

Developing a Local-Scale Nonpoint Area Source Emissions Inventory: Cuyahoga County, Ohio

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EPA Integrated Air Toxics Program

- Finalized July 19, 1999 (64FR38705)
- The Strategy included plans to conduct initiatives at both the national and local levels
- Strategy to remove air toxics in urban areas, focused on 33 hazardous air pollutants (HAPs)



33 Urban HAPs

Acetaldehyde	Coke Oven Emissions	Manganese Compounds
Acrolein	1,2-Dibromoethane	Mercury Compounds
Acrylonitrile	1,2-Dichloropropane	Methylene Chloride
Arsenic Compounds	1,3-Dichloropropene	Nickel Compounds
Benzene	Dioxins and Furans	Polychlorinated Biphenyls (PCBs)
Beryllium Compounds	Ethylene Dichloride	Polycyclic Organic Matter (POM)
1,3- Butadiene	Ethylene Oxide	Quinoline
Cadmium Compounds	Formaldehyde	1,1,2,2-Tetrachloroethane
Carbon Tetrachloride	Hexachlorobenzene	Tetrachloroethylene (Perchloroethylene)
Chloroform	Hydrazine	Trichloroethylene
Chromium Compounds	Lead Compounds	Vinyl Chloride

Cleveland Clean Air Century Campaign

- The Cleveland Pilot Study is one of the first demonstrations of a community-based approach to address reducing air toxic emissions
- Primary goals:
 - Reduce air toxics in Cleveland within a year;
 - Ensure the overall project is sustainable within the community
 - Ensure the approach can be replicated in other counties across the United States



Cleveland Clean Air Century Campaign

- Web address: www.ohiolung.org/ccacc.htm
- A Working Group was formed in June 2001 consisting of representatives from:
 - Environmental groups
 - Local area businesses and business organizations
 - Governmental and non-governmental agencies
 - Ohio EPA
 - U.S. EPA Region V
 - U.S. EPA headquarters (RTP, NC) and
 - Two neighborhood organizations (St. Clair/Superior and Slavic Village)

Active Local Community Involvement



With a resident from
Slavic Village



St. Clair/Superior Neighborhood
Development Association

Stationary Nonpoint Sources

- ERG was tasked to compile a HAP emissions inventory for point, area nonpoint, and mobile sources.
- Stationary Nonpoint Sources are defined as:
 - Small stationary point sources that can be grouped by a source category and whose emissions are usually not calculated for individual facilities (e.g., fireplaces)
 - Sources that do not really have a true “point” of emission (e.g., traffic marking)

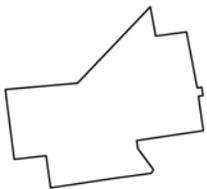


Inventory Development Steps

- Identifying nonpoint source categories
- Gathering activity and HAP emission factors
- Evaluating state, local, and federal regulations
- Developing nonpoint source category estimates
- Resolving quality assurance/quality control (QA/QC) checks specific to nonpoint source inventories

Initial Source Category List

- An initial list of 73 source categories was developed using:
 - 1999 NEI
 - Specific information for Cuyahoga County
 - Reviewing other state/local inventories
- The list was finalized to 54 source categories after:
 - Researching the source categories
 - Contacting Ohio and Cuyahoga County programs, offices, and agencies
 - Reviewing data available to the point source inventory



Data Sources - Local

- Cleveland Local Air Agency (CLAA) permit data
- Cuyahoga County governmental programs/agencies:
 - Health Department
 - Transportation
 - Auditor's Office
- Specific sources (e.g., airport fixed-based operations)
- Marketing Data for Cleveland PMSA



Data Sources - State

- Ohio Department of Transportation
- Ohio Bureau of Storage Tanks
- Ohio Fire Prevention Bureau
- Ohio Division of Surface Water
- Ohio EPA





Data Sources - National

- EPA MACT data/guidance
- U.S. Department of Agriculture
- U.S. Census Bureau
- Trade Associations
- Energy Information Association



