

# **Air Pollution & Quality of Life in East Flatbush, Brooklyn.**

A National Science Foundation  
Graduate K-12 (NSF-GK12) Program,  
in partnership with It Takes A Village Academy and  
Brooklyn College.

# Air Quality & The Olympics

- The International Olympic Committee (IOC) stated that "Beijing Air Quality Could Put Athletes at Risk".
- International athletes wore gas masks in Beijing, delayed traveling to China, and some athletes even chose not to compete.
- In order to improve air quality, Beijing removed 90% of the cars from the road and closed hundreds of factories and power plants before and during the Olympics.



**Good and Bad Air Quality Days in Beijing**

# Air Quality in the News and Media

- Forecast: Sunny, hot, air quality alert  
*Knoxville News Sentinel, TN*
- Code red air quality today!  
*Richmond Times Dispatch, VA*
- Steps taken to improve air quality at high school     *ABC15.com (KNXV-TV), AZ*
- Report Warns Poor Air Quality Killing Canadians  
*MarketWatch - Aug 13, 2008*
- Air Pollution Bad in Beijing, Not Great in NY State     *ReadMedia (press release), NY - Aug 4, 2008*

# What is air made of?

• Nitrogen	78.0842%
• Oxygen	20.9463%
• water vapor	1%
• Argon	0.9342%
• Carbon dioxide	0.0384%
• Other	0.002%

# So what is Air Pollution?

- Air pollution is any chemical, physical, or biological matter that changes the atmosphere in such a way as to cause harm to the environment.
- Examples:
  - Carbon Dioxide - believed to be a major contributing agent to global warming.
  - Asbestos - inhaling asbestos fibers can cause serious illnesses, including mesothelioma and asbestosis.
  - Mold - molds and other types of fungus release spores into the air and can trigger asthma episodes.

# Illnesses linked to air pollution.

- Minor Lung Illnesses - sore throat, coughing, sneezing, also watery itchy eyes.
- Lung Infections - croup, bronchitis, and pneumonia.
- Asthma - causes shortness of breath, coughing or wheezing or whistling in the chest.
- Chronic Obstructive Pulmonary Disease (COPD) - encompasses two major disorders: emphysema and chronic bronchitis.
- Lung Cancer - most common cause of death due to cancer.
- Coronary Artery Disease - refers to the blocking of the blood vessels that supply blood to the heart.

# People at risk in Brooklyn.

People at risk from poor air quality in Brooklyn\*:

