

Scope and Cost of Air Dispersion Modeling



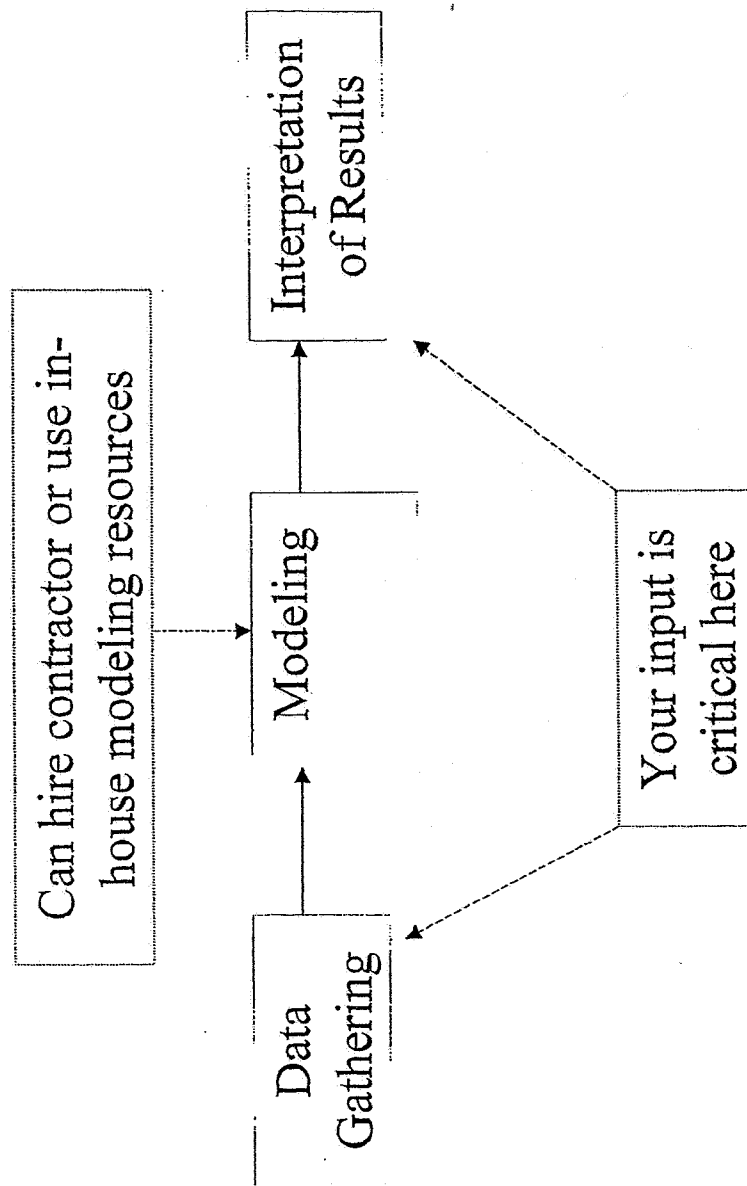
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Overview of the Scope



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Data Gathering

- Meteorological Data
- Terrain elevation maps
- Stack Parameters
 - Location (coordinates)
 - Height
 - Temperature
 - Stack gas vertical velocity
 - Diameter
 - Emission rates for each compound
- Plot Plan
 - Exact locations of all sources
 - Property line
 - Building locations and heights

Modeler typically
gets this
information for
you

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Standard Model and Methodology

- EPA's preferred model: Industrial Source Complex Short Term 3 (ISCST3) Model
- Procedures detailed in EPA's Guideline on Air Quality Models (40 CFR 51 Appendix W)
[http://www.epa.gov/scram001/guidance/gui
de/appw_01.pdf](http://www.epa.gov/scram001/guidance/gui
de/appw_01.pdf)