Estimation Procedures

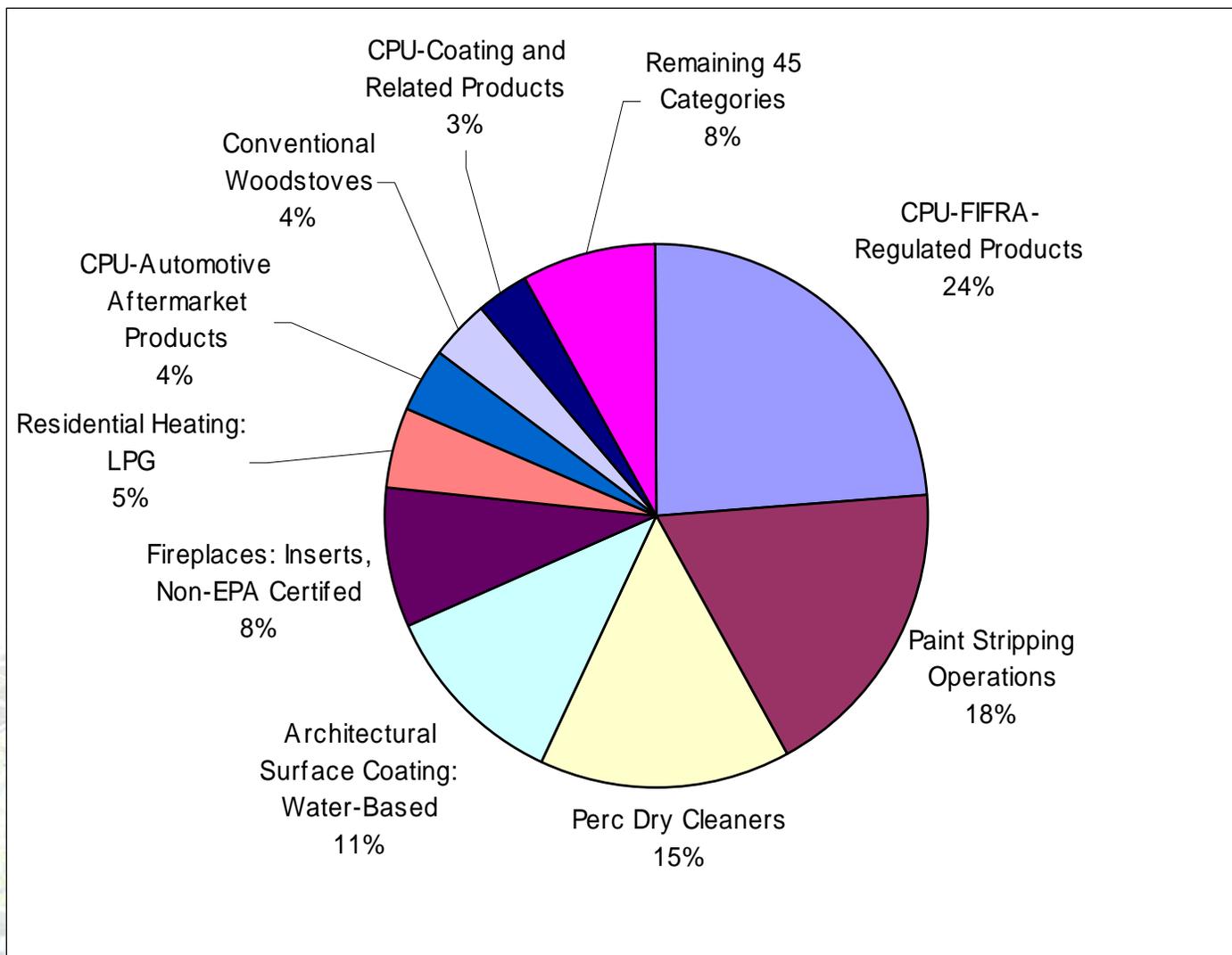
- NEI methodologies
- Emission Inventory Improvement Program (EIIP)
- AP-42
- Other state/local agencies

Emission Adjustments/Considerations

- Outdoor swimming pool activity during warmer months (May to October)
- Soil excavation occurred during June through August
- Residential/commercial/industrial heating assumed to be more active during the colder months
- Vapor recovery units are on all gasoline pumps; pumps are inspected annually certifying 95% control