**Pediatric Asthma**: 60,806

**Adult Asthma**: 156,821

**Chronic Bronchitis**: 78,575

**Emphysema**: 33,462

**Cardiovascular Disease**: 615,491

**Diabetes**: 141,024

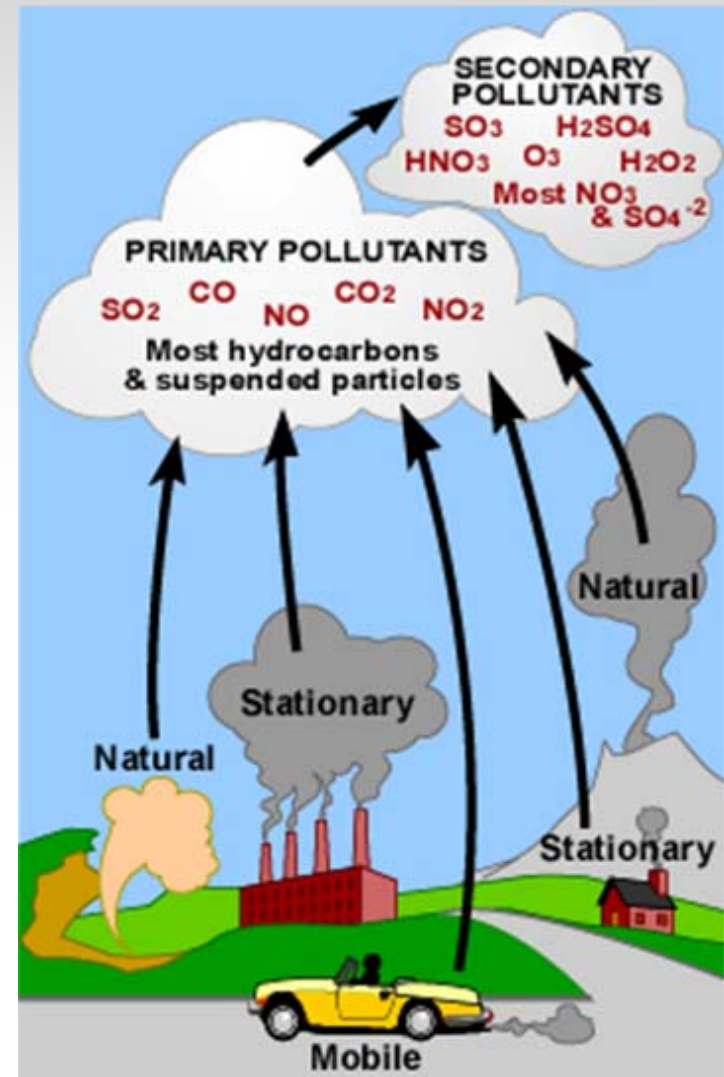
That is over 1 *million* people who are at risk of poor health every single day due to pollution in Brooklyn (about 43% of the population).

\* source: American Lung Association - 2008 State of the Air Report



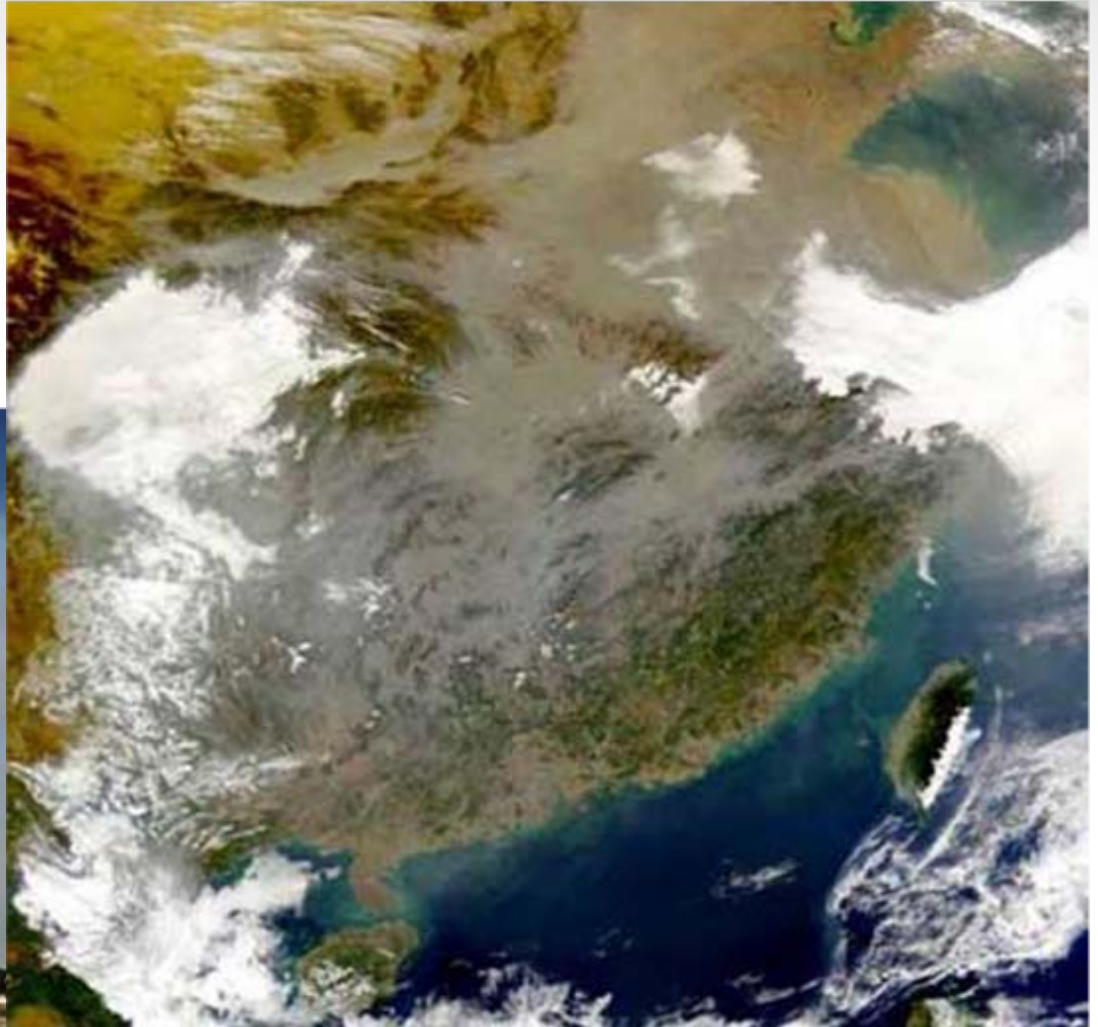
# What causes air pollution?