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Modeling Output

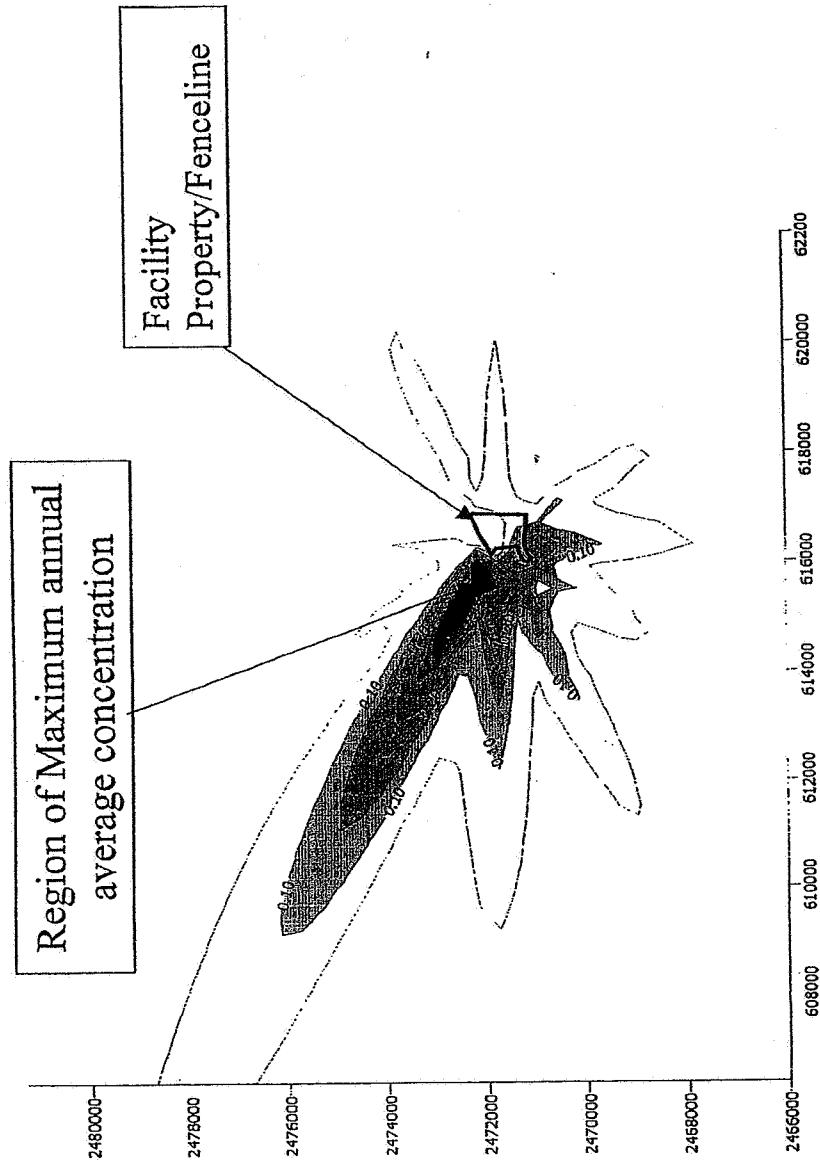
- Model will calculate hourly concentrations in $\mu\text{g}/\text{m}^3$ across a study area (5 km x 5 km for example)
- Model will average those concentrations over a designated time period (24 hour, monthly, yearly)
- Concentration contours showed extent of different $\mu\text{g}/\text{m}^3$
- Also shows numerical values (top 10 in the study area and locations)

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Technicolor Example of Output



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Interpretation of Results

- Compare maximum averaged concentration to appropriate "threshold" value
 - Maximum annual average would be compared to a chronic toxicity value
 - Maximum hourly average would be compared to an acute toxicity value

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Cost and Timing

- Expect about 50 man-hours ($\pm$ 10 hours)
- Costs
 - Outside modeler charges approximately \$150/hr
 - Meteorological data could be up to \$1,000
 - Estimate around \$8,500 for an average job.

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