Emissions By Source Category



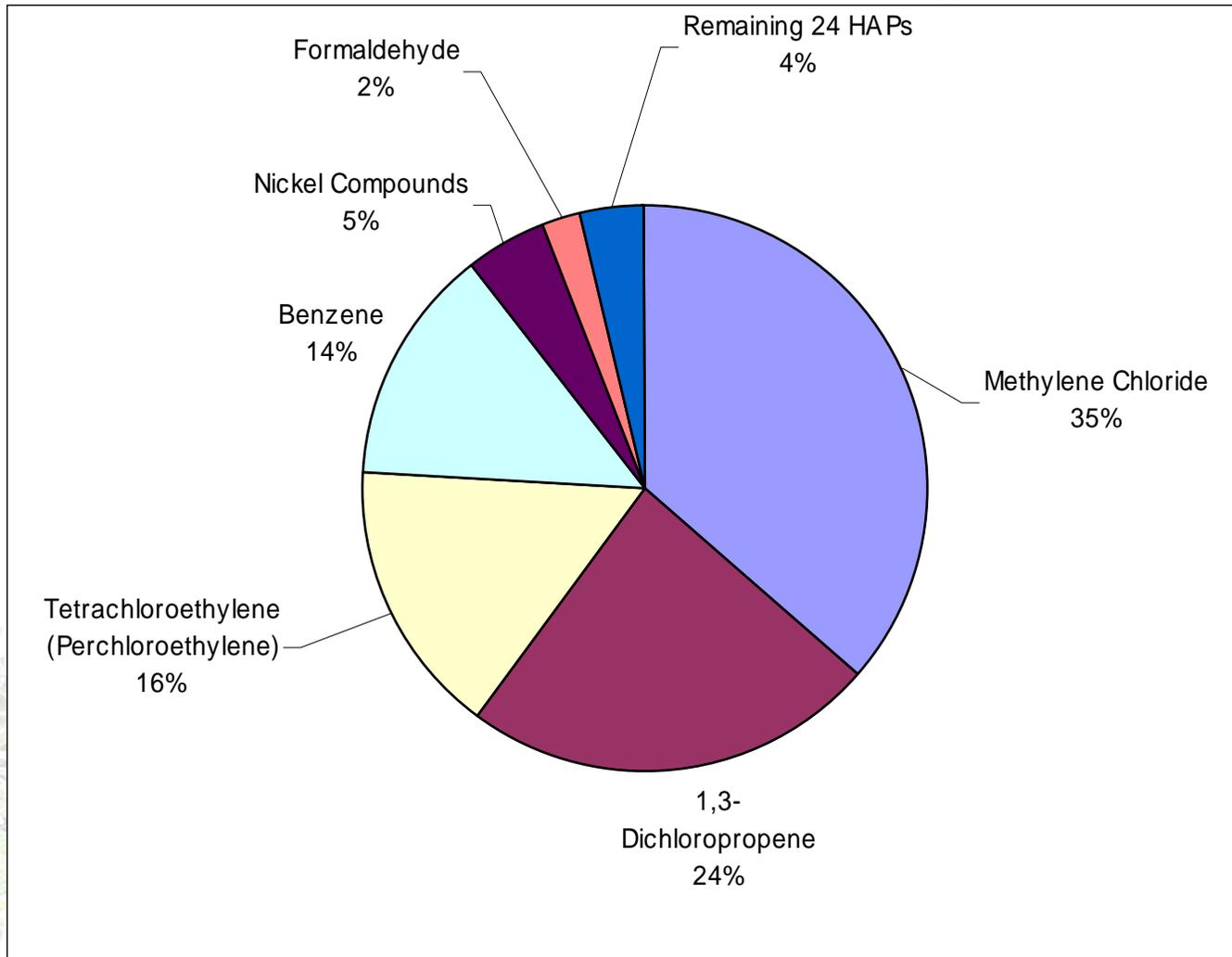
Total Emissions = 476 tpy

Emissions By Source Category - Highlights

- 90% of the nonpoint source emissions are emitted from 9 categories
- The top 3 source categories are similar to the nationwide profile
- New source categories for Cuyahoga County include:
 - Leaking underground storage tanks
 - Motor vehicle fires (tires)
 - Motor vehicle fires (components)
 - Residential heating using LPG



Emissions By HAP



Total Emissions = 476 tpy

Emissions By HAP - Highlights

- Methylene chloride, 1,3-dichloropropene, and tetrachloroethylene comprise nearly 76% of the total nonpoint emissions
- Nationwide, the top three nonpoint source urban HAPs are formaldehyde (28%), benzene (23%), and methylene chloride (11%), profile does not match Cuyahoga County.

QA/QC and Overlap Issues

- Overlap analysis was performed with the point sources inventory.
- Overlap categories include:
 - Perchloroethylene (PERC) Dry Cleaners
 - Institutional/Commercial Heating Using Natural Gas
 - Hard Chromium Electroplating
 - Decorative Chromium Electroplating
 - Human Cremation
 - Chromic Acid Anodizing



QA/QC and Overlap Issues

- 2002 Cuyahoga County estimates were compared to the 1999 NEI estimates
- Significant decreases due to methodology changes include: dry cleaners (-33%), outdoor swimming pools (-74%), conventional woodstoves (-14%), and POTWs (-99%)
- Significant increases due to methodology changes include: fireplace inserts: non-EPA certified (+62%), chromic acid anodizing (+2,681%), and stage II gasoline distribution (+121%)

Limitations

- Inventory only covers 33 Urban HAP emissions for the estimated nonpoint sources
- County source category coverage is incomplete (e.g., non-33 Urban HAP source categories not covered such as graphic arts)
- Data quality varies - generally, locally-specific data have higher quality

Acknowledgements

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 - Ms. Eleanor Bycoski, Slavic Village
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QUESTIONS?

