APES- Smog City www.smogcity.com

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Directions: After opening the page, click on the link- **"run smog city".** *Be patient, it may take time to load.* There are six variables you can manipulate in the simulation. You will be manipulating the variables to discover the answers to the following questions.

Variables: (Pick One for Each)

- **Air Speed *(little windmill)***
- **Inversion Level- height of air mass that traps pollution *(black stripe)***
- **Temperature *(thermometer)***
- **Cloud Cover *(clouds)***
- **Population *(plain meter)***
- **Emissions *(dials at the bottom)***

1) What is **AQI?** *What levels are there for air quality?*
AQI stands for Air Quality Index; levels are good, moderate, unhealthy for sensitive groups, unhealthy, very unhealthy, hazardous

2) What is **Ozone** and *why are children most at risk*?
Ozone (O3) is an odorless gas in the atmosphere, children are at risk because ozone can cause respiratory problems

3) How does **air speed and wind** affect the level of smog in the city? ***Explain.***
Higher airspeed=less smog, and vice versa. Smog stays in areas with lower airspeed because it can accumulate without being disturbed.

4) How does **temperature** affect the level of smog in the city? ***Explain***.
Higher temperature=more smog, which is caused by chemicals reacting with the heat

5) **Which type of emission** has the greatest affect on air quality? ***Identify and explain why.***
Automobile emissions have the greatest effect since there are so many (could amount to millions in a city), which accumulates

6) Would you expect there to be more smog on a **cloudy day or a clear day?** ***Explain.***
I would expect smog to be more prevalent in a cloudy day because smog would not be able to rise above cloud cover, which traps the smog in the lower atmosphere

RESET the simulator and try to create the **WORST** conditions for smog in your city- you should be able to get the air quality index up to unhealthy levels- ***What are the readings for each of your variables to produce the nastiest city air?*** **Discuss.**
I maxed out everything (population, cars, trucks, temperature) and switched clouds on and wind off. Maxing out the population increases processes such as burning of fossil fuels for electricity use and industry to compete with the growing population. Increasing cars and trucks also increases mobile sources of pollution, and higher temperature causes more chemical reactions to occur. Clouds trap the smog in the lower atmosphere, and no wind keeps the smog concentrated in one area.