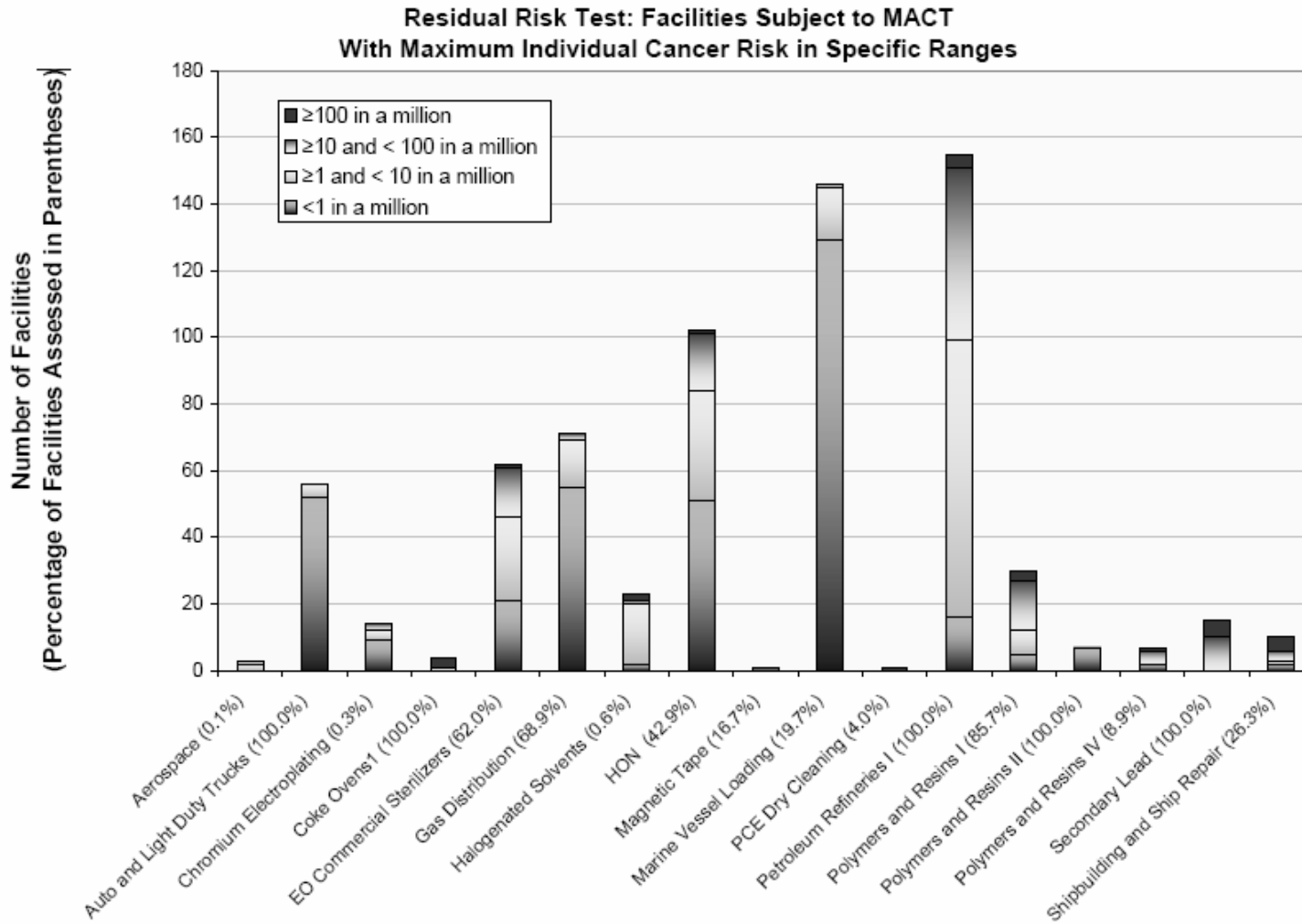


Conclusions & Questions

- ✍ EPA has shown no interest in requiring additional controls if the residual risk is less than 100-in-1 million.
- ✍ So far, EPA has shown no inclination to establish more stringent requirements for HAP sources already subject to control under an existing MACT standard
 - confirmed in discussions with EPA project officer regarding Refinery MACT I.
- ✍ Focus is clearly on sources in urban environments:
 - Dry cleaning MACT
 - July 2005 proposed revisions to the oil & natural gas production MACT that would regulate emissions from triethylene glycol dehydration units at area sources in urban settings
- ✍ How will EPA address complex source categories:
 - Major and area sources?
 - Many facilities – located in both rural and urban areas?
 - Already subject to control under an existing MACT but residual risk is greater than 100-in-1 million?



Residual Risk Test Findings





Residual Risk as Part of an Integrated Urban Air Toxics Strategy

- ✍ Series of programs constitute EPA's integrated urban air toxics strategy:
- Section 112(d) MACT standards
 - Section 112(f) residual risk standards
 - Clean Air Mercury Rule (CAMR)
 - Municipal waste combustor rules
 - Area source rules
 - Voluntary community-based emission reduction programs



Area Source Standards

✍️ 41 area source categories listed for future regulatory development. Examples include:

- Asphalt processing & roofing manufacturing
- Brick & clay products manufacturing
- Chemical preparations
- Electrical & electronic equipment finishing operations
- Fabricated structural metal manufacturing
- Heating equipment manufacturing
- Inorganic pigments manufacturing
- Paints manufacturing
- Valves & pipe fittings
- Agricultural chemicals & pesticides
- Auto body refinishing
- Pharmaceutical production
- Sewage sludge incineration

✍️ First standards scheduled for proposal in 2007.



What's Next?

- ✍ Expecting EPA to propose residual risk standards for HON and Refinery MACT I sources sometime this year (?).
- ✍ Anticipate that, if additional controls are required, focus will be on sources excluded or minimally affected by initial MACT standards:
 - More monitoring for heat exchange system leaks?
 - More stringent fugitive monitoring requirements?
 - Lower thresholds for Group 1 designations?
- ✍ Will EPA provide off-ramps – ways that individual sources can demonstrate acceptable residual risks and, thus, avoid additional control requirements?



What Can You Do?

- ✍ Engage in the residual risk rulemaking process through your industry association
- ✍ Track developments
- ✍ Comment on any proposal



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