# Asthma and Air Quality

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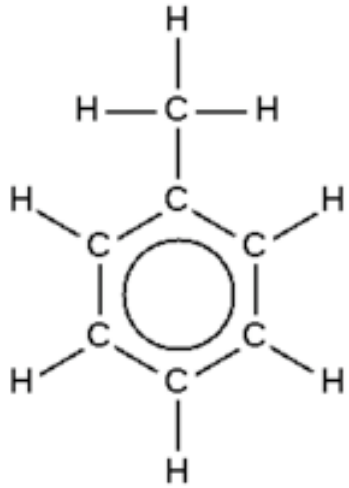
## Question

Do air stagnations have an effect on the amount of toluene found in the air samples?

# What is Toluene?



$C_7H_8$

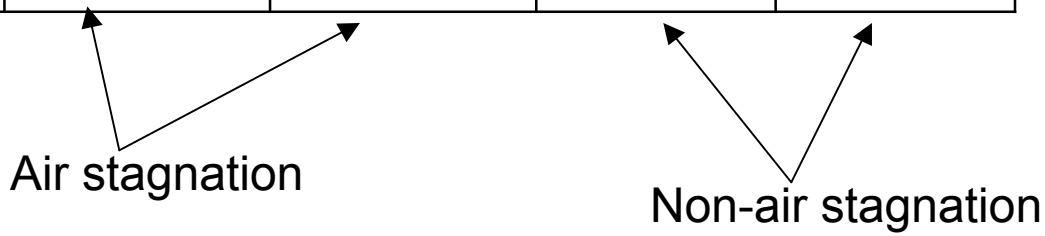
- Clear, colorless, sweet smelling liquid
- Consists of a benzene ring with one methyl group
- Most toluene is used as a component of petrol
- Primary source is industries that make it or use it in manufacturing
- Also found in paints, lacquers, inks, adhesives, rubber and cleaning agents, and vehicle exhaust
- Short term effects: light-headedness, euphoria, dizziness, sleepiness, unconsciousness, sometimes death
- Long term effects: kidney damage, permanent brain damage, problems with speech, vision, hearing, loss of muscle control, loss of memory and balance

# Procedure

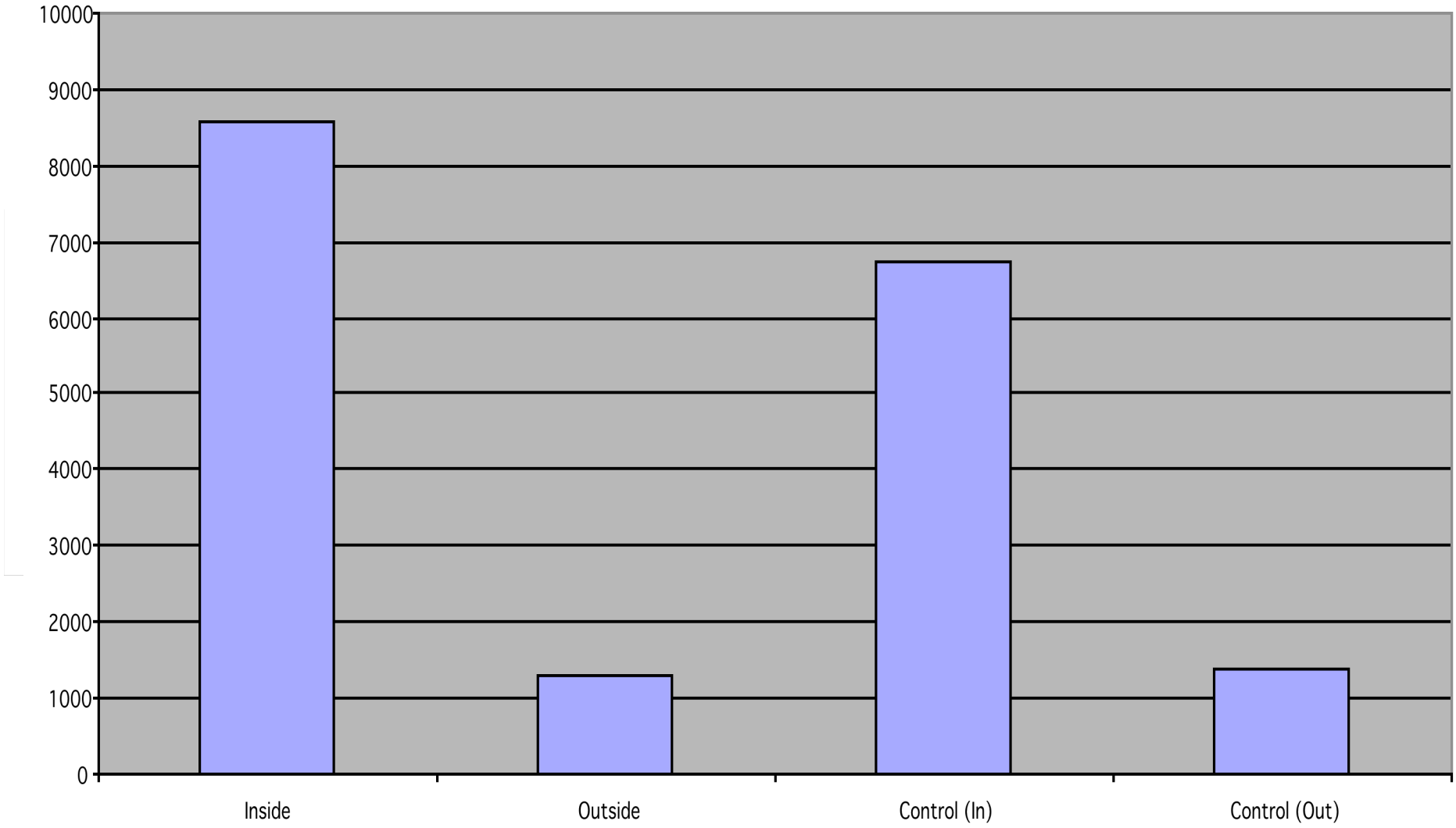
- Obtained weather archives for November 2004 through March 2005 and determined the dates of air stagnation
- Obtained air sample data
- Identified the dates of the samples taken
- Recorded amounts of toluene on dates of air stagnation
- Compared to levels of toluene from same sample sites on dates of non-air stagnation
- Averaged the values and made a graph to compare air stagnation levels to non-air stagnation levels

# Data

| | Inside | Outside | Control (In) | Control (Out) |
|---|---|---|---|---|
| Average Toluene | 8581.003 | 1297.769 | 6735.55 | 1360.97 |



## Amount of Toluene during Air Stagnation Periods vs. Non-air Stagnation periods



# Conclusion

**Inside:**

•Levels of toluene were significantly higher during air stagnation

•During cold weather (air stagnation periods) there is not much circulation inside homes

•Therefore, toluene gets trapped inside homes

**Outside:**

•Levels of toluene were so close together that they were basically equivalent

•Levels could be so close because the sample testing time wasn't long enough to actually capture the air stagnation period

•Also, the dates we interpreted as air stagnation periods might not have actually been air stagnation periods

•Possible that air stagnation periods don't affect outside levels