



Final Project Report

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Outline

- ◆ Executive Summary
- ◆ Introduction/Background
- ◆ Objectives
- ◆ Methods and Analysis
- ◆ Conclusions and Recommendations

Executive Summary

- ◆ Briefly describe what you found.
- ◆ Dr. Ellis Cowling - turn significant results into simple sentences.
- ◆ Capture the attention of the decision maker.

A Statistical Methodology for Corroborating Emission Inventories for Volatile Organic Compounds and Nitrogen Oxides

Louise Camalier, Brendan Yoshimoto & Brian Stines

- ◆ Describe the VOC/NO_x Emission Inventory Discrepancy In Houston.
 - Why do we care?
 - ◆ Goes to the heart of the air quality management process.
 - ◆ Future predictions are only as good as the emission inventory.
 - Can we determine what the “typical” ozone day inventory represent? How are upsets, malfunctions, spills, etc. addressed?
- ◆ Way has the study been extended to Atlanta?
 - Can the results in Houston be replicated?
- ◆ How can the statistical method that normalizes air quality data by removing the effect of wind speed be used?
 - Corroborate emission inventories
 - Develop correction factors to take malfunctions, etc. into account
 - Enforcement – identify excessive pollution problems

Four Projects & Four Teams

- ◆ NCDENR Air Division Project – “Is the Fine Particulate Matter Air Pollution “Non-attainment” Problem in Hickory and Lexington, NC Regional or Local?” (John White)
- ◆ NCDENR Water Division Project - “Is there a relationship between water chemistry and bug abundance?” (Jay Bibby, Audria Humes & Kimberly Madsen)
- ◆ NCDENR Water Division Project - “Is there a better way to define swamplands in the Coastal Plain and Sandhills?” (Jera Mendenhall)
- ◆ USEPA Office of Environmental Information Project – “A Comparison of Environmental Toxic Release Trends in Wake County, the State of North Carolina and the USA” (Cathy Pitts, Ken Hayden & Paul Tillman)

Is the Fine Particulate Matter Air Pollution “Non-attainment” Problem in Hickory & Lexington, NC Regional or Local?

- ◆ Need to describe the importance of the PM fine nonattainment designation.
- ◆ Why do we care? If the problem is regional it could affect many counties, whereas if it is local it might only affect the counties the sites are located in. A wrong decision can be very expensive for the taxpayers.
 - Can analysis of the ambient data identify the sources responsible for the high levels of fine particulate matter pollution in Lexington and Hickory?
 - Can meteorological data be used to help explain the location of the sources?
- ◆ Work done for the NCDENR Air Division:
 - Mrs. Laura Boothe
 - Mr. George Bridgers
 - Dr. Wayne Cornelius
 - Mr. Pat Bello

Is the Fine Particulate Matter Air Pollution “Non-attainment” Problem in Hickory & Lexington, NC

Regional or Local?

John White

◆ Describe the Data Sets

■ Lexington

- ◆ Three air monitoring sites
- ◆ Pollutants Measured
- ◆ Meteorology

■ Hickory

- ◆ Two air monitoring sites

■ Other Cities

◆ Discuss findings.

Is the Fine Particulate Matter Air Pollution “Non-attainment” Problem in Hickory & Lexington, NC Regional or Local?

John White

◆ Describe the analysis

- Comparison Among cities with FRM Measurements
- Comparison of continuous PM fine sites
- Diurnal Pattern by Day of the Week

◆ Discuss results

Is there a relationship between water chemistry and bug abundance?

Jay Bibby and Audria Humes

◆ *Describe the problem.*

- ◆ Need to describe the importance of comparing the relationship between water chemistry and bugs
 - Why do we care?
 - Is there a relationship between water pollution and the abundance of tolerant and intolerant insect species?
 - Is the State's water monitoring strategy working?
 - How can it be improved?

◆ *Describe the data base.*

◆ *Discuss findings.*

Is there a better way to define swamplands in the Coastal Plain and Sandhills?

Jera Mendenhall

◆ Describe the problem.

- Why do we care?
- If swamp waters are defined based upon the dissolved oxygen level, we need to make sure all potential swamp sites are properly identified.
- How do we deal with uncertainty when making the determination as to whether or not a site exceeds the dissolved oxygen standard?

◆ Describe the data set

A Comparison of Environmental Toxic Release Trends in Wake County, the State of North Carolina and the USA

◆ Describe the problem.

- Need to describe the importance of the Toxic Release Inventory.
- Why do we care? We may be impacted by toxic releases. How does our area compare with our state and the nation?
- Are improvements taking place over time?
- Are levels per capita in Wake county higher than the state or the nation.?
- Which sources are impacting us?

◆ Describe the data set

- USEPA TRI Data Base

Introduction/ Background

◆ Multi-Purposes:

- Answer questions posed by NCDENR Air Division, NCDENR Water Division or USEPA Office of Environmental Division
- Can we determine if the problem in Lexington is regional or local or a combination of both?
- Can statistical models be developed to predict bug abundance as a function of water chemistry.
- Can we develop a better form of the dissolved oxygen standard that minimizes uncertainty?
- How do the trends in the Toxic Release Inventory compare among counties, the state of North Carolina and the nation?

◆ Discuss the data. Who collected it? What does it consist of?

Methods and Analysis

- ◆ Describe the statistical methods you employed. Comment on building the SAS data sets.
- ◆ What does your analysis show? It must include/support what you say in the executive summary.
- ◆ Attach you SAS code and SAS summaries in an Appendix. Only include the most important SAS output in this section.

Conclusions

- ◆ What have you found?
- ◆ Are there limitations in the conclusions you reached?
- ◆ What recommendations do you make?
- ◆ Do you have recommendations for future analysis?