- Some pollution comes from natural sources, but most is the result of human activity.
- The biggest causes are fuel-burning power plants and automobiles.
- Combined, they are responsible for about 90% of all air pollution in the United States.



# What causes air pollution?

In china a lot of pollution comes from coal burning plants. To the right is a 2007 satellite shot.



## AIR QUALITY INDEX

Air Quality Index (AQI) Values	Levels of Health Concern	Health Effects
0 to 50	Good	Little or no risk
51 to 100	Moderate	Acceptable quality
101 to 150	Unhealthy for Sensitive Groups	General Public not likely affected
151 to 200	Unhealthy	All may experience some effects
201 to 300	Very Unhealthy	All may experience more serious effects
301 to 500	Hazardous	Emergency conditions

Most cities only measure Ozone and TPS (total particulates suspended). Some include Sulfur Dioxide, Nitrogen Dioxide and Carbon Monoxide. Very few test VOC's, Lead or Mercury.

# Where are AQI tests taken?

**Your Local Air Quality**  
For Brooklyn, NY 11212

**Alert** Weather Alert for Your Area!  
Check our Local Alerts Section for details

**Today's Air Quality - Jersey City, NJ**

Date	Code	AQI Level	Major Pollutant
9/4/2008 10:00 AM		9	Ozone

**Air Quality Forecast - Jersey City, NJ**

Date	Code	AQI Level	Major Pollutant
9/4/2008		105	Ozone
9/4/2008		105	Ozone
9/4/2008		75	Small Particulate Matter
9/5/2008		105	Ozone
9/5/2008		75	Small Particulate Matter

No health impacts are expected when air quality is in this range.

# What is Environmental Stewardship?

- Taking responsibility for the environment that you live in and the quality of life that you get as a result.
- If you live in East Flatbush, and you don't care about the quality of the air here, do you think anyone else should care?
- Community's have taken action before to solve their environmental problems.

# What we would like to find out:

- How many people are at increased risk of sickness and death because of air pollution in East Flatbush?
- Where does most of the pollution in East Flatbush come from?
- Are there pollution "hot-spots" in East Flatbush?
- What kind of experiments could we as a class perform, to help gage the quality of air in East Flatbush?
- What can we do to improve the quality of air in East Flatbush

# How we can get started ↵

Divide into groups and research the following:

- Ozone
- TPS
- Carbon Monoxide
- Nitrogen Dioxide
- Sulfur Dioxide
- Carbon Dioxide

For each kind of pollutant research source (where it comes from), measurement (how it can be measured in the air) and effect (what it does to the environment, including people).